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THE STORIES OF INTERIOR
Multiple Perspectives on Interiority

30-31 January 2018
Universitas Indonesia

Department of Architecture
Faculty of Engineering
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[in]arch Scientific Committee

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PREFACE

THE STORIES OF INTERIOR: MULTIPLE PERSPECTIVES ON INTERIORITY

There is a significantly growing discourse evolving on the topic of interiority, that calls for reconsideration of inhabitation process in our living environments, and extends its potential beyond the bounded internality of architectural spaces. The attempts of rethinking interiority challenge spatial dichotomies, promote interdependence, and offer insights from different culture and perspectives. These attempts may emerge from diverse stories of engagements with interiority. Following the previous dialog during 1st Conference on Interiority and Interior Architecture in 2014, this year conference seeks to provoke further conversation that reflects multiple perspectives on interiority.

Extending the concept of interiority provides further thinking beyond the binaries in living spaces, and allows for enquiry towards living practices situated beyond traditional configurations of public and private domains. The concept of interiority encourages the understanding of interdependence among actors, objects and spaces as emerging network rather than as separated entities. The concept of interiority also acknowledge the diversity of living practices emerged in different social and cultural contexts, each narrating their own stories.

Understanding and researching interiority call for multidisciplinary approaches, ranging from urban, architectural and interior studies, to other fields of study with pertinent concern on the tangible and intangible aspects of interiority. This proceedings contain the papers presented during [in]arch Conference 2018 that reflect multiple perspectives on interiority which could construct different stories of interior. The ideas gathered in this proceedings suggest the possibility to extend the knowledge on interiority and interior architecture by exploring the encounters of interiority, by understanding the systems of interiority, and also by examining how the idea of interiority could contribute to the critical issues of human inhabitation.

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KEYNOTES

HOW SHOULD WE SPEAK OF INTERIORS?

Edward Hollis*

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I recently ran a tour of the city in which I live, in which the owners and curators of historic houses guided us round their precious and private interiors. At the same time, I was writing a guidebook for the oldest house in the city. During the process, I followed guided tours around the building, and at the end of the process, conducted some of my own, too. And all the while, like most design educators, I spent my days listening to students talking about interiors in presentations, pitches, and critiques.

In each case, I encounter interiors in word, and gesture; for in general, we assume that the interior does not speak on its own, but must be spoken for. If so, how should we speak of it? This question is, of course, of interest to a conference met to do just that; but it will also interest curators, guides, and the practitioners who draw, model, and also talk interiors into existence.

This paper will build on Beatriz Colomina's thesis that architectural space is not just a thing to be represented (verbally or visually) but a representation in itself. To explore how words and gesture mediate our encounters with the interior, a dramatis personae of guides to rooms will be framed in reference to theories of performance that posits interiors as scripts and their curators as actors. Lastly, this paper will engage with design discourse to explore the uses of speech and gesture in the creation of interiors – in conception, design development, execution, occupation, and retrospect.

If every interior is a representation, then how do words and gestures inflect its meaning; and how can those inflections of meanings help us to (re)imagine new interiors from the (re)presentation of existing ones?

FINDING RECIPES FOR INTERIORITY

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The idea of interiority requires an understanding of the internal aspects that make an interior. When we consider interiority as pertaining to the discipline of interior architecture or interior design, it is not limited to the physical condition of being inside, enclosed or contained. Its definition is extended far beyond the state of interior as the inside of the enclosed architectural space. Interiority suggests a way of understanding of space and environment from within, from itself. Interiority refers to subjectivity, and this subjectivity might be found throughout the process of inhabitation as well as the process of materiality that prioritize on what it actually is and what is already there.

One possible manifestation of the idea of interiority is by understanding interior as an internal system – as a system that makes and conditions an interior. By understanding interior space from the perspective of interiority, then the recipes for interiority should be generated by considering all the ingredients that do not come from somewhere else but from within, from itself – from what is already there. The process should begin by a deep understanding of each ingredient involved in the process – the strength of each ingredient in contributing to the recipes. Then the methods and techniques of spatial intervention should be developed by understanding the appropriate handling for each ingredient, and what is made possible by every action involved in the process.

The understanding of interiority as the internal aspects, internal system could be manifested through various forms of practice in inquiry, education and design. Such practice is generally characterized by the thorough inquiry into the existing, the enhancement of the potentials and possibilities, the appreciation of the uniqueness in each technique and method, as well as the celebration of the locality and subjectivity.

The practice of interior architecture based on the understanding of what is already inherent and its potential has the aesthetic consequences. Interiority brings the understanding of aesthetic at different levels. It is the emerging aesthetic that is originated from itself. It is the aesthetic that could only be comprehended by appreciating how the interior works and not by how it looks. The perspective of interiority suggests that the visuality that often becomes a central consideration in the interior practice should be reconsidered. It even perhaps needs to be replaced by the more important understanding of how the interior works.

The perspective of interiority also requires multidisciplinary approach, to enable the pulling out of the internal aspects that make an interior. Understanding of interior system requires knowledge on different disciplines as the internal system that makes an interior might be complex and incorporating various aspects – technical, social, cultural, etc. that could not be understood by the knowledge of architecture or interior discipline alone.

if we consider the interior practice as equivalent to cooking practice, the good recipes should be developed by incorporating the science of cooking. It requires the accurate knowledge on properties of ingredients, the mastery of techniques in working with heat, fire, water and steam, the correct choice and use of tools and equipment, as well as the sensitivity to identify the state of ingredients in each stage of the process. The

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science of cooking incorporates the basic knowledge of nutrition, biology, physics, and chemistry. Equally, the recipes for interiority require the accurate knowledge from other disciplines to address each aspect incorporated in the interior system. This might include, but not limited to: mechanics and physics, health, anthropology, archaeology, environmental psychology, and other relevant disciplines. Such diverse knowledge might be necessary in order to pull out the important element that generates the internal system of the interior, and use them as the basis for designing.

the recipes for interiority are the recipes that could only be developed by looking inward – to understand thoroughly the internal system that make the interior works well. But at the same time we should understand interiority by looking outward – by opening possibilities from other perspectives, by understanding what might be offered by other disciplines to contribute to the understanding of that internal system.

INTERIOR, IDEOLOGY AND ALTERNATIVES FOR THE PUBLIC INTERIOR

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When we think of interiority, we tend to think of a condition pertaining to the inner life of the individual, one that is rich and set in opposition to the pressures of the world. This is consistent with notions of the exclusiveness of the interior. In the seventeenth century, the interior began to be thought of as set apart from the world, and the increasing determinations of rooms' specific functions and their grouping was met by the interior's association with the familial, wherein the interior came to be regarded as a refuge for thought and a breeding space for individualised subjectivity. The thoughtful individual, aware of her unique perception of the world, so came to possess a quality of inwardness, apparently resistant to forces of the city and of the metropolis in particular, a quality that seemed to replicate the form of the familial interior itself. This interiority--this quality of being interior or inward--continues to suggest a domain controlled by the individual, one conditioned by personal and familial relations. It is at once a haven of domesticity, a realm of privacy, and the province of creativity and neuroses. As a realm of privacy and subjectivity, of projections and receptions, the interior comes to be considered as a realm that, although profoundly affected by infiltrations of the world without, is 'responsive' to the individual at its centre. As such, it is a realm of illusions.

One might define another order of interiority, namely, a condition of interiority in the world, wherein spaces, settlements and territories are established as sites of agreement or as ideological realms within which all forms are rendered familial and the individual subject is given an impression of freedom within a prescribed system of constructed narratives, including laws and imagery. The case of the Roman colonial settlement, for example, set forth a network of streets, houses, institutions and monuments within an enclosure that was both within and against its environment; and the rituals associated with its foundation made the distinction between environment and interior clear. The Roman colonial settlement was placed in the world of autochthonous tribes, and the acts of settlement cast those tribes as others, as hostile to the colonising project of the settlement, whose object was to transform the environment into a legislative interior, its people, resources and territory all possessions of Rome. The system of elements deployed by the settlement--from architectural to agricultural--was intended to effect consistent and predictable behaviour and performance within the colony's territorial interior. The Roman method of colonisation, which simultaneously involved urbanisation and territorialisation, was echoed in those waves of European colonisation that we have experience of, from the seventeenth through the twentieth centuries--by the Spanish, the French, the British, the Portuguese, the Dutch, the Japanese--and those of thoroughly globalised capitalism--predominantly by the Americans and the Chinese--in our own century.

The project of colonisation undertaken in the United States from the late eighteenth through the end of the nineteenth centuries was based on the projective abstractions of a grid, enshrined in Thomas Jefferson's Land Ordinance (1785) rendering the entire continental territory--as yet unseen and unknown--an ideologically-charged interior. Quite apart from its role in a complex agency that removed, annihilated and replaced the indigenous inhabitants (the other) of that space, the grid, like the network of streets in the

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exemplar of the Roman colonial settlement, became both a scaffold and an infrastructure for an array of representative effects, from the pattern of land ownership to imagery, which were repeated throughout the territory.

A notable legacy of that territorialisation--that interiorisation--was the new typology of the 'public' interior that attended the motorised, diffuse urbanism of the United States after the Second World War: the air-conditioned indoor shopping mall. Its defining characteristics were its siting within the network of regional motorways, an integrated system of customer and service vehicle access, and a boundary-free and representational interior dedicated to consumption that bore the imagery of a 'free' and 'public' environment. Its 'freedom' precisely echoed the characterisation of the territorial interior in which it was set.

The functional and operative congruence of this interior and its environment was consistent with its ambition, and representative of the binding of the aims of laissez-faire capitalism with the patterns and effects of American urbanisation. This was not lost on architectural critics of the colonising effects of American capitalism and consumerism on conditions in Europe and beyond: the Florentine groups Superstudio and Archizoom recognised that a continuous interior of capital was being created, one anticipated in the form of the Crystal Palace (1851), and which offered illusions of freedom in its all-encompassing environment of work, consumption, dwelling and leisure, which the architects made manifests in their hypothetical and critical projects, *The Continuous Monument* (1967) and *No-Stop City* (1969) respectively. We see now, in the worldwide realm of neoliberalism, myriad realisations of those hypothetical effects and environments.

Beyond descriptions of important episodes in the development of this ideological interiority and its environments both territorial and interior, it is necessary to offer alternative models, and illustrate exemplary projects for public interiors that can be regarded as both critical and positive. These exemplars have promoted other constructions of freedoms for individuals and groups, frequently in opposition to the ideological interiority of laissez-faire or globalised capitalism. These are public interiors that have advocated coexistence and social consciousness: shelters and places for gathering and interaction and for the freedoms of movement, association and action.

BETWEEN REALITY AND DESIRE: THE MODEL AS PERFORMANCE

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Our recent research is concerned with the physical model in theatre and architecture focusing on aesthetic practices that do not neatly fit into one genre or the other. This research originated with reflections on the model that covered; the oscillation between original and copy, the model as spatial double, reenactment or mock-up, and the prototype, and considered questions of scale, perception, atmosphere and materiality. In our research, we discovered that traditional model typology does not classify a model that has no precedent or a model with no anticipated future artefact.

In 'the Model as Performance. Staging Space in Theatre and Architecture', published in early 2018, we investigate the phenomenon of this different kind of model through close readings of architectural, theatrical and visual arts/installation key practices from the Italian Renaissance to today and we call this model 'the autonomous model'. Distinct from the iterative and representative model that present developmental steps and the final design respectively, the autonomous model has been conceptualised and built to be its complete world. And while we argue that each model is capable and possibly even strives to be world-creating, it is the autonomous model's distinct quality to exist without past or future. The act of modelling, we argue, while cosmopoietic in its ambition, additionally incorporates performative and epistemological gestures, processes and techniques, and in its dual manifestation as object and idea, the model represents the fragile junction between reality and desire.

PAPERS

MLEBU METU ENDI? AMBIGUITY IN ENTERING SPACE IN JAVA

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ABSTRACT

Mlebu metu endi? could be translated as 'entering out where'. It is hard to translate literally, but its approximate meaning is 'which way do you enter?' That is the ambiguity life which is the Javanese mindset. That mindset is shown in a shadow puppet play (*wayang*) which reflects the Javanese life and mindset. This paper explores and shows the Javanese philosophical aspect which is shown in *lakon* Dewa Ruci, one of the stories of the shadow puppet play. That philosophical mindset is reflected in Javanese architecture and behavior of Javanese in dwelling. The main question in this paper is: How is the conception of interiority in Javanese, based on their mindset and architectural behavior?

This paper use exploratory study with a comparative method and hermeneutic approach, by looking at the philosophical aspect of the *wayang* play and comparing it in the daily life of Javanese people in their architectural building. The result was that the space in Javanese mindset is associated with event and perception; that is why the boundaries in Javanese architecture are not 'solid' but 'vague'. Javanese interiority could be described based on the event and perception, not from the 'wall' or 'physical boundaries'.

Keywords: ambiguity, Java mindset, comparative method

Imaginary conversation

Paijo : *Assalamualaikum, sugeng enjing mbok.* (Assalamualaikum, good morning mam)

Mbok Ijah : *Walaikumussalam. Mlebu mu metu endi to le, moro-moro ndejul ndang dapur. Soko endi wae.* (Walaikumussalam, which way did you enter into the house? All of the sudden you are already in the kitchen, where did you come from?)

Paijo : *Dalem saking peken mbok, metu saka ngaprepan. Nang latar mburi omah radi becek. Sak esuk jawah, mbok.* (I was from the traditional market, mam. I was passing by from the front house because it was raining this morning, the backyard is soo muddy)

The conversation above is a common daily conversation in Javanese. It occurred in the kitchen. The conversation was about a young boy who came back from the traditional market and entered into the house. In the kitchen, his mother was waiting for him, and then she asked him: *mlebumu metu endi?* Which has the meaning 'which way did you enter into the house?' But it was conveyed with the words in Javanese '*mlebu*' which means 'enter', and '*metu*' which means 'exit'. Enter but exit. There is the ambiguity in the concept of space

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BABAK TALU / INTRODUCTION

The word of *metu* have two meanings, the first meaning is 'come into outside from inside' and the second meaning is 'passing by'. Whi is thatle the word of *mlebu* has the meaning 'come inside'. There is a process of understanding, not from the result perspective. The understanding of 'come inside' and go outside' have the same situation. There are boundaries between 'outside' and 'inside', but in the Javanese perspective, those boundaries become obscure if we look at each words meaning in the previous conversation. There is a 'process' perspective and at the same time explains about 'boundaries'.

Based on that phenomena, this paper is trying to explore the ordinary Javanese people's behaviour at their home, and compare it with their Javanese mindset. We can interpret the Javanese mindset from shadow puppets plays (*pagelaran wayang*) and the stories of shadow puppets (*lakon wayang*).

This paper writes down the architectural space context and space boundary perspective. Architectural space boundary exploration was done in the daily activities of Javanese people (praxis perspective) and also Javanese mindset (philosophical perspective). The Javanese shadow play (*Wayang*) becomes the main references because it is the standard of life for Javanese people. The main question in this paper is: what is space in Javanese perspective and how?

PATHET NEM / WAYANG AS PHILOSOPHICAL MINDSET AND THE SHADOW OF DAILY LIFE OF JAVANESE

Javanese has a view of life rooted from Hindu philosophies and Islamic tasawuf (Herusatoto, 2000, p. 67). Javanese traditions and behaviors are based on two things : (1) a religious and mystic philosophy of life, (2) ethics of life that upholds morality and degrees of life. That view of life is always based on GOD and spirituality, mystic and magical with respect to the ancestors, and the intangible power. (Herusatoto, 2000, p. 79). The understanding of the Javanese view of life was manifested into the art of *wayang*. The *wayang* is the symbol that explains the Javanese existence in relation to natural and supernatural power. The relationship between human and the universe, between the creature and the creation, and between profane and divine. (Mulyono, 1987, p. 12). The messages in symbolic forms that wish to be conveyed are moral and religious messages. Then the all symbolic forms can be named as the 'books'. (Herusatoto, 2000, p. 112). Based on that understanding, the shadow puppets plays (*pagelaran wayang*) and the stories of wayang (*lakon*) could be placed as the 'text', and could be interpreted and read into the understanding of 'architectural space'.

One of the stories that tells about the journey of the perfection of life was written in the *lakon 'Dewaruci'*. Adiyanto put the *lakon Dewaruci* as the source of philosophical knowledge of *Manunggaling Kawula Gusti* (literal meaning: the unity between creation and creator). That is the source for the understanding of Javanese architectural philosophy (Adiyanto, 2012). Supriyadi discussed *the lakon Dewaruci* from the Sufism perspective, which is divided into the *laku, raga, cipta, jiwa* and *rasa* phase (*syariat – tarikat – hakekat – makrifat* in term of Sufism) (Supriyadi, 2010, p. 118)

In *the Lakon Dewaruci* audio performance, Ki Nartosabdo (one of the famous master of puppeteers) said: '*om.... awighnam astu mugi rahayu ya sagung dumadi*' three times, when Wrekudara prepared to get into the body of Dewaruci from the left ear. This spell (*mantra*) means 'hopefully no hindrance to all praise has been perfected'. It showed that this scene (Wrekudara getting into the body of Dewaruci from the left ear) was a very important phase in this story (Adiyanto, 2012, p. 49). This is a contradictive scene because Wrekudara had a gigantic body, opposite with the body of Dewaruci which had a small figure. After Wrekudara got inside the Dewaruci body, he could see the whole universe.

In another story (*lakon*) called 'Bimasuci', Ki Nartosabdo said '*panunggaling kawula lan Gusti, loro loro ing atunggil, awas loro ing atunggil*'. (Adiyanto, 2012, p. 50) The scene when Wrekudara was inside of Dewaruci's body. The understanding of that sentence talks about 'the unity between creation and creator, two become one, there are two but in one'.

From a different source, was written, the word *pamoring*, to express the scene when Wrekudara gets into the body of Dewaruci (Adiyanto, 2012, pp. 50 -53). Therefore, we obtain two words to express that important scene: *panunggaling* and *pamoring*. The word *panunggil* is from the word *tunggal* and related with the word *anunggal* which means 'become into one'. Which means that 'become into one' showed the result, not the process of the perspective. The word *pamoring* is based on the word *amor* which means 'mixed, come together (with), absorbed'. The word '*pamor*' is also associated with *keris* (traditional Javanese weapon, made from mixed many metal items and has a special form), which means the *pattern on a keris blade is achieved by forging different metals* (Adiyanto, 2012, pp. 53 - 54). The word *panunggaling* shows the result when the Wrekudara and Dewaruci become one. The word *pamoring* expresses the active process. To show the Wrekudara activity, going into the Dewaruci body and also active when Wrekudara inside the Dewaruci body.

The etymology study above showed that *panunggil* and *pamoring* have different perspectives, one talks about the result and the other talks about the process.

Now, how about the Javanese mindset which manifests into their behavior at home?

PATHET SANGA / THE UNDERSTANDING OF SPACE FOR JAVANESE

This part takes place in the Javanese dwelling called *omah*. Inside the *omah*, there is a part called the *pringgitan*. The literal meaning of *pringgitan* is the space for *ringgit* play. *Ringgit* is another name of *wayang* (shadow puppets play). This proves that *omah* had a closed relationship with *pagelaran wayang*. *Omah* became the origin of shadow puppets performance (Santosa, 2000). Does it have a relationship with Dewaruci stories? Supriyadi said that *Pringgitan* became the center of the order of space, as the 'boundaries' and transition the two nature of space, and became the balance space, as the meeting point between profane and divine space. (Supriyadi, 2010, p. 105). Like the scene when Wrekudara wanted to go inside of the Dewaruci body, *pringgitan* became the left ear of Dewaruci.

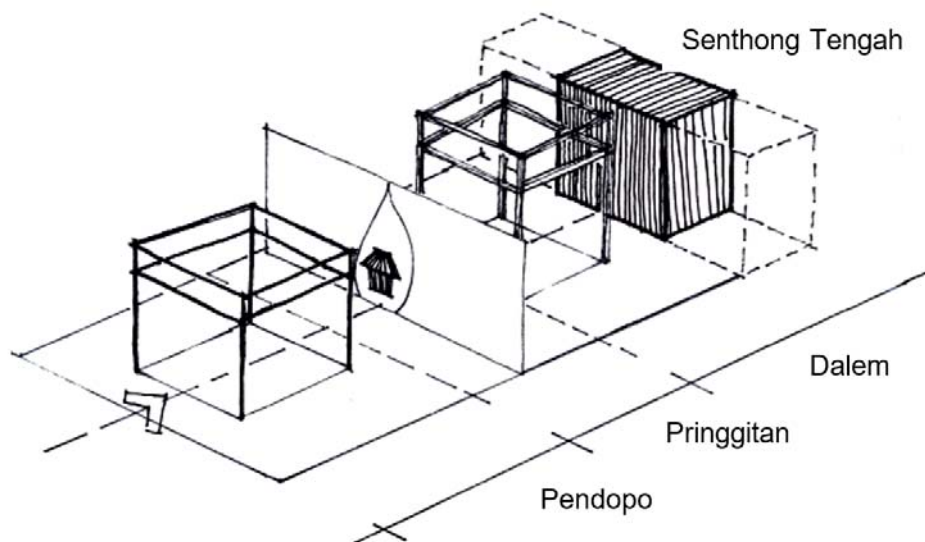


Figure 1 Position Pringgitan at Omah (Adiyanto, 2012, p. 58)

When the shadow puppet is played, the puppeteers use *Gunungan* which takes place in the center of the *kelir / geber* (the white screen where the puppeteer performs to play the puppets shadow). *Kelir / Geber* is like the boundary between outside and inside of *omah*. This *Gunungan* is called *Gunungan gapuran* because the *gunungan* symbol has a gate ornament which in Javanese is called *gapura*. *Gapura* is also used in special facilities like the cemetery of a religious leader like Sunan Bayat.



Figure 2 Gapura in Sunan Bayat cemetery at Desa Paseban
(Adiyanto, 2012, p. 67)

Gunungan also has another word to express the same meaning, which is *kayon* (Sena Wangi , 1990, p. 611). The word *Kayon*, related in the scripts of Kawruh Kalang and Kawruh Griya has sentences like this:

Dados tiyang sumusup ing griya punika upamekaken angaub sangandhaping kajeng ageng ingkang paedahipun kados ing nginggil wau. Dene tumraping dhumateng tiyang gagriya ingkang boten jangkep wicalanipun gangsal prakawis sanepanipun dhateng kajeng nginggil wau gothang salah satunggal paedhanipun

(... so, for Javanese to get into the house can be metaphored as the shelter under the big tree. For the house, must be completed five aspect, if not then there is something uncompleted). (Prijetomo, 2000, p. 13)

Another word which has the same meaning as *kayon* is *kajeng*, which means wood or tree. The Javanese metaphor to get into the house is like sheltering under a big tree, and the process to get inside the house is '*sumusup*'. People have to bend their body and head to get inside the home. The word *sumusup* expresses the process the Javanese people have to go.



Gate of Sunan Bayat tomb

Gate of Solo Great Mosque

Main Entrance of Omah

Figure 3 Entrance
Source : author collection, 2010

If we see into Javanese architecture, especially the entrance (see Figure 3), we can see that the 'gate' of Javanese architecture is not wide enough. At the Sunan Bayat tomb, pilgrims must do a 'walking squat' when they are inside the house of Sunan Bayat tomb. At the Great mosque in Solo, pilgrims must 'jostle' when there are special events like *grebeg maulud*. At *omah*, a householder must bow their head as they get into the house. There is no easy way to get inside. There is an inconvenient process for getting inside.

PATHET MANYURA : MLEBU METU ENDI / DISCUSSION

The first phase etymology study of *panunggaling* and *pamoring* showed that there are two perspectives to the understanding of space in the Javanese mindset. The first perspective talks about the situation of unity (*panunggaling* word) and the second, discusses the unity process. (*pamoring* word).

The second phase discusses the architectural behavior. *Pringgitan* became the center of the order of space, as the 'boundaries' and transition the two nature of space, and became the balance space. There is a screen between outside and inside called *kelir / geber*. That understanding showed that out and in at *omah* is obscure. Where

are the real boundaries between them? *Gunungan - Gapuran* can be symbolized as the 'gate' between out and in. But how to get inside? The word 'sumusup' expresses the process of going inside. Javanese must bow their head to get inside. The word *sumusup* is also related to the word *mbrobos*. There is a ritual called *brobosan*. This ritual occurs when there is someone's death. The family walks under the coffin before the corpse is brought to the grave.



Figure 4 Ritual of Brobosan

Source : <http://budayajawa.id/tradisi-brobosan-kematian/>

There are two objectives of the Brobosan tradition intending to honor the deceased person and also intended to obtain the swab or luck of the deceased person. In another perspective, it symbolizes the 'gate' between mortal and divine worlds. It is any process to go inside.

This is the same scheme of process in *Gunungan*. Adiyanto divided *Gunungan* into three phases, the first called as 'dualistic-contras dialogue'; the second 'dualistic-mediative dialogue' and the last phase called as 'monolistic-spiritual monologue' (Adiyanto, 2012, p. 61). 'Dualistic-contras dialogue' talked about the physical differences; dualistic-mediative dialogue discussed the similarity and gathering it; finally, the 'monolistic-spiritual monologue' is about unity (Adiyanto, 2012, p. 61).

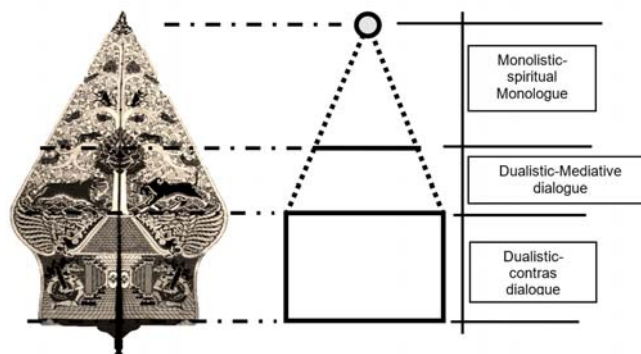


Figure 5 Phases in Gunungan
(Adiyanto, 2012, p. 61)

The three phases of *Gunungan* aim for a spiritual aspect. The difficult process for going inside the tiny gate is an indicator that going inside in the Javanese perspective has a special purpose. After the difficult process of going inside, what happens inside?

Supriyadi said that Kelir/Geber is the 'boundary' between the bright and the dark side. (Supriyadi, 2010, pp. 94 -95). Another source also has the same perspective. The transparent boundary and focusing on bright and dark context is also written in Kawruh Kalang and Kawruh Griya. 'Sheltering under the big tree' showed that 'shadow' is the 'boundary' and the people have to *mbrobos* to get inside. This explanation shows that space for the Javanese is about the bright and the dark under the shadow. When the Javanese people go inside, there is a 'dark space'. This was the same situation when the Wrekudara got into the body of Dewaruci. What

do the Javanese do in dark space? On the third phase of the three, the monolistic-spiritual monologue, there is an active activity with a non-eye orientation. In the dark space, the eye cannot work properly so we must use the hearing method. In the dark space with the hearing method, we enter another 'space'. We enter into space to get out of the other 'space' that is from the physical space to the spiritual space. It proves that the understanding of Javanese space must be seen from the ear's perspective, not from the eye. Understanding based on eye's perspective will result in a rationalistic logic while basing on the ear will express the comprehensive feeling (Benamou, 2010), more about intuitive and feel perspective. The word *Omah* has the connection with other languages in Nusantara, like *Uma* in Bali, Roti, Rindi and Tetum, or *Amu* in Sawu, or *Um* in Aton language. Those words have the same meaning. Therefore there are social communities which are together claiming the same origin and the same ritual (Santosa, 2000, pp. 3-4).

The process in the *sumusup* perspective means to get into the inside, and *in the manjing* perspective means work together, it could be interpreted that inside the 'dark space' people had to work together in a spiritual context.

The *manjing* word is associated with structure and construction in the Javanese house (Priyotomo, 2006, p. 284), as well as architectural concepts (Priyotomo, 2006, p. 256). *Manjing* also means 'go inside/enter', but in what perspective and which context? *Manjing* was expressed in the empyak and balungan construction with cathokan technic. With cathokan technic, both constructions did not lock and dominate each other, but both constructions work together (Priyotomo, 2006, p. 243). From this perspective, *manjing* is about entering and work together; hereby there was an active process.

PANUTUP PAGELARAN/ CONCLUSION

Mlebumu metu endi?

If interpreted literally would be: where do you enter out from? Or we can translate it into 'which way do you enter from?' or 'where are you from? There lies a deep meaning in space perspective.

When the Javanese get inside their homes, they also get into the darkness. In the dark space, their eye cannot work properly so they must use another type of sensory. They could use their ear to hear in the dark space. In that situation, they get outside from the physical boundary into the spiritual boundary. Space also could be defined when the *pagelaran wayang* was performed in the *omah* (Javanese dwelling). Space is defined by events and also spiritual events.

Javanese space is not about physical boundary but rather from the perception boundary (hearing perspective) and spiritual boundary (event).

GLOSSARIES

Babak Talu

Babak Talu is the gamelan/kawaritan plays at the beginning of puppets shadow plays

- *Mlebu*

The meaning of *mlebu* are :

(1) *menjang (tekan) ing djero*; (2) *menjang ing pagawean*; (3) *melu iksamen lsp*; (4) *menjang (seba) ing kraton (daleme prijaji gede)*; (5) *dadi*.

(1) came into the inside; (2) go to work; (3) take the exam, and so on; (4) going into palace; (5) become.

- *Metu*

The meaning of *metu* are :

(1) *menjang tekan ing jaba (saka ing jero)*; (2) *ngaton, mentjoengoel*; (3) *liwat ing*; (4) *lair (saka ing guwagarba)*.

(1) coming to outside from inside (2) appears, (3) passing by (4) born (from the womb)

(Poerwadarminta, 1939)

- *Pagelaran Wayang*

Pagelaran Wayang is the shadow puppets show. Usually played in Javanese dwelling at a special event, like wedding ceremony, etc. This is played all night long, starting from 07.00 pm until dawn (03.00-04.00 am).

Pagelaran wayang is divided into three phases. The first: opening. This phase usually shows *gamelan* instrumentals. The second phase is the shadow puppets play. These phases are also divided into many rounds called "*pathet*". The simplest version, are only three *pathet*: *pathet nem*, *pathet sanga* and *pathet manyura*. The difference between one *pathet* with another is from the *gamelan* play.

- *Lakon Wayang*

Lakon wayang is the stories of Javanese puppets shadow plays (*wayang*).

Pathet Nem

Pathet Nem is the early phase of the puppet shadow performance

- *Lakon 'Dewaruci'*

Lakon Dewaruci is the shadow puppets story about Werkudara, one of Pandawa sons, the biggest one and Dewaruci. The figure of Dewaruci is the same with Wrekudara, but smaller. Supriyadi said that *serat* (manuscript of) *Dewaruci*, written by Yasadipura, gives thought of the Islamic Javanese view of life. (Supriyadi, 2010).

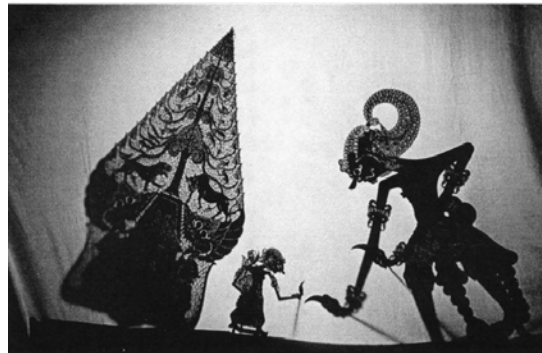


Figure 6 Wrekudara and Dewaruci dialogue scene

(source : <https://pranowobudisulistyo.wordpress.com/2014/02/08/dewarucibimasuci-12-audio-ki-hadi-sugiran/>)

Pathet Sanga

Pathet Sanga is the middle phase of pagelaran wayang used *laras slendro pathet sanga*.

- *Omah*

Omah is the dwelling space of Javanese people, house, home. Omah also reflects the Javanese life which is bound with the dwelling concept which is related with ritual and routine activities (Tjahjono, 2000).

- *Pringgitan*
Pringgitan is from its root word *ringgit*, which means form, *wayang* figure and *wayang* performance (Zoetmulder & Robson, 2004). *Pringgitan* also means the place where the *pagelaran wayang* is shown (Santosa, 2000, p. 167).
- *Gunungan*
 Supriyadi said that *Gunungan* is the figure of the Javanese spiritual journey. Supriyadi's interpretation is based on the *gunungan* figure, ornament in *gunungan*, role and function of *gunungan* and *pagelaran wayang* (Supriyadi, 2010, pp. 112-118). *Gunungan* is also called *Kayon* which means *wood/tree*. The *Gunungan/kayon* symbolizes the tree of life. It has a function as the mountain, tree, or cave model, and also symbolizes the communication between the puppets shadow master and the *panabuh gamelan* (gamelan savers). (Sena Wangi-tim penulis, 1990)

One of the *Gunungan/kayon* models is the *Gapuran*. The word *Gapuran* comes from the word *gapura* which means wicket in the front yard. *Gapura* is also called *regol* which means a small house with a door located in the gate *pomahan* (Poerwadarminta, 1939) (tiny house or gate for palace or house of the rich).



Figure 7 *Gunungan / Kayon Gapuran Solo Style*
 Source : (Adiyanto, 2012)

- *Sumusup*
Sumusup is rooted from the word *susup*, which means *mbrobos*. *Mbrobos* is rooted from the word *brobos* which means "*mbrangkang nlusup (metu, mlebu) ing bolongan utawa ing sangisoring apa-apa*" (Poerwadarminta, 1939), (translated: to enter (inside or outside) hole or under anything).



Figure 8 *Mbrobos*
 (source <http://peristiwa-foto.blogspot.co.id/2009/04/peristiwa-satu-bulan-tragedi-situ.html>)

- *Kawruh Kalang and Kawruh Griya*
Kawruh Kalang and Kawruh Griya are the manuscripts which talk about Javanese houses. Kawruh Kalang is for the carpenter, and Kawruh Griya is for the owner of Javanese house. The books are like the manuals for constructing the Javanese house

Pathet Manyura

Pathet manyura is the final phase of the pagelaran wayang used laras slendro pathet manyura

- *Manjing*
Manjing which is from the word *anjing* has the meaning (Priyotomo, 2006, p. 240):
 - **(anjing) 1 dianjingake** kn,: 1. ditrap sarana dilebokake ing; 2. ak, dilebokake, didadekake warga lsp.; 3. dilebokake ing petungan (cicilan utang lsp); **anjing-anjingan**: sambungan sarana dianjingake; ktj, manjing, panjing [poer wadarminto 11]
 - **manjing** 1. kw., mlebu, lumebu; 2. engg., beburuh; 3. wis mlebu (ora bisa dicopot); 4. wis klebu dadi; 5. ngrasuk ing (agama); 6. ptj, sumurup dadi; ktj, anjing, panjing [poer 290] [(1)go inside; (2) working; (3) has entered (can't be removed); (4) already get inside to be..... (5) being a part (religion perspective); (6) know it..
 - **panjing**: kw, anggone manjing; ktj. Anjing, manjing [poer 464] (the place where going inside)
 - **panjing**: manjing – masuk [woyowasito 190] (going inside)
 - **panjing** sesuatu yang masuk, termasuk dalam daerah tertutup; masuk (nya) [zoetmulder II – 757] (something going inside; including in restricted areas; inside.
 - **pinanjangan** (bp) memasuki, merasuki [zoet II – 757] (going inside, entering)

Manjing is an important key to compose and integrate between *guna griya* dan *dhapur griya*; also for composing Javanese houses. Manjing plays a role as the concepts and also the actions in composing the Javanese house. (Priyotomo, 2006, p. 258)

- *Kelir/Geber*
Kelir/Geber is a white rectangular screen with a length of 2 to 12 meters and a width of 1.5 to 2.5 meters. Kelir / Geber is the place where the *dalang* performs to play the puppets shadow.

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PHYSICAL MODELS: A METHODOLOGY TO CAPTURE THE PHYSICAL AND IMMATERIAL MECHANISM OF INTERIOR ENVIRONMENTS

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ABSTRACT

The proposed paper is a contribution for the better understanding and implementation of physicality versus the digital, physical fabrication rather than digital forming. As Interior designers, we design environments that are composed of materials that are tactile and interact with different natural conditions such as light, sound, steam, water. These materials evoke different emotions influenced by their texture, finish and composition. What this paper proposes, is not new, but it highlights a current resurgence of a type of observation and recording of design proposals that is particular in the current age dominated by digital visualisation.

The paper underlines the continuing relevance of physically constructing and composing interior design proposals as a design tool. The models are then photographed using camera equipment available through mobile technology, whereas a smartphone, a miniature digital camera such as the GoPro or small tablet and using post-production applications. This is a affordable technology only globally available in the past five years, making the technique more accessible.

This paper presents how models are deployed to overcome limitations in design within a particular demographic, by presenting examples that outlines the problem parameters, details the approached methodology that utilises mobile technology in conjunction to physical representation and presents the achieved outcomes. The followed approach builds two aspects:

- Understanding of the spatial three-dimensional quality captured through the poetics of interior lighting and materiality.
- Understanding of space occupation in relation to the body proportion and choreography.

Keywords: visual representations, prototyping, materiality, mobile technology, ephemeral, mobile learning, architectural photography

PREAMBLE

Representations are well-routed methodologies in design communication. Physical modelling; a form of representation, are tools of discussion, inquiry, discovery and presentation. Over the years, they have been used as means to overcome the limitation presented by the drawing typology. "The three-dimensional material model speaks to the hand and the body as powerfully as to the eye" (Juhani, 2009).

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Some of the most prominent application of models through modern architectural history is to “investigate novel and optimised structures found through complex and associative relations between materials, shape and structures.” (Wirz, 2014). Frei Paul Otto (1925-2015) and Antoni Gaudi (1852-1926) are some of the 19th and 20th century pioneers in new form-finding approaches through physical models seen as smart analogue apparatus (Wirz, 2014).

This paper presents an alternate approach to design investigation and inquiry processes through capturing the spatial attributes formed through the curation of physical representations and capturing its essence through the use of today's widespread mobile technology. As such, the physical attributes of the used models and their aesthetic qualities become secondary and are subject to manipulation in response to the desired spatial attributes and feeling of the occupied space. The quality of the constructed physical model does not necessarily correspond to the quality of attained visual representations.

INTRODUCTIONS

We are currently in an age where we design the physical using digital, visualising and forming intangible spaces that will someday create enclosures for humans. As Interior designers, we constantly engage in designing as fast and as realistic as possible, following non-material methodologies to produce material environments. As educators, teaching Interior Design in the Middle East, we struggle with this dilemma in our daily teaching; how to instil realistic constraints within the design project and yet, give equal importance to the non-material spatial aspects. We believe, it is important not to lose *sight* and *feel* of the spaces we design. This adds a non-material dimension to the interior architectural materiality that is difficult to emulate digitally. Because of this, we follow approaches, that require building and making rather than just drawing and representing. Students learn to compose spaces, using real materials and capture the essence of the Interior architectural proposals by assembling large models and photographing them using mobile technology.

As such, the role of physical modelling is expanded by utilising this form of representation as a tool for discussion, inquiry, discovery and presentation. Because of this connection of scale and proximity to materials, students' proposals, try not to produce *reality*, but to connect and capture atmospheric conditions, showing the 'essence', the effect of external light, shadows, spatial volumes and materiality of the proposed *places*. This 'essence' of material composing is what Swiss architect, Peter Zumthor, refers to as; trying to find "the poetic quality in the context of an architectural object" (Zumthor, 2010).

ACADEMIC SETTING AND PEDAGOGICAL APPROACH

Teaching interior design students at the College of Arts and Creative Enterprises, Zayed University, Abu Dhabi campus, we have developed a variety of design approaches to prepare our students to form a creative set of design proposals that are catered to different project design parameters; thus, accommodating different design elements that are varied. During their academic progression through the Interior Design program, we involve them in a series of research exercises that gradually increase in complexity and sophistication and are specifically directed to exploring their design ideas. These include; design research, sourcing materials and experimentation using physical and virtual tools.

The body of research carried out, varies from testing light conditions, historical precedence, material research, surveys, interviews and experiments. For technical tools, students use sketches, computer-aided design and visualisation software. Most importantly, they develop their designs through three-dimensional physical models. These models help the students understand and visualise their design intentions and at the same time explore the physicality of their proposals. Selected models are then carefully photographed to capture the specific atmospheric conditions. Emphasis is concentrated on trying to understand the three-dimensional space definitions by function, spatial flow and materiality of components.

THEORETICAL PERSPECTIVE

A. Link to learning modules

Experiential learning theory of Kolb is a well-defined methodology comprised of a learning cycle that starts with experience, proceeds with reflection into action. It outlines four learning styles: 'accommodating', 'diverging', 'assimilating' and 'converging'. (Kolb, 1984) The workmanship of risk, a notion described by David Pye in the *Nature of Art and Workmanship* (Pye, 1968), relates success to a personal creative knowledge of tools, materials and techniques, where expertise is attained and mastered through gradual increase of process understanding. This leads to a thorough understanding of workmanship type, role, process and type distinction, which over time leads to gaining the expertise of knowing when and how to call upon what process when needs arise (Pye, 1968)

By utilising this learning style, through the merged approach of combining traditional representation tools (physical modelling) with mobile digital technology, that enable us to formulate an alternate approach for interior space representations. Furthermore, the ease of use of mobile digital technology, enabled students to go through a series of rapid experimentation processes, refining the method of image capturing and visual editing. Over time, as the students progress from junior to senior levels in their university education, they gradually understand and master the selection of model making type. This leads to a practical knowledge of how and when to vary the level of model technical complexity, in response to the desired outcome they intend to achieve. This has a direct correlation to the time allocated to the preparation of the physical environment setting.

B. Mobile tool use contextualisation

Literature review shows an increase in mobile technology use in primary educational (Vahey & Crawford, 2002) and science fields studies (Pascoe, Ryan, & Morse, 1998). There are also examples conducted for the purpose of collating data for environmental design and site surveys (Cheng & Lane-Cumming, 2003). Other precedents are augmented reality modules documented as part of the case studies analysis conducted by Ernest Domínguez, David Escudero, Albert Riera and Isidro Delgado (Domínguez, Escudero, Riera, & Delgado, 2014).

PROCESS AND OUTCOME

In their experimentation, the students find that materials play an important role in the definition of space. The large scale of the models and the use of materials resembling real ones, provide an opportunity to experiment and research different tentative conditions. The models are then carefully photographed to capture these conditions. The photographs themselves, become glimpses of a possible reality with enigmatic and realistic characteristics.

The technique resembles the work by artist Thomas Demand, whose photographs of models showcasing interiors of everyday ordinary spaces transcend between the familiarity representation of the spaces and the extraordinary essence evoked by the photographs themselves (Grima & Demand, 2016). Prior to the advent of digital photography, models were often photographed at the end of the design process and not as part of the design process. The models will often be photographed using time-consuming setting up of lighting, needed a reasonable amount of photography skill and were usually photographed with Medium format or SLR 35mm analogue film cameras set on a tripod. The film was then developed and contact sheets were created to choose the best images to be printed on photographic paper in the darkroom. This was a very successful approach, yet one that embodies a long-winded technical process.



Figure 1. Model of Park Royal project (1997) short aperture photographs printed on photographic paper taken with SLR Canon AE programmable on 35mm ASA 200 film
Source: Courtesy of Marco Sosa

The approach highlighted in the paper uses commonly available Mobile Technology. Mobile technology is the term often used to describe the technology which "includes technological infrastructure for connectivity such as Wireless Application Protocol (WAP), Bluetooth, 3G, and General Packet Radio Service (GPRS) as well as mobile information appliances such as mobile phones, PDA, and laptop computers (Varshney & Vetter, 2000); (Perry, O'Hara, Sellen, Brown, & Richard, 2001); (Nah, Siau, & Sheng, 2005); (Sheng, Nah, & Siau, 2005). It is evident, that although not every student might have access to an SLR 35mm analogue film camera, a computer and even the internet through a computer, most young people have smartphones, which provides a real opportunity to transform instruction (West, 2013). This technology has recently become globally available within the past ten years (iPhone by Apple) and more affordable in the past five years, making the technique more accessible to design students.

Our approach uses Mobile Technology in the form of smartphones, miniature digital cameras such as the GoPro or small tablets. Another important element is the use of post-production digital applications (apps) allowing our students to enhance their images quickly and easily. A process that required in the past a darkroom to develop the film, printing on paper using an enlarger, and then scanning to enhance using expensive postproduction software only available on computers.

The photographs themselves become phenomenological essays of the proposed Interior spaces. Interior architectural photography is often seen as a form of representation of a building as an object rather than as a media to explore the emotions a space evokes. Photography is a perfect medium for documenting the atmosphere of a space. The photographs also portray a narrative of what happens in the depicted space, not just the obvious functionality but also other possible potentials not normally catered. The photographs become the extension of the object, depicting the atmosphere, the materiality and the poetry of the place as a three-dimensional space at a specific time of the space's formation. Only physical models can portray an accuracy of an atmospheric condition as a digital model's atmosphere must be completely imagined while forming the space. A physical model allows you to encounter interesting 'accidents' captured by the light bouncing of a particular wall finish, therefore, testing possibilities. This proves particularly useful for developing Interior design students who are yet to fully understand how materials behave. Digital models can create a bias of material behaviour to conditions limited to the designer's (lack of) experience.

A. Used mobile applications

The process capitalises on the use of two main mandatory mobile applications; the embedded camera and a post-production smartphone application such as Photoshop express app. The latter is a paid application that the students acquire as a complementary addition to their academic subscription to Adobe software package. Other alternative mobile applications for manipulating representations are Apple IPhoto and Instagram.

Additional optional mobile applications included Photoshop Fix, Photoshop Mix, Adobe Sketch, Adobe Draw and Lightroom. The latter were minimally used as the majority of the needed work was executed with the first two.



Figure 2. Main used mobile application and process of manipulation
Source: Courtesy of Lina Ahmad

B. Prescriptive Methodology

The following outlines the adhered steps in chronological order:

1. Students build a physical model carefully thinking about its purpose and intention, deciding between a sketch or a final representation. The selected model scale adheres to a recognisable scale in the industry i.e.: 1:50, 1:20 or 1:10. Model accuracy and level of detailing can vary depending on the intended outcome. The students are instructed to select a scale that is large enough, to allow ease of interaction with a mobile technology device.
2. The students cut silhouettes or 3D printed figures that represent the activities generated in the proposed space. The students are asked to ensure that the scale of the used figures/silhouettes is identical to the scale of the constructed model.
3. The students select and set up the space within the model to be photographed. The space could be either interior or exterior and is set-up in such a way that the surroundings are either isolated or contribute to the emulated interior space.
4. If the selected photography space is exterior, then:
 - a. The student selects the model orientation depending on the cardinal directions of the geographical location.
 - b. The student reflects on the time of the year at which the activity is being performed, analyse the sun orientation and location in the sky; sun azimuth and altitude.
 - c. Based on the specifics of the design proposal, the students determine the correct orientation of the model
 - d. The student analyses the light intensity and shadow length and determines the preferred time for executing the activity.
5. If the selected photography space is interior, then:

- a. The student analyses the general lighting in the selected interior space, switching off the unneeded one.
 - b. The student sets up the lighting environment using one or several lighting sources, sometimes using external light from the window or even torchlight generated from other colleague's mobile phones to produced light sources within the model.
 - c. The student experiments with changing the positions of the lighting source and/or the physical model.
6. The student takes a series of photographs of the interior design space by positioning the camera phone inside the model space.
 7. The student scrolls through and analyses the photographs identifying the ones that best capture the space and communicate the intended visual message.
 8. The student identifies the photographs that require further editing.
 9. The student opens the selected photographs, one at a time, with mobile photography post-production applications such as; PS Express App, crops and adjusts the photo angle and orientation and changes the photo properties as needed by altering one or several attributes, such as: colour, exposure, contrast, highlights, shadows, etc.
 10. Photographs are selected through creating several options, reflecting on the achieved visual quality and analysing the communicated message. The student chooses the output to be either black and white or colour depending on the desired created atmosphere.



Figure 3. Collaged photographs are capturing an action moment of students during their design process that combines both tools: the physical models and mobile device.

Source: Courtesy of Marco Sosa

The outlined ten steps describes the formula for the followed methodology that students were instructed to adhere to. This rigid outline allows for an endless number of variations by altering four parameters;

The attributes of the physical models: including scale, tectonics, detailing and materiality.

The attributes of the set-up of the surrounding environment.

The mobile device position, angle and orientation when capturing the photograph.

The alterations in the selected visual attributes of the photo.

The achieved visuals, in addition to representing the aesthetic qualities of the spatial designs, help the students understand the simplicity and complexities of their three-dimensional proposals. Students share their work with the wider audience through publishing in social media using apps such as Instagram, Pinterest or Tweeter. They also transfer the visuals into computers and incorporate them into project posters for presentation.

C. Application and Utilisation

The emphasis of this methodology was never intended to replace the use of computer engines high-resolution rendering. It was developed as a response to an observed urgency of our students lacking the needed computer presentation skills. As such, a method was devised as an alternate approach, capitalising on the qualities that are difficult to digitally simulate with a beginner level of software knowledge. Nevertheless, the approach has proven to be such a valuable tool, that we continue to utilise it to broaden the design boundaries beyond the planned, perceived and proposed; to include momentums of valuable unintended discoveries.

In junior levels, these discoveries serve as valuable teaching tools, where students learn the basic principles of design via trial and experimentation. In the more advanced years, it allows students to focus on their original intentions through incremental steps of carefully crafted design processes.

The following are seven examples of the methodology application accompanied with visual illustrations;

1. Examples where photographs are used to illustrate the effect cause of light and shadow interplay due to natural light penetration into an interior design environment.



Figure 4

Source: Courtesy Zayed University Decathlon team.

2. Examples where photographs are used as means to capture scale and imagine a spatial configuration of a set of otherwise linear planes.

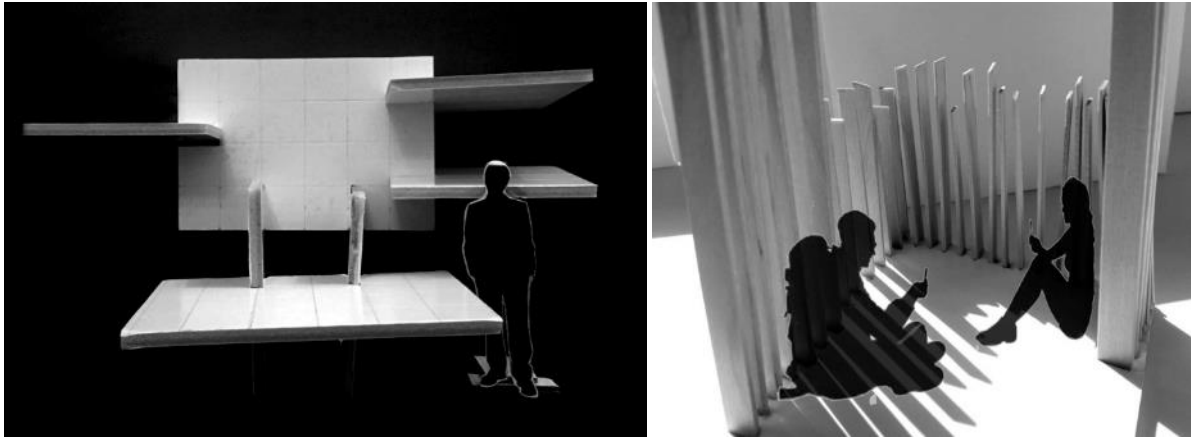


Figure 5

Source: Courtesy Mariam Saeed and Afnana Hussein

3. Examples where photographs are used to illustrate the blend between the interior and the exterior environment.



Figure 6

Source: Courtesy Zayed University Decathlon team and Asma Al Mukhaini.

4. Examples where photographs are used to demonstrate occupation or activity.

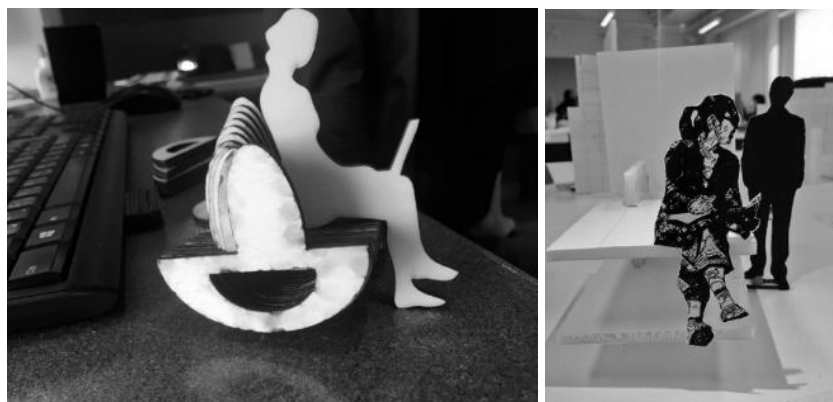


Figure 7

Source: Courtesy Zainab Al Blooki and Sheikha Al Mulla

5. Examples where photographs are used to illustrate the assigned materiality in an interior design environment.



Figure 8

Source: Courtesy Zayed University Decathlon team and Asma Al Mukhaini

6. An example where photographs are used to experiment with and assess the different possible sizes of proposed interior design elements.

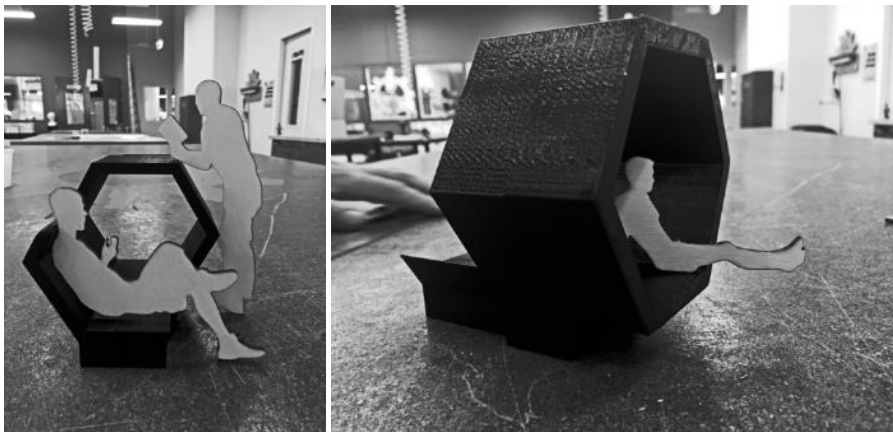


Figure 9

Source: Courtesy Rawdha Al Ketbi

7. Examples where photographs are used to illustrate the interior design space proposal, a substitution to highly realistic renders.

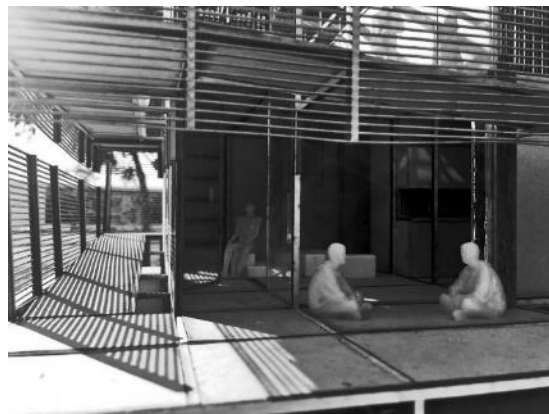


Figure 9

Source: Courtesy Zayed University Decathlon team.



Figure 10

Source: Courtesy Asma Al Mukhaini



Figure 11

Source: Courtesy Alia Rashid and Maryam Galaladdin



Figure 12

Source: Courtesy Shamsa Al Ahbabi

CONCLUSION

Through history, the presented approach has been extensively used by architects and designers using traditional cameras using film and associated accessories. The introduction of smart mobile devices, have eased, democratised and facilitated the process, due to the slenderness of the phone, size of miniature cameras, high resolution, accessibility and affordability of the technology and most importantly, relative easiness of use. Post-production apps have increased the quality of the output process and production. Social media photo specific apps have increased the distribution and dissemination of such images within the design community.

The active relation between physical representation and design processes is not a novel idea. The recent years however, the design community has witnessed an evident preference of carefully composed realistic rendered images, resulting from the rapid developments of computer aided design (CAD) software and rendering engines.

Furthermore, the rise of computer aided manufacturing technology (CAM), has enabled the designers to combine the benefits of both manual and digital manipulation in their model making processes. Yet, model making is generally used as a representation tools of the final design proposal.

In parallel occurrence, the widespread of mobile technology have brought many tools and procedures to our fingertips making them readily available to our use at all times and places. This has enabled individuals with limited professional knowledge to benefit and use procedures that only until recently, were unavailable, except through sophisticated and specialised software and hardware.

Through combining the “making” methodology, with the notion of mobile photography and manipulation, our devised pedagogical approach has enabled us to counterpart our students' lack of expertise in high-end realistic rendering engines. Furthermore, it allowed us to reinstate the model making role as a tool implemented and actively used throughout all design stages. Visuals generated through mobile technology devices of physical settings, created an intensive reflective design process approach, through a feedback loop of continuous dialogue, critique and inquiry within the designer minds (the students).

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READING STILLNESS IN SPACE OF MOVEMENTS

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ABSTRACT

When conceiving space of movements (pedestrians, corridors, or transitional space) architects and engineers mostly concentrate on mobility aspects: how to maximise the flow of people and to move them efficiently. However, these spaces need to be understood more than just an area to contain constant movements. This paper offers a perspective that stillness is an integral part of one's mobility that makes the whole journey. Thus, it is essential to be considered in the design of space of movements. Whereas in many precedents, stillness is commonly simplified as the act of waiting and responded by providing seating objects.

Understanding stillness, the author observed how it is practised bodily and spatially while using mainly David Bissell's notion of stillness for reading the observed site. Gambir station, an inter-city train station, was chosen as the site for observation due to the variety of stillness that could be performed there. As a result, this paper highlighted the need to rethink space of movements, as its interiority is actually built of both movements and stillness.

Keywords: stillness, waiting, mobility, movements, passengers

INTRODUCTION

A. Space of Movements

When we talk about urban context, perhaps we also relate it with movements, how people and things travel from one location to another within. Being on the move is essential for urbanites to maintain their everyday activities; therefore substantial areas of urban landscapes are composed of systems for movement. Different modes of transport connect those networks, ready to aid people to live in a world of flows.

Space of movements (pedestrians, transportation transit spaces or other transitional space like corridors) is designed to accommodate maximum flows, where speed and moving time become success parameter. Movement and speed are perceived equal to productivity; hence any other condition opposes to that should be eliminated. Our space of movements is constructed by this mindset, utilitarian and sterile from anything that might be the obstacle to flows. Movement is mechanized, and its spatial container acts as a vessel. The experience of being on the move is reduced to a mechanical state, where docile bodies are directed by signs and transferred through transportation systems, as described by Marc Augé in his seminal book 'Non-Places: an Introduction to Super modernity' (Augé, 1995).

However, is it really what happens in our daily mobile life? According to Eugene McCann, "The movement of people is not 'empty' but filled with liveliness" (as cited in Cresswell, 2012). Travel itself is an embodied corporeal experience, which results in moments of physical proximity to particular peoples, places or events, where the proximity could be felt obligatory, appropriate or desirable (Urry, 2002). Bodies responded

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physically and emotionally to others, places, and events, or it can be said that there is an affective relationship between bodies and space (Adey, 2008).

For that reason, it could be problematic if our way of seeing daily mobility, such as pedestrian walking in the city or commuting by train, as empty and submissive experience. Phillip Vannini suggested that people are not just being transported, but they are 'performing journeys.' He further explored that a journey is a "mundane but meaningfully ritualistic and artful practice which creates occasions for unique interaction settings and relationships" (as cited in Lanng, 2016). Thus, the term 'journey' offers more nuanced bodily experience, rather than just a habitual movement. Laura Watts and John Urry researched in 2008 to comprehend what happened to train passengers, bodily and emotionally, during their travel time. They argued that understanding the use of travel time (the period between departure and arrival) can be important for deciding strategies for infrastructural projects, as it will also help to unravel spatiality and materiality of travel (Watts & Urry, 2008). Their findings show that travel time use is not perceived as wasted or unwanted, but rich and filled with highly valued activities (reading, playing games, listening to music or working/studying). Interestingly for female passengers, it provides a desirable pause and 'me-time' where they can relax and reflect for a while. The research also found that among travel time experiences, waiting at stops and in stations perceived to be the most undesirable and frustrating activity. Therefore, Watts & Urry (2008) suggested the importance of "providing appropriately designed moving places (trains/buses) and waiting places (stations/stops) that engender many different affordances for multiple activities and uses of time."

The event of waiting, a common form of stillness which is a product of transit mechanism in the space of flows, as troublesome for mobility is explored by David Bissell (2007), who examine the corporeal experience of waiting during journeying process. He offered to view 'waiting' as activity/inactivity during a journey rather than seeing it from the perspective of immobility which often rendered unproductive in a society that yearns for higher speed and mobility. In that way, he considers the possibility of waiting as corporeal phenomena, which include specifically embodied relation-to-the-world and a wholly performative social event. Waiting produces various affective and embodied action and is experienced as part of the overall journey.

In this paper, the author will talk about stillness and wait (as a form of stillness) not only as a form of immobility but as suggested by Bissel, as activity/inactivity, which performed by passengers, specifically in the transitional area within transportation facilities. It will focus on the reading of various stillness, and how the spatial practice of being still is negotiated and could act as a strategy to overcome the otherwise monotonous situation in a journey. Thus, the objective of this paper is to study how stillness and movements are performed and how it relates to the interiority of transit space.

B. Stillness

According to Merriam-Webster Online Dictionary, the definition of still is: devoid of or abstaining from motion; archaic: sedentary; uttering no sounds: quiet; or calm, tranquil. Stillness is a noun form of still (Merriam-Webster, 2017). The understanding of stillness range widely but the term is connected with mobility, as the opposite of it. In productivist and capital term, stillness is used to characterised unproductivity and stagnancy (Bissell & Fuller, 2011). In the perspective of health and wellbeing, Conradson described that stillness is a condition where an individual is "more aware of their immediate, embodied experience" (as cited in Buser, 2017). Stillness is a range of intensities that can fluctuate especially during fragile times (Adey as cited in Bissell & Fuller, 2011, ch.8). While in the context of public space, stillness is a force that can contribute to the way in which a public realm is experienced or disrupted (Buser, 2017). From the multiple perspectives, we can conclude that stillness is normally seen as the opposite of mobility and movements and related to unproductivity and stagnancy. However, also, stillness might trigger a range of emotions and forceful enough to trigger one's experience of space.

Forms of stillness happen every time, everywhere in our mundane life (queuing to get in the bus, daydreaming, waiting for a train at the platform) but its presence is often thought of as inferior or even obstacle to movements and activities. Despite the fact, in a world that demands more speed and mobility, stillness might be something that the body sometimes asked for. Bissell argued that the desire for stillness within the scene of constant flux or turbulence is the folding of activity and passivity of body and thoughts that offer one's self to decipher, orientate and evaluate, a 'thoughtful sensibility' (Bissell, 2011). During one's mobile life, the body might need certain detachment (being carried away by thought or daydreaming), to calm the mind and to be 'present with itself' (Bissell & Fuller, 2011).

Bodily experience in time and space consists of a dynamic between flow and stillness, or a "mobile sense-making," an embodied mobility which creates meaningful engagement with the environment (Jensen, 2014). Therefore, it can be said that together with movements, stillness is an essential aspect of building meaning and making sense of our experience within a space. It is also a wholly performative social event (Bissell, 2007), which means still bodies are demanding positive engagement with its surroundings, while also reacting to other bodies in presence. Löfgren defines stillness as a form mobility tactic that manifests in bodily motion (Löfgren, 2008), it is a skill needed to face the everyday. In this paper, stillness will be discussed as a form of bodily engagement within space of movements, without disregarding movement over stillness, but both as a dynamic state of being mobile.

C. The Passengers

The passengers are interesting figures. They are often described as a figure whose being carried away by the mobilization of mobility and stillness (Bissell & Fuller, 2011). Bissell depicts the passenger as prostheses, as they are contained and being carried away by technologies of transit and assemblage of process and procedures in the space of flows. Passengers' bodies are submissive to mobility protocols, and being still is their way of acceptance of these protocols (Bissell, 2011). According to Bissell, still is volatile, unpredictable and conditional. Thus it rather contradicts the common views of still as static. In practice, still changes from time to time, and its duration can be brief or lengthy depending on the passengers' situations. Therefore, during the journey, passengers might acknowledge different possibilities of still: as disruption, problematic, challenging but also as joy, container, cocoon, or even as a stabilising process. (Bissell & Fuller, 2011).



Figure 1. Passengers in the space of flows.

(Source: <https://cdn.klimg.com/newshub.id/news/2017/02/08/118627/nikmati-kereta-ekonomi-serasa-kelas-eksekutif-1702083.jpg>, accessed 14-11-2017)

Peter Merriman stated that "the experiences of the passenger have frequently become associated with increasing levels of comfort and speed, as well as changing relations and engagements between the passenger and the passage or passage (landscape)" (Adey, Bissell, McCormack, & Merriman, 2012). Raymond Williams describes this mutual relation between passenger and landscape with the term 'structures of feelings,' which he used to define how the material infrastructures of transport could shape emotional mindscape of travel (as cited in Löfgren, 2008). The relation between motion, emotion and physical landscape of travel are further explored by Löfgren (2008), he concludes that emotional state of travellers (anxiousness or 'travel fever') produce a certain relationship with the material world, which reflects in passengers' behaviour who tend to seek comfort in objects. The passengers' responses to travel conditions, bodily and

emotionally, are what Michel de Certeau defined as 'tactics of travel,' particular cultural and contextual skills which acquired through experiences.

In this chapter, we can conclude that passengering is not a passive experience where bodies are obediently being carried away by means of transport. Passenger experience is not always alienating, individualising, and contractual (as in Auge's characterisation of non-place), in fact, passengers are often actively engaged socially and spatially (Adey et al., 2012). Passengering also requires specific tactics as a form of response to context, which in the end will result in subjective experience mediated by the materiality of the landscape.

READING STILLNESS

"The hall or waiting rooms only assemble temporary loneliness." (Auge, 2000)

For this paper, the author chose to observe a railway station in Jakarta as a case study. Gambir is one of Jakarta's most prominent and oldest station which has served the city from the early 1930s, and it was formerly known as Koningsplein station. Gambir was renovated in the 1990s, and now it only serves inter-city routes for executive class trains (PT Kereta Api Indonesia, 2017); hence Gambir is one of the leading gateways to Jakarta. The situation in Gambir is quite distinctive from other stations in Jakarta, possibly due to mid to long distance routes it serves, which connect Jakarta to other cities on Java Island, which create a particular ambience. Perhaps, the atmosphere is produced by passengers that are longing for a journey aside from their daily mobility. Each passenger come with various purposes, making the air is filled with the mixture of anticipations, hope, joy and also of nervousness. This diverse mix of purposes and emotions might trigger the different possibility of stillness, which makes Gambir Station is an intriguing site for observation.

Like any other railway stations in the world, passengers in Gambir also required complying several procedures before being able to get on the train. Unquestionably, their bodies are going to submit in whatever process and directions they obliged to, as described by Bissell & Fuller (2011) in the first part of this paper. Gambir station embodies its leading role as a vessel of movements through its architecture and internal organisations. Almost half of its 250-meter span is dedicated to procedural events of departure and arrival (Figure 2.). While the other half is devoted to supporting facilities, which accommodate passengers during their period of in-between. The logic of its internal organisation supports its primary function as transit space, where circulation paths are the main protagonist.

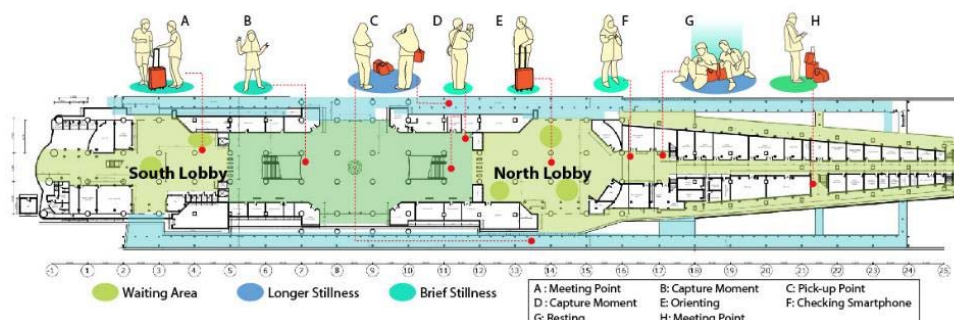


Figure 2. Gambir Station layout and mapping of stills

(Source: Arvanda, 2018)

When we watch passengers' movement within the station, stillness can be easily overlooked and generalised as 'to wait.' Only after a closer look, we would be able to distinguish several different practices of stillness. The north lobby of Gambir is the busiest zone in the station, and it acts as the main gate of arrival and departure; thus passengers are mainly orienting toward the area. The main entrance leads passengers to their first encounter with the station's interior (figure 3), where they are welcome with a sudden change of scale. A few responded this with a subtle shift in walking rhythm, while many suddenly hesitated and decided

to halt their movements for quick observation of the surrounding. Going further inside, people initially scan the space and look for wayfinding clues while keep on moving. The centre part of the lobby is becoming their primary spot for taking a decision, whether to keep on moving and submit to procedures of departure or to wait until the scheduled time of their journey.



Figure 3. Sequence of movements-stillness at entrance area
(Source: Group 1 Unit 1 of PA15, edited by Arvanda,2018)

From the above picture (Figure 3) we can see that seating area is located nearby the entrance. It attracts passenger immediately as resting place and a meeting point. Waiting is commonly seen as a form of immobility, where bodies are on hold from movements. The stationary understanding of waiting for influences the arrangement of 'seating areas' which lined up with chairs to accommodate still bodies. Seated bodies, along with their handful of belongings, are placed in close proximity to others. The anxiety of waiting seems to be escalated by this arrangement, especially when the seats are fully occupied. Thus, it is not surprising that the event of waiting is perceived as problematic and frustrating (Bissell, 2007), 'boring' becomes a common term when someone illustrates the experience of waiting.

If we look closer to passengers who wait, we can see that none of them is entirely still for an extended period. They do several activities while being seated (using smartphones, leisure reading or talking to acquaintances.) or they might prefer to perform 'inactivity' and being immersed in their minds (thinking, contemplating, daydreaming, etc.). Although their bodies are relatively not moving (despite unconsciously they fidget from time to time), they still manage to have certain degrees of engagement with the surroundings (watching around, watching others or react to loud voices/information system). Unfortunately, the seating arrangements do not encourage further engagement with the surroundings nor with others. Although interestingly, each of the passengers seems to have a different tactic to deal with the waiting event. The lined up seating layout as shown in figure 2, is being responded differently, by the passenger who comes with heavy baggage, the passenger who travels without any acquaintance, strangers with different gender who compelled to sit side by side or the passenger who still has abundant time until departure. Each person negotiates their body, belongings, and others by practising different spatial strategies (figure 3) to make themselves feel comfortable and safe.

As identified by Bissell (2007), waiting is, in fact, a hybrid event, so it can consist of several different kinds of activity or inactivity, which is performed while anticipating something to come. Gambir station seems to be well aware of some opportunity that comes from waiting event, from the way commercial functions are aggressively added to its layout. Passengers can spend their waiting time by going in and out of different shops, enjoying food and beverages from stalls, or buy locally made souvenirs. Some passengers found it as a pleasant alternative for spending time without having to be still and bounded to a seating object.

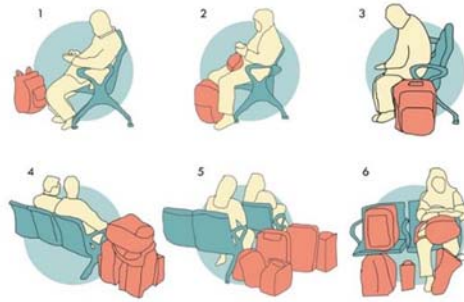


Figure 4. Tactics of sedentary waiting
(Source: group 1, PAI5 unit 1)

Aside from sedentary stillness, we can find other strategies for resting bodies and temporary detachment, these kinds of stillness are prolonged type of stillness which can be lasted from several minutes to presumably an hour, depending on the circumstances. Passengers often utilise affordance offered by architectural elements inside the station: they lean on columns, stopping a while at sidewalls, occupying the stair walk, sitting on raised platforms at corridors, etc. The passengers chose a site for performing stillness methodically, and their decision was based on observation of the physical surroundings and its perceived condition. However, there seems to be a spatial preference to where stillness is usually performed such as edges and nodes (figure 2 and figure 5). Chosen locations were mainly the ones that can assure the feeling of being 'safe' and protected (from other moving bodies or the gaze of others) or depending on which condition of stillness they desire, which are provided by building elements, especially its materiality and spatial qualities.

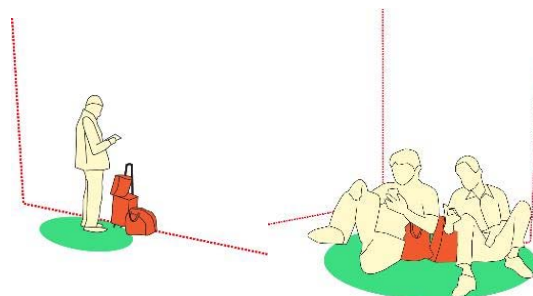


Figure 5. Stillness performed by utilising architectural affordance
(Source: Arvanda, 2018)

The need to perform stillness might occur anytime in between movements; thus it can cause obstacles to flow even though it only happens briefly. Although by observation, stills were mainly performed at the edges of space to consciously avoid being an obstruction to other people's movement (figure 6). This finding is in line with a remark stated by Bissell (2007) that stillness is a wholly performative social event while performing stillness people still maintain engagement with surroundings and react to other bodies in presence.



Figure 6. Stillness intervened flow and altered movements
(Source: Group 1 Unit 1 of PAI5, edited by Arvanda,2018)

The atmosphere of space could also trigger stillness, as indicated by Buser (2017), 'calming' atmosphere trigger a more relax or reflective state of stillness, 'dynamic' atmosphere could evoke the joy of watching others, while 'frantic' atmosphere could be responded by withdrawal. In the picture above (figure 5a) tranquil view of the outside afforded by large architectural openings allowed for a quick reflective state of stillness. While the view from the train platform to the nearby national monuments (figure 5b.) which seemed to glow at night, trigger passengers to seize and capture the moment.



Figure 5. A person was looking at outside scenery. Spatial features and atmosphere offer possibilities for a different form of stillness.

(Source: Valdo Karya, Aristanto Aryo https://farm5.static.flickr.com/4550/37613430404_5203d03cb4_b.jpg, accessed 14-11-2017)

Another finding from the observation is that art as a featured spatial element can be an efficient way to invite passengers to stop and engage with the surroundings momentarily. In the below picture (figure 6a) central staircase that leads to the departure platform was decorated with printed images of nature. Passengers responded by slowing down their pace and trying to figure out the picture's details, took pictures, then quickly proceed to climb the stairs again. The same reaction also happened (figure 6b) at the corner area right after check-in gate, a life-size train picture greeted passengers and suggested to take a photograph. Involuntarily, many did take pictures and enjoying the small moment.



Figure 5. Art features invites passenger to perform brief stillness
(Source: Instagram @NandaTaboel, illustration by Arvanda,2018)

CONCLUSION

Our mobile life relies so much on transportation infrastructure, where transit space architecture becomes an important key factor as a threshold that contains and accommodate the transition. Scholars have emphasized the importance of thinking about mobility as an embodied practice (Adey et al., 2012; Bissell, 2007; Cresswell, 2012; Hannam, Sheller, & Urry, 2006) which has particular engagement to space and materiality and underline the need to think about forms of stillness as a part of theorization of movements

(Bissell & Fuller, 2011; Buser, 2017; Cresswell, 2012). Both issues, especially the latter one is still undervalued and unexplored in the planning of transit architecture. From the case study, we can see that Gambir station's architecture mainly focuses on its role as a place that accommodates movements. Each spatial elements were planned to serve its primary function, without giving much attention to possibilities other than flows and procedures of departure and arrival.

Travellers are often feeling vulnerable and anxious about their journey, so they seek for engagement, physically and emotionally, from their immediate surroundings to make sense about their experience. However, eventually, they also need certain detachment to calm their mind. The kind of stillness being performed in Gambir station were diverse and conditional for each passenger, it can occur within a very brief period (looking at train schedules, resting a while after carrying heavy baggage or checking information on smartphones) and more extended period (waiting for train arrival, waiting for others, expect to be picked up, etc.). Each kind of stillness has its unique gesture, as a respond (changing the pace of walking, a brief pause, standing still, sitting or leaning on something). Analysis of the precedent shows that tactics used by passengers while doing stillness are methodical, which influenced by their readings of possibilities offered by physical surroundings and the presence of others. In short, performed stillness is a very calculated and tactical gesture; it is not merely a halt in between mobility.

Passengers also spend some idle time inside the station before the departure or after the arrival which often generalised as 'to wait.' The event of waiting consists of hybrid activity or inactivity and is rich of engagements whether it is spatially or socially. Unfortunately, the richness of waiting is still neglected in Gambir station, and the passengers are only provided by general lined-up seating in several zones. Why wait is perceived as being immobile in sedentary position? The author concluded it is the result of the collective perception of waiting as opposed to mobility or movements. Commodified waiting space also seems to be favoured by the station's operator, as it is profitable and productive from the economic perspective. On the other side, it does not necessarily enrich passenger's stilling time, although some of them might find it pleasing for spending time.

Stillness is layered within movements and bounded by time, the materiality of space and situations. It can occur unconsciously (fidgeting) but mainly it is a calculated act that requires tactics. Passengers are seeking comfort in objects and materiality of space, and they are actively seeking for affordance given by space to feel connected and safe. Hence the role of interior architectural elements a significant part in creating engaging surroundings within space of movements to provide more meanings to passengers' experience within it. Possibilities for activities and uses of time (resting, encounter, relaxing or waiting) might be enhanced by various spatial elements if they are carefully planned to afford not only movements but also various forms of stillness.

Thus, the author concludes, if only stillness and waiting is not simplified and undervalued, it can offer more possibilities in how mobility is performed within space. If we start to think of stillness as an integral part of one's journey, it will also influence how the design of transit space might be planned. Sensibility to how stillness is actually and possibly performed will enrich one's experience in the space of movements. Therefore, hopefully in the future if we talk about space of flows, we will not have to relate it to negative terms such as 'frustrating' or 'boring.'

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URBAN INTERIORITY AS COLLECTIVE INDIVIDUATION

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ABSTRACT

This paper addresses the current emphasis on interiority in the discipline of interior design with a particular focus on the urban environment. The Situationists are a much-cited precedent for this line of thinking; their constructed situations aimed to 'provide a décor and ambiance of such power that it would stimulate new sorts of behaviour, a glimpse into an improved future social life based upon human encounter and play (Sadler, 1998, p. 105). In the twenty-first century, the relation between interior/exterior, interiority/exteriority continues to be a critical topic in relation to the question of inhabitation. The philosopher Gilbert Simondon's concept of individuation offers a different way of thinking about interiority from one which is premised on the subjectivity of the individual. He writes of the individual as a product of individuation where movement and temporality, change and contingency are foregrounded; inverting individuation as something produced by the individual. This moves interior design from phenomenological and psychological frameworks, which centre the subject and work from the inside out, to an ecology of subjectivity and entertaining the potential of the production of interiority as a 'subjectification isn't even anything to do with a "person": it's a specific or collective individuation relating to an event (a time of day, a river, a wind, a life ...). It's a mode of intensity, not a personal subject' (Deleuze, 1990, p. 98-9). *Urban + Interiority*, a workshop held in Nicosia, Cyprus I was invited to lead as part of the 10th IMIAD (International Masters of Interior Architectural Design) Workshop - *Inhabiting Nicosia: Interior Strategies for the Public Realm* - is a key project discussed in this paper.

Keywords: individuation, urban, exteriority, Deleuze, Guattari

INTRODUCTION

The International Federation of Interior Architects and Designers defines the identity of the interior architect and interior designer as a design practitioner who 'determines the relationship of people to spaces based on psychological and physical parameters, to improve the quality of life' (IFI Interiors Declaration, 2011). This definition loosens the assumption that interior design is a practice that takes place inside a building and provides an opportunity to think about the practice of interior design in the urban fabric. In opening up the discipline as such and thinking about the relationship between people and the environment, as city and metropolis, a number of key terms that are usually coupled as binaries/dualities come in to play - such as 'the individual' and community, private and public, interior and exterior, domestic and urban. As with the IFI definition which identifies 'people and spaces' with 'psychological and physical parameters', ideas of interiority and interior are generally equated with individual subjectivity and space respectively. In the milieu of this conference addressing 'interiority', I am interested in not only posing an idea of an urban interiority in relation to the practice of interior design but also to re-pose the concept of

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'interiority' in relation to collective individuation and as a process of interiorization in an exterior – as urban interiority.

In the twenty-first century, the number of people living in cities exceeds those in rural areas for the first time in history. This increase in population is coupled with an increase in individualism. The editors of the book *Intimate Metropolis. Urban Subjects in a Modern City* note that their choice of 'the word "intimate" reinforces the extent to which the modern city is predicated on the concept of "the private individual", and on the sanctity of the individual's innermost thoughts and feelings' (di Palma et al., 2009, p. 1). This idea of interiority as intimate and individual – as subjectivity that is personal/of the person – is a philosophical idea, as distinct from natural state or *a priori* given. As a philosophical concept, the idea that there are other ways of thinking 'interiority' is opened up.

In my practice-based research and teaching, the philosophy of Gilles Deleuze and his peers, Félix Guattari and Michel Foucault, have been particularly useful in opening up accepted concepts of interiority:

A significant aim [of their work] has been to pulverise the traditional notion of the subject as the ultimate essence of individuation, pre-reflexively contemplating its own existence, and to develop a *schizoanalytic* subjectivity superposing multiple strata of subjectivation in a multicomponential cartography opposed to the Conscious/Unconscious dualism of the Freudian schema. This is not a denial of the process of individuation but the recognition that subjectivity deploys itself as much 'beyond' the 'individual' ('it is wrought by collective assemblages of enunciation') as 'before' it on the side of preverbal intensities. ... a multiplicity of subjective strata ... [as distinct from] subjectivity or unicity, understood in a phenomenological or Cartesian sense (Bains, 2002, p. 103).

Picking up their ideas – as a 'box of tools' or a 'pair of glasses directed to an outside' (Deleuze & Foucault, 1977, p. 208) – and using them in the discipline of interior design to think about the relation between people and the urban environment involves a shift from phenomenological and psychological frameworks, which centre the subject and work from the inside out, to experimenting with an idea of subjectivity as ecological and processes of subjectification, or what I am calling, processes of interiorization. In relation to 'urban interiority', this effects a shift from beginning with the individual as the producer of subjectivity to working in the midst of a dynamic network of relations and forces where subjectivity is generated as 'a spatio-temporal immanence of unity in multiplicity, or of interiority in exteriority' (Bains, 2002, p. 106). The motivation to challenge a subject-centric idea of interiority comes from seeing the potential of the discipline of interior design – as a practice of designing interior – to experiment with new ways of thinking and generating interior and interiority. Guattari's book *The Three Ecologies* provides impetus as a provocation: 'For the way, we invent/posit subjectivities and for our reappropriation of the means of the production of subjectivity, which alone will enable us to deal with the eco-systemic crises already engulfing us and with those yet to emerge' (Bains, 2002, p. 106).

This paper presents a series of conjunctions between interiority and urban – drawn from architecture and design references – as a way of thinking through how 'urban interiority' as a concept is currently understood. These 'accounts' then lead into a reflection on an international workshop with interior design/interior architecture masters students that experimented with posing an idea of urban interiority as a production situated in a complex urban environment, the divided city of Nicosia. The workshop involved experimenting with techniques of interiorization – including a situation analysis and synthesis, scenarios as future worlding, and exhibition as event – as part of a process of collective individuation.

INTERIORITY + URBAN

Following are different accounts of interiority in relation to urban. These are offered to enable a way to grasp givens that inhere in current ideas of interiority in relation to interior design and to open up the possibility of thinking 'interiority' in a way that is not defined dualistically in relation to exteriority but 'interiority in an exteriority'; 'the inside as an operation of the outside' (Deleuze, 1988, p. 98). As philosopher Jon Roffe observes: 'one of the greatest aspects of Deleuze's philosophical labour' is his insistence 'that the interior is rather produced from a general exterior, the immanent world of relations. ... Hence, human subjectivity as a produced interiority undergoes changes according to its social milieu, its relations, its specific encounters, and so forth' (Roffe, 2005, p. 95-6).

The early twentieth century writings of philosopher Walter Benjamin attend to the relation between the individual and the city and are regularly cited as a key historical reference for the concept of 'the interior' and interiority in relation to architecture and interior design (Rice, 2007). The Collector is defined as 'the true resident of the interior' (Benjamin, 2002, p. 19); a 'private individual' for whom 'the interior' is a refuge from the public world of commerce and social engagement. As Benjamin writes: 'In the formation of his private environment, both are kept out. From this arise the phantasmagorias of the interior – which for the private man represent the universe. In the interior, he brings together the far away and the long ago. His living room is a box in the theatre of the world' (Benjamin, 2002, p. 8-9). Interior and interiority are equated with domestic and private, and characterised as a retreat from the exterior world and exteriority.

Urbanist and sociologist Richard Sennett, in a keynote lecture for the Harvard Architecture Symposium *Inside Matters*, addressed the issue of interiority in the urban environment in a paper titled 'Interior and Interiority' (Sennett, 2017). His focus on interiority is interesting in the context of the seminar's topic: 'Architecture's interior matters in new ways today' (Moe, 2017, p. 4). Specifically, Sennett challenged the 'interior/exterior divide' that conceives of interiority as a withdrawal in to the domestic interior. In contrast to this 'standard account' – as he referred to it – he presented the criticality of thinking interiority in an exterior, that is an 'urban subjectivity'. Citing sociologist Georg Simmel's 'Metropolis and Mental Life', written in 1903, Sennett offers this as 'a contrary account' which gives 'an urban account of interiority – i.e. subjective feeling – linked to an exterior condition – i.e. exposure to others. ... There is an inside-outside divide, Simmel says, that is made by the street rather than removed from the street' (Sennett, 2017, p. 13).

Sennett is critical of urban strategies which assume the importance of making communities – 'that warm, Jane-Jacobs, feel-good about-your-neighbour, sensibility' – and refers to this as 'the great unspoken dogma that urban designers share' (Sennett, 2017, p. 18). To the contrary, Sennett advocates that designers need to rethink the emphasis on social space and move to an idea of 'urban subjectivity' as one link to an exterior condition freed from the constraints of domesticity – the familiar and familial. Urban subjectivity is not a withdrawal from the exterior, as per Benjamin's Collector, but an engagement in the world which is reflexive and is based on 'the freedom of being able to observe without interacting' (Sennett, 2017, p. 16).

... the emphasis on sociable space is something that we have got to rethink. Because, for lots of people, that is not why they want to be in public. They want something else. They want an interior life, a life where they can practice an observational cruising and reflexivity in which the work of memory can occur, because they are alone. ... The issue for us, then, is to understand what kinds of space we can make so that somebody can sit at a table, in a café, drink a glass of absinthe, smoke a cigarette, and reflect. That is really the relationship between interiority and the exterior (Sennett, 2017, p. 18).

While on the surface aligned with an idea of interiority in exteriority, Sennett's proposition is quite different to an idea of interiority produced *in* an exteriority – 'an immanent world of relations'. Sennett maintains a dualistic relation and separation between interior and exterior where interiority is a production of the

individual. In the question time that followed, Sennett was asked why he focused just on 'interiority as psychological subjectivity' and not interiority as a spatial condition. He replied that he was referring not just to a psychological definition of interiority but also 'the cognitive and emotional' as well as social. However, in effect these are all 'psychological parameters' and are underpinned by an idea of interiority as the domain of the subject/the self (Sennett, 2017, p. 19).

Simmel's text is interesting to read on its own as the focus of his analysis is the individual confronting the metropolis and the blasé attitude that is produced to diminish the encounter with an exteriority of overstimulation – as a 'protection of the inner life against the domination of the metropolis' (Simmel 2002, p. 12). As with Sennett and Benjamin, the division of interior and exterior maintains an idea of interiority that which belongs to an individual self who is the producer of subjectivity.

The Situationists are useful to bring into this selection of accounts as their aim and manifesto was to transform relations between people and urban environment, between interiority and exteriority:

With the Situationists, all the doors are resolutely open, everything happens outside, there is no longer room for either interior or exteriority: henceforth subjectivity is lived or expresses itself externally, it is collective or it is nothing, it is detached from all individual representation (Kaufmann, 2002, p. 287).

Techniques such as the *derive*, *psychogeography* and *détournement* were invented to enable a different way of seeing and engaging the urban environment through situating individuals in 'constructed situations' that would stimulate 'new sorts of behaviour' and create 'an improved future social life based upon human encounter and play' (Sadler, 1998, p. 105). This would lead to a new urban environment based 'on the atmospheric effects of rooms, hallways, streets, atmospheres linked to the gestures they contain'. For the Situationists, architecture needed to attend the construction of 'emotionally moving situations, rather than emotionally moving forms' (Sadler, 1998, p. 107).

The artist/architect Constant Nieuwenhuys's *New Babylon* was a proposal for a new urban environment composed of interactive labyrinthine structures across cities. An interior environment that was not fixed nor static but in a process of perpetual becoming and producing new social relations. What is interesting here in relation to the concern of this paper – urban interiority – is the internalized environment of *New Babylon*. There is no relation with the exterior. Instead it is a kind of 'continuous interior' (Pimlott, 2007, p. 10) where 'the ambiances will be regularly and consciously changed, with the aid of every technical means, by teams of specialised creators who, hence, will be professional situationists' (Ford, 2005, p. 76) while people wandered.

While these accounts engage in a dynamic of interiority and urban environment, the interior/exterior division is maintained as a given and interiority – as personal subjectivity – is assumed. The provocation to move to an idea of urban interiority as collective individuation is not a call to 'make more community' – the urban designer's dogma criticized by Sennett. Rather it is a mode of intensity; a composition of intensive forces through process of interiorization where 'subjectification isn't even anything to do with a "person": it's a specific or collective individuation relating to an event (a time of day, a river, a wind, a life ...). It's a mode of intensity, not a personal subject' (Deleuze, 1990, p. 98–9).

URBAN INTERIORITY – AN EXPERIMENT

In September 2016, I was invited as keynote and workshop leader for the 10th IMIAD (International Masters of Interior Architectural Design) workshop. Each year a workshop is convened by a program participating in the international master's program – this year academics from the Istanbul Technical University convened a workshop in Nicosia, Cyprus with the provocation/title: *Inhabiting Nicosia: Interior Strategies for the Public*

Realm. As Bahadır Numan, one of the convenors of the workshop, noted: 'The workshop will be a significant lab to understand what is interior and urban interior in all its complexities'.

Cyprus is a complex social, cultural and historical milieu; a country continuously inhabited since the Bronze Age, 4,500 years ago. In 1963, Cyprus was segregated into south and north as a result of continuing political tension and violence between Greek and Turkish Cypriots. Then in 1974 when Turkey intervened and occupied the north, a 'buffer zone' was constructed by the United Nations – a militarized border between the Republic of Cyprus and Northern Cyprus. Northern Cyprus is a state recognized only by Turkey. Running more-or-less through the middle of Cyprus, the 'UN Buffer Zone' separates the two cultures and divides the capital city, Nicosia. Referred to as 'the green line', because a green pen was used to draw the buffer zone on a map, it takes up 10% of the city. All activities within the buffer zone were ceased and people evicted from their shops, houses and factories. Roads crossing north/south became dead ends at the centre. The UN Buffer Zone is owned by no country and patrolled by UN soldiers. Now – over half a century later – the line has actually become green as plants and trees grow wild in, and through, the abandoned stretches of space between the two parts of the city. Inside the walled part of the city, there is only one checkpoint where people can cross. Either side of the zone requires every person to present their identity card or passport to receive permission to enter. No photographs are allowed; no stopping nor lingering while crossing.



Figure 1. Nicosia, Cyprus.

Image provided as part of the IMIAD workshop 2016



Figure 2. Greek side of the UN Buffer Zone, Nicosia.

Photographs by Suzie Attiwill, 2016.

The workshop *Inhabiting Nicosia: Interior Strategies for the Public Realm* was held over ten days from 1 to 11 September 2016 and involved masters students and academics from universities in India, Germany, Switzerland, USA, Turkey and Cyprus, as well as local Greek and Turkish Cypriots.

Urban + Interiority – one of several sub-workshops offered – involved thirteen participants (ten students and two colleagues Özge Cordan, from the Istanbul Technical University, Department of Interior Architecture and one of the *Inhabiting Nicosia* workshop convenors, and Kağan Günçe, Eastern Mediterranean University, Department of Interior Architecture plus myself) as well as people who joined as the workshop took shape, including local consultants, children and teachers.

A carpark located near the UN Buffer Zone on the north side and situated in the old city was selected for the focus of our workshop. I chose the carpark over other potential locations so as to rupture participants' assumptions of an architectural definition of urban interior as a space enclosed by buildings such as a courtyard. A composition of white lines on the ground organised its usage as a carpark during the day when its eighty-one spaces would fill with cars driven by people attending the nearby Justice Court of Cyprus, Museum and American University of Cyprus; and then after 4.30pm, the cars left and it became a playground for local children, shadows and animals. A dynamic spatial-temporal ecology.



Figure 3. Carpark, Arabahmet neighbourhood
Photographs taken by students as part of workshop, 2016.

Most of the houses in the area are traditional Ottoman houses of heritage value yet in a significant state of neglect and deterioration. Many houses are abandoned. A majority of their owners have moved to the modern areas of Nicosia outside the medieval walls and they rent their houses to Turkish migrants and refugees. This situation has also produced many social problems (see Attiwill, Cordan, & Günçe, 2017 for more detail).

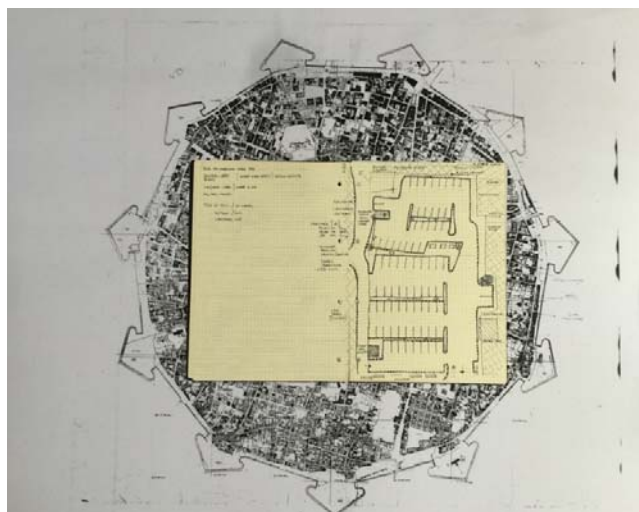


Figure 4. Diagram of carpark laid on top of a map of Nicosia.
Diagram and photograph by Suzie Attiwill.

The workshop began with a situation analysis. This is a key technique in my practice and pedagogical approach as a process to open participants up in an exterior. A situation is like a milieu where one is in the midst, working in the middle, in a medium as distinct from site, which brings implication of measurement and space as geometry. 'Situation' invokes an ecological sensibility and sensitivity to relations as dynamic and changing. For the 'urban + interiority' workshop, the students were asked to be attentive to flows, vibrations and rhythms, weather, light, temperature, air, colour, sound, smell; sensations, affects and effects; temporal and spatial conditions such as habits and routines, expressions of value and attraction. Students were asked to make drawings, paintings and recordings as a way of becoming sensitive – pausing and opening up in the environment – to composing forces and relational fields.



Figure 5. Situation analysis, consultation and synthesis.
Photographs and drawings from workshop

The students were then asked to present their situation analysis as a synthesis – an interiorization – through a presentation of their analysis. These were produced on tracing paper and then laid on top of each other to produce a group situation analysis and synthesis. From this, three groups were formed and each group was invited to create a design; ‘a creation and materialization of possible worlds and a way of thinking and critically responding to current issues and concerns’ (Brassett & Marenko, 2015, p. 4).

Three design scenarios were posed for an urban interiority yet to come. A scenario proposed an ‘emotional museum’ for the carpark; an encounter which would bring north and south Nicosia together through historical awareness and an engagement with temporality – a composition of past and present for a future. The emotional museum would make present ‘the patchwork community that resides in this part of the city and all along the buffer zone’ by encouraging people to leave photographs of themselves together with a series of ‘seating opportunities’ that would work as introductions to locations further away. Each seat would orient a sitter towards a historical aspect of north and south Nicosia as well as places of unification and community ‘through playful adventure and discovery’ [Figure 6].



Figure 6. Scenario One *an emotional museum*
Amelie Beicken, Ricarda Pulcher, Anja Schäfer, Anna Schmitt and Monisha Royan.

Another scenario – *UNIT-Y* – proposed a ‘unit’ per parking lot which could be adapted to different uses such as workshops, café, garden [Figure 7]. The concept of a unit was inspired by a makeshift habitation that had been built in the carpark [see Figure 5 – middle right]. This ‘makeshift’ made apparent – to the students as part of their situation analysis – a way of occupying space-time that could be extended to enable people to do something which produced economic benefit as well as develop an understanding of spatial and temporal practice that could lead to innovation.



Figure 7. Scenario Two *UNIT-Y*
Sühendan Eroğlu and Taha Gungor

The third scenario was titled *Uniting with active interaction* and proposed a Football Club composed of teams and players from north and south. The carpark would be transformed into a soccer field with a Youth Centre [Figure 8]. The scenario included the design of team colours and uniform that would express and activate integration. The idea of working with the youth towards a reunified Cyprus was key to this scenario. At other times, the situation could be rearranged and used for social events and celebrations such as weddings.

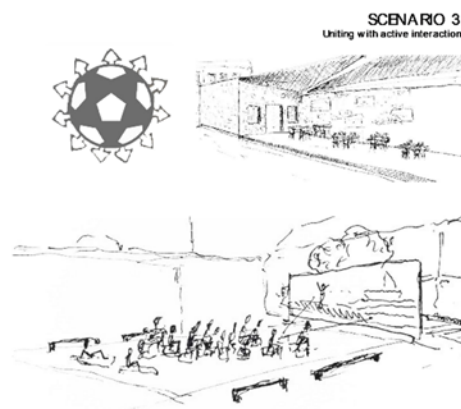


Figure 8. Scenario Three *Uniting with active interaction*
Helena Smalca, Joseph Tuegel and Yusuf Chiniwala

The three scenarios were then displayed in the carpark on one of the walls and the locals were invited to come. Özge Cordan presented these scenarios – in Turkish – as ‘possible worlds’ to a group of children and teachers who were there and listened attentively. Then the children were invited to draw their own scenarios. These were then put up and displayed on the carpark wall together with the workshop students’ design scenarios.



Figure 9. Event and exhibition:
Urban + Interiority: Propositions toward a new collective urban inhabitation
 Photographs by workshop participants, September 10 2016.

CONCLUSION – URBAN INTERIORITY AS COLLECTIVE INDIVIDUATION

The IFI definition of the role of the interior designer/architect as one of determining the relationship between people and spaces based on psychological and physical parameters is one which relies on an accepted idea of interiority as belonging to the individual, a personal subjectivity where the individual is the cause of individuation. The accounts of interiority given through the writings of Benjamin, Sennett's provocation and the tactics of the Situationists maintain – albeit it in different ways – an idea of individual subjectivity and individualism in a dialectical relation with the urban environment. The *Urban + Interiority* workshop was an experiment in thinking and practising differently with ideas of interiority and situating interior design as a practice in the urban environment.

In the workshop, different tactics and techniques were engaged with to produce a pause between stimulus and response, and interrupt the habitual assumptions of interior as enclosed space and interiority as enclosed self. Situated in a complex milieu, participants were invited to think ecologically, i.e. in terms of spatial, temporal and material relations; to become sensitive to the environment – to pause and open in an outside of flux and indeterminacy; to become immersed in an immanent world of relations. Posing urban interiority as collective individuation foregrounds individuation as an event situated in an exterior of dynamic forces and relations.

Urban density, globalisation and mass migration are radically transforming ideas of place, context, site specificity, belonging and modes of living. The question of habitability – how to live in the world – has become urgent and vital. The workshop enabled an encounter with the criticality and potentiality in re-posing the idea of interiority in a complex urban environment and the value of thinking interiority otherwise – as 'a specific or collective individuation relating to an event (a time of day, a river, a wind, a life ...). ... a mode of intensity, not a personal subject' (Deleuze, 1990, p. 98-9) – a produced interiority in exteriority.

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PROSTHETICS AND INTERIORITY

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ABSTRACT

"Prosthetics and Interiority" emerges out of research for a design and studio project and investigates what it means to make *prosthetic* interventions into architectural spaces. The word *prosthesis*, from its original Latin derivation *prostheticus*, refers to an addition that "furthers, gives additional power" to an object in addition to being a substitute for a missing or defective part of the body. (Wordreference.com, 2017) Thus, a prosthetic intervention into the body of a building requires thinking beyond merely fulfilling a functional requirement. It involves, too, thinking about affecting a built environment's circulatory and sensory experience, making an "addition" that substitutes, enhances, and transforms the capacity and power of a building.

Keywords: prosthetics, multi sensuality, experience, responsive interventions

INTRODUCTION

The last century has seen a marked disconnect between the human body and built space in architectural theory, teaching, and practice. This disconnect, particularly evident in 20th-century architecture, has thus affected our physical and emotional responses to the built environment. In favor of form, technology, economy, standardization, and visual and conceptual stature in buildings, the emphasis on human multisensory comfort and emotional character has been mainly cast aside.

But the relationships between body and built space and between our body's occupation of space are central to any form of human habitation and in the midst of the field of interior architecture. The existing building stock represents the largest financial, physical, and cultural asset in the industrialized world. A sustainable society is not possible until this key resource can be integrated and managed wisely into our ever-changing environment. "Prosthetics and Interiority" aims to investigate such relationships and generate minimal but intelligent and responsive interventions to allow existing buildings and spaces to regain and advance their function, communication, sensory quality, and performance. "Prosthetics and Interiority" investigates what it means to make prosthetic interventions into architectural spaces. The word *prosthesis*, from its original Latin derivation *prostheticus*, refers to an addition that "furthers, gives additional power" to an object in addition to being a substitute for a missing or defective part of the body. Thus, a prosthetic intervention into the body of a building requires thinking beyond merely fulfilling a functional requirement. It involves, too, thinking about affecting a built environment's circulatory and sensory experience, making an "addition" that substitutes, enhances, and transforms the capacity and power of a building. Prosthetics for spaces and buildings are aimed to achieve goals beyond "fixing" -- they enhance the user's overall experience of the building including its appearance and levels of comfort, functionality, and energy use.

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BODY AND BUILT SPACE

From Vitruvius to Freud and from Schulz to Lefebvre, scholars across disciplines have studied the human body's relationship to space. Indeed, interior architecture as a discipline emphasizes the relationships between body and built space and between the body's occupation of space. But in architectural practice, this idea that built space should interact with and respond to its users has not been used in any meaningful way for design interventions.

In his book *The Production of Space*, French philosopher and sociologist Henri Lefebvre argues that space should have an active role in generating human knowledge and action (Lefebvre & Nicholson-Smith, 2009), allowing the body to be the predominant influence and generator in designing spaces and buildings. In Marco Frascari's *Monsters of Architecture*, he argues for the body as the creator of space and the unit of architectural production: Just as we think architecture with our bodies, we think our bodies through architecture (Frascari, 1991). Indeed, since Classical times, Vitruvian architecture, and the Renaissance, buildings have been represented as bodies and vice versa. Vitruvius' writing and de Francesco di Giorgio Martini's illustrations are just two examples of the human body used as a parallel projection onto a building plan or elevation. Compared to such abstract symbolism, craftsmen and workers in vernacular buildings used their hands to form building material and their bodies to assemble human-scaled spaces. Anthony Vidler, in his 1990 article "The Building in Pain: The Body and Architecture in Post-Modern Culture," echoes this argument in his opening paragraph:

"The idea of the architectural monument as an embodiment, as incorporating the reference to the human body for proportional and figurative authority, was, we are led to believe, abandoned with the collapse of the classical tradition and the birth of a technologically dependent architecture' (Vidler, 1990).

The concept and the presence of the human body inbuilt space have degenerated over time: from the physical body as a center, to iconic representations, to mathematical body proportions and body measurements, and finally to recent forms of academic abstractions and mechanical systems responding to the body.

THE STATE OF EXISTING BUILDINGS

Urban areas everywhere are experiencing problems related to poor construction, too much or too little regulation, inadequate building reuse of the existing building stock, and high energy and material flow in new construction. Demolition rates are rising, and due to the artificially low costs of landfill disposal and incineration, many demolished materials are not being reused or recycled. In questions of sustainability and spatial (interior) qualities in the built world, new construction is still emphasized over reuse and appropriation of the existing buildings -a policy- and technology-driven approach to the new often results in the neglect of interior bodily qualities in the existing. However, designing more holistically would require us to think about the sustainable transformation of spaces from the inside out -- to take seriously how we as humans interact with and feel in the spaces we inhabit. We need to make physical spaces' multi-sensory and spiritual experiences central to sustainable design -- not just as an afterthought.

Another serious issue with our interior spaces is related to health, as a large percentage (World Health Organization Committee, 1984) of our new and old buildings cause headaches, tiredness, and dizziness among other occupant related health issues. According to the EPA (United States Environmental Protection Agency), the term "sick building syndrome" (SBS) is used to describe situations in which building occupants experience acute health and comfort effects that appear to be linked to time spent in a building (Air and Radiation, Research and Development, United States Environmental Protection Agency, 1991). The WHO report on sick building syndrome concludes that most health issues appear in buildings made in the 1960s or later, and that the existence of air conditioning with cooling capacity affected health more than non-cooled buildings and spaces. Essentially, the study concluded that there are immense health issues associated with

20th-century architecture, particularly in light of the invention of plastic-based materials and mechanical air conditioning systems. While such technical innovations allowed the scope of architecture to go beyond what was previously possible, they also started to affect humans' health negatively.

RELATIONSHIPS BETWEEN BODY, BUILDING AND MACHINE

The term 'host building' as a metaphor for interventions in the built environment refers to the entity that provides hospitality to, or harbours, something new. Prosthetics in architecture aims to insert a new part into the old, thus improving the existing and therefore becoming a better host for the human being. Such an insert of a new part into the fabric of the old may also relate to the idea of the 'cyborg', to allow erasure of fixed boundaries, and a potential fusion of different 'parts' and 'bodies', generating something new.

While a technology-driven architecture and Sci-Fi inspires creative and compelling science research and fiction, there are significant problems with machines' impact on built environments and the human body. As this paper attempts to illustrate, it may be worth rethinking the forms of machine integrations into buildings, however much positive impact they have generated in the recent past. If we would construct buildings and spaces with a stronger focus on comfort and health (allowing buildings to open for fresh air, adjusting to different thermal conditions, introducing better and efficient natural light, etc.) it may reduce our reliance on energy and dumb machinery and decrease issues like the sick building syndrome.

Written in his book *Toward a New Architecture*, Le Corbusier's statement, "The house is a machine for living in," started a body-denying process and a movement to re-conceptualize the relationship between dwelling and architecture. While postmodernism has unsuccessfully critiqued this trend of a modern machine architecture, Juhani Pallasmaa, in particular, has revisited and critiqued the idea of the machine as a metaphor for living in. In his book, *The Eyes of the Skin: Architecture and the Senses*, Pallasmaa discusses the bodily experience of space and the five senses' role in communicating a multi-sense perceptual experience. "Modernist design at large," he says, "has housed the intellect and the eye [and the machine], but it has left the body and the other senses, as well as our memories, imagination and dreams homeless" (Pallasmaa, 2014).

Now, recent perceptual experience studies drawing on philosophy, psychology, neuroscience, and psychiatry have brought our multi-sensory perceptions to the forefront once more. Designers have begun assigning the more significant value to procedures and interventions intended to relate our interior spaces to the body, its senses, and perceptions, and to create new spatial experiences.

OUR SENSE MACHINE

This subtitle is an ironic attempt to describe a largely complex and fascinating system that living things developed to perceive and understand the world. A much better understanding of multi-sensory perception is necessary to create entirely engaging environments, but in reality, the human sensory apparatus is surprisingly little understood. Steve Draper from the Department of Psychology at the University of Glasgow states that Aristotle's definition of the five human senses (vision, hearing, touch, taste, smell) is wrong and that potential scientifically-backed numbers could even be 3, or 9 or 21 or 33. Draper also distinguishes the difference between sensing and perception: "Sensing doesn't cause perception: real perception is all about integrating information across senses, across time, across space if you are moving around partly to perceive better" (Draper, 2002).

In Volume 6 of *Int|AR*, the *Journal of Interventions and Adaptive Reuse*, the editors compiled a series of articles on what's known as the "experience economy." While the term originated in an economic context, it can be defined in architecture as the creation of meaningful experiences in which spatial perception takes a central role. In the urban and architectural context, the experience economy has focused in particular on

unprecedented spatial encounters within the built environment. From innovative tourism to hospitality and retail, the creation of such experience often originates from inimitable settings.

In the editorial of Volume 06, the editors describe the great importance of experience in a future economy and its relevance in the field of interior architecture and its relation to spatial context. While unique sensory experiences are difficult to define and explain, recent neuroscientific research, such as studies in Centre for the Study of Perceptual Experience in the University of Glasgow, tells us that “the brain integrates inputs from many more sources to create unified, multisensory experiences” (Rethinking the Senses, <https://www.thesenses.ac.uk>, 2017).

Rene Descartes' 1692 illustration 'L'homme' exemplifies the coordination of our senses, our spatial perception and the pineal gland. Descartes' understanding of human perception is based on the idea of the human as a machine and its ability to generate sensation, imagination, memory and bodily movements.

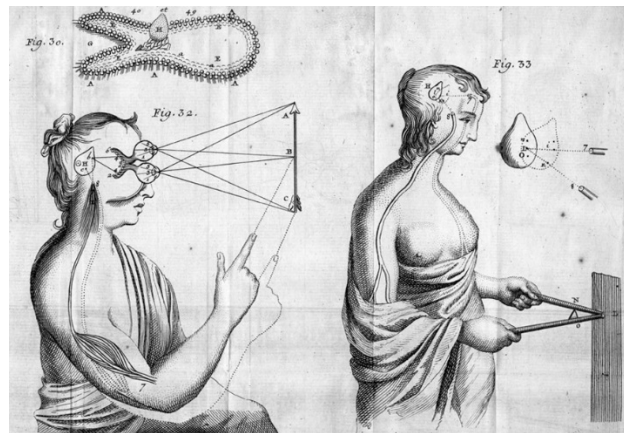


Figure 1. L'homme de Descartes, René

Source: https://commons.wikimedia.org/wiki/File:Descartes_body_physics_1.jpg

Bringing multiple senses back into architectural design aims to capture a "sense of place" where a building or space not only speaks to an occupant but communicates as a whole through a two-way dialogue.

“The external senses have a double province; to make us feel and to make us perceive. They furnish us with a variety of sensations, some pleasant, others painful, and others indifferent; at the same time, they give us a conception and an invincible belief of the existence of external objects. [...] The feeling which goes along with the perception, we call sensation. The perception and its corresponding sensation are produced at the same time. In our experience we never find them disjoined. Hence we are led to consider them as one thing, to give them one name, and to confound their different attributes. It becomes very difficult to separate them in thought, to attend to each by itself, and to attribute nothing to it which belongs to the other” (Reid, 2011).

Thomas Reid's 18th-century *Essays on the Intellectual Powers of Man*, one of the most important contributions to the common sense philosophy, highlights the interconnections of perception, multiple sensations, and the creation of experience. The research and design projects in the next chapter examine such experiences and the meaning of a “sense of place” for occupants through the use of prosthetic insertions. In the center of all projects is the effort to bring back multi-sensory experiences into sensory-deprived architectural environments.

TACTICS AND TECHNIQUES FOR THE PROSTHETIC DEVICE

In order to build creative, body-centered, strategic, socioeconomic, and environmentally engaged conceptual frameworks for interior architecture, it is necessary to understand the complex layers in mindsets, strategies,

and actions for rebuilding, modifying, and altering. Such strategies for “humanizing” existing buildings can be found in the functions of prosthetic and cyborg devices. In Georges Teyssot’s *The Mutant Body of Architecture*, Teyssot describes the evolution of the uses of medical devices—from extracting operations, to additive and inserting functions, to substitution (Diller & Scofidio, 2001). To add to Teyssot’s list of medical functions for prosthetics, we can include prosthetic devices of the 18th and 19th centuries such as “normalizing” and “restoring” aspects of the human body (in the classical prosthesis), as well as form-correcting of the 20th century (in plastic surgery). Similar to the abilities of traditional prosthetic devices, the editors of *The Cyborg Handbook* outlined in their book four different ability classes for cyborgs that include the restorative, normalizing, reconfiguring, and enhancing (Gray, Figueroa-Sarriera & Mentor, 2009) faculties. To expand on the human-machine interaction and visualize the cyborg in a larger scheme of body interventions, an implanted prosthetic/technological device into any spatial body could arguably translate an inanimate environment into an (inter)active one. In addition to enhancing, normalizing, and restoring, prosthetics and cyborgs are also external forms of representation and beautification, communication and mediation. In the following chapters describing various verbal tactics and strategies, students in the advanced studio course titled “Prosthetics and Interiority” in the Department of Interior Architecture (INTAR) at the Rhode Island School of Design have researched and explored various forms of such interventions. The research-based design studio was conceptualized and constructed along with this article and taught by the author in the fall semester of 2017. The 11 students have researched tactical options, found “host sites” to test their interventions and developed their prosthetics for spaces and buildings to replace (something lost) or rehabilitate (to a former state) or, as in many contemporary devices, enhanced (giving additional power) an environment.

>TO REHABILITATE AND RESTORE:

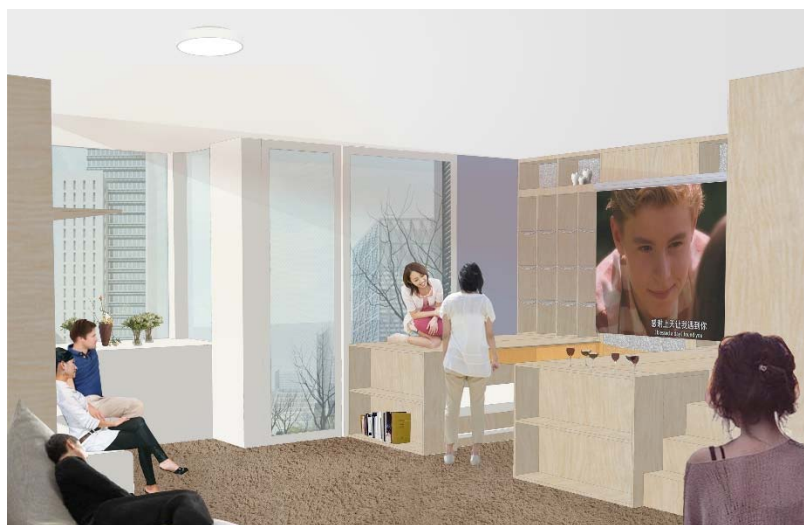


Figure 2. Rao, Yisi, 2017, MArch, 2019, RISD)

Prosthetic and cyborg technologies’ restorative power lies in their ability to replace lost functions, organs, or limbs and retain structural integrity and appearance while acknowledging what they are fixing. In the context of adaptive reuse, it would refer to changing a building for a continuing or new use through various interventions. In the context of Prosthetics and Interiority, to rehabilitate or to restore could mean a return of a function, a spatial quality, or a social experience to a former condition. Simple examples of this include functional abilities, technical infrastructure, structural integrity, and a sense of belonging or other memories that are related to cultural experiences. An effective example of such a functional and cultural restoration is embodied in the studio work of a Yisi Rao (March 2019, RISD), who investigated the increasing population and restricted living spaces for the Chinese middle class in large cities, specifically Shanghai. She asks for new approaches in living habitats that could normalize living conditions in rural areas. Due in large part to the

new two-child policy in China and the addition of grandparents to the home to support childcare, the small apartments in Chinese cities often house too many people per square foot. Rao argues that China's monotonous, scale-, movement- and sensory deprived existing apartment stock requires a rethinking and a normalization to traditional living in the rural areas. The author investigates possibilities to normalize traditional conditions and enhance the quality of living by moving from mono use of spaces (2D) to more spatial approaches as the inclusion of the vertical space and walls (3D) and the incorporation and superimposition of multiple task time segments (such as the different schedules of the member groups) during a day (4D). Essentially, the author explores how a built space might adapt and reconnect to social and cultural experiences as a family grows.

>TO NORMALIZE:

Normalizing usually refers to a standard relating to the usual, typical, or expected, or something taken for granted or 'natural' in everyday life (Wikipedia). We are able to account normalization when comparing variables to each other and recognizing the pattern of the norm. Prosthetics in buildings and architectural spaces can be normalizing in that they restore a feature, an experience, a sensation, or a function of previous normality through time. Time in this context can be set in the past, present, or future relating to and evaluating appearance, function, thinking, meaning, value, etc...)-In the studio project "Interactive skin" Juhyun Shin (MDes in Interior Studies, 2018) aims to normalize and restore the history and meaning of the Center for Computation & Visualization, built by Philip Johnson on Brown University's campus in 1961. The building was originally conceived and constructed to house the most advanced computing system on the east coast at the time but lost significance with the advance of new computers in the 80's.

Juhyun Shin normalized and enhanced Philip Johnson's original design of a Computing Laboratory as a *porticus*, which emphasized the importance of the building as a technical center, by bring computational processing back into the physical built environment and allowing and enhancing relationships and connections between the various spaces in the building and its users. The "Interactive Skin" introduced flexibility of use and a new flow of information between the new network of super computers, its spaces, and its inhabitants via its active surfaces to enhance activity. Interactive Skin is related to the field of Intelligent Environments (IE) with the ability to create interactive spaces and objects that bring computation into the physical world and enhance occupants' experiences.



Figure 3. Shin, Juhyun, 2017, MDes in Interior Studies, 2018

>TO RECONFIGURE AND TRANSFORM

Prosthetics can also create new typologies, forms, or experiences that are very similar to previous ones, but markedly different in some way -- in other words, prosthetics can function to reconfigure or rearrange, parts or elements into something new.

Both reconfiguration and transformation denote a change in appearance, form, or structure. Such a change embraces a building, space, or object in its entirety, and the clear boundary between one to the other is dissolved. In such a transformation, the existing building, space, or object is newly interpreted with entirely different outcomes, such as a thorough change in appearance. This can be an act, a process, or an instance that occurs in time. For a transformation to happen, a subject (transformer) needs to apply the change resulting in a changed condition or outcome. Xin Ma's (MA in Adaptive Reuse, 2018) project proposal, for example, both reconfigures and transforms a large space in a brutalist architecture building with few materials to generate a maximum spatial effect on its learning inhabitants. Through dimming and illumination, she transforms the spatial experience of the hall, while at the same time aiming to improve social interactions, learning environments, and creative performance.

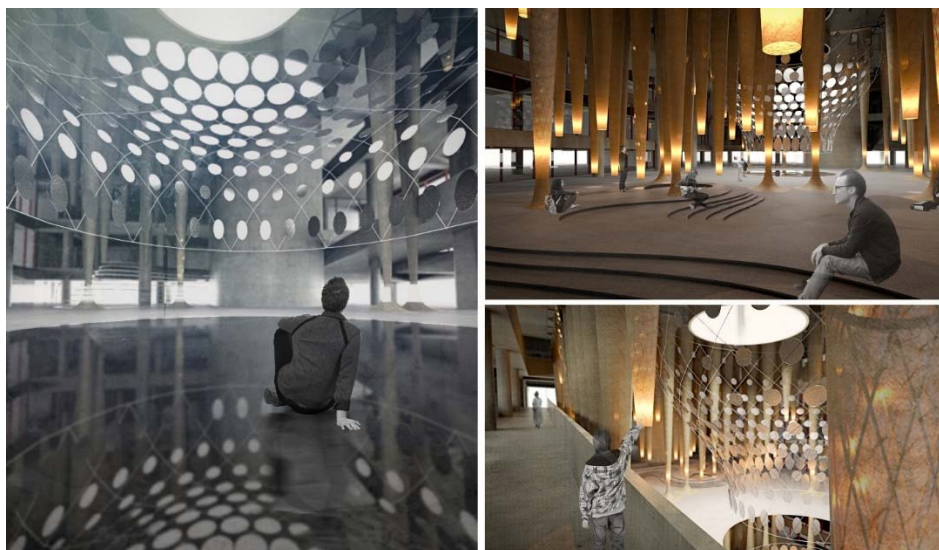


Figure 4. Ma, Xin, 2017, MA in Adaptive Reuse, 2018

>TO REPRESENT, COMMUNICATE AND MEDIATE:

A building's ability to communicate is usually limited to a singular message (power, money, "Come in," "Not you," etc.). Contemporary forms of communication elements in architecture are not so much based on a particular choice of material but on digital factors. Computerization has affected the built body as well as the human body through representation, communication, and mediation. Representation in architecture and design often only depicts a likeness or reproduction of a style or theme. The communication of people's emotions -- the active environment and its dangers -- are communicated through technology. Representation is often intended by the building's owner, designer, or inhabitant as a means to relate information, usually in the same one-way transfer; but today, multimodal communication is necessary for advanced communication and mediation.

Niyati Singh's (MA in Adaptive Reuse, 2018) project 'Layers,' is a responsive system that aims to create a physically and mentally healthy environment through interaction and communication. Through a system of three layers, information is shared and communicated between sensors, mechanical systems, and people. Layer One, the outermost layer, can sense exterior environmental conditions and communicates them with Layer Two, an interactive layer between the inhabitants and the mechanical systems that generate fresh

purified air. This layer both engages inhabitants and helps bring natural and machine-activated movement into building systems. Layer Three acts as the communication layer, and it broadcasts events of the space and translates activities and information within the space.

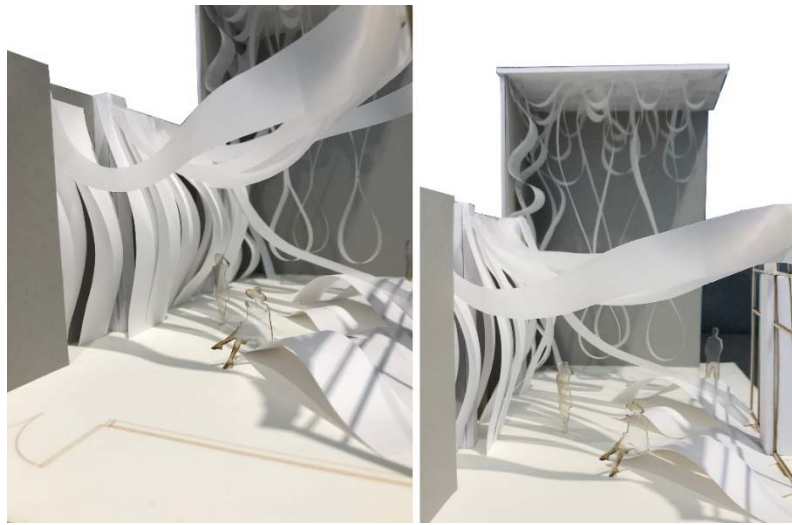


Figure 5. Singh, Niyati, 2017, MA in Adaptive Reuse, 2018

>TO RESPOND

Responsive spaces are interactive elements in architecture such as walls, ceilings, objects, and systems that can quickly react to users or the environment. Responsive spaces and buildings react to dynamic pattern changes with a preset reaction, such as the trigger of movement, light, sound, or any other visual or physical change. An effective, responsive system will measure some current environmental- or body- based user conditions via sensors, and respond with some form of change driven by actuators in its shape, visual appearance, the degree of openness, etc. Responsive spaces in relation to interiority could include elements of the space that adapt the space's condition or experience or change based on user needs immediately or over time. In comparison to automated environments, responsive environments adapt to a user or environment without a direct request. An example is Yoo Jin Kim's (MA in Adaptive Reuse, 2018) project, an integrated and responsive system that can sense the occupancy load of two adjacent spaces via integrated noise and movement sensors. Due to this innovative technology, the system can respond to changing occupancy by gradually increasing the openings in a wall-system until it allows passage between the two spaces.



Figure 6. Kim, Yoo Jin, 2017, MA in Adaptive Reuse, 2018

>TO ENHANCE

Most military and industrial prosthetics research aims to enhance or surpass the abilities, of the human body. Such prosthetic and cyborg fantasy aims for enhanced versions of speed, strength, resiliency, efficiency, etc. But enhancement can also come in the form of a further improvement of human experience, comfort, spatial quality, function, or appearance. Furthermore, built space enhancement can exist through the reduction of energy and material resources. Thus, enhancing a physical space can heighten its experience, make it more attractive, or improve human health conditions. Just as performance-enhancing drug technologies go beyond treating illness and disability in order to enhance human attributes and abilities, spatial qualities can go beyond repair and normalization and create new, innovative qualities. An example of enhancement is Ramkumar Rajendran's (MA in Adaptive Reuse, 2018) research and design project which seeks to create a prosthetic device that enhances the occupant's health and physical comfort in enclosed spaces. Ram proposes the device achieve this by enriching the oxygen content and illumination while reducing the carbon dioxide emissions through the use of microalgae.

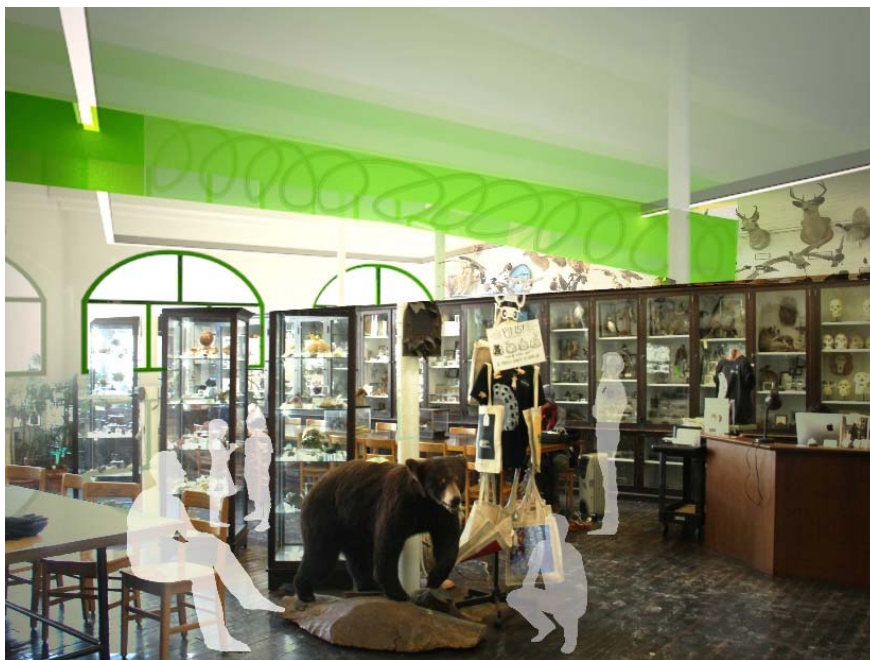


Figure 7. Rajendran, Ramkumar, 2017, MA in Adaptive Reuse, 2018

>TO ENGAGE

To engage architecture as a person is to occupy its spaces, to have architecture engage its inhabitants, it needs to be able to attract the user, to involve them, to have them participate in everyday actions that are encouraged by design. Paria Heidari (MA in Adaptive Reuse, 2018) focused her project on redesigning the entrance lobby of RISD's graduate building with this question of engagement and titled her studio project "PLAY" Outside the Box. Paria used "play" as an opportunity to break the monotonous existing environment and its practical purpose and engage the inhabitants of the building in activity for enjoyment and recreation. Her design aim was to think outside the ordinary routine of life and have people participate, interact and communicate in new experiences.

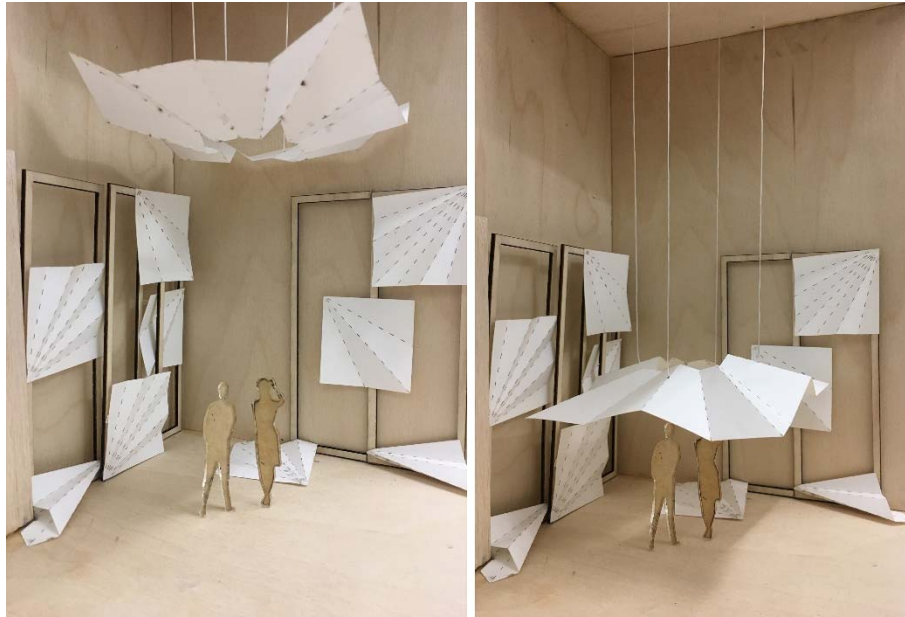


Figure 8. Heidari, Paria, 2017, MA in Adaptive Reuse, 2018

CONCLUSION

Imprisoned by four walls
 to the North, the crystal of non- knowledge
 a landscape to be invented
 to the South, reflective memory
 to the East, the mirror
 to the West, stone and the song of silence)
 I wrote messages but received no reply.

Octavio Paz, Envoi

Octavio Paz's poem featured in Henri Lefebvre's *The Production of Space* exemplifies a spatial and self-reflective way of thinking and the conceptual depth of space and, arguably, a reference to the poor and limited quality of present architectural environments. Prosthetic devices such as illustrated by the students in the studio course and integrated with our existing spatial environments aim to enhance our sensory perception and experiences. Based on the normative abilities of human prosthetics and concepts of cyborgs, spatial devices are aimed in addition to enhance communication, comfort, functionality, energy use, or appearance. "Prosthetics and Interiority" focuses on the empowerment of occupants both physically and mentally, and calls back to the very basics of humanity and habitation. To produce interiority through prosthetic devices is to stimulate, engage, and interchange multi-sensory perceptions by an array of acoustic, haptic, olfactory, thermal, tactile, mechanoreceptive, and visual entities. It is here that with the assistance of prosthetics we are able to unite material qualities, environmental conditions, objects, and memories and therefore engages the immediate space and humans' sensorial stimulants to form a unique experience.

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MODELLING INTERIORITY: ENCOUNTERING THE MODEL AS A SITE OF SPECULATION & IMMINENCE

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ABSTRACT

Models are speculative productions; simplifying, coding and abstracting complex thoughts and processes through mechanisms of representation and metaphor. They enable a “letting of what is not yet present arrive into presencing” (Heidegger, 1977, p.10). As an exploration of the scale-model as a tool of mediated interiority, the paper will seek to explore the interior model as a transformative articulation of event, situation and idea; providing a rich ground with which to investigate the phenomenological, spatial and theoretical experiences of interiority.

The research views the model as action, not artefact; transformative articulations of an event, situation and idea. They provide a rich ground with which to investigate, map, articulate and trace the reflexive associations formed in their iterative development. The work attempts to extend the power of the model as an interface for interior discourse “intrinsically bound between a mental product – a dematerialized or conceptual form – and a sensory experience’ (Vervoort, 2011, p.80). The value of interiority within the research is as a signifier of the conditions of the cognitive process and as a focus for the theoretical and contextual site of investigation. It assumes a ‘blurring of the inner, mental activities of occupants and the material and spatial environments they occupy’ Sparke (2008, p.73), a device to locate the research so that models ‘become co-producers of reality’ (Eliasson, 2007).

It is through these studies and effective modes of production that the interiority of the model as a distinct typology, and mechanism of imminence, can be encountered.

Keywords: interiority, model, speculative tool, process

INTRODUCTION: PROPOSITIONAL CONTEXT

The history of architecture and the spaces within is also a history of the re-occupation and re-programming of our spatial environment; a re-configuration of interior situations, contexts and ideas. The speculative, explorative and iterative processes undertaken in the creation (and questioning) of interior territories are explored here through an investigation of the scale-model as a gestural act of creativity and as a fundamental expression of an inner idea in (and through) time. The model of interiority here “concretizes the ontic condition of the project. It exists as desire – in a kind of atopia, if not utopia” (Hubert, 1981, p. 17).

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The model in this context is a mechanism of interiorised abstraction, a maquette or conduit for the flow of situations and imminent potentialities "[it] is intrinsically bound between a mental product – a dematerialized or conceptual form – and a sensory experience' (Vervoort, 2011, p. 80). The models and their intrinsic praxis are not fetishised, post-factum outcomes of production but are tools for the exploration of spatial and transformative ideas. The model is no longer conceived as a mode of representation but viewed – in Deleuzian terms - as an abstraction of an idea "abstract, singular and creative, here and now, real yet non-concrete, actual yet non-effectuated" (Deleuze, 2008, p. 511). The interiority of the model exists as an abstraction which does not exist but becomes, which is never fully emerged but always in emergence; it is an approach to reading the model as a territory of imminence – a virtual construction of a multiplicity of potentials and situations. The space of the model is liminal and temporal; it is in a state of flux between the material and cognitive now and the phenomenological then.

A. INTRODUCTION: Prepositional Context

The model as a site of speculative and interiority is driven by Gerard de Zeeuw's prepositional distinction between models *of* and models *for* design (Glanville, 2005). Models of design are after-the-fact representations of a final design idea; the model operates as a culmination of design practices and becomes a small-scale representation of the actual. They exist as conclusive descriptions, at scale. The focus for this research within the design studio lies in models for design which, as Glanville proposes, 'facilitate action'; they encourage testing, dialogue and reflection through a series of design iterations. It is this valuable condition, of the critical and reflective, which both defines and situates the model's 'being'.

It is within this pre-propositional exploration that the very nature of a practice-based research approach can be drawn out through the additional distinction between [design-]research *of* and [design-]research *for*. Research *of*, Glanville suggests, is a research approach that operates at distance from the subject, it suggests a change but does not facilitate it without a secondary action (technology). Research *for*, however, suggests purpose and action through research, it is, as Christopher Frayling suggests, "where the thinking is embodied in the artefact" (Frayling, 1993).

DYNAMIC AND SCALAR INTERIORITY

Interiority is an abstract and transformative concept, operating as a dual condition between the interiority of thought and the interiority of space as experienced and envisioned through the modelling process, "we, in fact, inhabit idea, mind, self and space as a seamless passage of movement from interior to interiority. We are placed in the inside of the outside (of us)" (Perolini, 2012). McCarthy (2005) contends that interiority is not an absolute condition that depends on a restrictive architectural definition but is instead fluid and promiscuous. It is 'intimate with and contaminates every interior and every inside. It adheres to sensual possibilities (acoustic, haptic, olfactory, tactile, visual); conditions that are intimate with, but that defy, the specificity of particular interiors'.

The value of interiority within the paper is as a signifier of the conditions of the cognitive process and as a focus for the theoretical and contextual site of investigation. It assumes a 'blurring of the inner, mental activities of occupants and the material and spatial environments they occupy' Sparke (2008, p. 73), a device to locate the research so that models 'become co-producers of reality'. (Eliasson, 2007)

This encounter with an interiority which sits between the cognitive idea and design action develops a dynamic interiority which exists in a state of constant dialogue between thought and scalar object. The valuable condition of 'smallness' within the model here is an important element in the exploration of the model *for* design. The model inhabits the reflective interiority of our consideration, as Gaston Bachelard writes in *The Poetics of Space* (1958), "Thus, the minuscule, a narrow gate, opens up an entire world. The details of a thing can be the sign of a new world which, like all worlds, contains the attributes of greatness. Miniature is one of the refuges of greatness" (Bachelard, 1994, p. 155). It is this condition which allows the

designer to manipulate and transform with speed and intuition, interiorising the potential spatial, functional and material composition. The miniature, as Bachelard reminds us "is an exercise that has metaphysical freshness; it allows us to be world conscious at slight risk" (Bachelard, 1994, p. 162).

In *The Savage Mind* (1966) Claude Levi-Strauss, in his exploration of the miniature (within painting and sculpture), further suggests that "being smaller, the object as a whole seems less formidable. By being quantitatively diminished, it seems to us qualitatively simplified...this qualitative transposition extends and diversifies our power over a homologue of the thing, and by means of it the latter can be grasped, assessed and apprehended at a glance" (1966, p. 23). This reduction in size, this ability to control, manipulate and hold, does not imply any loss of significance, the model continually acts as a surface for thinking and understanding. As Lawson (2004, p. 447) further contends, it is this scalar reduction which allows the model to be considered and investigated within the frame of reference of the designer, "the whole... remains within the foveal area of the retina". Lawson (2004) gives a clue as to the importance of this quality of visual and mental focus in a statement by Herman Hertzberger "It's a sort of imperative for me, you know. I insist upon having my concentration on quite a small area, like a chess player. I could not imagine playing chess in an open place with big chequers" (p. 448).

Beyond this dialectical scalar relationship, Levi-Strauss further suggests that one other quality of the miniature is that it is constructed by hand, and as such, he suggests, is not just a projection or passive replication but constitutes a real engagement with the model. To the child, it is these material and haptic qualities of the miniature which initiates imaginative play – experiences which live with the designer through their life. From the Froebel blocks of a young Frank Lloyd Wright to the Meccano sets for a young Richard Rodgers, the miniature is an important catalyst for the imagination. In Susan Stewart's *On Longing: Narratives of the miniature*, the qualities of the miniature and the imagination as experiential situation, is brought to the fore; "miniaturization does not want to call attention to itself or to its author; rather, it continually refers to the physical world. It resists the interiority of reflexive language in order to interiorize an outside; it is the closest thing we have to a three-dimensional language, for it continually points outside itself, creating a shell-like, or enclosed exteriority" (Stewart, 1993, p. 45)

INTERIORITY AS A MATERIAL-SEMIOTIC NETWORK

The exploration of a modelled interiority is sited here within a methodological 'material-semiotic' network; an opportunity to view the model as part of a temporal flow of potentials, ideas, reflections and memories in a constant flux of making and re-making. This network allows us, as Yaneva (2009, p. 24) suggests, to 'hear the voices' of the design process and to uncover the web of traces, connections and relationships in the formation of interior space. Actor-network theory, as a collection of material-semiotic tools (principally formed by Bruno Latour, John Law and Michael Callon), operates less as a theory than as an approach to the tracing of associations between heterogeneous elements. It is used to define concepts of assemblage, which for Latour is 'a movement, a displacement, a transformation, a translation, an enactment. It is an association between entities which are in no way recognisable... except during the brief moment when they are reshuffled together" (Latour, 2005, pp. 64-65). ANT brings mediation and materiality to the fore. In Latour's actor-networks, actors need not be human, nor "animate" in the sense we're accustomed to, considering the actor to be "not the source of an action but the moving target of a vast array of entities swarming toward it" (2005, p. 46). This tracing of the associations ultimately requires an action within the network, "action is not undertaken under the full control of consciousness; action should be felt as a node, a knot, and a conglomerate of many surprising sets of agencies that have to be disentangled" (2005, p. 44).

Within the context of Actor-Network theory, the scale-model and designer(s) are developed as actors within a flow of (networked) ideas in which text, memory, material, space and interior become agents in the transform of space. It is through the re-reading and re-assemblage of these agents that the model can act

as “an analytic and a poetic tool which prompts simultaneously semantic and syntactic interpretations” (Robertson, 1981, p. 110).

MODEL AS PRAXIS

To explore these interactions and traces within the model of interiority, two approaches were taken to research the potential of the model to capture the intangible qualities of the interior. The first attempts to explore the connections between space, sound and resonant experience(s), an opportunity to uncover the potential of the model to express both idea and experience. The second encounter explores the potential of the model to bring spatial theory into a physical presence, exploring Foucault's knowledge/power relationships through the model, to “present an understandable surface (framework) from which to project and define invisible things” (Smith, 2004, p. 65). Each of the models presented attempts to extend the power of the model as an interface for discourse; connecting ideas of interiority, through production, towards effective discourse and interaction.

It is through these studies and effective modes of production that the interiority of the model as a distinct typology, and mechanism of imminence, can be encountered.

A. Resonance Mapping: MODEL

“Sound is a spatial event, a material phenomenon and an auditive experience... (it) embraces and transcends the spaces in which it occurs, opening up a consummate context” (Oase #78, 2009).

One of the great paradoxes of the model is that whilst conceived and formed through the eye, hand and mind it can quickly take on the qualities of a ‘look-but-don't-touch’ artefact. It moves from being a haptic and sensory object whose very existence relies on its ability to be physically manipulated through mediated engagement, to that of a rarefied and ultimately mute object. The intention of this initial investigation was to create a model which engendered interaction and dialogue – to create a responsive model which not only mapped spatial and auditory resonances but also allowed others to engage with the model and the interiority of its inception. The research did not attempt to manipulate or re-conceive the spatial or auditory dynamic of these spatial resonances, but set-out to map and represent the existing conditions for future investigation.

The focus for this studio project was to explore the relationship between space, sound and the body in an attempt to uncover and reveal our auditory experience(s) of interiority. The model was an initial research tool for an undergraduate studio project, attempting to present the latent potential of the model to not only capture ideas and experiences but also to act as the catalyst for discourse. To capture these sonic experiences and to site the project in a spatial enclosure, a route was planned through a market hall in Northern England - an interior whose spatial presence owes much to the vibrant vocal sounds and reverberations encountered within and beyond the market. A digital audio recording was made during the walk along this planned route, carefully plotting the time and audio signatures.

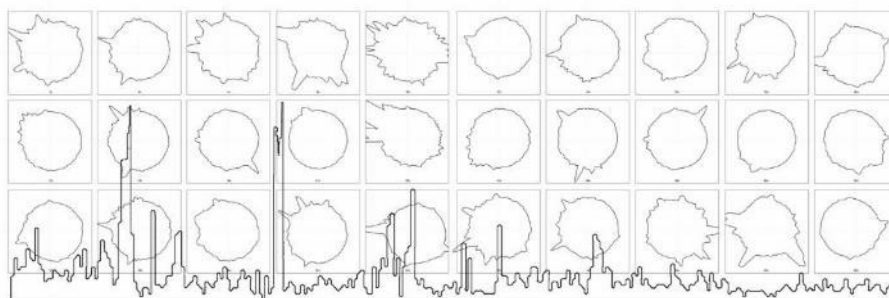


Figure 1. Radial Audio Spectra

In the studio, this audio recording was spliced into a series of time frames and wrapped into a radial audio spectrum (Figure 1). Peaks denoted an increase in sound intensity (dB), while their position on the radial curve denoted the frequency (Hz) of each aspect of the total sound within the space. These audio-visual spectra enable the sound experience at a given moment in time to be given form, acting as abstract models of the auditory experience of space through time.

Subsequent to this spectral modelling, a series of transparent cut forms were produced and located along a scaled timeline of the route through the market hall. The variations in pitch and intensity of sound created their own physical presence (Figure 2), creating a rhythmic expression of the auditory sources. The transparency enabled the audio spectra to be read as a whole and as a single sound experience, but ultimately the form remained mute and detached from the auditory experience which informed its creation.

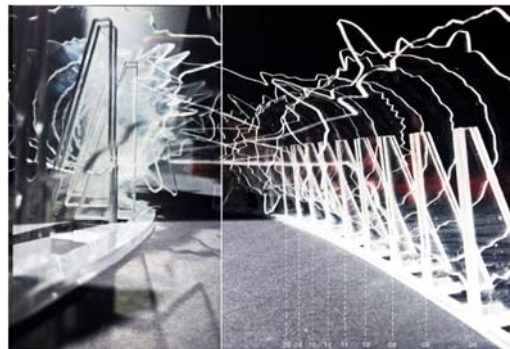


Figure 2. Mapping of Radial Audio Spectra

With the key compositional element in place, a series of investigations were undertaken to enable the model to become an interactive and responsive device. Each of the audio spectra represented a time-spliced audio recording, a moment in the sound experience which could be re-enacted and revealed through touch and engagement. Through the addition of an Arduino board and clip connectors, it became possible to link each of the spectra back to the original time-spliced sound (Figure 3). Through this hybrid condition of physical and digital modelling, the mapping of the original sound experience could be re-enacted and explored. A single touch would playback a two-second sequence of sound, but these spectra could also be 'played' by touching groups and sections of the model.

This interactive condition of this experience model became a valuable tool in expressing the potential of the model to simultaneously capture (auditory) spatial experiences whilst at the same time suggesting new ways of encountering and experiencing the space - "the model accommodates and practically substantiates idiosyncratic thought through opaque form" (Vervoort, 2011, p. 81). With these tentative explorations in place, it was then possible to engage a student group with some of the emerging ideas formed through these experiments.

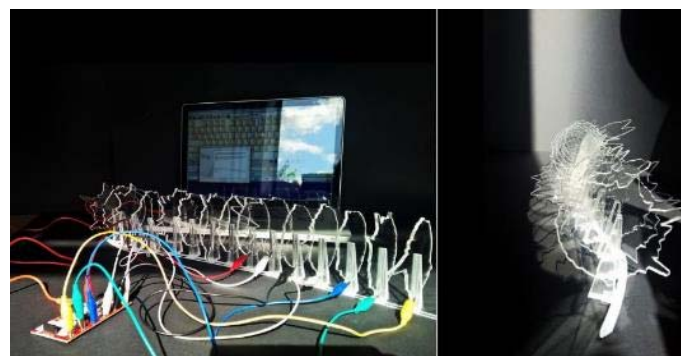


Figure 3. Connected Auditory Responses

B. Discourse Model of Interiority: MODEL

This aim of the second model in the series was to explore the auto-biographical interiority of making through the creation of a model which utilises spatial theory (power/knowledge) as its generating idea. Engaging spatial theory as the catalyst for design responses throws the relationship between theory and practice into the light. There is often a perceived split between the consideration of objects and artefacts *for* design and design theory which is considered to be *about* design. A view which sees the processes and models *for* design as non-discursive entities around which float the words of discourse (Hirst, 1993).

Michel Foucault (1926-1984) challenges this distinction in *The Archaeology of Knowledge* (1969), viewing practice *for* design and theory *about* design as both fundamentally engaged with discourse; enacting a '*discursive formation*'. Foucault describes these discursive formations as 'a work in progress' temporarily fixed 'intersections of things and words', a kind of 'web of language' that 'sits chained to things' (Fontana-Giusti, 2013). Within the context of the paper these discursive formations act as a framework which is enacted through the context of the theoretical reading and resonant making processes; a context within which the interiority of the discursive formative and can be exposed.

This relationship is further expanded in the 1972 conversation between Michel Foucault and Gilles Deleuze in *Language, Counter-Memory, Practice: selected essays and interviews* by Michel Foucault (1977).

Foucault: theory does not express, translate, or serve to apply practice: it is practice...

Deleuze: Precisely. A theory is exactly like a box of tools. It has nothing to do with the signifier. It must be useful. It must function. And not for itself... it was Proust...who said it so clearly: treat my book as a pair of glasses directed to the outside; if they don't suit you, find another pair. A theory does not totalise; it is an instrument for multiplication and it also multiplies itself.

With the potential between theoretical reflection and design action set within the context of the discursive formation, the following section describes the approach to documenting the model through praxis and an initial introduction to the formulation of the model utilising a relational spatial theory.

Diarised Protocol Analysis

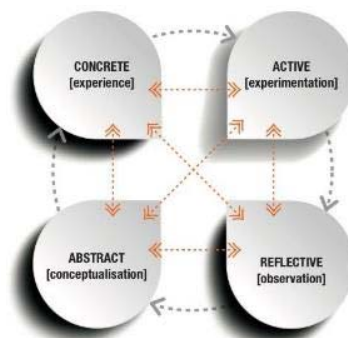


Figure 4. Networked Tracing of Associations after Kolb (1984)

To trace the inner thinking and contextual associations in the praxis of the model are mapped and diarised through the lens of David Kolb's cognitive cycle of experiential learning processes (Kolb, 1984). The cycle is conceived as four stages of experiential learning, Concrete Experience, Reflective Observation, Abstract Conceptualization and Active Experimentation; presented as a cyclical model of engagement. This model of learning utilised here supports the tracing of association and ideas not through a cyclical process but through a network of sequential ideas, thoughts, provocations and constructions. Kolb's model operates as

a connected series of events and intuitions which are documented through the process of theoretical ideation, material manipulation and reflexive response (Figure 04).

The capturing of thoughts, influences, ideas and verbal statements (Figure 07) are captured within the diarised protocol analysis under four headings (Kolb, 1987);

Abstract (conceptualisation): Theoretical drivers and influencing passages of text, video and audio are documented here - they are retrospectively documented in full but a simple notation is recorded at the time to ensure their relevance within the modelling process.

Active (experimentation): Documents the material, form and spatial investigations which occur through time as pre-cursors to the model construction. Text in orange denotes a vocal statement recorded during the modelling study to further elicit the tacit manipulation of two-dimensional materials into three-dimensional form.

Concrete (experience): Captures the making of the model, the qualities of the spatial interfaces and the developing relationships between elements, spatial forms, implicit language and significance. The interiority is exposed through the multiplicity of readings and retrospective notation.

Reflection (observation): Is a documented account of the dynamic process of reflection which occurs throughout the modelling period. The commentaries are retrospectively documented with voice recordings to supplement and highlight this dynamic process.

MODEL [power/space]

Utilising the research framework and protocol analysis to trace the interiority of the model as a set of reflective discourses, an exploration of Foucault's power/knowledge structures within the Archaeology of Knowledge (1980) was chosen to entwine practice and theory through the process of modelled ideas (as discourse). For Foucault, power is embedded into our everyday existence, it "reaches into the very grain of individuals, touches their bodies and inserts itself into their actions and attitudes, their discourses, learning processes and everyday life." (Foucault, 1980, p. 39). Power though is not seen as a solely repressive form, and knowledge becomes an intrinsic resource "it traverses and produces things, it induces pleasure, forms knowledge, produces discourse. It needs to be considered as a productive network which runs through the whole social body" (Foucault, 1980, p. 120). In spatial contexts, this power/knowledge relation can be examined through approaches of surveillance and panoptism – the abilities of spatial configurations to exercise power as resource and control.

In order to create the model as a discursive-formation, it was felt important to surround myself with the literary and visual cues of the theoretical works. Book excerpts, videos and extended papers were as much a part of the workspace as the tools for constructing the model. There was no separation of practice (making) and theory (reading), so that reading led to making, making to reading – a modelling discourse of actions. Initial forms began to trace the ideas of power as un-closed cellular elements, their materiality expressing a variation in transparencies of power relations and forms. The qualities of surveillance were initially expressed in the built form, but rejected – surveillance is omnipresent and without a fixed spatial form. It was at this stage that the location and site-specific qualities of the final model were explored and developed as a means to represent concepts of spatial surveillance. The model quickly moved from a traditional position on the horizontal surface to the position of many modern-day motion detectors, CCTV cameras and surveillance devices, namely the corner of the room. This repositioning of the model, from a position of being viewed to a position of viewing, generated a series of angular elements which dealt not only with the construction of interior spaces but reflected their position within an interior angle (Fig. 5-6).

The capturing of design thoughts, processes and reflections as praxis becomes then a discursive activity; each iterative exploration operates as an extension to the discursive-formation. The mapping of these relationships echoes Latour's (2005) tracing of associations, in which the "action is not undertaken under the full control of consciousness; the action should be felt as a node, a knot, and a conglomerate of many surprising sets of agencies that have to be disentangled" (p. 44).



Figure 5. Discourse Model



Figure 6. Discourse Model [detail]

PRAXIS MODEL

ABSTRACT [conceptualisation]

Power 'reaches into the very grain of individuals, touches their bodies and inserts itself into their actions and attitudes, their discourses, learning processes and everyday life.' (Foucault, 1980, p.39).

"It traverses and produces things, it induces pleasure, forms knowledge, produces discourse. It needs to be considered as a productive network which runs through the whole social body" (Foucault, 1980, p.120)

"Description here is not a reproduction, but more a deciphering: the meticulous undertaking from untangling" (Elden, 2007, p.167)

ACTIVE [experimentation]

Initial crafting of the material explored the potential of the plastic to deform and fold, creating enclosure and interior qualities - the forms elicit a desire to create vertical openings within their folded form. This material quality develops a series of small scale experiments with enclosure and visibility.

But *there is a collective and social connection here* - a relationship between the actions of power - the social body which can be explored through the multiple qualities of the enclosures.

The folding resistance of the material provides a valuable condition from which to mount the enclosures (a secondary support element will be required to hold the elements at first).

CONCRETE [experience]

The 3-dimensional internal plane of the model develops an immediate recognition that the model will need to be constructed not from the traditional horizontal surface but from a reversed plane of construction - *so this will need to be formed from the interior angle, to work down and into the space.*

The opportunity to craft the model from this new position develops its own methods and considerations. The collective enclosures of individual power will need to create their own (social) framework, to support each other and to develop the content of the model.

The internal angles of the room are echoed through an extending substructure, *creating a resonant form which anchors the model* to its context. They *choreograph* the action of the model.

Folding creates a useful device to mould the model into the interior. The reversed plane and internal angles create a really difficult working position, but the central elements are able to tie the social elements together.

The variation in material thickness presents a series of imperfections and distortions in the form and language - but this is textural and developing a more varied tension in the

REFLECTIVE [observation]

There's a site specific opportunity for the model, an opportunity for it to 'watch' or observe the interior - *thinking here of motion detectors, a site of surveillance; a context.*

The materiality expresses and suggests *a variation in transparencies of power the relations and forms.*

In spatial contexts, this power/knowledge relation can be examined through approaches of surveillance and panoptism - the abilities of spatial configurations to exercise power as resource and control.

The *choreography* of the model signals a valuable metaphor for the action of the model, an opportunity exists to more fully explore this condition.

Figure 7. Diarised Protocol Analysis

CONCLUSION

The models of interiority presented here view the model as *an action*, not as an artefact. They explore notions of interiority through the inner cognitive processes of reflexive design and extend to the interiority of their future context. They serve to draw out new potentials to modelling and to situate experience in, and through, the model. Interiority then becomes a generative and transformative agent in the ideation of space; allowing multiple traces and associations to develop a "continuing reciprocity between thought and object" (Graves, 1981, p.38). This continuous reciprocity, this discourse between self, space and experience shares Lajer-Burchard & Söntgen's assertion that we should strive for "a performative understanding of interior as an agent rather than a container, a space that does rather than simply is" (2016, p.7).

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PROCESSES OF REGULATION, PROTECTION, AND SURVEILLANCE: THE CASE OF URBAN INTERIORITY IN MEDELLÍN

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Since the 1970's, the Colombian city of Medellín has endured unrelenting political violence caused by a shift in its economic patterns. The reconfiguration of hegemonic classes restructured the city's dominant trades from long-established links to the banana, oil and coffee industries to emeralds, narcotics, and arms. This led to the birth of the Narco-Bourgeoisie, professionalised gangs and the initiation of crime as a successful business. Gangs multiplied in rapidly growing informal neighbourhoods, and gangsterism became a model for society. By 1990, 190 gangs had been identified in Medellín (Salazar, 1990, p. 8), the city earning its title as 'Murder Capital of the World' by 1991. The criminalisation and privatisation of power utilised methods of security to establish governance in Medellín as political groups territorialised frontier neighbourhoods. Here, architectural devices were mobilised as weapons in the conflict. Architecture in this position is systematically oppressed as a violent and symbolic devastation of society (Weizman, 2007). Consequently, architectural devices in Medellín connect the geography of the interior and exterior spaces of the city – their performance an integral part of the structure of the city's condition of interiority. They embody real and perceived threats, working across scales in the inanimate spaces of everyday scenarios to assert authority.

Today, Medellín identifies with a new urban narrative: "Social Urbanism" (McGuirk, 2014, p. 243). The rhetoric of the narrative is deliberate and framed by the intervention of architectural objects scattered across the city. As symbols of reassurance for both past and present social insecurities, iconic architectures have produced a "new" urban identity. This "new" Medellín is authenticated by various international awards – the most notable being Citi Bank Group, Wall Street Journal, and Urban Land Institute's prestigious 'Innovative City of the Year' of 2003. Consequently, architectural demand has revealed associations between the structural continuity of interiority in the city and its subsequent urban transformation through processes of securitisation.

Interiority is expressed through the emotive response of citizens to contextual fears. By examining architectural devices that reinforce the relevance of securitisation in Medellín's transformation, an inquiry is made into the political instrumentality of interior space through the processes of regulation, protection, and surveillance. As a mode of interpretation, these spatial processes articulate how Medellín's interiority has been framed and constructed by an urban imaginary founded on violence. Evidence of these processes as integral in the pursuit of political power reveals the logic behind the city's overemphasis on architecture's ability to evoke change.

Evidence of the political and spatial logics of Medellín's interiority is as follows:

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a. Regulation

At approximately 450 residents per hectare, and a severe lack of public space, domestic interiors became an extension of the 'barrios' (Salazar, 1990, p. 112). The demarcation of this singular territory implicit in the display of both criminal and state power.

b. Protection

With the continued fragmentation of political territories, public space continued to diminish.

Consequently, the aestheticisation of the criminal agency was intensified by military-style security doctrines in domestic space and privatised enclaves.

c. Surveillance

The reliance on police to instil "confidence" in public spaces caused a reconfiguration of safety practices in the process of invisibilisation. In a move away from territorial supervision, police were replaced by dense systems of technology as primary measures of security.

Framed by externality, interiority in Medellín is a symptomatic response to the urban actions and events of everyday life. However, even as citizens withdrew into defended interior enclaves, these spaces were still victim to criminal organisations. Impositions of safety rent and a surplus in the employment of "protective services" upheld the territorial denominations of power (Moncada, 2016, p. 231/2). Medellín's urban territory was, and still is, consistently restructured – through the application of architectural devices and spatial processes – to produce collective anxieties as a means of managing the interior and public realm. Therefore, interiority in Medellín acts as an urban interior, a seamless territory founded on apprehension where interior space is an active agent in the dissemination of the psychological effects of securitisation and violence.

Medellín's transformation does not supersede systems of securitisation in contemporary urban developments in the city as architectural space remains a weapon in new age urban warfare. Instead, links between the structural conditions of interiority and the overemphasis of architectural objects as compensation emphasise the necessity of securitisation processes in reshaping the city's identity. Spatial analyses of regulation, protection and surveillance measures questions the logic of power in Medellín as interiority sustains the built rhetoric of security and reassurance, continuing to construct ideas of public space authenticated by the city's long-established urban imaginary.

Keywords: interiority, politics, urban imaginary, Medellín, Colombia

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THE IMPORTANCE OF TYPE AND SPECIFICATION OF DOOR ON BIOSAFETY LABORATORY

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ABSTRACT

Biosafety Cabinet is a space in the Biosafety laboratory that serves as the second barrier. This space has considerably high sensitivity. In this highly sensitive environment, the doors element play a great role in affecting the quality of the biosafety room which are closely related to temperature, humidity, air pressure, and motion. This study discusses in-depth the types of doors, door openings, door materials, specifications and vision panels that will be related to the dimension of the doors that affect the function, space requirements and standards, as well as safety and security standards within the biosafety laboratory area and its surroundings. The objective of this study is to obtain biosafety laboratory studies which are devoted to the needs of door types. This study uses laboratory study program method and the effect of door motion study on laboratory conditions. The important variables in this study relate to the human zone working in the laboratory, the specimen zone that is associated with the research in the laboratory, and the research therein. Zoning activities, plot and the size of the laboratory research room is influenced by several things, and the most basic one is the type of the door as the main point of incoming and outgoing flow. This study will produce an appropriate model for the laboratory, in particular, the use of certain types and materials, as well as specific door specifications required in some types of biosafety laboratories related to what research is undertaken therein so that the lab gets designs with the expected conditions as required.

Keywords: door, laboratory, biosafety, materials, specifications

INTRODUCTION

The existence of the Biosafety Laboratory as a means of supporting the needs in conducting the research activity is a "secondary barrier" as mentioned in the Biosafety in Microbiological and Biomedical Laboratories, 5th edition. Both the protection area and the second barrier to an agent after the first barrier of the Biosafety Cabinet as the first protection against a possible infectious agent and full protection of the agent against contamination from the outside area (Centers for Disease Control and Prevention and National Institutes of Health, 2009). The main objective of the Biosafety laboratory with the containment therein is to protect the personnel working in the laboratory with three main aspects: personal security working in the laboratory, the environment around the laboratory and the quality of the products to be protected, thus avoiding the carelessness and accidents of potentially harmful agents (Info Medion, 2010).

Therefore, the three elements of containment include laboratory practice and technique, safety equipment, and facility design. The risk assessment of the work to be done with a specific agent will determine the appropriate combination of these elements. A laboratory should develop or adopt a biosafety or operations manual that identifies the hazards that may be encountered, and specifies practices and procedures

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designed to minimise or eliminate exposures to these hazards (Biosafety in Microbiological and Biomedical Laboratories, U.S. Department of Health and Human Services, Public Health Service, 1999).

As an important part in containment, the design and construction of the facility contributes to the laboratory workers' protection, provides a barrier to protect persons outside the laboratory, and protects persons or animals in the community from infectious agents which may be accidentally released from the laboratory. Laboratory management is responsible for providing facilities commensurate with the laboratory's function and the recommended biosafety level for the agents being manipulated, as described in Biosafety in Microbiological and Biomedical Laboratories, 5th edition (Centers for Disease Control and Prevention and National Institutes of Health, 2009).

In a laboratory, there are some architectural elements and interior forming secondary barrier (Dahan, 2000), the elements include walls, floors, ceilings, doors, windows and HVAC. These elements need to be considered for the effect of material selection, type and system elements, as well as measures related to the effects of biorisk security.

In relation to the laboratory space program as well as the impact on the flow of circulation, the door becomes the most important element. The door element greatly affects the quality of the biosafety room which is closely related to temperature, humidity, air pressure, motion and its relation to the high sensitivity of a laboratory (Mears, Blanding, & Belkoff, 2015). This paper will discuss the type of door, door openings, door materials, specifications and vision panels that are related to the dimension of the doors which affect the functions, needs and dimension of space, as well as safety and security standards in the area of biosafety laboratories.

Each laboratory has its own goals in its operations, and space and layout programs are very influential on the operation of each laboratory. Doors have a profound effect on the causes and effects of space and layout program, so the goal of the research of biosafety laboratory studies is devoted to the need for the right type of door in its selection regarding the purpose of the laboratory operation.

METHODS

This study uses a qualitative approach because of the studied problem requires data collection and data analysis that are related to the behaviour, needs and roles of the working scientist and the studied agents who can only be obtained at a group of people. Studies of the laboratory space programs and the effect of door-motion study conditions are needed to strengthen the Space Syntax Programming method supported by functional analysis by determining the space requirements that consider the functions and demands of the perpetrator's activity patterns and the study of materials. The highly respected variables in the laboratory related to the human zone working in this space, the specimen zones associated with laboratory research, as well as the research inside them. Some data are collected from Literary Studies; the collected data are relating to the Research Laboratory, BSL-2 + Laboratory or BSL-3 Laboratory, BSL Standard Laboratory from WHO.

THEORETICAL REVIEW

Dahan (2000) in the Laboratories, A Guide to Master Planning, Programming, Procurement, and Design suggests that each laboratory room must have a door with minimum opening width 4 feet, this will allow heavy equipment and large instruments to be moved in and out of the room. Wide openings can be fulfilled with two doors. One door leaf remains 1 foot wide (30cm) and one active leaf with a width of 3 feet (91cm) used for entry and exit for worker or scientist. Doors with smaller widths are closed tightly. Both doors are only open for moving large equipment or instruments in and out of the room. Dahan's (2000) further detail, for laboratory entrance in general corridor area it is advisable to hide the door or make an overdraft to enter

the door so that there is space from the corridor traversed by the general activity, this is to avoid the collision between the door opening and the person carrying the chemicals.

In a laboratory with two doors or more, it is better to keep the door open consistent from the outside to the end door. The wider door should always be on the right side of each laboratory room so that when circumstances occur emergency, does not make it difficult for the victim to go out or towards the emergency shower if the emergency shower is outside the laboratory suite area (Dahan, 2000).

In Dahan's (2000) suggestion, materials selected for doors and door frames are also critical. There are many choices of these doors on the market, and most are acceptable if the selection is done as needed, location, and safety and aesthetics. It should be noted. However, that steel doors and door frames are quickly corrode when exposed to salty, damp, marine, climatic. In the Dahan's (2000) guidelines book on the other page, mentioned that they also must be equipped with flush view window. Doors at opposite ends of an air locked space should be interlocked that only one door can be opened at a time. At least one door must be wide enough to allow thick or heavy equipment to be moved in and out of the room.

The theory will discuss the advantages and disadvantages, the possibilities and consequences of the application of the theory of door specifications that become the standard for a biosafety laboratory.

DISCUSSION

A. ROOMS IN A BIOSAFETY LABORATORY

In the biosafety laboratory, there are important rooms, before entering the laboratory suite. The first is vestibule and anteroom weather room. Weather vestibule room is a space that functioned as an outside air barrier into the laboratory. Weather vestibule room size about 10m² and must be emptied from various equipment. Between the outdoor corridor and the vestibule weather room, there is a door as the main entrance for scientist and main barrier for anyone who may enter the laboratory area. At the next of vestibule room, there is an anteroom. In the anteroom, the aeration has been arranged. The dimension of anteroom at requirement 10-15m². Anterooms are always advised for both positive or negative isolation spaces for three main reasons which are to maintain air pressure between the room and against the entry or discharge of contaminated air into or out of the isolation chamber when the airlock door is opened. This is to prevent the protective clothing to be contaminated before entering the isolation chamber. Inside area of the anteroom can be used to place the personal protective equipment and gowning rack. There are three different air control flow designs in the anteroom pressure related to the isolation chamber and the corridor (Mahfud, 2014).

1. Negative anteroom for both isolation and corridor spaces, These designs have two advantages such as unnecessary to supply air in and no air pressure to the anteroom. If the anteroom becomes contaminated, there is still a pressure buffer between the waiting room and the corridor. The disadvantage is that since the anteroom is negative against the corridor, the possibility of anteroom contamination is higher.
2. Positive anteroom for both isolation and corridor spaces. These designs also have two advantages, There is no need to discharge air out or exhaust from and cautiously in balancing anteroom air pressure, and because anterooms are positive pressure than the corridor's, there are changes in anteroom contamination are lower. The disadvantage is, if the anteroom does not become contaminated, it is likely that the isolation chamber will be contaminated as well
3. The neutral anteroom, negative to room isolation and positive corridor. The design combines the best features of two other designs. The advantage is because the anteroom is positive against the corridor, and the possibility of polluting the anteroom is lower, and if the anteroom becomes

contaminated, There is still a pressure buffer between the waiting room and the isolation chamber. The disadvantages are increased cost and complexity of control and balancing.

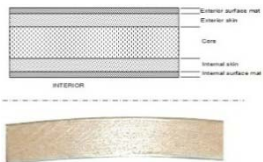



Based on these three main designs of an anteroom, the door becomes important enough to support the stabilization of air conditioning in the weather vestibule or corridor, anteroom and laboratory suites.

The third room is the main room of the laboratory suite. There are clean areas and dirty areas in the laboratory suite. The equipment in the clean area includes microscope storage cabinets, storage cabinets for consumables, refrigerators for reagents and sterile media, microscopic inspection desks, document equipment cabinets and inspection results. The equipment that are located in dirty area are incubator, centrifuge, BSC (WHO recommendation: for culture and sensitivity test using BSC class III with lead duct to remove dirty air from laboratory room), refrigerator specimen, autoclave, scales for sensitivity test LJ, dye tub, Freezer-70 ° C, storage area isolate, Xpert MTB / RIF (optional), MGIT (optional).

B. DOORS MATERIAL

Some doors materials can be applied in the laboratory but adjusted for use, location, and security requirements. Material selection is part of the fundamental consideration in determining the type of door.

Table 1. Doors Materials for Laboratorium specification
Source: personal documents of the author, 2017.

Specification	Doors Material			
	Glass Reinforced Polyester (GRP)	Steel Finished epoxy powder coating	EPS, PU, PIR (Sandwich Panel with different material inside)	UPVC
				
Firerated & Heat Resistant	✓	✓	✓	✗
Perfectly closed	✓	✓	✓	✗
Nonporous, free of hole, sealed smooth.	✓	✗	✓	✗
Chemical resistant	✓	✓	✓	✗
Disinfectant Resistant	✓	✓	✓	✗
Water Resistant	✓	✗	✓	✓
Size	✓	✓	✗	✗
Color	✓	✓	✗	✗

Easy to get	✗	✓	✗	✓
Application	✗	✓	✓	✓
Time efficiency	✗	✓	✗	✓
Easy Mobilisation Demobilisation	✗	✓	✗	✓

In the statement, at least one door must be wide enough to allow thick equipment to be moved in and out of the room. With the limitation of material slab size, the larger the door leaf width, if it exceeds the standard slab width of the manufacturing material, there will be a connection. This connection is risky in unbalanced connections, sharp holes, porous, unsmooth sealed, and air leakage. Steel material for example, when the material is finished with epoxy powder coating, it will conform to the specifications of a laboratory door by minimising the occurrence of corrosion. That the iron door can be considered, for a reasonably wide leaf, this is very important to care that high quality. Contrast to GRP material, to conform to the standard specifications of a laboratory door; this material conforms all requirements. But in terms feasibility, this material is less common in Indonesia and still imported from foreign industry thus increase the construction cost. Sufficient material that conforms to the requirements of a biosafety laboratory door is a sandwich panel, this material is not very easy to obtain, but it is manufactured in major cities in Indonesia. Size becomes an important factor, due to the limited size of the sandwich panel and a connection is inevitable. For UPVC material, ease of acquisition, mobilization and demobilization, easy application fulfils the requirement, but the local manufacturing process causing some poor work quality. The selection of materials for laboratory biosafety doors in Indonesia is very influential on the availability, convenience, ease of mobilization and demobilization and ease of application. This is very important in the initial planning. Specifications required in a laboratory are planned from the outset when determining operational and biosafety laboratory objectives, time in execution, as well as location and access considerations.

The weaknesses in the use of material for doors that require door openings with wide openings can be overcome by double swing openings.

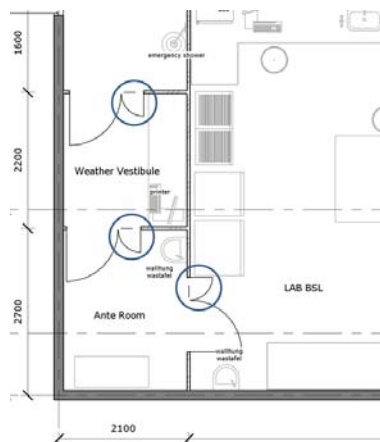


Figure 1. Layout Laboratorium with double swing door
Source: personal documents of the author, 2017.

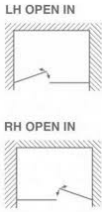
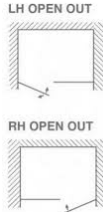


However, the use of doors with double swing openings also have some weaknesses. There will be many loopholes from the door, though only one door that is operational every day, the other side of the door will not be used at all when the laboratory operation, only used when inserting and removing equipment and large tools. In this double swing door application there will be a lot of gaps between the door and the frame, these more gaps must be calculated when conditioning air pressure in the anteroom or laboratory space. The lock gap will also keep the dirt and bacteria that need to be considered thoroughly. Although not operated in everyday conditions, the small gate should receive routine maintenance. Other effects also need to be considered. Opening and closing doors provide vibration on the other unused door. When the door closes received by the field other than the massive wall will occur stronger vibrations and instability occurs, the vibration allows influence the air conditioning and the tools in the laboratory. In this case, the effect on the layout of the room should be in more depth about the placement of equipment and equipment that is sensitive to vibration.

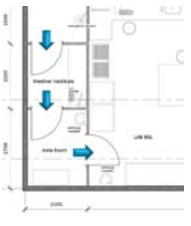
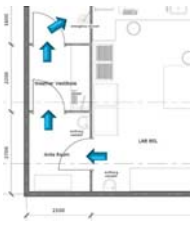
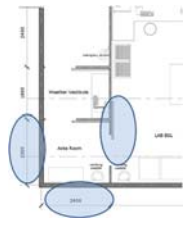



C. TYPE OF DOOR OPENING

Apart from all the guides, it is tough to prevent incoming contamination. In practice, even with adequately operated ventilation systems, contamination can still migrate, which may have adverse human health effects. A critical factor, which can cause contamination to migrate between rooms although there is a pressure difference is the operational door. The problem is even more important if the door is frequently used. The opening of the door immediately causes the equilibrium pressure between the rooms. Moreover, it is proved that the swinging door keeps the air masses from both sides together, especially on the top edge of the door wing, while the airflow difference, which protects the room when the door opens, too low to direct it. Airflow moves when the door open (Hendiger, Chludzińska, & Ziętek, 2016).

In architecture, there are several types of door openings, including swing and sliding, in the application in the laboratory, the type of swing and sliding openings, as well as the direction of swing and sliding openings greatly affect the air pressure inside the room. In this volume, it will be inside how the effects of each use and application of each type of door.

Table 2. Doors system for Laboratorium specification
Source: personal documents of the author, 2017.

TYPE OF DOOR OPENING			
SWING		SLIDING	
OPEN IN	OPEN OUT	INSIDE ROOM	OUTSIDE ROOM
 <p>Figure 2. Door open in Source: documents of the author, 2017.</p>	 <p>Figure 3. Door open out Source: documents of the author, 2017.</p>	 <p>Figure 4. Door open slide outside room Source: documents of the author, 2017.</p>	 <p>Figure 5. Door open slide inside room Source: documents of the author, 2017.</p>
Air pressure is depressed inward	Air pressure is pushed out	Tend to be stable, minimum air pressure due to door operation.	
Uncensored manual opening		Allows using door opening and closer with sensor	

Standard Door closer			
Space for swing is circulation area		Requires free space for door position when open	
When in and out of carrying goods or trolleys are less effective and efficient		Facilitate when in and out of carrying goods or trolley with the use of sensor opening	
Minimal influence on the outer space or corridor area	Affects the activity of space or outside corridor	Minimal influence on the outer space or corridor area	
 <p>Figure 6. Swing Door open in layout Source: documents of the author, 2017.</p>	 <p>Figure 7. Swing Door open out layout Source: documents of the author, 2017.</p>	 <p>Figure 8. Sliding Door open inside layout Source: documents of the author, 2017.</p>	 <p>Figure 9. Sliding Door open outside layout Source: documents of the author, 2017.</p>
In accordance with the standard in theory	Not recommended in the standard.	Allow for use in laboratory biosafety	
Minimize collisions when one comes in carrying chemicals.	Chemicals and suspects enter from Passtroughbox	The wall as a door opening space cannot be used	
When the emergency, the opening into the difficult self-saving from within	When emergency, easy in self-saving, and easy to the emergency shower	Needs attention concerning open and closed sensor system in case of emergency and self-saving. If the emergency sensor works well, the ease in self-saving.	
 <p>Figure 10. Airflow of swing door opening in effect Source: documents of the author, 2017.</p>	 <p>Figure 10. Airflow of swing door opening out effect Source: documents of the author, 2017.</p>		
Air pressure due to door movement leads inward	Air pressure due to door movement leads out	Minimal pressure and vibration when opening and closing	

Recommended for negative pressure	Recommended for positive pressure	It is recommended for both negative and positive pressure
In the outer space groove cleaner and less contamination than in the laboratory (research Lab in the field of disease, virus, bacteria) to protect the outside area	In the deeper clearance of the chamber and minimal contamination than outside the laboratory (in-stemcell lab research) protects the inner area	On any space groove
		It takes space wall on the side of the bigger door
Different types of doors cause changes of layout and size of the room		

The translation of the laboratory system does not mean right or wrong, but the most appropriate use fits the operational objectives of the biosafety laboratory itself, that affect each other between the extent available and the result of the selection of door system applications generating the larger extent.



Figure 11. Layout Laboratorium with swing door open out
Source: personal documents of the author, 2017.

In addition to research, the type of swing openings towards the outside effect on the space required will be enlarged in the area outside (Figure 11).

Doors of this type of openings cannot be applied to the biosafety laboratory area with outer space in the form of hallways or common corridors as it will allow the occurrence of work accidents while in and out of laboratory areas especially when carrying trolleys or chemicals. This type of openings when applied, requires the completion of the design, such as with the door opening space in the form of a special space overdraft, or with a special corridor, which with the completion of this requires more space (Figure 12).

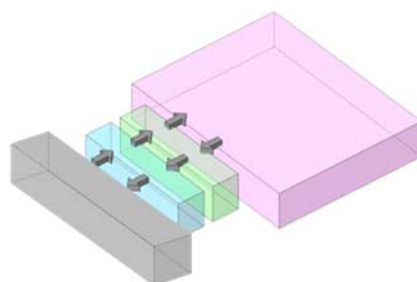


Figure 12. Exterior corridors as adjoining addition to open door swing openings
Source: personal documents of the author, 2017.



Figure 13. Different staining on the swing space area
 Source: <http://cleanroomsindia.com/Modular-Clean-Room.html>

This type of open-door swing openings allows for application to biosafety laboratories within the laboratory at lower levels or within the general laboratory area. With the completion of different colouring in the swing space area and of course the corresponding signage with the SOP (Figure 13). Further explanation of the flow that allows the use of open swing doors in the laboratory area located within the general laboratory will create a specific space and path program (Figure 14).

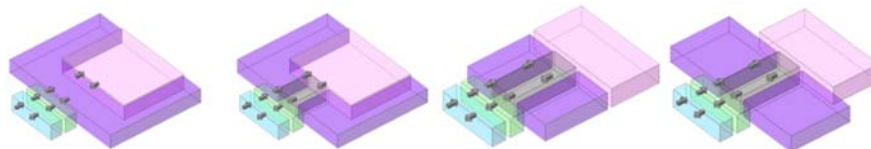


Figure 14. Spatial program and biosafety laboratory groove in general laboratory or lower level laboratory allowing the use of open swing door openings
 Source: personal documents of the author, 2017.

Doors with sliding systems, some positive things in the sliding doors should be considered in their use in biosafety laboratories. Sliding doors provide ease, efficiency than swing doors, with the use of open and closed sensors allowing researchers to enter the room without touching the door handle so that the condition of the researcher is more hygienic when they have put on laboratory clothes to the laboratory area. Sliding door type is very effective when placed in the anteroom area towards the laboratory suite (Figure 15,16,17).



Figure 15. Sliding Door
 Source:
<https://www.logismarket.fr/ditec/porte-automatique-pour-pietons/2128831558-2346645950-p.html>



Figure 16. Sliding Door
 Source:
<https://www.terrauniversal.com/cleanrooms/automatic-cleanroom-doors>



Figure 17. the effect of Swing Door for laboratory
 Source:
<http://www.medicalexpo.com/>

Sliding doors also have disadvantages regarding space constraints, required a wider side wall, so the wall can't be utilized for placement of laboratory equipment, or other equipment that rests on walls such as sink (Figure 15). But this side wall can be used for the placement of windows with wide openings (figure 16). By this side that should be the receiver of the door on the type of swing door can be utilised. Furthermore, it will affect the extent of space generated from the selection of doors with the sliding system. On a pilot comparison of the size of the room resulting from the use of swing and sliding doors, resulting in a larger intermediary space so that the laboratory suite space becomes smaller. On the other hand the use of the door swing, intermediary space is more effective and can be maximised in the biosafety laboratory suite (figure 18,19). With the use of opening sensors and door closers, it is necessary to analyse the application of automatic door system with sensor system specific security standards for the laboratory. Who has a sensor code, and how to rescue in case of emergency or work accident in the laboratory

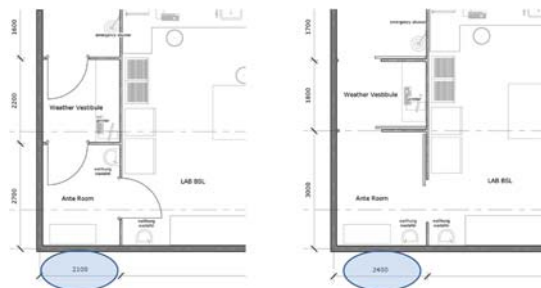


Figure 18. Comparison of differences in area resulting from swing and sliding doors
Source: personal documents of the author, 2017.

This comparison is important to fulfil the needs and objectives of the biosafety laboratory operations, the location of planning, and space constraints.

Regarding the necessity of a laboratory has a pair of doors with a self-closing system, and if one door opens, the next door cannot open that serves to control the air pressure (Centers for Disease Control and Prevention and National Institutes of Health, 2009). Basically, every type of door allows using self-closing doors. Both Swing and Sliding can use self-closing, both manual and with the sensor. However, it should be noted for human sensors; a safety code "For the workers only" should still be given.



Figure 19. Comparison of differences in area resulting from swing and sliding doors
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D. VISION PANEL

As part of the safety standard in a biosafety laboratory, it is the use of vision panels on the doors as Dahan's (2000) guidelines in the book of Laboratories, A Guide to Master Planning, Programming, Procurement, and Design. Type and width of vision panel openings there are several kinds of position and size.

Vision panels and openings for window-to-side viewing are important for laboratory doors, but the safety and confidentiality standards of a biosafety laboratory are an important issue to consider. Crime for bioterrorism becomes a consideration in the application of this vision panel but is also returned to safety standards in the event of an emergency or accident in the laboratory.

Table 3. Vision Panel for Laboratories Door
Source: personal documents of the author, 2017.

VISION PANEL			
OPENING		POSITION	
WIDE	SMALL	MIDDLE	LEFT/RIGJT SIDE
Laboratory safety standards		In an emergency situation, if the door can not be opened from the outside and must break the glass panel vision, it is difficult to reach the key and handle inside	In an emergency situation, if the door can not be opened from the outside and must break the glass panel vision, easy to reach the key and handle inside
Easy to see overall space	It's hard to see the whole space	The position of seeing the inner state from the middle of the first	Can see the inside situation while opening the door
Convenient for security guards to see inside conditions.	It is hard to see around in the inside area.	Balanced view	Hard to see the other side

Need handling a special layout to keep BSL secrecy	Functional, The view is narrow so it is quite safe in the standard of secrecy of BSL.	Appropriate for sliding doors with sensors	Appropriate for the door with the manual open, so when will open the door, directly looking into
If using for anteroom door, change clothes can be seen clearly from the outside.	If using for anteroom door, is quite comfortable.		
	The view is small so inside is like being caged.		
	Layout is relatively more flexible		

Some experimental layout experiments resulted in a safe layout with wide panel vision openings (Figure 20). How the standard of confidentiality of a biosafety laboratory can be achieved with the comfort of the scientists when having to change clothes entering and leaving the laboratory area.

However, there are some setbacks on the security side of the scientist working in the laboratory. If there is an emergency or accident that requires help from outside security. The layout should be reconsidered due to the difficulty of the security officer to look inside the laboratory.



Figure 20. Test placement of vision panels with wide openings.

Source: personal documents of the author, 2017.



Figure 21. Vision panel function

Source:

<http://www.instrument.com.cn/news/20130107/088746.shtml>



Figure 22. emergency situation due to work accident

Source:

<http://www.gettyimages.com/detail/photo/chemical-risk-prevention-simulating-a-high-res-stock-photography/487737901>

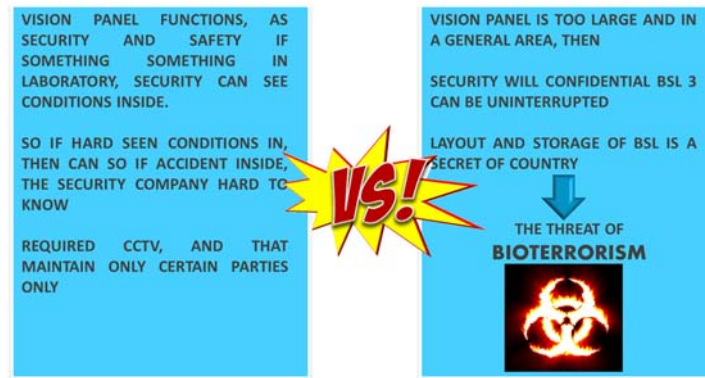


Figure 22. Comparative analysis of function and effect of vision panel implementation
Source: documents of the author, 2017.

CONCLUSION

The study presented is not about right or wrong in the selection of the door, but how to use it appropriately in every need of its application in biosafety laboratories. Each biosafety laboratory design requires full involvement of a head of the laboratory section and laboratory administrator representative who will determine the objectives and limitations of the biosafety laboratory operations, assisted by an industrial hygienic or biosafety laboratory expert who will determine the exact laboratory system. Architects are required to determine the design and selection of the most appropriate system application to the conditions and limitations in the field, including the determination of the door type. The advantages and disadvantages must be analysed from the beginning so that the completion of the design and the design system produce the minimal negative effect. This study is a preliminary study that should be continued to the deeper extent.

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INCOMPLETE DEVICES FOR INTERIOR PRODUCTION

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ABSTRACT

Far from fixed and predetermined, an interior is always in flux. It is contingent, dynamic and interdependent through relations to its participants and the temporal forces that affect it.

This paper discusses the way in which an interior design practice has adopted the indeterminacy of interiority - a condition of constant production, assembled and affected by the built environment, objects, information, media and personal interactions that we encounter.

By adopting a certain level of 'incompleteness' of material and form, the practice developed a series of diagrammatic and scenographic tools that allow a specific engagement with complexity and flux.

The openness of the diagram is a generative tool within the design process, a maker of new convergences and knowledge, rather than simply a communicator of prior understanding. It provides a conversational space in which collaborative ideas can interplay and intersect..." not only an abstract model of the way things behave in the world but a map of possible worlds" (Allen, 1998, pp.16).

Layered upon these diagrams is an assembly of scenic fragments that draw people into the work, a mise-en-scène of objects and actions that intentionally seeks to activate the role of the participant in a scenographic negotiation of space. It becomes a performative encounter through the assemblage of scenes, providing a critical space for collaboration and the opportunity to externalise an otherwise internal subject. The interior produced simultaneously becomes both real and fictional, a mediator between the self and others.

Keywords: interiority, scenography, models, fiction, diagram, negotiation, mediated

INTRODUCTION

For the research led design practice, *Making Distance*, Interiors are understood as a set of relationships that are in flux, mobile, temporal and contingent. Interiors contain and produce stories through both their formation and our individual or collective contribution to their making.

The three projects discussed in this paper, *Carry On*, *Complexity and Fullness* and *Quick / Slow Transition* demonstrate the development of a specific way of working as designers of interiors whereby the indeterminacy of interiority is celebrated. In this work, interiors are in constant production, assembled and affected by the built environment, objects, information, media and personal interactions.

The three works explore an extension of the conventional scale model into a device for interior productions - a site of participation, collaboration and negotiation.

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Flux

Interior experience is understood by *Making Distance* to be a dynamic set of spatial and temporal relationships. It is in flux, a partially subjective reality produced through a convergence of actual and virtual conditions. These temporal relations are produced through performative actions and consideration of the immediate social conditions of the inhabitant. In this way the interior emerges from a multiplicity, a situation of potential in which both interior and inhabitant are co-dependent, both in flux, and both in a process of production (Massey 2005).

Recognition of this co-production allows *Making Distance* to prioritise the outcomes of design practice whereby the inhabitant moves into a participatory role, active in determining experience and interpreting meaning. In this way the interior experience can be considered to be partially subjective. The inhabitant is encouraged to take on the role of active participant: producer, negotiator and mediator of experiential meaning.

Relational approach to Interior

A dominant association of the term 'interior' is with ideas of location, containment or enclosure. *Making Distance* take the view that an interior need not be understood as 'container' or fixed. Interiors can be understood as a relational condition. This relational approach to Interior Design foregrounds the positioning of occupants relative to the physical and virtual conditions of space, both perceived and experienced.

Lois Weinthal (2011) states "For me, the interior begins with the elements that are closest to the body, forming concentric and more complex layers as it progresses from the body into spaces where larger scales are accommodated without losing their relatedness to the body and emotion"(p.19).

Weinthal's relational view of interior positions the body and emotion as the determining entities of an interior. This idea moves away from the notion of physical boundaries for defining an interior to a selective process that emphasises relationships through physical and emotional connectivity. Her notion of interior relations aligns with Gottfried Wilhelm Leibniz's ideas that an event or object's location is a situation that is dynamic – relative to other objects and events.

Urban Interiors

Elena Enrica Giunta (2009) states that "The interior design discipline is called upon to enlarge its territories, to start considering cities' interiors as fields of application. Interior design practice might generate a credible, independent, response to contemporary needs. It could develop visions of inhabiting suitable to the paradigms of our society: a permanent uncertainty where transition is a stable reality and liquidity is a permanent state" (p.5).

Giunta's provocation aligns with many within the discipline in recent times who have looked to expand the way in which interior design practice engages with our urban centres. The architectural practice MOTOElastico is a compelling reference point here in their observation of a 'borrowed city', the private use of public space in Seoul. They conceptualise this scenario as a "Metropolitan Interior", where the streets are understood as rooms and are furnished and customised by its users. The documented occupation of spaces within the city often produces interiority through i) activity, ii) temporary assembly of objects and materials, and iii) the relationships that are formed.

METHODOLOGY

Principally *Making Distance* speculates on ideas of interior design through making. Characteristically, as is the case in the making of these models, the approach taken is to reflect upon previous work through a new design. This folding of ideas from one project into another allows us to refine and challenge our thinking, tools and techniques. It allows the act of design to be both reflective and propositional. In this way the knowledge is produced and captured in the creative making of the work, it is research *through* design. (Downton, 2003; Schaik, 2011)

The models of *Making Distance* discussed in this paper were made with two clear intentions, firstly as a site for our own collaborative design speculation and secondly as things of themselves; experiential devices to be encountered by others. The three models made over a five year period have allowed us to track the development of this approach. They all address a broader understanding of interior and use consistent techniques of diagram and scenography in their production. Each is understood as a work in its own right but have an iterative function that builds upon one another.

Collaboration is equally central to the research led design practice. After some initial agreement upon the proposition, mediums, materials, size and the like projects largely develop in an open-ended manner. Ideas are exchanged and developed through a collaborative design process, the work becoming a site of exchange between the designers.

The operative (Tschumi, 2001) nature of the models allows them to function both diagrammatically and experientially. They invite an extended participation through modes of looking between fragments and via a bodily movement around and through the work. For the designers, this both facilitates the collaboration and anticipates a future encounter of the work by others.

TOOLS + TECHNIQUES FOR INTERIOR PRODUCTION

Diagram

Diagram is an important tool and technique used in the work of *Making Distance*. It is both a graphic visualisation device, used to structure complex relationships of information and a method of spatial analysis and speculation that is both generative and operational.

The work of Edward Tufte, alongside the significant lineage of work produced by Peter Eisenman, Bernard Tschumi, Stan Allen, James Corner and others over the last three decades provides a background to the way in which we embed a diagrammatic overlay of our project work.

Stan Allen's (1998) interpretation of diagram is pertinent here. He states, "A diagram is not a thing in itself but a description of potential relationships among elements, not only an abstract model of the way things behave in the world but a map of possible worlds" (p.16). This notion reflects the operative and interactive condition of the works of *Making Distance* that take the form of a scale model but resist a fixed representational status.

Mise-en-scène

The term *mise-en-scène* was initially adopted from earlier filmic collaborations and emerged from the incongruous condition of occupying a chaotic film studio whilst simultaneously viewing a resolved filmic image as a convincing representation of space. This indeterminate sensation was later adopted into the work through the construction of complex scenic arrangements that could be bodily and visually inhabited. These materially layered and image-rich works were designed to at once to provide both compelling resolutions of urban views and revelation of spatial construction and temporal production. The works established through underlying diagrammatic arrangement required bodily participation to visually inhabit the fragmented and continuous scaled urban interior. Here, image and body become interconnected with the production and disintegration of scenic interior experience.

Fiction

Fiction plays a pivotal role in the creative works of *Making Distance*. It is used as a way of engaging with the various intended or imagined spatial and social scenarios that may play out in response to or through design. Each of the works contains interwoven stories and spatial moments that emanate from the collaborative design process of *Making Distance*. These are formed from the musings of spatial situations encountered in our daily lives that we feel are pertinent to the structure and spatial qualities of our urban experience.

Incompleteness and Indeterminacy

The design approach strives for levels of indeterminacy, working carefully in the middle ground, mediating, negotiating the possibility of encounter, anticipating levels of subjective interior production. A process of fragmentation and layering is used as both a method and an outcome. This approach is intended to reveal complexity and build spatial relationships that resist enclosure and containment. The edges of spaces overlap, blur or fade. Through techniques of diagram, fiction, layering, fragmentation and the revealing of the *mise-en-scène*, the work seeks to invite performative participation; to empower the inhabitant to consume and produce experience at least partially on their own terms.

Despite the obviously constructed quality of these scaled works we could build sufficient spatial realism from the *mise-en-scène* to allow inhabitants to willingly enter into an interior condition; an acceptance of the fiction, an experience reliant upon a knowing disbelief. It is an irresolvable, complex condition, but optimistically also one that is full of individual and collective potential – an urban *mise-en-scène* for individual and collective production. It is an acknowledgement that the inhabitant is not simply passive nor homogenous, but instead active, de-centred and critical; freed up to reconsider the hierarchy of a fixed interior/inhabitant relationship (Bishop, 2005).

THREE INCOMPLETE DEVICES FOR INTERIOR PRODUCTION.

Carry On



Figure 1. Carry On - Aerial view.
Source: Making Distance

Carry On was a project that provided a critical documentation and reflection upon an earlier project by *Making Distance* titled *3 Tonne 'o' Space*, an evolving experimental space that sought to expand conventional boundaries of Interior Design practice/thinking by mobilising an interior space. Tested through the appropriation and occupation of a ubiquitous utilitarian environment (i.e. the back of a three-tonne truck), this mobile space intentionally placed the interior in the public domain - a shifting urban context.

The work included a model and series of printed images concealed within a timber case that could be easily assembled and disassembled. The work was intended to be shown in an exhibition in London and needed to be transported by hand. The title *Carry On* is a reference to the carry on baggage and allowance given by airlines but also an idea of 'carrying on' an idea from one project to another.

The international carry on baggage allowance given by Qantas for international flights is 56cm (Length) + 36 cm (Height) + 23cm (Depth) with a total linear dimension of 115cm. This was used as a starting point and a defining constraint for the design. There was a certain pragmatism to this decision, but was also seen as an analogy to the mobility and performative transformation of packing and unpacking that took place in the previous 3 Tonne 'o' Space project.

The box, made from hoop pine ply, split open to reveal a collection of scenic components including a number of scaled 3-tonne trucks, building fragments and an abstracted city grid or ground plane into which a number of mobility paths were etched. Photographic images of selected buildings were printed onto clear acrylic and then laser cut to provide an outline of building form which provided a constructed skyline.



Figure 2. Carry On - The 'inside' of the truck folds into the urban surroundings.
Source: Making Distance

Unpacked and re-assembled, *Carry On* was a diagrammatic representation of the relationship of the 3 tonne truck to the urban context understood as a series of scaled urban scenarios. These included the truck positioned in open space formally framed by its surrounds, the truck encountered by chance against the kerb, and the truck approached in a narrow laneway.

The layered composition of *Carry On* presented multiple relationships through a variety of ways of viewing the work that became inherently scenographic. Adopting a scenic approach allowed us to suggest the various qualities of urban space, but more importantly the production of interior experience within a broader urban environment through personal engagement and encounters.

Carry On provided a narrative of constructed spatial moments derived from views, approach and engagement; foreground and background context; edges and thresholds. The work was understood to be both analytical, in that relationships between sites and truck were depicted, and scenic in that the viewer was drawn in and encouraged to engage with various different types of encounters with the trucks.

Complexity and Fullness

Complexity and Fullness draw on similar concerns for interiors within the urban realm as the earlier *Carry On* project however is situated more directly in relation to retail environments as a significant proportion of urban space.

In this project we considered urban retail environments as a 'medium of space' that we move through and inhabit as part of our day-to-day activities (Koolhaas, 2001). This ubiquitous condition presents a complex and full experience that is constructed through personal interaction, still and moving image, text and other devices to engage and activate its occupants. As Branzi (2008) states, "In the whole, both materially and non-materially, these represent an uninterrupted flow of aesthetic perceptions and stimuli" (p. 94).



Figure 3. *Complexity and Fullness* - View from distance.
Source: Making Distance

Complexity and Fullness focused on the active condition of 'display' within the retail setting, not only as conveyer of information or conspicuous presentation but also as a significant moment in the access to and engagement in an interior. An interior that is in constant production through a process of engagement and exchange.

We began constructing this work borrowing from the typical retail tenancy format with a shop window or facade (that we later obscured) mirrors for reflection and expansion, framed views, repetitious images and detailed joinery elements to shift scale. These were built in model form but resisted being a representation of a whole retail tenancy. Instead, *Complexity and Fullness* brought together a layering of scenic arrangements that demanded a participation from the the viewer of the model to construct specific moments - a curated view.

The work sets up implied narratives through the arrangement of fragments that suggest activities and relationships whilst contradicting this through an incompleteness of material, setting and information. Parts of the model extend out from its base with repeated images that suggest a transformation through time. Outlying fragments play on ideas of transition, memory and distance.



Figure 4. Complexity and Fullness - Framed composition.
Source: Making Distance

A hinged mirror located alongside the 'back wall' of the model, allows for participants to adjust framed views, including the spatial relationships constructed through the reflection of building forms that are situated in front of the retail facade. A doubling of distance is generated through the mirror projecting the image of these buildings beyond the immediate floor plane and offering an indeterminacy (Diller, Scofidio and Teysot, 1994) of scale and relationship.

Suspension of disbelief and an acceptance of the 'unreal' is often a necessary participatory condition in this work. The assembly of fragments, objects and actions intentionally seek to activate the role of the participant as author of their own experience.

Complexity and Fullness is more of a device than a model - perhaps a trick, a tactic, a manoeuvre. Its intention is to provide opportunities for both the authors and other participants to construct their own encounters through a negotiation of abstracted scenes becoming an interior that is simultaneously reflective and propositional.

Quick / Slow Transition

Quick / Slow Transition built on the techniques of spatial assembly developed in the earlier *Carry On* and *Complexity and Fullness*. It explored a fictional construction of an urban space derived from our collective urban experiences together with aspects of previous projects. The selective collection of fragmented moments assembled a transitional interior in constant production.

A detail image of street markings from a street in Seoul which we use as a type of billboard image and connects to the sequence of repetitive images of material details positioned on the wall behind the model. A black acrylic surface replicates the void of the adjacent cut in the platform and provides a deep reflective surface to capture other views. Black crosses denote imagined viewing positions through the model as if on street level.

In this setting the height of *Quick / Slow Transition* and its position in the gallery enable other people to participate by looking through the mirrors, across the reflective surfaces and through the gaps and frames. The work offers an expanded view aligning with the view through the gallery window and to other sections of the gallery.



Figure 5. Quick / Slow - Aerial view
Source: Making Distance

Quick / Slow Transition, like *Complexity and Fullness*, is an incomplete device for interior production. It presents the collaborative engagement of the practice *Making Distance* in material form and communicates our thinking and making process through the work itself allowing others to look through our eyes. In this way, *Quick/Slow Transition* is an instrument for making relations, for us as a design tool and for others as participatory device for interior experience.



Figure 6. Quick / Slow - Layered reflections
Source: Making Distance

The model as a 'device' aligns with the work of Smout Allen whose research focused architectural practice foregrounds a process of making. They discuss their drawings having 'a dual function of examining and narrating' a site. Similarly, *Quick / Slow Transition* presents a fictional construction of the city for participatory engagement by its audience whilst revealing an examination of a process of interior making.

CONCLUSION

The three works discussed in this paper - *Carry On*, *Complexity and Fullness* and *Quick / Slow Transition* demonstrate the development of an approach to the exploration of interior understood as a set of dynamic relationships that are in constant flux. Through a method of collaborative making, research through

designing, the works sought to reconcile the elusive and temporal conditions of interior and related experiences with the fixity of physical construction associated with the production of architectural or spatial models.

A development of techniques including diagrammatic overlays, incompleteness of material or structure, embedded fictional scenarios, and constructed *mise-en-scène* have enabled a progression from a model format, that provided an account of a previous built project, and is inherently representational, to a performative device that is both speculative and critical, that invites participation and negotiation of interior experience via an active viewing.

Carry On attempted to break from the fixed representation of space by presenting multiple narratives layered into the model incorporating different locations, situations and timeframes through specific scenographic arrangements. Tracings of movement and past spatial relationships were indicated as diagrammatic etched lines.

Complexity and Fullness resisted the articulation of the fixed compartment of an enclosed retail tenancy through the removal of some of the perimeter walls. It extended the use of multiple narratives tested in *Carry On* allowing a focus on constructed scenic arrangements, a selection of *mise-en-scènes* that make up the significant experiences associated with the retail environment including the detailed encounter with objects, multiple reflections and repetition of image. The use of multiple scales and dislocation of components allowed an expansion and contraction of perceived proximity and depth of view inciting a negotiation of experiences. The diagrammatic lines literally etched into the ground plane of *Carry On* are not present in *Complexity and Fullness*. The diagrammatic becomes an invisible overlay that provides a structure for the overall model providing trajectories of sightlines and connections.

Quick/Slow moves even further away from the notion of a static model to adopt a more operative function. As a less discernible assembly of moments, fragments of materials and junctions or relationships this work requires a greater degree of participation and negotiation by maker and audience. The interior experiences are less defined and directed by the makers in this work requiring the audience to participate in their own visual assembly. The construction of these relationships occurs via a visual assembly – a scenographic negotiation of space. The act of making is extended to the audience of the work. In this sense, the work is not already formed prior to the making process.

Carry On, *Complexity and Fullness* and *Quick/Slow Transition*, as a sequence of works, have provided *Making Distance* with a way of responding to the ongoing difficulty and challenge of representing and constructing the multiplicity of experiences of interior as a dynamic condition.

The work is now recognised as a critical tool for conversation, exchange and an opportunity to externalise the otherwise internal subject through performative participation and action. They present a dialogue between two designers drawn from observation, speculation and imagination. For us and others, this has allowed the issue of full authorship to be overcome within the collaborative design process and subsequent engagement of the work.

These incomplete devices for interior production have changed our understanding of the role of material making whereby the authorship is redistributed to others, enabling the viewer a deeper participatory engagement. Drawn into the work through this process of interior assemblage, viewers discover the work hinges between resolution and incompleteness, a device of speculation. In this way, the models act as a *mise-en-scène* for performative participation and subjective production of interior experience.

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RELATIONAL ENCOUNTERS: MEANING-MAKING OF THE INTANGIBLE THROUGH EMOTIONAL ATTACHMENT

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ABSTRACT

Interiority and inhabitation are interconnected as one state of being and are activated by human interaction. This relational field of experience, which lives in the intangible, occurs through sensorial observations of the natural landscape, or the physically constructed environment, whether interior, architectural or urban. The investigation is grounded on the premise that this is rooted in the 'interiority' of the person, stretching beyond the sensorial. Personal narratives of these engagements reveal stories of the deeper essence and understanding of interiority, through associations beyond object, space, taste, style or artefact.

This paper maps the intangible meaning-making of interiority through a series of experimental projects. The exploratory approach includes opportunities for non-choreographed encounters that are contingent in the prospect for interaction, and the subsequent response obtained. An aleatory research method is used which allows for chance encounters, happenings and associations to emerge. It aims to reveal the purpose of the connectedness and relational engagement from the perspective of emotional attachment. As a result, the value of multi-disciplinary research with allied fields such as behavioural science and psychology, is highlighted.

Internal and external forces within social and cultural frameworks, influential to the interpretation and associations formed, are acknowledged. The contribution of these findings adds another facet to the already complex and multi-layered field of interiority and inhabitation. The importance of the intangible is emphasized as the critical variable for consideration in design interpretation. It is meant to further extend the richness of understanding of the inhabitation process.

Keywords: emotional attachment, intangible, association, meaning-making, relational

INTRODUCTION

This paper grew from an interest in the intangible qualities that fill our everyday lived experiences. Various associations and connections are made through relational encounters with objects, people and spaces. This meaning-making process is key to this exploration and maps the connectedness and relational engagement that is formed through emotional attachment. Environments for human inhabitation offer multiple opportunities for such encounters. It is likely that by investigating the intangible within interior architecture and design, the tangible (and associated meanings) be understood more comprehensively (Weinthal, 2011, p. 11).

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A literary overview, with a different approach to that of a literature study in itself, is used in this investigation. Three sources have been identified from which secondary data, in the form of selected essays and stories, are analysed. The particular focus on emotional attachment, is used in order to extract metadata as concepts. These narratives are seen as experimental projects forming the basis of this investigation by means of quotations for an accurate description of meaning-making. These are included as: relationship with consumer products (Battarbee & Mattelmäki, 2004); a philosophical experiment (Droit, 2005); and a psychological/emotional experiment (Alexander, 1980/2004). Each of these emphasizes an aspect of relational encounters that speaks to interiority and inhabitation. This exploration is conducted with a multi-disciplinary lens, as psychology and behavioural studies provide insight into the emotional attachment and meaning-making that is produced as a result thereof.

If a person makes a decision that is very personal – related to a person-object interface – could the same motivation count for a spatial interface? The questions then remain, why and how?

What is the tipping point, or the moment of shift for making a decision that is personal and emotive by nature? How does emotional attachment play a role?

The aim is to find the reasoning why or what the motivation(s) could be for the decision to engage in an encounter. The main objective is to extrapolate this application to (interior) spatial terms. This study uses objects/products to illustrate phenomena as small scaled encounters that are relational in the field of experience; intimate and directly related to the participation of the person.

The aleatory method, an analytical tool, is used to process the metadata in order to obtain spontaneous responses related to the emotive subject. "*Active chance*" as the aleatory form, "produce changeable, pluralistic...configurations, rather than fixed outcomes" (Manolopoulou, 2013, p. 193). Interior architecture can also be associated with plural conditions. The fact that spaces are occupied by human inhabitation result in responses and perceptions that carry the same degree of complexity of experience. Consequently, for interior architecture, overlapping and multi-disciplinary research with psychology and behavioural sciences, can uncover the motivations for emotional attachment and possible emotional shifts. These could pose relevant for considerations in spatial design and the understanding of the inhabitation process.

This study sets out to explore a conceptual model as a preliminary network from the concepts that are emerging from the metadata, through examining the relational field of possibilities for meaning-making. As an aleatoric work, it does not state the outcome (Manolopoulou, 2011, p. 197) of the emotional focus, although some aspects are controlled, with the engagement of the participants resulting in individual interpretations (Manolopoulou, 2011, p. 197). However, this study questions whether aleatory research could in fact be used to arrive at an end result.

What could design practice and design consideration benefit from this investigation? By opening the discourse on the emotive side of interiority and inhabitation, could the awareness of human nature and the dependencies locked inside these experiences be highlighted?

THEORETICAL FRAMEWORK

The purpose of this study is to develop a conceptual model derived from the theoretical framework: to investigate the intangible qualities of emotional attachment. Aleatory works allow for a method of exploration where the end result is not known and no detailed or specific plan is set for the inquiry. However, it includes a degree of structure within which involvement and encounters of participants could take place (Manolopoulou, 2013, p. 197). The identification of determined and undetermined variables from the literary sources, support the creation of structure in the aleatory research design.

Architecture, as object-building, contains an aspect that is social and dynamic, over which the designer or architect has no control – “an inevitable condition” (Awan, Schneider, & Till, 2011, p. 28). Non-choreographed encounters, whether interfaced with objects, people or space are contingent on conditions outside the interaction and thus allow for the possibility of chance. Vealey & Gerding (2013, p. 1) describe this method as accidental, chance-based, and non-linear in practice. The purpose of this approach is to provide scope for chance “...and cultivate a space for accidents in research methodology” (Vealey & Gerding, 2013, p.1).

In this sense, Manolopoulou (2013, p. xxiii) refers to deterministic and indeterminate applications: “While deterministic applications of chance result in fixed forms because they are fully defined by the actions of the author, indeterminate applications of chance are open to the actions of the performers-users who invent ever-changing scores and spaces.”

The purpose of this aleatory approach is to reveal the intuitive and spontaneous associations that are made when objects (and spaces) are encountered, with specific reference to emotional attachment. An open-ended inquiry allows for free interpretation and unscripted responses in order to achieve authentic expressions and is described as examples in the narratives below. Determined and undetermined variables are identified in the sources in order to aid in the mapping of the narratives and reveal the associated meaning-making, as illustrated in the experimental projects and the related approach or theoretical lens with which these are conducted.

CONCEPTUAL FRAMEWORK

A. Conceptual framework - Relationship with consumer products

Battarbee and Mattelmäki (2004) explore the design of new products from the perspective of the consumer sector in the article, Meaningful Product Relationships. Although the importance for individuals is stressed, the intention is for consumption of the mass market. Emotion, experience and meaning are important criteria for different levels of interaction – “subconscious, conscious and meaningful stories” (Forlizzi & Ford in Battarbee & Mattelmäki, 2004, p. 337).

Narratives were taken from a large representative sample (113 stories and essays) collected in Finland, from children through to the elderly. These categories were used to analyse the narratives and were utilised as an iterative process (Battarbee & Mattelmäki, 2004, p. 337). These categories form the structure for the article and are informed by the narrative responses of participants. Although the original research approach is not aleatory in design, the responses are unpredictable, but leads to the creation of the framework of the categories.

The authors describe the ingredients, or product categories for creating meaningful product relationships as: meaningful tool, meaning association and living object and offer personal narratives of users of products, to illustrate the meaningful product relationships (where an emotional link is established) (Battarbee & Mattelmäki, 2004, pp. 337-340); (Jordan in Battarbee & Mattelmäki, 2004, p. 338).

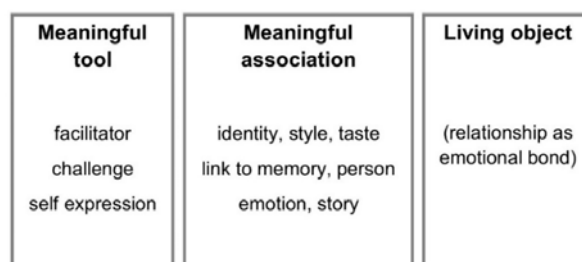


Figure 2. Response > Experience > Relationship Process
 Source: (Van Gorp & Adams, 2012, p. 90)

The holistic picture is culminated in the living object, as the relationship between person and product exist on an emotional level. Van Gorp and Adams (2012, p. 90) illustrate the development of a product relationship in *Design for Emotion*, as a process from emotional response, through emotional experience, to the emotional relationships that are formed between user and object (Figure 2).

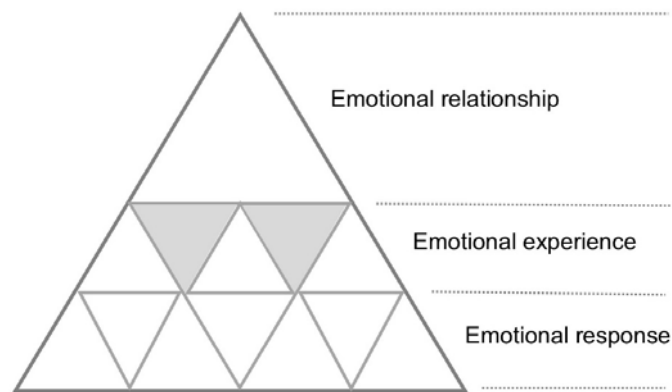


Figure 2. Response > Experience > Relationship Process
Source: (Van Gorp & Adams, 2012, p. 90)

Supplementary to this understanding, Wildevuur et al. (2013, p.70) communicates the relationship process graphically (Figure 3) in *Connect: Design for an Emphatic Society* with the three 'e' principle: encounter, expectation and exchange. The context for this book is an aging population with specific reference to interpersonal relationships, where making connections and "feeling connected" are considered as important for well-being (Wildevuur et al., 2013, p.12). This model poses certain preconditions for a relationship process to evolve: awareness, openness, and occasion. As a result, the effects of a healthy relationship can be the formation of identity, independence, emotional attachment and acknowledgement (Wildevuur et al., 2013, p.70).

The model of the relationship process in Figure 3 below, can be integrated to create a rich understanding, in order to illustrate the intangible dimension of meaning-making through emotional attachment. Variables can be mapped as independent variables in a conceptual model that becomes the relational field of experience, in which the precedent studies are situated.

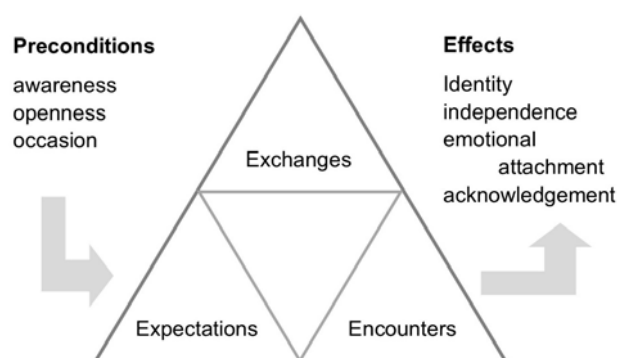


Figure 3. Relationship process
Source: (Wildevuur et al., 2013, p. 70)

The circular overlapping nature of the diagram in Figure 4 below, represents the relational condition of the variables. This conceptual model, informed by the relationship with products, informs the aleatory nature of the philosophical and psychological/emotional approaches.

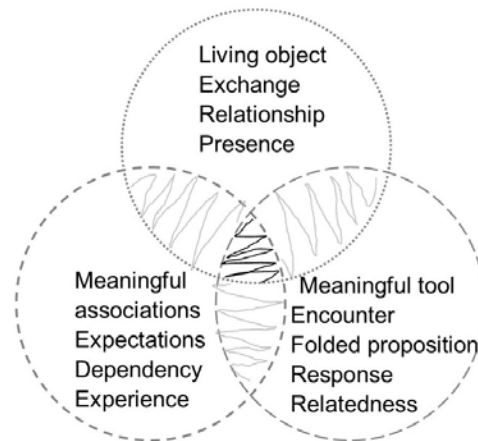


Figure 4. Conceptual Model

Sources: Adapted from (Battarbee & Mattelmäki, 2004, p. 338); (Van Gorp & Adams, 2012, p. 90); (Wildevuur *et al.*, 2013, p. 70); (Droit, 2005); (Alexander, 1980/2004, pp. 64, 65)

B. Conceptual framework - Philosophical approach

Roger-Pol Droit (2005, p. xiii) narrates the following instructions in the book, *How are Things? A Philosophical Experiment*: "Take *none* of the assertions in this book seriously? An exaggeration. Take *all* of them seriously? More exaggeration. Accept that the following assertions *might* be accurate, and draw your own conclusions. Conclusions will vary, depending on the person."

Droit (2005, p.12) explains this method of exploration, "To play the explorer", as random and with no predetermined method of enquiry. Could this open, experimental approach then be described as "chance encounters", or "*active chance*", but still remain systematic in the documenting of the observations as a "ship's log for my voyage"? (Droit, 2005, p. 12); (Manolopoulou, 2013, p. 193). The motivation for this enquiry is to find the meaning to the question: "How are things?" During the documentation process, the author suggests that a method is perhaps not desirable and "presumptuous, and illusionary" instead (Droit, 2005, p. 126).

As an alternative, an aleatory experimental journey is proposed, where the outcome or destination is unknown - no guidelines, protocol or scientific spirit. It is defined rather by "random observations, uncertain rules, [and] improbable results" (Droit, 2005, p. 126). At the outset of the experiment, Droit (2005, p. 11) makes the assumption that things are "...folded propositions...and vanished phrases...Or solid residues of extinct words." The route at this point is unclear, but the intention is to reveal the ideas that are locked inside objects that are integral to daily living and inhabitation. Relations to objects, spaces and art are subjective and intuitive, but this book sets out to uncover the life of randomly selected every day or unremarkable objects or things... "Created on purpose by human agency" (Droit, 2005, p. 8).

During the documentation process, the aim is refocused by the author, to get caught in the folds of objects in order for the results to be faithful and accurate (Droit, 2005, pp, 126-128). This is where the structure of an aleatory study is introduced in order to supplement the random/chance manifestations. The chapters of

the book are divided as emotions and method – astonishment, trial and error, panic and calm. Droit questions the motivation for conducting this experiment and comes to realise that things (objects) are “bearers of our thoughts” and that this can only reveal itself “as the result of an encounter” (Droit, 2005, p. 260). Specific references to chance encounters are made: “There are whole populations of ideas that are only ours courtesy of things and our chance encounters with them. A dependency at once casual and profound” (Droit, 2005, p. 260).

Dependency is rich with potential, because of the unpredictability. In *Architecture Depends*, Jeremy Till (2009, p. 1) describes dependency from an architectural perspective as forces, people or circumstances that are outside the control of the architect. With interior architecture, this dependency is further reliant on the perceptions, associations and personal relatedness of people, where encounters can be small scaled and rooted in the interiority of the person. This paper argues that interiority extends from the person, through an object, or collection of objects and into a space.

Personal narratives of the author phrase these experiences on a deeper understanding and from a philosophical perspective, revealing something of the “self” that is associated with the substance of the object (Droit, 2005, p. 67). “It is as if we overlap with things and aspects of things are buried inside us...People and places have always been implicated with things...a matter of individual psychology” (Droit, 2005, p. 123).

C. Conceptual framework - Psychological/emotional experiment

Christopher Alexander echoes this sentiment in *The Nature of Order, Book Four: The Luminous Ground* (1980/2004). It is written from a personal perspective, or an “inner meaning” (Alexander, 1980/2004, p. 3). A theoretical explanation is proposed as an understanding of the physical and emotional phenomena that can generally be observed. The aim of the book, is to find an explanation by means of an empirical documentation of experiences, as it should be able to reproduce these in order “to create a living structure in the world” (Alexander, 1980/2004, p. xv). The method of creating this framework consists of the relationship between determined and undetermined variables. “I have described facts about buildings, intuitions, experiences, as they are, as people experience them” (Alexander, 1980/2004, p. 344).

The search for the existence of the “I” is the focus of this volume: the articulation of the relatedness, the “something” that stretches between a person and an object. This relationship assigns a “presence” to the “something” (object, product) (Alexander, 1980/2004, pp. 51, 62-63).

FINDINGS (PRECEDENT STUDIES)

These three conceptual frameworks described above, were used for the three precedent studies derived from the literature, to illustrate the theoretical framework derived from the aleatory method. Precedent studies in this investigation are narrated using experiments and encounters as a collection of stories about meaning-making of the intangible: relationship with consumer products (Battarbee & Mattelmäki, 2004); a philosophical experiment (Droit, 2005); and a psychological/emotional experiment (Alexander, 1980/2004).

A. Precedent study - Relationship with consumer products

This study set out to investigate the relationship process from the perspective of “real people and real contexts”, outside that of the marketing domain. The research environment acknowledged people and products in relation to the home and built environment (Battarbee & Mattelmäki, 2004, p. 337). An increase in complexity related to the layers of meaning-making in the product categories include: meaningful tool; meaningful association; and living object. The product categories are defined as the independent variables in the research equation, with the stories and essays forming the basis for the dependent variable responses.

An example of a meaningful tool that facilitates a specific purpose is related to the encounter and response to the product. According to the conceptual model, it is the folded proposition in the use possibility and the relatedness as a result, that is awakened in the user. "You can hardly call a pale blue and squarish hair brush case pretty, but because of its size and function it has become a very important thing for me. (foldable hair brush)" (Battarbee & Mattelmäki, 2004, p. 338).

Meaningful association as an example of style and taste as aesthetic appreciation. Expectation, dependency and experience forms the foundation of the association. "We still have in our living room, a green, fiberglass chair, the "Pastilli". It was bought in the 60's...When I saw it in the office furniture shop window, I fell in love with its shape and colour. (Pastilli chair)" (Battarbee & Mattelmäki 2004, p. 339).

A living object, where an emotional bond between a person and an object is established through an active relationship and exchange which results in the presence of the product. "I imagined I was inside my car. We would drive along the floor...racing around, a bump in the rug as our garage. Tyly (the toy car) was like a friend, always ready for an adventure" (Battarbee & Mattelmäki, 2004, p. 340).

The authors come to the conclusion that the strongest relationships are formed with products that have the longest history with a person. With time, relationships are formed and as a result, rich descriptions are made. The other point to mention is that the relationship is dependent on the individual's life situation. The narrative approach as data collection method provides a "holistic picture of the user, [and] stories of products can be used as a way to empathically understand people and their values as expressed through products" (Battarbee & Mattelmäki, 2004, p. 341).

The living object demonstrates the relationship between person and object because of the emotional attachment and is found as a higher order category, as a result of the personal association and attachment.

B. Precedent study - Philosophical experiment

The four sections that form the structure of the book, *How are things? A philosophical experiment*, relate to the same emotional complexity: astonishment; trial and error; panic; and calm. A narrative description of the relationship with an everyday use object, for example the teapot, falls within the 'trial and error' section of the book. Droit (2005, p. 125) describes these objects at the "border-crossing" where people and things intersect. This is described as the 'fold', where meanings and associations are contained.

"Between two meetings, just enough time for tea. It is a long time since I drank a cup of tea, but why not? ...The waiter comes and sets down the tray. The hotel isn't much to look at, but it owns its own silver and has its standards. The teapot is muffled in a sort of quilted overcoat, supposedly to retain the heat for longer. It is slightly absurd, but well-meaning. Underneath the overcoat, white porcelain. Simple, even rustic, but very round, plump, almost podgy" (Droit, 2005, pp. 103-104).

The author then describes the experience by means of a personal conversation in order to determine the meaning of the teapot. Firstly, its function is framed, as a vessel, and then also as the object in a sequential action of drinking tea. A teapot is considered a higher order object to a bowl, because of its "special operations... infusion, maceration, diffusion of tea-leaf aromas in boiling water...wholly invested in time, heat and confinement... A hidden process of ripening..." The process of making tea is slow and not to be rushed, teapots "do their work in the dark, in secrecy" (Droit, 2005, p. 105).

The invisible or hidden aspects of making tea, is then related to the physical characteristics that are associative and relational because of its use. "It is also a thing which bears the traces of its use, accumulates minute deposits, the patina of age...written upon by time...They are always in a state of

becoming..." and also, "They are never finished, becoming at once more and more smoothly accommodating and more and more densely themselves" (Droit, 2005, p. 105).

How could one relate this narrative to the conceptual model? First, an encounter with a meaningful tool leads to a response with a meaningful association and a dependency is formed, because of its repeated use. This leads to an exchange – tea and person interaction – for a relationship to be established. The teapot becomes a living object, because of its layered presence, and then expands beyond the limits of the teapot itself. How does Droit answer the research question: "How are things?" "They are as you are yourself. Reciprocally so" (Droit, 2005, p. 261).

C. Precedent study - Psychological/emotional experiment

In an experiment conducted with a friend, Alexander (1980/2004, p. 64) demonstrates the nature of the presence or the "I" that exists in a person through an experiment of relatedness or association to a cushion. Two options are presented, both old and worn. The one has a brownish-grey colour and the other, reddish with yellow lines in a tracery pattern. Of the two options presented, the friend chose the worn cushion that "had a faintly glowing quality. It was attractive to the heart" – the reddish cushion (Alexander, 1980/2004, p. 64).

The friend explained the relatedness of the "I": "It seemed to go out *toward* the cushion...my "I" seems larger than before, and it tends to expand toward the cushion, includes it" (Alexander, 1980/2004, p. 64). This example shares a very personal experience of the interiority of the cushion related to that of the person, and in the same way, the interiority of the person extends toward the cushion. This intangible quality of emotional attachment is made tangible through the narration of the experience.

In the philosophical experiment, Droit (2005) makes a link with the same sensitivity:

"Finally, I would say that our attitude to things is an index of our relationship to ourselves. If they fascinate and holds us in thrall, we no longer know who we are. But if we repulse and scorn them, we fall equally wide of ourselves. It is between these two poles that we should steer a course, always ready for the encounter with things, noting how they mingle or meddle with us, how they encroach upon our supposed freedoms. We are not 'centred' upon ourselves until we can bear to admit that such a centre does not exist" (Droit, 2005, p. 261).

What is the meaning of the final line in this quotation? How can the centre not exist? Does such a deeply emotive experience allow for the centre to shift, outside of ourselves? Enlarging and becoming something else?

Attachment and wholeness are words that become "folds" (Droit, 2005, p. 11) to the participant or user through the narration of the essence of the life of things. Folds develop into propositions or suggestions for association, dependent on time, context and situation. One could then argue for attachment to the presence, or the expanded field of experience of an object, but also through the object(s).

DISCUSSION

If objects or products (things) can be described as living objects, because each becomes a companion to a person, and holds a presence, then one could personify spaces. Spaces that are nurturing, could become 'nurturers'. Could 'facilitators', 'comforters', 'challengers', 'pleasers,' 'teachers' and a 'friend' then be the key to understanding the intangible meaning-making of interiors through emotional attachment?

The conceptual model (Figure 4) that has been developed from the theoretical framework, is mapped below into an integrated conceptual model as a relational field or network of meaning-making of the intangible (Figure 5).

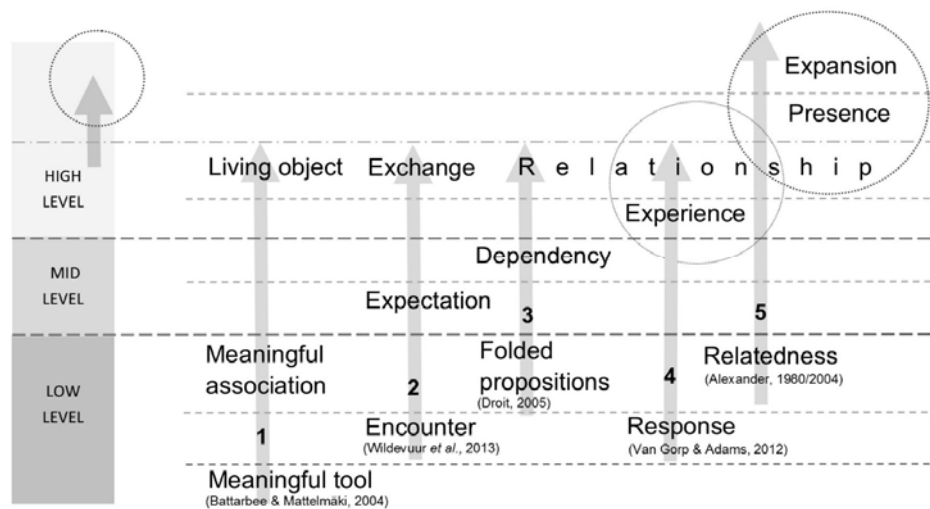


Figure 5. Integrated Conceptual Model

Sources: Adapted from (Battarbee & Mattelmäki, 2004, p. 338); (Wildevuur *et al.*, 2013, p. 70); (Droit, 2005); (Van Gorp & Adams, 2012, p. 90); (Alexander, 1980/2004, pp. 64, 65)

Figure 5 illustrates that the variables associated with products and development (arrows 1, 2 and 4), start at the low level of the integrated model, but all culminate in the high level or 'relationship' layer. The philosophical inquiry (arrow 3), enter the network at the top of the low level, with 'folded propositions' and also finds its ending with relationship formation. The psychological/emotional inquiry by Alexander (1980/2004) is the only investigation that crosses the invisible boundary at the high level: acknowledging the 'presence' and 'expanding' the phenomena/qualities of objects and users.

The aleatory method as investigative tool, allowed for chance encounters to emerge from the theoretical framework, resulting in the integrated conceptual model. It was found that this method was more representative of the intangible manifestations found in interior architecture and design; as compared to more conventional methods. The formulation of the theoretical framework revealed the empirical nature of the inquiry, as experimental projects that can be reproduced; although the aspect of chance is present. The process of meaning-making of the intangible, through emotional attachment, could consequently be mapped.

It is evident from the findings that the focus on commodified emotion; experience design; object making and interaction; as well as product development, relies strongly on the lower layers of the integrated model for meaning-making. This paper illustrates the lack of emphasis on the higher psychological/emotional understanding of the attachment process that is made possible through relational encounters.

CONCLUSIONS

An exploratory investigation of the relational condition between people and object as personal encounters, indicated that the integrated conceptual model developed may lead to a better understanding of emotional attachment in design. The relevance of this integrated conceptual model revealed the complexity and intricacy of inhabitation and interiority, with special focus on emotional attachment at a higher level. Because of this understanding it is proposed that this model can also be applied to spatial considerations in the design of interiors, as interiors contain collections of objects and artefacts that are experienced through inhabitation.

What is the implication then for spatial design and the understanding of the interior and interiority? The relational field of experience is extended beyond the boundaries of the interior as container, past objects and artefacts and allow for more opportunities for 'entering' into the emotional field. Multiple entry points result in a network of meaning-making, expanding the narrative and opportunities for emotional attachment through relational encounters.

A deeper psychological understanding of the interior can therefore be proposed. This psychological meaning-making process thus culminates in the person or user, or even extends from the person outward into the space. As a result, the object-space-person relation becomes one integrated whole and expresses a rich presence of interiority in the expanded process of meaning-making. This extended view of the interior is significant for both designers in the profession and academics in education, as the deeper essence and understanding of interiors and the association with users are emphasized. Through this understanding, a stronger consideration for the intangible may become an active design consideration - where the presence of interiority is expanding and becomes the emotional interior.

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IMPLEMENTATION OF UNIVERSAL DESIGN APPLICATION FOR HEARING DISABILITIES IN CAMPUS ENVIRONMENT

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ABSTRACT

Campus building is where students undergo of learning process and perform various activities. In learning process, campus should provide universal design facilities for all students, including students with disabilities. The design of campus is an important factor in operation and service of a higher education. Universal design application of lecture room in CADL ITB can make it easier of activity for students with hearing disabilities. The purpose of this research is test a universal design strategy for reducing hearing impairment, visual communication barriers and assistive technology strengthen, but universal design application to hearing disabilities that is much different and usually involves visual signs

This research uses 3 stages of method that is descriptive qualitative, classification analysis, and proposal design solution method. Using the parameters of 7h universal design principles, the factors involved in the application can be classified to determine the problem of lecture space in CADL ITB as a case study.

Then the observation of the interview result through questionnaire of 60 respondents of students / alumni of hearing disability in various universities stated that it is still difficult to be accessed in lecture room because there is no universal design facility available. While informants 10 persons academic and not academic people understand and design universal knowledge for the disabled except hearing disability.

The research results of this study indicate that the universal design application in lecture space in CADL ITB not optimal, then the existing problems will be given a design solution to maximize of universal design application.

Keywords: universal design, deaf space, lecture room, hearing disabilities L-ITB campus

INTRODUCTION

Interior Design is not just the science of indoor design that meets the basic needs, functions and aesthetics. These three things are indeed a major 'task' in interior design. Each space is designed for the development of functions and supporting elements. Offices, airports, stations, and hotels or apartments, for example, serve as accommodation facilities. An Universal Design in a public space should be accessible and user by a variety of different needs. Hearing disabilities barrier obstacles to Universal Design that applied to the needs are much clearer and usually involve visual cues.

As a human, hearing disabilities have the same rights to obtain education and accessibility of proper buildings and accommodation has been regulated in the Law 1945 Constitution as well as the concern of

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the world community through the UN and UNCRPD Law No. 19 of 2011 on the Convention on the Rights of Persons with Disability. One of the rights guaranteed is the opportunity to run all of its activities easily, safely, conveniently as realized through the availability of accessibility facilities . In Indonesia the availability of universal design is regulated in more detail in Peraturan Presiden RI UU No 8 tahun 2016 concerning Persons with Disabilities in article 18 Accessibility section b reads "to obtain adequate accommodation as a form of accessibility for individuals" while Article 19 of Public Service for b reads "mentoring, translation and the provision of easily accessible facilities in public services at no additional cost" and Peraturan Menteri Pendidikan dan Kebudayaan No 46 tahun 2017 on Special Education and Special Education Service in Universities. Both of these national-level regulations require every public building including the university to meet the 7 principles of Universal Design standards. The lecture space at campus is one of the main functions used by all students including disability, so the lecture space at university meets the nationally regulated universal design regulation standards

RESEARCH METHODS

The research method used is qualitative descriptive method and survey with interview technique to get requirement of data from research subject (Moleong, 2006), that is student/alumni with hearing disabilities. This research is evaluative, that is analyzing aspect of visual behavior on lecture room through standard of universal design principles that is sidewalk, circulation, corner wall, door and window, arrangement of table and chair, lighting and color and etc. The research results showed that concept of new lecture room design from design that has not met of universal design standards on room element. The method used is descriptive qualitative and survey method with interview technique to get the data requirement from research subject (Arikunto, 2010, p. 118), that is students or alumni of hearing disabilities 60 persons respondents and informants of 10 persons academic and non-academic of currently working close to students with disabilities participated in this study.

See of picture below there are several of respondent characteristic with students or alumni hearing disabilities at various university.

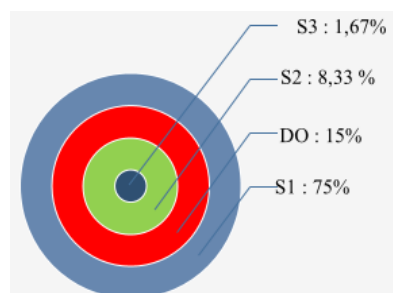


Figure 1. shows most of the respondents of students or alumni with hearing disability in this study were in the age rangen 17-25 (55%) and the male sex more than women. In terms of education level of most respondents S1 (75%), where there students drop out of college (15%) because not access.

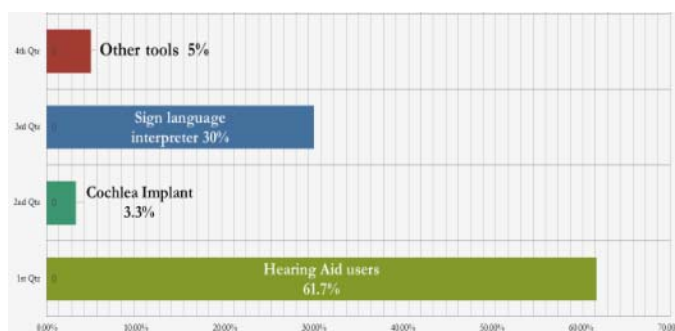


Figure 2. shows the respondents needs of most using hearing aid is 61,7 %, however the lecture space services and assistive technology aren't accessible.

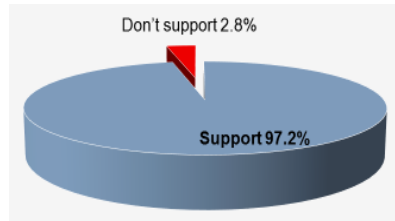


Figure 3. shows most of the respondents needs access of lecture space and assistive technology to be given opportunities and equality with other students.

The case study in this study was taken samples of CADL-ITB building located ITB complex in Bandung city, which aims to review the campus alignment to students who have different needs from the design side.

Data analysis methods used include:

1. Descriptive data analysis method; descriptive method in the form of embodiment of words. Qualitative data is the source of a broad description and more emphasis on meaning and bound value. Qualitative research is used to identify hidden meanings, to understand social interactions, to ensure data validity, and to develop existing substantive theories.

2. Method of analysis of data classification: the literature data about universal design and lecture space that is made into parameters and classified into 3 parts, namely: optimal (4), optimal enough (3), Sub optimal (2) and No access (1). The classification aims to find out the factors of universal design including which parameter classification. Universal design factors that include optimal classification (3) and Sub optimal (2) are factors that have problems in the application of universal design.

DISCUSSION RESULT

A. Hearing Disabilities

Hearing disabilities is a person experiencing a deficiency or loss of good ability or that can't be done with hearing aids so that he can't use his hearing devices in everyday life. There are several categories of hearing disabilities as follows are : Deaf-verbal, Deaf-sign language, Deaf-verbal/sign language, and Hard of Hearing (HOH) are categories of hearing impairment that can only hear above 91 dB (decibels). In this category, students with hearing disability are unlikely to have normal conversations, and many are deaf to the public.

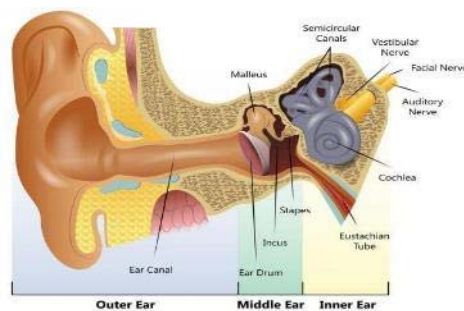


Figure 4. Physiology of Hearing diagram.

Source: Nordqvist, Christian. Deafness and Hearing Loss (DHL): Causes, Symptoms and Treatments (updated 1 September 2017)

There are three different types of hearing loss: (Christian , 2017) follows as :

1) Conductive hearing loss. This means that the vibrations are not passing through from the outer ear to the inner ear, specifically the cochlea. It can be due to an excessive build-up of earwax, glue ear, an ear infection with inflammation and fluid buildup, a perforated eardrum, or a malfunction of ossicle (bones in the middle ear). Also, the eardrum may be defective. Ear infections can leave scar tissue, which damages the functioning of the ear drum, and ossicle may be impaired due to infection, trauma, or their fusing together (ankylosis). **2) Sensorineural hearing loss.** Hearing loss is caused by dysfunction of the inner ear,

the cochlea, auditory nerve, or brain damage. Usually, this kind of hearing loss is due to damage of the hair cells in the cochlea. As humans get older, the hair cells lose some of their function, and our hearing gets worse. In Western Europe and North America, it is estimated that over half of all people over 70 have hearing impairment caused by degenerated hair cells in the cochlea. Long-term exposure to loud noises, especially high-frequency sounds, is another common reason for hair cell damage. Damaged hair cells cannot be replaced. Currently, research is looking into using stem cells to grow new ones. Sensorineural total deafness may be due to birth defects, inner ear infections, or head trauma. If the eardrum and middle ear are functioning properly, patients may benefit from a cochlear implant - a thin electrode is inserted into the cochlea, it stimulates electricity through a tiny microprocessor that is placed behind the ear, under the skin. **3) Mixed hearing loss.** This is a combination of conductive and sensorineural hearing loss. Long-term ear infections can damage both of eardrum and ossicle. Sometimes, surgical intervention may restore hearing, but it does not always work.

Based on these three classifications, it can be concluded that hearing loss is a listening ability, including the ability to capture, distinguish, or listen to sound, which is below normal listening ability.

B. Universal Design

Definition of universal design is while the concept of universal design emerged primarily with people with disability in mind, universal design helps everyone with support and assistance needs including the elderly, pregnant women, children and people with a temporary illness or injury (Goldsmith, 2000, pp. 1-2). Thus, benefits of implementing universal design are wide. Seven principles of universal design application will support practitioners to better meet the needs of as many users as possible. When working in developing countries, it is important to also take into account cultural, economic, engineering, environmental, gender and social contexts. According to Ron Mace, The Center of Universal Design, 1997 universal design is a philosophy in designing an appropriate and enabling environment for everyone without the need for great adaptation. In addition to providing easy access for people with disabilities, universal design is also aimed at parents, pregnant women, children, and foreigners. Universal design contains 7 main principles, namely:

Principle 1: Equitable use; Design that is useful and marketable to persons with diverse abilities.

Principle 2: Flexibility in use; Design that accommodates a wide range of individual preferences and abilities.

Principle 3: Simple and intuitive use; Design that is easy to understand, regardless of the user's experience, knowledge, language skills, or concentration level.

Principle 4: Perceptible information; Design that communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.

Principle 5: Tolerance for error ; Design that minimizes hazards and the adverse consequences of accidental or unintended actions.

Principle 6: Low physical effort ; Design that can be used efficiently and comfortably and with a minimum of fatigue.

Principle 7: Size and space for approach and use ; Design that provides appropriate size and space—for approach, reach, manipulation, and use, regardless of the user's body size, posture or mobility .

These principles apply generally to all areas of design, architecture, interior, products, etc., primarily in the form of facilities and products of public facilities (Dobkin & Peterson, 1999). In particular, these principles

can also be applied to private facilities with special needs. These principles offer designers guidance to better integrate features that meet the needs of as many users as possible.

C. Important factors of Universal Design application


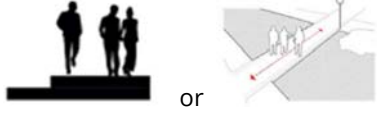



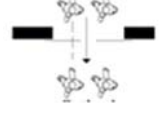




In universal design application requires factors that are essential to support success in universal design projects. Factors to note are Deaf Space design, which are applied in five aspects of the building include the arrangement of (Bauman, 2010): **(a) Space and proximity**; spatial orientation and the awareness of activities within our surroundings are essential to maintaining a sense of well-being. Deaf people “read” the activities in their surroundings that may not be immediately apparent to many hearing people through an acute sensitivity of visual and tactile cues such as the movement of shadows, vibrations, or even the reading of subtle shifts in the expression/position of others around them, **(b) Sensory reach or visually**; in order to maintain clear visual communication individuals stand at a distance where they can see facial expression and full dimension of the signer’s “signing space”. There space between two signers tends to be greater than that of a spoken conversation. As conversation groups grow in numbers the space between individuals increases to allow visual connection for all parties. This basic dimension of the space between people impacts the basic layout of furnishings and building spaces, **(c) Mobility and Proximity**; while walking together in conversation signers will tend to maintain a wide distance for clear visual communication. The signers will also shift their gaze between the conversation and their surroundings scanning for hazards and maintaining proper direction, **(d) Lights and colour**; Poor lighting conditions such as glare, shadow patterns, backlighting interrupt visual communication and are major contributors to the causes of eye fatigue that can lead to a loss of concentration and even physical exhaustion. Proper Electric lighting and architectural elements used to control daylight can be configured to provide a soft, diffused light “attuned to deaf eyes”. Color can be used to contrast skin tone to highlight sign language and facilitate visual wayfinding and **(e) acoustic**; deaf individuals experience many different kinds and degrees of hearing levels. Many use assistive devices such as hearing aids or cochlear implants to enhance sound. No matter the level of hearing, many deaf people do sense sound in a way that can be a major distraction, especially for individuals with assistive hearing devices. Reverberation caused by sound waves reflected by hard building surfaces can be especially distracting, even painful, for individuals using assistive devices. Spaces should be designed to reduce reverberation and other sources of background noise.

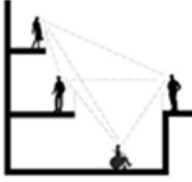
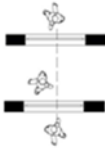


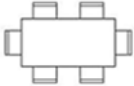


The visual behavior access set forth in the deaf space guidelines has 5 main aspects. However, given the different scope of 7 universal design principles, the five aspects can't be directly implemented in the design. The researcher tries to bridge 5 aspects related to visual behavior access for users of hearing disability in deaf space guidance with 7 universal design principles through integration concepts. This is intended to facilitate the designer in applying access to visual behavior based on deaf space while applying the rules of universal design.


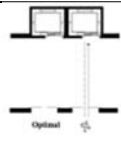






By following the fifth principle of deaf space principle then the project to apply universal design will be easier.


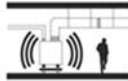
Table 2 Conclusion Space element analysis approaches the five principles of Deaf Space. Source: Excerpted from Bauman, Worrell, R, 2011,p.58-68 and Analysis of researcher, 2017

Element
1.Space and proximity
a. Pathway widths ; Hearing disabilities (HD) require wider pathways for eye-to-eye communication. Pathways should be 8’ wide minimum. This applies to sidewalks and hallways. Sidewalks that are too narrow may force a HD to walk in the street while conversing, which can be hazardous. More circulation space and public space will increase building cost.

Suboptimal	Optimal
	
<p>b. Corners: Use angles, curves, interior windows, or notches to soften corners, provide better visual awareness, and avoid collisions. Avoid pathways that intersect at 90 degrees or abrupt angles.</p>	
Suboptimal	Optimal
	
<p>2.Sensory and reach</p>	
<p>a. Automatic Doors : Provide automatic doors at building entrances for uninterrupted conversation and visual connections. Consecutive automatic doors in a vestibule, if placed close together, do not allow for continuous conversation</p>	
Suboptimal	Optimal
	
<p>b. Door Swings ; Doors should swing into rooms or vestibules, not directly into hallways. Doors swinging into hallways pose a potential hazard to HD and people with other disabilities.. Doors should swing into rooms or vestibules, not directly into hallways. Doors swinging into hallways pose a potential hazard to HD and people with other disabilities.</p>	
Suboptimal	Optimal
	
<p>c. Glass Doors ; Solid doors should be avoided. Doors should have some amount of glass in them for visual connections, unless privacy dictates otherwise. Transoms above doors can also be helpful to indicate activity in a room while maintaining privacy.</p>	
Suboptimal	Optimal
	
<p>d. Vertical Visual Connectivity ; Visual connectivity is both vertical and horizontal. Stagger internal balconies instead of stacking them to provide better connections between levels. Provide clear sightlines at a various elevations to stimulate social interaction.</p>	

Optimal	
<p>e. Interior Windows and 2-Way Mirrors ; Interior windows can provide visual linkages between adjacent spaces and can also be used to soften corners to avoid collisions at corridor intersections. 2-way mirrors can provide privacy in a space while still allowing visual access from one side. Reflections also give HD a better awareness of their surroundings.</p>	
Suboptimal	Optimal
	
<p>g. Degree of transparency ; Using frosted, tinted, or obscured glass can provide some degree of privacy while still alerting HD of occupancy or activity.</p>	
Optimal	
<p>3.Mobility and proximity</p>	
<p>a. Tables ; Round tables for 5 people or more allow everyone at the table equal visual access. Square tables are acceptable for 4 people or less. Rectangular tables for more than 5 people make it difficult for a HD to see everyone else at the table and participate fully in the conversation.</p>	
Suboptimal	Optimal
	
<p>b. Seating arrangements ; Seating arrangements that take the form of circles or half-circles are most effective in granting everyone equal visual access. Semicircular seating arrangements are common in deaf classrooms.</p>	
Optimal	
<p>c. Visible destinations ; Make destinations directly visible, and minimize the need for signage. Avoid shielded entrances, solid doors, blind intersections, and visual interruptions..</p>	

Suboptimal	Optimal
	
<p>d. Way-finding elements ; Use variations in color, texture, design motif, and numbering systems to help HD understand their location within a larger structure. Use textured edges to walkways and intersections to show pathway changes. Use landmarks, artifacts, nodes, gateways, and points of interest to promote better orientation.</p>	
Optimal	
<p>e. Transom windows ; Transoms or high windows should be used in places that cannot contain average-height windows or glass doors. Transoms can provide clues to occupancy and activity inside an area. Low windows directly behind a person who is speaking or signing can cause glare, but high windows allow light to enter without disrupting conversation.</p>	
Optimal	
<p>4.Light and colour</p>	
<p>a. Reduce glare from natural light ; Use shading devices to prevent glare that could interfere with communication. Reflective building surfaces should be avoided. Outside walking surfaces should be textured, patterned, or darkly colored to reduce glare.</p>	
Optimal	
<p>b. Exterior Windows in Corridors ; Windows in corridors allows natural light to enter as well as facilitate a better connection to what is happening outside. Single-loaded corridors or extending the hallway to the exterior of the building can waste valuable space, which must be weight against the benefits of natural light.</p>	
Optimal	
<p>c. Artificial Lighting ; Sign language occurs within an anthropometric range of 2'-6', as shown in Figure 33, and 40 foot-candles should be provided in this range. Light sources should be hidden to provide softer illumination. If light is too bright, it can create eye-strain for HD.</p>	
Suboptimal	Optimal
	

5.Acoustics ;	
Control Noise and Vibrations: Reduce vibrations and unwanted noise from mechanical systems and other sources. Background noise can be bothersome for people who have residual hearing or use hearing-aids or cochlear implants (Bauman)	
Suboptimal	Optimal
	

Classification is based on universal design parameters that can be used to determine the level of conformity of standard 7 universal design principles. Objects that will be analyzed to produce factors that are not in accordance with universal design standards will be proposed solution design for the problems that exist in the lecture space. From the results of existing data analysis and design solutions will be found the conclusion of applying of elements universal design concept in this lecture room, as follows:

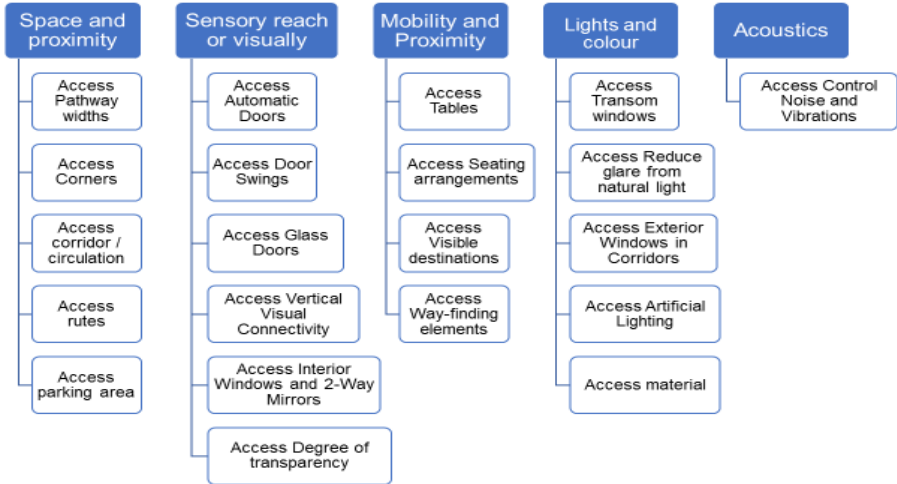


Figure 5. An important factor in the application of universal design (specifically deaf space design guidelines). Source : Analysis of Researcher, 2017

Judging from the division of factors that exist, then in the application of the universal design of lecture space in the building CADL ITB requires factors only tailored to the topic of discussion, namely Deaf Space design guidelines, which are applied in five aspects of the building include the arrangement of (a) space and proximity : access pathway widths, access corners, access corridor / circulation, access routes, and access parking area, (b) sensory reach or visually : access automatic doors, access door swings, access glass doors, access vertical visual connectivity, access interior windows and 2-way mirrors, and access degree of transparency, (c) mobility and Proximity : access tables, access seating arrangements, access visible destinations, access way-finding elements, (d) Lights and colour : access transom windows, access reduce glare from natural light, access exterior windows in corridors, access artificial lighting and access material, and (e) acoustics : access control noise and vibrations.

D.Object description



Figure 6 : Map ITB Campus (red circle). Source : Data Directorate SP-ITB, 2017



Figure 7 : Location of CADL Building. Source : Data Directorate SP-ITB, 2017



Figure 8 : Physical appearance of CADL ITB building. Source : Researcher, 2017

ITB campus located in the Bandung city with an area of 81.425, 53 M2 or 8.14 hectares (Data Directorate SP-ITB, 2017). The location of the CADL building is part of the Bandung Institute of Technology complex located in Ganesha. This CADL building of amount to 7 floors consists of several functions of the spaces, that is theory class room, studio room, practice room, lecturers room, meeting room, courtroom, staff room, display room, toilet and mushola. This is important in order to accommodate everyone with different abilities.

The building mass in Figure 6 is 7 floors, based on space program data as follows: 1st floor FSRD entrance hall and Language Center, 2nd and 3rd floor lecturer rooms and lecturers' meeting room and staff administration majors room, 4th, 5th, 6th and 7th floor theory class room, practice room, studio room and courtroom.

RESULT

The universal design application on lecture room in CADL is analyzed by classifying factors aspect visual perception for hearing disabilities. Classification is based on universal design parameters that can be used to determine the level of conformity of standard factors 7 universal design principles. Objects that will be analyzed to produce factors that are not in accordance with universal design standards will be proposed solution design for problems that exist in lecture space. From the results of existing data analysis and design solutions will be found conclusion of the application of the concept of universal design elements in lecture room.



Figure 6 Access horizontal. Denah 1st floor CADL-ITB Source : Researcher, 2017

The visual signs/marks on the exterior and interior of this lecture room at CADL ITB building including no access classification (1) because it doesn't meet of universal design standard the 2nd and 4th. No signs are used, so it is difficult to understand for users. Should lay out a strategic mark, the use of contrasting colors and large sizes can be seen for all users.

Parking area serves parking space and circulation, the need for visual behavior access is to know the existence of vehicles passing in front or behind the surrounding. Visual behavior access function is a view, self-protection and natural supervision. The parking area works in the parking lot. The function of visual behavior access is viewing, self-protection and natural surveillance. Breezeway serves the interconnection between buildings and circulation, the need is to know conditions outside the hall, in buildings and wayfinding (when first come). The function of visual behavior access is viewing, self-protection, natural surveillance and wayfinding.

See Figure 6.1 access corridor from parking area to entrance including of sub optimal classification (2) because haven't parking for disabilities (Figure 6.5) . Figure 6.2 access entrance to lobby at CADL ITB building including of sub optimal classification (2) because it doesn't meet of universal design standards the 1st, 5th and 7th. Figure 6.6 access entrance to elevators area including of medium classification (3) it meet enough of universal design standard. Figure 6.3 waiting area and security desk (Figure 6.4) including of sub optimal classification (2) because it doesn't meet of universal design standards the 4th nothing visual signs/marks no sign of space for whom in the hall area.

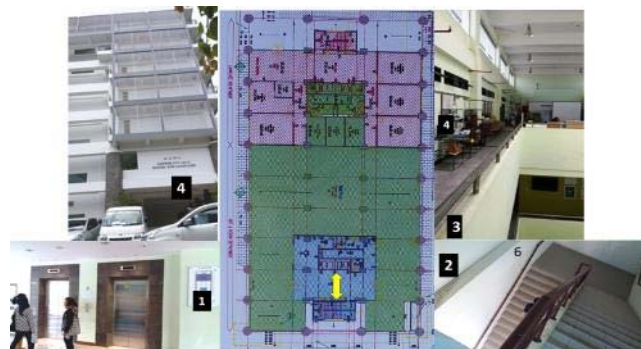


Figure 7. Access vertical - access between rooms 1st floor to 7th floor. Denah 1st floor CADL-ITB
Source : Researcher, 2017

Figure 7.1 access corridor to elevators area and stairs (Figure 7.2) including of medium classification (3) because elevators and corridors fit universal design standards the 1st, 5th and 7th. Access floor to lecture room (Figure 7.4) of vertical visual connectivity (Figure 7.3) including of classification medium (3) it meet enough of universal design standards the 1st, 3rd, 5th and 6th. Visible information board next to the elevators is sufficient access for hearing student disabilities students including universal design principles to 2 and 4 except emergency stairs including sub optimal classification

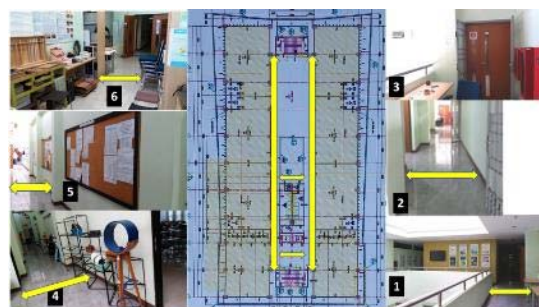


Figure 8. Access corridor circulation to lecture class room. Denah 7th floor CADL-ITB
Source : Researcher, 2017

Access circulation to lecture room including of sub optimal classification (2) because pathway width narrowed (all Figure 8) t doesn't meet of universal design standards the 1st, 5th and 6th. Pathways should be 8' wide minimum, also no visual signs/marks it doesn't meet of universal design standard the 4th. There are accommodated of student work items (Figure 8.4) and even bulletin boards will disturb people through the corridor (Figure 8.5) including of sub optimal classification (2) because it doesn't meet of universal design standard the 1st, 2th, 5th and 6th. Visible staff room on the lid without any information signs of what is space will be harder hearing disabilities users (Figure 8.3) including of classification sub optimal (2) because it doesn't meet of universal design standard the 1st, 4th, 5th and 6th



Figure 9. Seating arrangements and tables on lecture class room.
Denah 7th floor CADL-ITB. Source : Researcher, 2017

Lecture classroom function learning, practice, and seminars. The need is to know the condition of the outdoors (if own) and the people inside (if being in college and there are others), while the visual behavior access function is viewing, self-protection and natural surveillance.

See this classroom theory (Figure 9) includes the sub optimal classification (2), as it does not meet universal design standard the 1st, 2nd, 4th, 5th and 7th. In the layout seating arrangements and tables in the classroom theory is not provided a U-shaped arrangement then the students with hearing disability is difficult to access because they are usually visual communication through mimic mouth Lecturer was talking. That take the form of circles or half-circles are most effective in granting everyone equal visual access. Visible theory classroom and a separate courtroom (Figure 9.2) cabinets closed (Figure 9.3) including of classification sub optimal (2) because can interfere with noise from the adjacent room without walls. Layout of seating arrangement and tables can be seen the desired area through the existing visual behavior access elements, don't back to the elements or block people see elements.

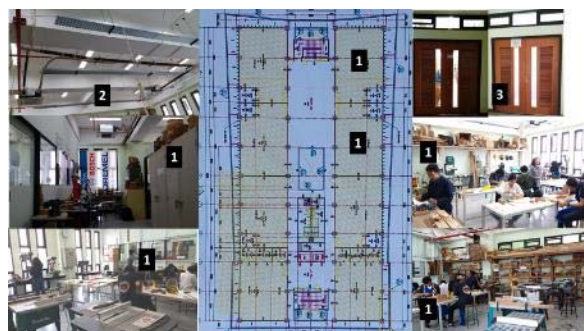


Figure 10. Light and colour and acoustic . Denah 7th floor CADL-ITB
Source : Researcher, 2017

See figure 10.1 lighting on lecture cllas room including of medium (3) classification because it meet enough of universal design standards the 1st, 4th, 5th and 6th. Lighting during the day is quite fulfilled through window openings. Thus, natural lighting through window openings is adequate. At night use artificial

lighting using incandescent lamp, which provides the quality of warm light with intensity of light intensity that remains uniformly distributed, not dazzling, and does not cause shadows.

CONCLUSION

The results of data analysis derived from field data and literature data or universal design standards, then factor of deaf space design guidelines can be classified according to the universal design parameters. Universal design parameters are obtained through the data literature or universal design standards. This is the result of conclusion in accordance with the formulation of existing problems.

Suggestions and recommendation, the researcher proposes a solution design in accordance with universal design principles for hearing disabilities. For the development of the next campus, should the university parties have planned the universal design application on all the factors of universal design, in order to provide facilities for students with hearing disability and government parties of the Ministry of PUPR can accommodate the universal design for hearing disabilities into the Ministry of PUPR regulation book number 14 year 2017 and also Ministry of Research and Technology of Higher Education number 46 year 2017. So that community of hearing disabilities in Indonesia can enjoy life and equality of rights to environmental and building accessibility without discrimination.

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SPATIAL SEQUENCE MANNER IN DEFINING LOCI SACRI: A STUDY ON BAHRUL ULUM MOSQUE'S ARCHITECTURAL ELEMENTS

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ABSTRACT

The definition of sacred place is subjective and complex but architectural elements seem to have the ability to define it. Architectural elements 'mold' space into a *locus sacri* in many ways—from being symbols of the sacredness itself to using lights on creating certain nuance. However, they will only be meaningful for people who use the place for the purpose of searching for sacredness or doing sacred rituals or activities. This paper is an attempt to know how architectural elements construct sacred place from its user's perspective. Bahrul Ulum Mosque became our case study because of its solitary nuance even though it is surrounded by housings and national scale research center. We explored the mosque's architectural elements by following Islam ritual orders. Based on our observation and exploration we argue that Masjid Bahrul Ulum's spatial sequence defines its sacredness with subtle repetitions and ambiguous atmosphere.

Keywords: mosque, place of worship, religious architecture, sacred place, spatial sequence

INTRODUCTION

In his endeavor to define beauty in architecture and ideals of home, Alain de Botton once wrote "in danger of being corrupted by our passions and led astray by the commerce and chatter of our societies, we require places where the values outside of us encourage and enforce the aspirations within us" (Alain de Botton, 2006, p. 108), as if we need a place that is detached from our everydayness. What De Botton wrote is not specifically about *loci sacri*—sacred places—but the discourse about our need to create a place where greater power exists that has lingered since a long time ago.

Looking through its literal meaning, *loci*, the plural form of *locus*, means "the place where something is situated or occurs" (Merriam-Webster, 2017). Meanwhile, *sacri* means holy or "entitled to reverence and respect" (Merriam-Webster, 2017). Thus, in general, *loci sacri* means a situated place that enhances great respect.

Although the literal definition of a sacred place is easily known, the absolute answer to what constructs it is nonexistent. What we consider as a sacred place can be an ordinary one in someone else's perspective. The Istiqlal Mosque is sacred for Indonesian Muslims, but tourists who do not believe in Islam may consider it as a 'mere' historical building or one of the tourism destinations at Jakarta. Despite its grandeur size and nationalism value, the Muslims usually use Istiqlal Mosque for religious rituals, especially for Friday prayer and Eid al-Fitr prayer. The rituals define the sacredness of the building and mark it as a site, which is discrete from profane realm. This distinction encourages certain behaviour, such as using clothes that cover our bodies and hairs (for women), to show respect towards the mosque.

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Yet, the example does not prove that every ritual marks the holiness of a place. A Muslim praying in a vehicle does not make it a sacred place. Neither does incensing at the corner of a market at Bangkok transform it into a holy place. A sacred place seems to contain particular nuance that is different from its surrounding and has definitive physical boundary to differentiate it. Its tranquillity, symbols or grandeur size can separate it from the hustle of non-sacred place. In some point, architectural elements have role to emphasize its sacredness. Stained glass windows in cathedrals that usually illustrate Christ or other holy figures clearly mark a sacred place for Catholics. Meanwhile, the complex geometry on a mosque's façade creates a distinguishable appearance of a holy place for Muslims. Both examples show how architectural elements can be symbols of a sacred place. Nevertheless, their capacity is beyond symbolic. A sacred place has certain distinct proportion and nuance to create awe of the users. A tall ceiling of a gothic church with light refraction, a gigantic *stupa* in the middle of a wide field, or a mosque's arches and pillars repetition are effectual for enhancing reverence.

It is crucial to examine the relationship between rituals and physical elements of a sacred place if we want to know how it is constructed. In his book titled *Seeking the Sacred in Contemporary Religious Architecture*, Hoffman (2010, p. 7-8) wrote, "emplacement, or ritual in place, transforms and elevates the ordinary to sacred". His statement is based on argument of Jonathan Z. Smith, a historian of religion, about how fundamental a place is for religious rituals: "place directs attention". In this position, we have to regard architectural elements as not only tools of the sacred space emplacement but also entities that create orientation for ritual movement. In other words, spatial sequence represents how architectural elements give direction and orientation for sacred rituals. Our premise is examining spatial sequence will lead us to know how physical elements emplace rituals.

Now, how does spatial sequence of a sacred place define sacredness within it? We would answer this question by exploring Bahrul Ulum Mosque. The mosque is located at *Pusat Penelitian Ilmu Pengetahuan dan Teknologi—Center of Science and Technological Research—(PUSPIPTEK)* area, South Tangerang. It is surrounded by a serene landscape that intensifies its solemnity. With its geometrical aperture and distinct spatial composition, Bahrul Ulum Mosque seems to contain deeper quality in enhancing sacredness of a place for worship. We thoroughly observed the architectural elements by focusing on its gate/portal, path, and place. We followed the Islam ritual order—walking through the entrance, removing footwear, going through its terrace that surrounds its yard, cleaning ourselves at *wudu* room, and entering the main pray room—to know how the mosque's architectural elements shape its spatial sequence. We, then, analyze how the sequence symbolizes sacredness by examining its 'archetypal elements'—universal archetype, religious symbols, and geometric symbols—and interpreting the nuance.



Figure 1. Bahrul Ulum Mosque

Source: <http://mistiwardrobe.blogspot.co.id/2012/07> accessed on October, 2017

SPATIAL SEQUENCE IN LOCI SACRI: TURNING ORDINARY INTO SACRED

Before explaining about our exploration on Bahrul Ulum Mosque, we need to elaborate the relation between spatial sequence and *loci sacri*. Further explanation will show that the issue is as primitive as understanding space and place, yet it is excessively abstract.

As Hoffman mentioned about emplacement of a sacred place, we realize that it is always related to how we describe space into place. We know that in general 'space' is more abstract than 'place'. By endowing it with value, space becomes place (Tuan, 1977, p. 6). Nonetheless, if we consider more specific quality, such as 'sacred', 'space' itself is already noticed with sacral experience 'within' it. Meanwhile, 'sacred place' only appears if there is an intended physical element that is used for supporting the experience and marks the sacredness. For example, Muslims can pray everywhere as long as the place is free from *najis*—unclean things or creatures according to Islamic law. In other words, an ordinary clean place is able to be a 'sacred space', but it does not necessarily become a 'sacred place'. A 'sacred place' demands more than just functional matters. *Loci sacri* contains symbols and specific orders to clarify its holiness. In this perspective, place is not only about value in space, but also about defining it as a more 'sensed' matter.

If space is where experience happens, then movements and events must be 'within' and 'through' it. Both happen in certain order that turns them into something called 'sequence'. Sequence generally means "a continuous or connected series" (Merriam-Webster, 2017). The term is commonly being used in architecture realm to define frames of movements in space. Tschumi in *The Manhattan Transcript* mentioned that sequence is "a composite succession of frames that confronts space, movements, and events, each with its own combinatory structure and inherent set of rules" (1994, p. 10). Tschumi's notion about architecture as something that is never disassociated to events (1996, p. 139-150) has put sequence as a 'product' of desire—it strings up events that may appear spontaneously. Relating this notion to previous general differentiation between space and place, we understand that sequence has a capacity to unintentionally endow space with events and movements; hence, making it a 'new' place. This nature of sequence is also applied on rituals at *loci sacri*. However, we have to consider that ritual is more complex than movement. It is a "meaningful action" (Hoffman, 2010, p. 4).

Regardless of the various ways to interpret it, architecture in *loci sacri* can 'dictate' spatial experience. Because it requires reverence, sequence in *loci sacri* is less likely invariable. *Loci sacri* is always related to ritual, which is repeatedly done with order and rules. Following them will direct devotees from its preparation phase to its pinnacle. In the preparation phase, the devotees must clean themselves to show their worthiness to enter the *loci sacri*, whether by washing their body parts or being abstinence for particular time. They enter the sacred place afterwards and walk with the purpose to be enlightened, getting a higher degree, or for clarity. From the entrance to the highest spot of the hierarchy, they amble. When they reach the main room of *loci sacri*, the devotees proceed into the pinnacle of the ritual—gathering to pray. The rituals order is crucial because its process and phases have sacral meanings. Therefore, in this sense, we need to see sequence as symbols carriers. We use "spatial" before "sequence" to emphasize its relation with spatial experience, which is conducted by architectural elements. In other words, spatial sequence is the product of architectural elements arrangements.

It is obvious that spatial sequence is an important matter in emplacing spatial quality, including sacredness. In his attempt to understand how (physical) architectural elements mark certain space with sacral symbols and transform it into a sacred place, Hoffman mentioned about architectural elements, archetypal elements, and atmospheric ambiguities. These three components are arguably linked to define a sacred space.

Architectural elements are materials that conduct the devotees to amble and achieve the peak of their rituals. Hoffman argued that an ordinary space needs these elements to emplace sacredness. Furthermore, to create a sense of awe and mesmerizing spatial quality “architectural setting for worship...must provide meaning in both the physical and metaphysical realm” (2010, p.12). Regarding the significant role of walking through a path toward the ‘highest’ part of *loci sacri*, we think the architectural elements are meaningless without considering the impact of its spatial sequence. Hoffman focuses his notion on the architectural elements of a sacred space into ‘gate’/‘portal’, ‘path’ and ‘place’. It is conformable with our notion about spatial sequence of *loci sacri*.

Concurrently, *loci sacri* bares symbols, which are recognized and admitted by the community of devotee. At the same time, it is intriguing to know that there are symbols, which generally have the same meaning in every religion—water to cleanse and renewal, fire for enlightening, et cetera. In other words, symbols in *loci sacri* can also be public. Hoffman realized this fact so that he examined several works of Jung to elaborate it further. He used Jung’s term in defining “forms or images of a collective nature which occur practically all over the earth as constituents of myths”: archetype (2010, p. 3-4). Hoffman categorizes archetypal elements in *loci sacri* into ‘universal’ symbols, ‘religious/mythic’ symbols and ‘geometric’ symbols.

Furthermore, *loci sacri* can never be separated from the duality of holy and profane, dark and lights, or insider and outsider. The separation is important, as we need to represent divine power into matter. Nevertheless, the relation between profane and sacred is not aloof (Coomans, *et al.*, 2012, p. 7). Therefore we need to consider this relation and examine how atmospheric ambiguity “convey(s) the sense of *mysterium tremendum*” to move the devotee’s minds or consciousness to other places (Hoffman, 2010, p.3).

It may be said that a sacred place is where ordinary place is reconstructed by certain orders of architectural elements to accommodate sacred rituals. Thus, in order to know how a sacred place is constructed, we need to take a look at symbols and nuances by experiencing it as if we are doing the rituals. Gate, path and place construct the spatial sequence, while every step of the rituals is urging the forming of symbols and particular nuances.

EXPLORING BAHRUL ULUM MOSQUE

In this part, we will explain Bahrul Ulum Mosque’s situation and spatial configuration. We will also elaborate our exploration on it, focusing on Hoffman’s categorization of sacred space’s markers: architectural elements, archetypal elements and atmospheric ambiguity.

A. THE SACRED ENCLOSURE

Bahrul Ulum Mosque is situated on a green area of PUSPIPTEK, adjacent to Raya Serpong Street on the west side, PUSPIPTEK Street on the north side, the green area on the South side and a lake on the east side. The only access, for both pedestrians and vehicles, to this mosque, is through the north side, which passes PUSPIPTEK Street.

The position of the Bahrul Ulum Mosque is hidden from Raya Serpong Street. Although it is a public facility, the position creates quietness and a sense of private area. In order to mark its existence, there is a tall contemporary minaret, which can be seen from Raya Serpong Street.

The mosque uses some natural and physical borders to enhance its boundary. A fence separates the mosque area from Raya Serpong Street. Meanwhile, some vegetation and level differentiation at its south divide the mosque area and PUSPIPTEK Street. A lake at the east side of the mosque borders its area from the outside. These borders do not only define boundary in between the mosque and outside but also enhances sacred enclosure with its tranquillity.

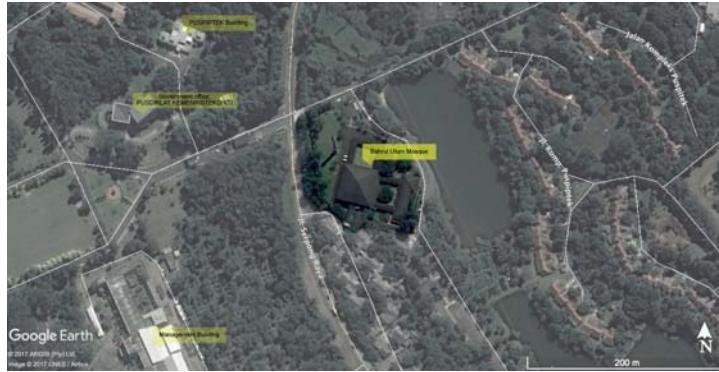


Figure 2. Location of Bahrul Ulum Mosque
Source: Google Earth, 2017

From the four sides of the mosque, only one of them uses physical border to enclose it. This creates the impression that the mosque is open and flexible. It does not directly segregate the outside. This is in line with *loci sacri*'s characteristic: it stands out, but it belongs to the same universe as its other dimension (Coomans, et. al, 2012, p.7).

B. GEOMETRICS FORMS: SQUARE CONFIGURATION

Bahrul Ulum Mosque's spatial configuration is rectangular. It is formed by arrangement of the mass buildings, which consist of the main hall, *wudu*¹, two plazas, and an office and education facility. Two main axes connect the form configuration. The first one lengthens from office and education facility to *mihrab*² Another one elongates from main entrance to *wudu* room. Both axes intersect right in the middle of the main hall, which can be accessed from the mosque's four sides.



Figure 2. Location of Bahrul Ulum Mosque
Source: Google Earth, 2017

1 A room for washing hands, mouth, nostrils, face, arms, head, ear, and feet as a way to self-purify
2-a particular niche that symbolizes wall of qibla—the direction that Muslims should face when they are praying.

The mosque design configuration generates spatial sequence, which enunciates sacred impression. The following description will explain further about it.

C. ARCHITECTURAL ELEMENTS: PATH-SPACE RELATIONSHIPS

To enter Bahrul Ulum Mosque the *ummah*³ will have to go through the gate, then continue to walk on the path to find *mihrab*, the worship's focal point, which is located inside the main hall. The entrance begins with a gate from the north side (Raya Serpong Street). From this gate, pedestrians and vehicle users start entering the mosque area. On the left of the main entrance, there is a parking lot for four-wheel vehicles that also connects with the path on the south side and the path of the east side (Figure 2). These paths give access to office and education facility.

There are three possible sequences that may be experienced by the *ummah*. The first one is the main access. Walking through it gives the *ummah* a chance to observe the minaret and the mosque's front part. The main access has two paths. Both paths are connected to walkways surrounding the plaza. The *ummah* will see the plaza welcoming while they are ambling through the walkways. From this position, the massive figure of the mosque will clearly be seen.

The different floor levels that gradually continue up to the main hall also show this sacral impression. This vertical achievement is a form of application of *axis mundi*⁴ to produce a sacred impression that is felt when the *ummah* enters the courtyard. Moreover, the sequence from the plaza will give the *ummah* an experiential space in the walkways whose sides consist of repeated columns that seem to lead them to the main hall.

However, the mosque does not direct the *ummah* to enter straight to the main hall since it has a great view towards the outside. They are expected to circle the mosque plaza through the east side that has a serene lake view to run one of Islamic sacred ritual⁵: "the ablution". The *ummah* usually does it in *wudu* room at south side of the main hall.

The first path does not only function as a circulation space but also gives impression as if the *ummah* must pass through a long path before worshipping. It seems situated as if they need to leave the profane life and to calm down before doing ablution and worship. From *wudu* room to the main hall, there is a wide terrace that acts as a transition space. The *ummah* must pass through it before entering the portal of the main hall.

³, A Muslim community

⁴. *Axis mundi* refers to the imagined world center. Poles, trees, ladders, and other vertical elements to convey the essential concept of an axial center marking sacred place frequently symbolize it (Hoffman, 2010: 4).

⁵ *Ritual* in this context of this study refers to act to achieve a specific end. It usually has certain patterns and ceremonial movements and articulations that are carried out in a sacred context (Hoffman, 2010: 4)

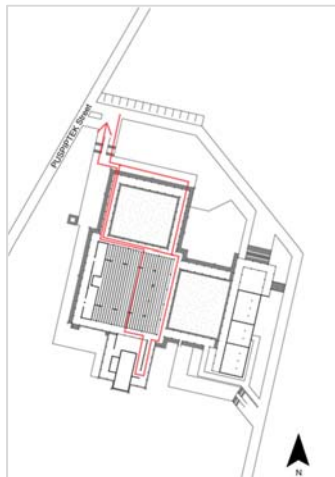


Figure 4. The First Path
 Source: Redrawn PUSPIPTEK's document, 2017

The second path is shorter than the first one. It passes through the south side walkways, terrace, and the main hall. It gives opportunity to the ummah to directly enter the main hall. The ummah can pass through the terrace and does not need to encircle the plaza. This option is more useful for ummah who has previously performed ablution.

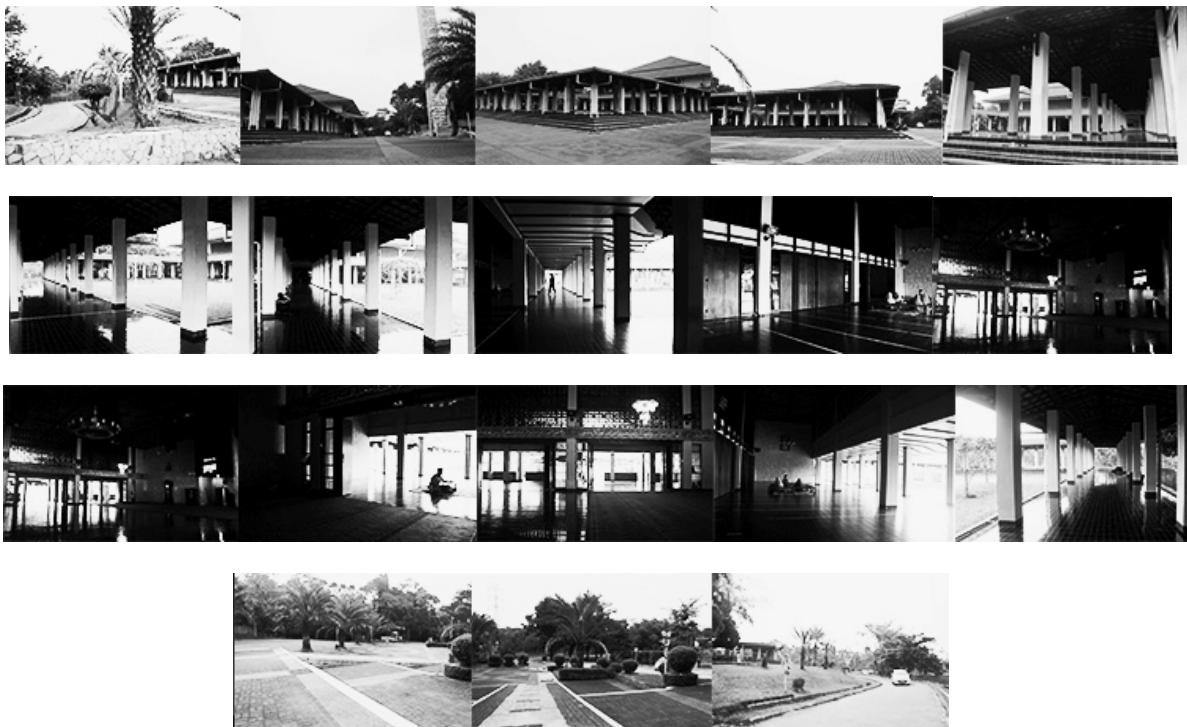
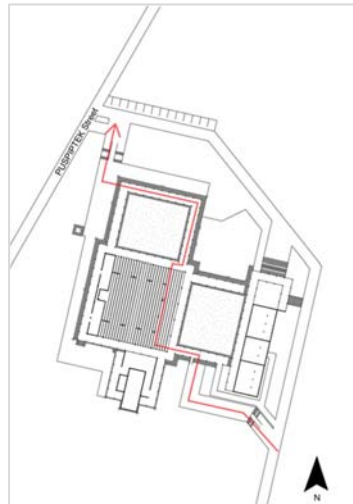


Figure 5. The Second Path
 Source: Redrawn PUSPIPTEK's document, 2017

The third sequence begins from the parking lot to the office and education facility. In this sequence, the *ummah* face the plaza on east side of the mosque, pass through the walkways to the *wudu* room, and walks across the terrace before entering the main hall. They can also use the *wudu* room first before entering the main hall. This sequence option is practical for *ummah* who usually do activities at the office and education facility.

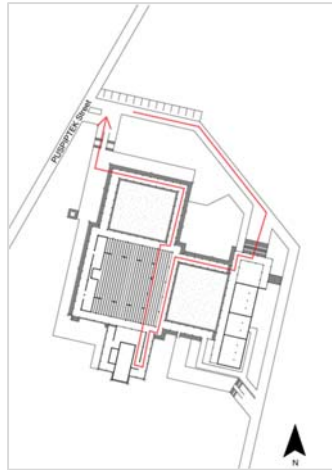


Figure 6. The Third Path
 Source: Redrawn PUSPIPTEK's document, 2017

Generally, each path of Bahrul Ulum Mosque is linear. From the exploration, we notice that the important points of each sequence are entrance, vertical circulation space (such as stairs), walkways, terrace, *wudu* room, and main hall. The three paths do not only reach one point to another but also 'invites' the *ummah* to delve in every path. Every path subtly connects them to feel the divine, which is represented by the *mihrab*.

D. ARCHETYPAL ELEMENTS

Archetypal elements are symbols of a cosmic and unconscious link to realm of the sacred. The symbolic references to archetypes operate in many realms, but this study explores universal, religious (or mythic) and geometric ones. The universal refers to the ancient concept of four primary elements: earth, air, water, and fire.

The representation of earth in Bahrul Ulum Mosque takes many forms. These can be seen in the different levels on the site, starting from the low level of the vehicle circulation, going up to the court then the inner court of the site. The process of level differentiation is shown when the *ummah* starts to enter the main building, which starts from the corridor to the terrace, then enters the first floor to the second floor of the main hall. The process of level differentiation from outside to inside symbolizes hierarchy between the profane and the sacred. Furthermore, the representation of earth is also shown by the existence of various vegetation arranged around the building. Not only it functions as greenery, but the grass in the inner court also represents the existence of nature as human settlements that need to be maintained for providing life-giving renewal and increasing the healing process.

Representation of air (or sky) at the Bahrul Ulum Mosque is found at the aperture of the interior as well as the transition space between exterior and interior. These openings are found on the wall element, which is the circulation area for both visitors and air. In the interior of the mosque, the profane circulation is located along the north and south sides with openings such as doors and jalousies at the top as place for air circulation.

On the other hand, the lake and *wudu* room represents water element. With the existence of this water element, the *ummah* feels the difference of atmosphere from outside to inside the building. This lake serves to provide a transition from the profane to the sacred space for preparing worship. Not only in the mosque environment, but the water element's appearance is also in the interior start from corridor, terrace, until the *wudu* room before entering the praying room. For Muslims, *wudu* is one of the requirements for praying. Nonetheless, the *wudu* room does not only serve as an area to perform it but also leads the *ummah* to prepare themselves to pray.

Meanwhile, the fire element is represented by the attraction of daylight and artificial lighting. The differences in lighting occur from the outside to the inside of the main hall. On the outside, the light is obtained excessively, while in the inside light is very minimal. It is designed to provide the *ummah* with a different atmosphere where they can feel solemnity presented by the minimal lighting. A quiet and different atmosphere also occurs when we enter the second floor of the praying room, where we feel the darkness from the stair before we are being greeted by maximum light from the jalousie.

Religious/mythic refers to the archetypes most commonly associated with cultural identification of religious beliefs, such as the existence of axial pillar. The axial pillar of the Bahrul Ulum Mosque first appears on the outside area. It is in a shape of minaret. Minaret serves as one of the elements of worship building, in addition to its function to signify a mosque in an environment. The minaret also serves for *azan* (a voice caller to remind Muslims the time for praying).

Entering the corridor area, we found regular and repetitive pillar arrangement, framed the corridor in human scale to the next journey to enter the terrace area. Pillars on the terrace also have regularity, but the space feels more spacious. When we come to the main hall, we will no longer find pillars. This wide-span room is welcoming the *ummah*. All of this arrangement gives them an opportunity to feel spatial experiences of a journey from a long corridor to a wider space. The divine representation in the praying room lies in the *Ka'ba* ornament above the *mihrab*. As we have mentioned before, this ornament guides the *ummah* to focus on the Qibla as the orientation in praying.

At Bahrul Ulum Mosque, the elements of archetypes can be found on its floors, walls, and roof. The building is clearly able to define space by presenting barriers of different levels, different floor patterns, walls, doors, and jalousie ornaments as a connection between the inside and outside. The wall creates a good distinction between the outside and the inside. Archetype is also seen in yard as a transition area between the outside and the inside. Meanwhile, the floor as the lower part of the building has a role to define the upper and bottom elements.

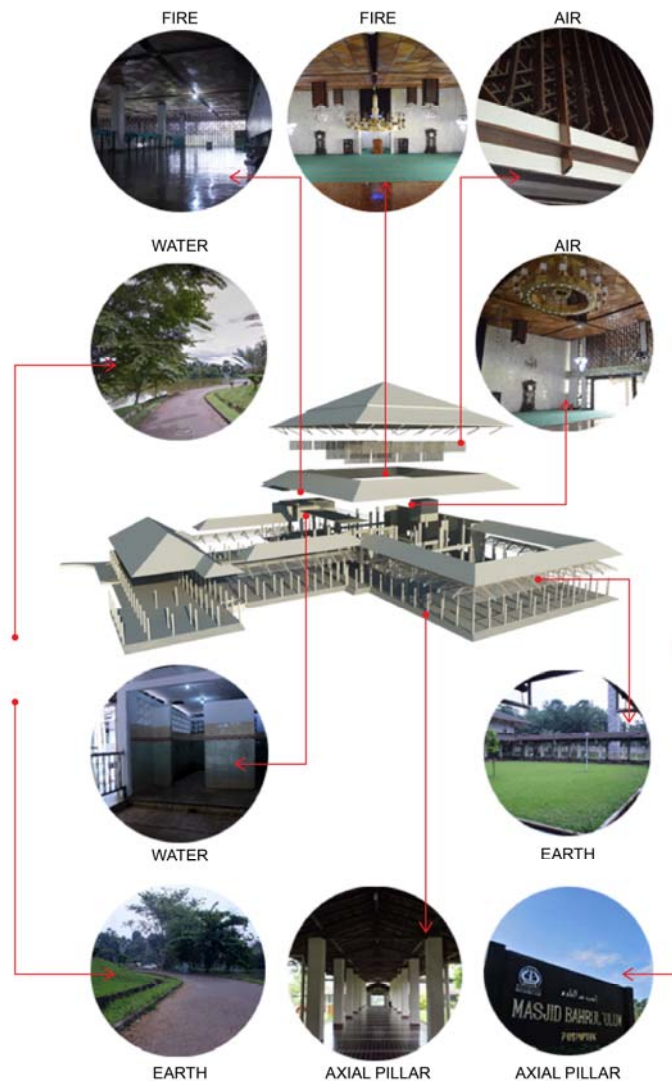


Figure 7. Archetypal Elements in Bahrul Ulum Mosque: Universal Symbols
Source: Authors' document, 2017

Bahrul Ulum Mosque has a rectangular form. It has a main hall without columns and has no dome on its roof. The mosque plan has 5 x 5 meter square module. This square module serves as the basis of development and forming unity as well as rhythm. It also supports linear *ummah's* activities. The square module makes it easy to show the direction of *qibla* while facilitating spatial division in the room. The repetition of this square geometry shapes the lobby area that frames the inner court as life-giving in the building site. This layout makes Bahrul Ulum Mosque look balanced and symmetrical.

The Bahrul Ulum Mosque has four elevations that are divided into the east, west, north, and south parts. The result of the geometry is rectangular and triangular on the roof. Repetition of structural elements (the column) is seen from the outside and the repetition of the non-structural elements of jalousie ornament is seen on the upper side of the main wall. In the main elevation (northern elevation), the main building becomes the "receiver" area. The main floor of the praying building is also raised. It indicates that praying room has higher hierarchy than the elevation of the court.

Element on the wall consists of columns, beams, walls, doors, windows, stairs, second floor, and jalousie at openings. In these elements, the obtained geometric elements are square, rectangular, and triangular.

The floor pattern geometry is formed by a rectangle of 10x20 cm on the corridor, 20x20 cm on the terrace, and the square of parquet in the main hall. Meanwhile, the geometry on the ceiling has a triangle configuration that forms a regular rectangular module. This ceiling element is equipped with hanging lamp ornaments placed on four spots within the worship building. These ornaments have squared and triangular geometry.

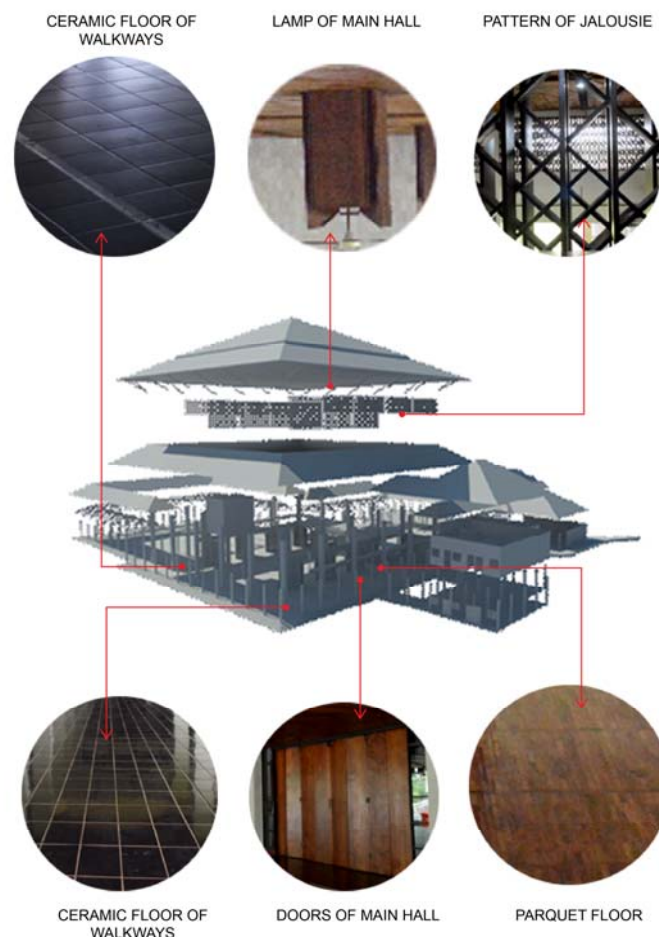


Figure 8. Archetypal Elements in Bahrul Ulum Mosque: Geometric Symbols
Source: Authors' document, 2017

E. ATMOSPHERIC AMBIGUITIES

Bahrul Ulum Mosque' provides silence and noise experience via its building and environment. The *ummah's* journey begins from the street next to the mosque area. This street has a high vehicle capacity so that its noise level is high as well. Soon after entering the mosque area, a lake and garden that can reduce the vehicle and visual noise will greet them.

At Bahrul Ulum Mosque, darkness and light are represented by the difference in lighting quality that begins from the outside to inside the building. On the outside, the daylight can be obtained optimally. As the *ummah* is entering the terrace, the light will be reduced. This light reduction will continue as they are going deeper into the building where lighting is extremely lacking. It is so if we are entering the second floor of the praying room, where minimal lighting is conditioned with the aperture situated on the north and south of the main building.

The emptiness and profusion are being represented by "sprawl and tight" elements. They are apparent on the outside where the maximum view of the mosque building is being provided. In a certain distance, the *ummah* will get experience of spatial sequence from "not ready" to "ready" for praying. These elements are also represented by the attraction of repetitive and rigid columns surrounding the inner court. The columns frame the emptiness and transform it into a "meaningful" space.

Humility and monumentality are indicated by contrast elements between the mosque building and the minaret. The mosque represents the "submission" to God, while the minaret represents the "divine power" itself. Likewise, as we are entering the main hall, we can clearly see that the vertical element of the wall represents monumentality, while the horizontal element of the floor and ceiling expresses humility.

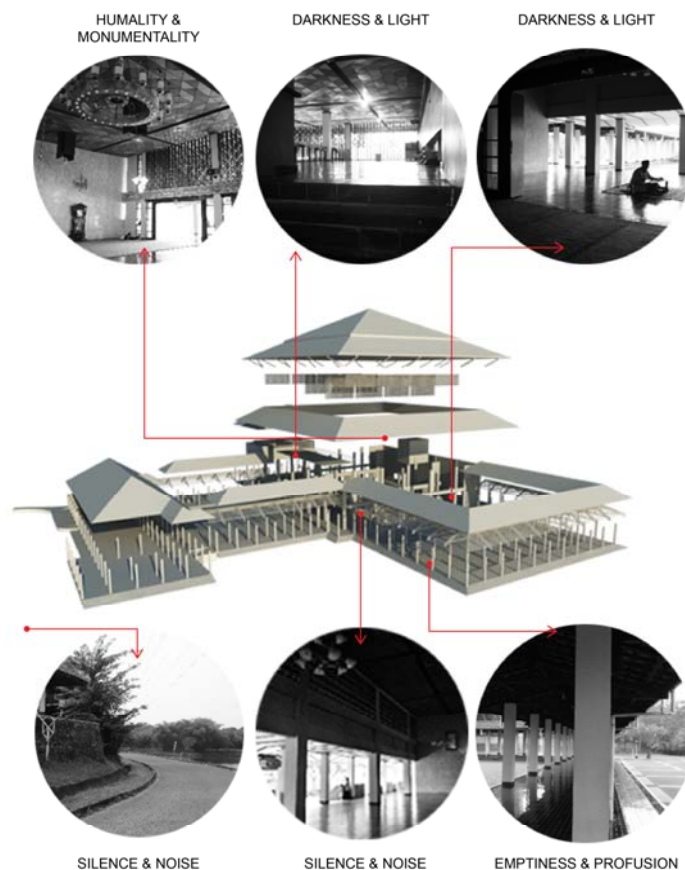


Figure 9. Atmospheric Ambiguities in Bahrul Ulum Mosque
Source: Authors' document, 2017

CONCLUSION

One way spatial sequence defines sacredness of *loci sacri* is by repeatedly giving contradictory symbols and creating ambiguous atmosphere. In the beginning, the mosque use level differentiation to tell the *ummah* that they are entering a holy place. They need to step stairs, as it is situated at higher level that symbolizes a more sacred area. Moreover, the plaza has a lower level than the walkways to show that earth is profane and the *ummah* is now on a higher level. It does not need pictures or icons, such as Arabic calligraphy, to tell the *ummah* about that. A tranquil spatial sequence that directs their ritual will allow them to feel the nuance.

On the other hand, there are archetypal elements that vividly underline the sacredness of *loci sacri*. Water elements in the mosque intensify ablution as a way to purify the *ummah* while lights that come through the geometrical jalousie represent the fire element. The mosque does not blatantly use icons of the elements nor dictate the *ummah* to interpret them as a manner of enhancing its sacredness.

To sum up, Bahrul Ulum Mosque's spatial sequence defines its sacredness with level differentiation for preparation phase, the pillars' repetition as a path to the holiest part, and unruffled arrangement of archetypal elements. It directs the *ummah* without overusing glaring (physical) icons. In this context, spatial sequence defines sacredness of *loci sacri* by emphasizing ambiguous nuance and subtle symbols.

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TERRITORY INVASION: REBRANDING THE URBAN JOURNEY OF *MANGGA BESAR*

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ABSTRACT

Every night, groups of street vendor gather to create informal establishments at the arterial road of *Mangga Besar*, an entertainment area in Jakarta which was once crowned as Indonesia's Hollywood. They mark territories with their tents, *gerobak* (Indonesian word for cart), tables, and chairs in the slow lane to sell foods & goods—generating the new landmark of the city. The event is followed by street performers, selling performances to consumers who occupy each tent. This paper identifies the idea of interiority within an urban context where the 'nesting' consumers inside each tent are seen as a process of maintaining their domesticity. Meanwhile, the street performers who persistently ask for money in trade for their performances are considered by the consumers as threats to their private realm. This territorial invasion is seen as the result of economic demands—modifying public realm into a place of consumption and replacing socio-cultural values into market values—which significantly affect one's journey & behaviour of inhabiting the urban environment. The research was conducted through bottom-up analysis, interviews, behavioural and experience mapping to understand the territorial issues.

The goal of this paper is to challenge how architecture concerned with interiority, time and modularity could contribute to solve the issues and suggest the future of urban journey in *Mangga Besar*. By studying the importance of local knowledge, global technology, public engagement, socio-cultural values and human's interrelationship with the city, it aims to rebrand the city into a more meaningful place with indigenous identity while adding values to its inhabitants.

Keywords: domesticity, informality, urban interior, cultural planning, Mangga Besar

INTRODUCTION

The city has always been a destination for everyone to improve their lives and needs, ranging from economic needs to entertainment needs. As explained by Montgomery (2014), today cities have transformed themselves into employment and entertainment places, which means there are some occasions and experiences in the city that we cannot find in our domestic realm and eventually force us to occupy the public realm (Farelley & Mitchell, 2008). The construction of domestic space, as well as interior space, is highly associated with the notion or feeling of comfort, intimacy, ownership, and isolation (Winton, 2013; Power, 2014).

Thus, the displacement of domestic space into public realm has practically blurred the line between them. As a result, it triggers a transforming relation of interior and urban environment, which open up possibilities to the existence of temporary domestic space in public realm (Attiwill, 2013) as well as in a personal space within a social space (Hall, 1990).

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On the other hand, our society saw this phenomenon as an opportunity to expand their needs, especially to seek profit by conducting informal practice instantaneously and therefore to produce a habitation by making an interior on the streets. The practice of informality seems like has been appeared in our popular culture since many decades ago. An early 20th-century British science-fiction writer, Sir Arthur C. Clarke notes that “rules are made to be broken” (1953, p. 54). This statement undeniably has turned into a proverb that lived among us and practically can be found in the public realm, especially in the streets.

The emergence of informal practices in the streets has always been associated with irregularity and impropriety to city's order. One example we can see concerning this phenomenon is how street vendors and performers construct their temporal habitation in the streets. The temporal, spontaneous and flexibility aspect in informal practice is beneficial for the actors to adapt with the arrangement and condition of the streets, even though it costs them some rules to be broken (Lim, 2011). Practicing informality, as well as interiorizing the streets indeed generates the cycle of economic activity. In other words, when there is a producer, there will be a consumer to consume the ‘products’. And when talking about consumers, a “progress towards satisfaction” relevant to well-being will become a critical point to observe (Baudrillard, 1996, p. 204).

The central question posed in this paper is, if interiorization is a process of idealisation to enable inhabitation through selection and retreat from the unwanted forces (Benjamin, 2002; Attiwill, 2013), is producing an interior in public realm has already guaranteed our well-being and satisfaction? The purpose of this paper is to reassess the theoretical basis regarding interiority, particularly within the urban context, and compare it with its practice in reality. As a site of everyday practice, the public realm has never just contained realm of familiarity that is needed to make an interior (McCarthy, 2015), but it also contained realm of strangers. Hence, an understanding from a different perspective is crucial to deal with the possibility of drawbacks or backlashes led by this behavioural practice of producing an interior space within the urban context.

This study will be focusing on the phenomenon of how street vendors and performers in the street of *Mangga Besar* practising a territorial invasion in the context. The term ‘territory invasion’ is an act of how informal actors aggressively occupy the street of *Mangga Besar*. The paper emphasises on three main actors: street vendor, street performers, and consumers. All actors have their manoeuvre to make their interior on the streets. The paper describes the interconnection between their operations to uncover the other side of interiorization then using the knowledge to propose an urban branding project that aims to guarantee the well-being of the street’s occupants.

The paper is structured in five sections. After the introduction, the second section deals with literature review regarding the making of interior within the urban context and its relation to branding and territoriality. Section three briefly describes the methodologies conducted on site to find the underlying issues within the context. The fourth section uncovers the stories of *Mangga Besar*, how the well-being of its occupants is challenged through the practice of interiorization, furthermore the development of design tactics, related to modularity, to counter the issues. The final section presents some conclusions.

LITERATURE REVIEW: [INTER]IORIZING THE STREET

The concept of home is a funny one, but we all agreed that home is indeed has strong relevancy with domestic space. Attiwill (2013) argues that domesticity will appear through the process of taming, mastering, and owning. These aspects can be easily found when we are at home. Being at home grants us the freedom and permission to arrange space according to our needs and desires because we *own* them. All these variables are adhered to the concept of interior and the process to make one.

McCarthy (2005) has argued that interior is constructed through the understanding of interiority. Interiority acknowledged interior as something that is intimate to us, therefore, contains the sense of familiarity. The realm of familiarity is constructed through a routine engagement. As a result, it delivers a sense of ownership and isolation from external forces (Power, 2014). Despite breaking the dependency of the interior, the act of separation, in fact, has roused a more significant relationship to its environment—an ability to control the space (McCarthy, 2005).

The ability to control our environment allows the idea of producing inhabitation in the streets by altering our environment to suit our needs. Actors of informal practices, such as street vendors and performers have utilised the street as part of their everyday activity, which means their ability to understand the existing systems, as well as their sense of familiarity toward the road, is on a higher level than the consumers or visitors who infrequently occupy the street. It means that the higher someone can collect the sense of familiarity in the context, the higher their chance to control the environment. Moreover, the practice of informality also has a crucial role in allowing greater adaption to the existing orders as it provides more freedom and flexibility to control the environment.

The idea of producing inhabitation could be seen in the process of creating a 'nest'. The association between nest and inhabitation lie in the argument of Bachelard (1994) who argued that they share particular emotions in common. There is an act of withdrawal from outside to fulfil basic or emotional needs of being inside and secure, to retreat from an unfamiliar territory, to maintain their personal and intimate space (Hall, 1990). Thus, "well-being takes us back to the primitiveness of the refuge", as noted by Bachelard (1994, p. 91). In other words, the displacement of domestic space in the public realm could be seen as the process of nesting to achieve some specific needs in the context. From here, the act of nesting can be seen as a process to produce (particular emotions of being) home—an interior or domestic space in the public realm.

The city as a public space provides the opportunities for someone to see and be seen, to hear and be heard, to meet and engage with socio-cultural communities, as well as economic and political contexts (Gehl, 2011). Meanwhile, as an occupant, our body became the receptor for the impulse (of opportunities) triggered by the city (Farelley & Mitchell, 2011). It indicates that a city could produce a magnetic effect to its occupants.

The attractions that one city could offer has changed the understanding of both domestic and public realm as no longer an independent entity, rather as an interdependent process (Till, 2009; Attiwill, 2013). Both Attiwill (2013) and Till (2009, p. 116) provoke that the understanding of interior must be encountered through the transition "*from noun to verb*": from *the interior* to *interiorize*. This statement allows interior for being exposed to countless possibilities, especially the opportunities to construct the displacement of interior space.

I lead this phenomenon to a proposition for the understanding of interior, particularly with its relationship with the urban context, as [Inter]ior—by defining *inter* as "inter-". The prefix lent from Old French, where it meant "between" or "among" (inside and outside), rather than its original Latin word, "inter", where it merely meant as the inside. As declared by Bachelard (1994) that outside and inside, as well as public and domestic realm, does not independently stand in space but have always been representing each other. Taking on the account that public realm has to be understood as an interdependent process, we can say that city is no longer served as a passive entity, the container of events and inhabitants. Instead, it has become an agency that actively plays its role to generate specific images and opportunities to its inhabitants (Jensen, 2007), which means there are efforts from the city to provoke its occupants intensely to their senses with its identity (Lynch, 1960). In the previous part, the city is explained through its psychological environment relevant to its occupants. The following section will emphasise on its physical

environment and qualities as an urban fabric for its occupants while they produce inhabitation and experience in the streets.

The act to attract attention from consumers, residents, and tourists by the city with its image, is undoubtedly a practice of urban branding.



Figure 1. The notion of branding was once used for slaves and livestock to identify their owner.
Source: <Eon Images, n.d.>

The word branding perhaps has some dark stories as it implies the idea of marking by burning slaves or livestock to give them a distinct identity (Figure 1). In the present time, as noted by Jensen (2007) branding now deals with “burning the consumer-mind” through the city. The goal remains the same, to give the consumers the ability to see the city in a particular perspective (Selby, 2004), to re-imagine a new journey (de Botton, 2002; Betsky 2000) and to re-tell a unique story through the brand of the city.

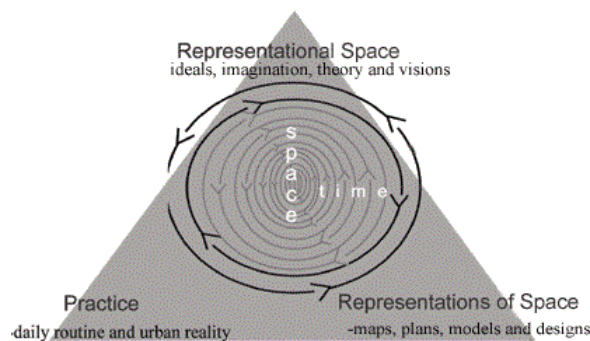


Figure 2. Diagram of Lefebvre's Triad
Source: <Anderson, 2003>

The idea of branding provides the experience that unfolds time and space. The same concept was introduced in Lefebvre's triad (Figure 2). The interrelationship between daily routine, urban reality, 'image' representations and design as well as the ideas and imagination are used to make place queer enough that they attract people to come over and conceive the fantasy, moreover to experience it. Thus, the articulation of experience has become the basis in the notion branding to make city reveals who we are (to our body, memory, and senses). It also shows where we are in a reality that seems more confusing which the connection between private and public, the real and unreal is blurred (Betsky, 2000).

As stated by Jensen (2007, p. 216), the practice of urban branding requires the connection between place and narrative, since the existence of narrative makes the city more habitable and inclusive. It is the role of a place to generate the stories or images to the city as well as its occupants. The place-bound aspect in the narrative, provide the understanding on the spatiality along with territoriality aspect of the city that a

different place will generate a different story. It indicates the relation between spatiality aspects toward the practice of branding, especially how particular territory in the city can be altered to support the well-being of its occupants through the practice of urban branding.

METHODS

There is an interdependent quality of interior that makes it undoubtedly has a substantial relationship with space and its occupants. The presence of individuals will generate life and operate the social context of the city (Gehl, 2011). Meanwhile, an overview of space will provide a gaze to the intertwining relationship that creates a city and thereby to uncover its existing orders (de Certeau, 1988).

According to Gehl (2010), the study of a city must begin from below and inside. This bottom-up analysis statement is supported by Attiwill (2013) who agreed that space must come after individuals and Guattari (1989) who declare that individuals have a higher position than space, for it is human who will firstly construct their (interior) space through their mind, body, and senses. This understanding is necessary to make the streets more liveable and to support the well-being of the occupants. De Certeau (1988) suggests that in achieving this goal, the study can be managed through the practice of walking and *voyeur*.

The practice of walking was conducted in the foremost to bear a perspicuous explanation of the behavioural patterns in the streets. Behavioural mapping and image collage is utilised to indicate the occurring issues in the process of interiorization and to reveal its atmospheric qualities. The practice was then followed by interviews and experiments to act as consumers in the context to record the present stories and trace of history. The practice of *voyeur* was conducted afterwards to point out the surrounding elements of the city by maps and moving around the neighbourhood through several modes of transportation.

According to Gehl and Svarre (2013), this study can be represented in layers, axonometric diagram, and detailed mapping to indicate the activities process and its impact on the surrounding elements. The reading of the urban elements was further conducted through the study of paths, edges, nodes, and landmarks' condition in the context, as suggested by Lynch (1960), to note the existing order and its transformation from day to night. These representations were made to develop the arguments toward issues and proposed tactics for the design.

This study took place on the arterial road in front of the *Lokasari Square, Mangga Besar* and was conducted from March to April 2017 for four weeks and from day to dawn. The occupants utilise the street as their everyday spatial practice to support their daily needs, attracting street performers and consumers to occupy their establishments. This study is conducted to understand the mechanism of interiorization and its underlying issues to become the basis of design tactics development.

FINDINGS

A. Mangga Besar: An Overview

Bing Slamet (Indonesian's version of Bing Crosby), *Tan Tjeng Bok*, *Laila Sari*, *Idris Sardi*, *Eddy Sud*, and *Komedie Stamboen* (Figure 3, top) are names that sound odd in the ear of young occupants of *Mangga Besar*. Conversely, those names perhaps sound like '*Beyoncé*' or '*Johnny Depp*' in the ear of the older generations who have lived in the city since their young. *Mangga Besar* was once the navel of film and entertainment industries in the Jakarta, as it was the home for famous films, producers, actors and actresses in the year of the 1940s to 1970s. The inhabitants named the neighbourhood around this city as *Tangkiwood*, indicated the woods that was often used as a film-shoot area located inside the neighbourhood around *Mangga Besar* (District *Tangki*), as well as to portray Hollywood.

The most significant place in the neighbourhood was *Prinsen* Park, which still intensely provided theatrical, musical and film acts, as well as night market (Figure 3, bottom) before the appearance of technology, called Television. The vicious force of technology has wiped almost all traces of its heyday. Some of them transformed into the name of streets, and the rest are just stories that lie in the memory of some inhabitants and told by mouth-to-mouth for those who asked.

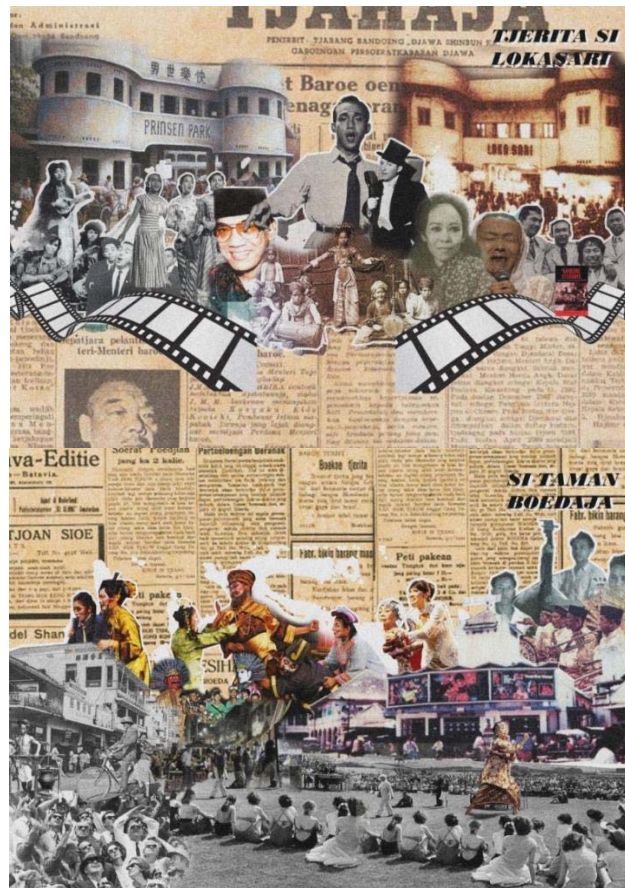


Figure 3. Uncovering the history of *Mangga Besar* by collaging old pictures, showing the famous actors and actresses from Indonesian film and entertainment industry who once lived there (Top) & Past entertainment and local activities (Bottom)
Source: <Khosasih, 2017>

In the present time, the city now has transformed into a contemporary city, consisting of residential, commercial and entertainment areas. There is a change in the image of *Mangga Besar*, from the show in the shape of a film, local music and theatrical acts to the prostitution. The night market now sells you the equipment, medicines, seducing clothes, and particular food to support the practice of prostitution. This phenomenon was followed by the emergence of a significant amount of leisure and nightclub, hotel, rent house, the street vendor, and restaurant in the city, suggesting it still serve as an entertainment area in another form since its heyday—a trace from the past.

Diagram in Figure 5 shows how its occupants perceive the city through layers of interest. The observation was conducted to arrange each layer to explain the tour identity of the city according to behavioural studies and testimony from the city's occupants. The right part of the diagram was arranged to depict the urban journey from its physical environment to psychological engagement with the actors. The left section of the diagram describes how the city has transformed from past to present and indicates how the extreme forces of technology and economy exchange, as well as the social conditions and obsessions, have turned the context into a city with no identity.

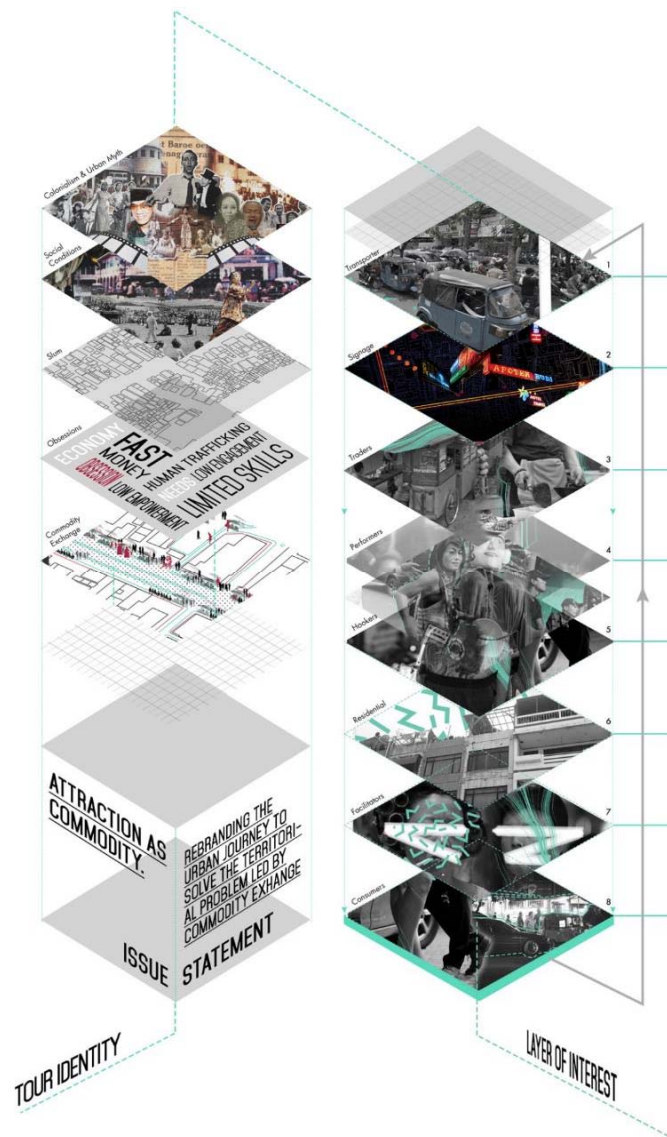


Figure 5. Layers of interest indicate the journey in the city by visitors and observers to determine the issue that occurred in the context.
Source: <Khosasih, 2017>

Diagram in Figure 6 shows the transformation of entertainment actors from past to present. It indicates how the act of entertaining in the past was to achieve cultural values, provided the city with a cultural journey. In the present time, street performers only perform in exchange for their economic needs without having the awareness to ensure a quality and well-prepared performance. The duration of their performance just depends on whether someone has already given some pennies in their plastic box. The performances were once celebrated and cherished. Today, they were avoided, and money served as the repellent to drive the street performers away. Figure 7 explains the relationship between each actor and their role which will be further illustrated on the diagram in Figure 8. It indicates the relationship between the traders (street vendors), street performers and consumers: how the performers invade the interiorization committed by the traders and consumers. The transforming value in the system of the city suggests that every actor in the context must be seen as the way they are, on how their activities are executed to fit their economic needs. Thus, the mapping shown in Figure 6 & 8 was carried out to identify kinds of product they offered and their relation with objects they carried as well as spatial elements they engaged in the context to do the economic exchange (through the process of interiorization and invasion).



Figure 6. Detailed mapping of entertainment actors in the present time (Left) & Entertainment actors in the past time (Right)

Source: <Khosasih, 2017>

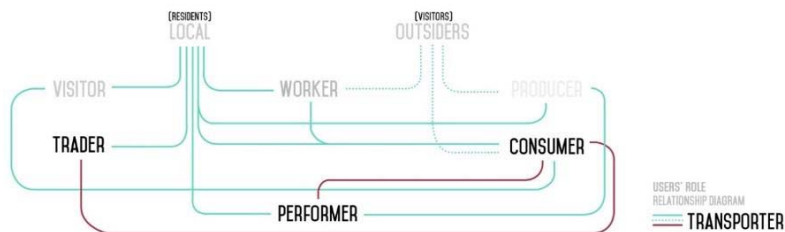


Figure 7. Actors' role relationship diagram in the context

Source: <Khosasih, 2017>

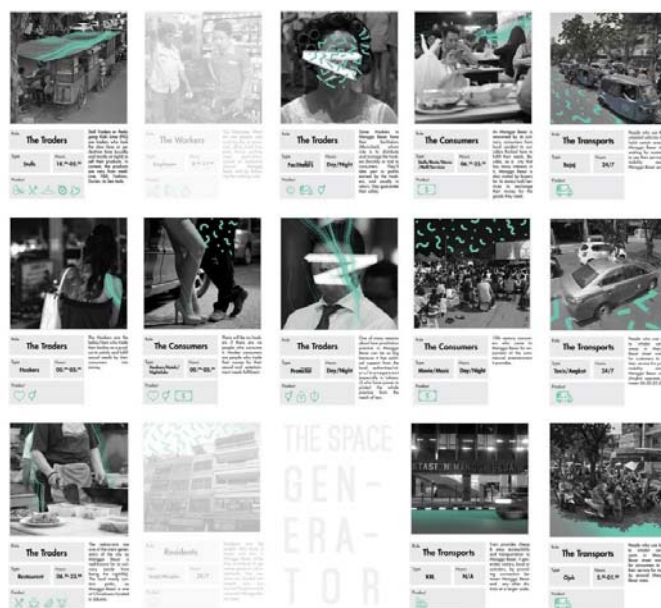


Figure 8. Detail mapping of actors and their product elements.

Source: <Khosasih, 2017>

B. The Invasion Begins

This second part of the study was conducted to provide a more in-depth look at the issues derived from the previous study. The opportunity given by the city leads to the emergence of street vendors. Meanwhile, the emergence of street vendors provides opportunities for consumers to please their needs of consumption. Besides, the rise of consumers provides opportunities for street performers to fulfil their economic needs.

The street serves the city to connect from place to place, a domain that Auge (1995) declared as the non-place. Betsky (2000) further explained this domain as meaningless, yet it can also allow anything to occur. This transitory space in the eye of street vendors is a magnet of opportunities, to seek profit. Thus, they celebrate this chance by installing tents, *gerobak*, tables, and chairs in the slow lane to sell foods & goods at the arterial road of *Mangga Besar*, changing the domain from meaningless to meaningful.

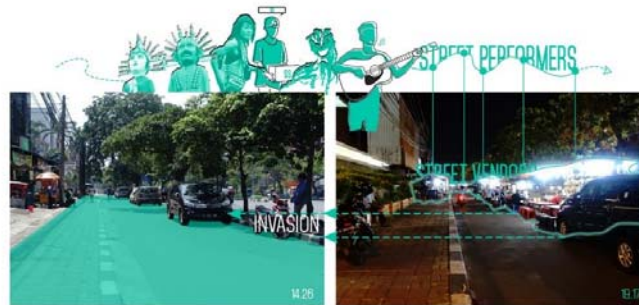


Figure 9. Behavioural mapping shows the sequence of micro-invasion led by the street performers.
Source: <Khosasih, 2017>

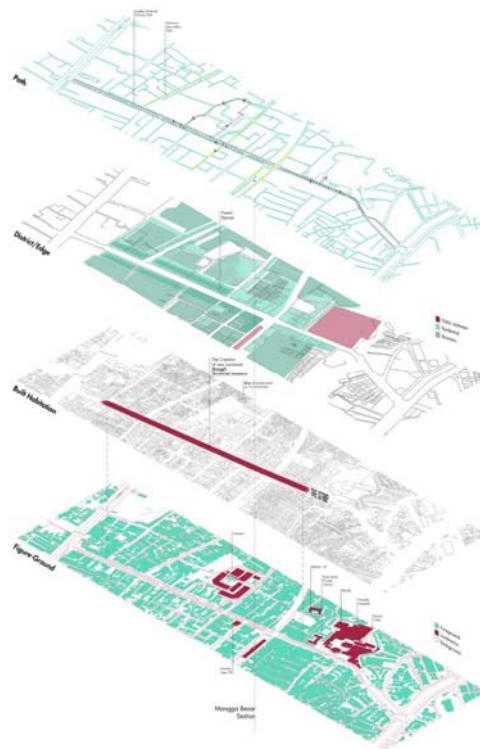


Figure 10. Axonometric plan diagram shows macro invasion on the street's territory by street vendors.
Source: <Khosasih, 2017>

There is an act of invading the street territory by breaking the urban policies, the transitory systems to make this public domain into their own (Lim, 2011). As stated by the local regulation (Perda DKI Jakarta No. 8, 2007), constructing informal establishments, primarily to seek profit, is strictly prohibited without the

permission of the government. Such act to control and alter the street, are acts of interiorization. In fact, as an observer and a first-time visitor, I underwent a strong controlling force of the street vendors and the other inhabitants while collecting information and photographs through their act of aggressive scanning and questioning the author's existence in the context. It indicates how strong the actors own this street and prevent the unwanted force to disrupt their territory.

The act of street invasion by the street vendors generates the distraction in the mean of leading the occupants somewhere aside their destination—The Strip (Venturi & Brown, 1972). Either in a good or bad way, distracting the occupants will cause a connection between that particular territory and the occupants. This phenomenon leads to the creation of new landmark in the city as shown in Figure 10. This statement is proved by a 'movement' into the arterial road from the mapping of flow and districts' function. There is a negotiation in the creation of this temporal landmark; the street vendors only operate at night then give up to the day, to restore the territory to its original order.

The authors would like to divide the invasion occurred in the context in two scales: Macro & Micro Invasion. The street vendors led the macro invasion against the street (Figure 9). Meanwhile, the street performers led the micro invasion against the consumers. There is a tendency of becoming aggressive in the behaviour of street performers while fulfilling their economic needs. The awareness of negative stigma possessed by the street performers in the memory of both consumers and the street performers alone has forced the performers to commit such aggression. As explained in section two, the act of consumers to occupy each tent which is installed by the street vendors means they also produce a habitation in there. The tents become their temporary nest.

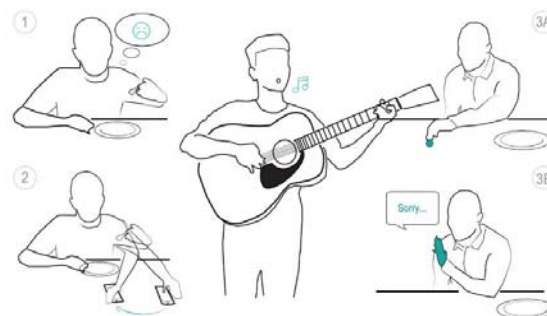


Figure 11. Behavioural mapping shows the sequence of micro-invasion led by the street performers.
Source: <Khosasih, 2017>

Committing invasion against their nest, certainly will cause a threat to the consumers' personal space, and thus to their well-being and satisfaction. Argued further by Bestky (2000), the obsession of society nowadays is fear and anonymity. There are efforts to protect their anonymity in the realm of strangers. On that account, in the eye of consumers, the emergence of street performers is seen as the 'alien' from the realm of strangers who try to invade their public domain, the familiar realm. As seen in Figure 11, their existence alone is perceived as an ultimatum for the consumers. It can be seen from the transformation of the consumers' bodily expression and stance by complaining implicitly along with bringing their belongings nearer their side. The coping mechanism is then followed either by surrendering to the invaders by giving out their money or by saying sorry to drive them away.

All actors emphasised on the paper: street vendor, street performers, and consumers are all conducting interiorization in their way. Street vendors interiorize the street by invading some particular territories of the street, attracting consumers to occupy their interior space. Consumers interiorize the streets by nesting in the tents of street vendors, creating their domestic territory within the urban context. Meanwhile, the street performers interiorize the streets by moving and performing from tents to tents, to invade

consumers' domestic territory, to seek attention and profit. The interconnection between their process of making a habitation in the street indicates how interiorization still doesn't guarantee the well-being of its occupants, therefore needs an intervention of design to solve the issue.

C. Design Process

The first study was conducted to utilise the history of *Mangga Besar* in the shape of narrative as the tactic to create a new image of *Mangga Besar*, thus to rebrand the city. Betsky (2000) argues that architecture should reveal the city. Architecture becomes at most powerful state when it can reveal the pre-existing stories and forces. The second study was conducted to indicate the main problem that the design tries to solve. The development of design strategies for *Mangga Besar* is based on spatial mechanism gathered by the act of mapping the behaviour of its occupants.

I propose the concept of modularity which was taken from the study of how the street vendors use objects as their tactics to interiorize the streets. The process went from collecting objects, disassembling them in the streets to create temporary informal establishments, then reassembling them to restore the streets to its original order. Thus, there are an organisational and immediacy aspects in the concept of modularity (Baudrillard, 1996), which enables the street vendors to play and control a particular territory in an environment.

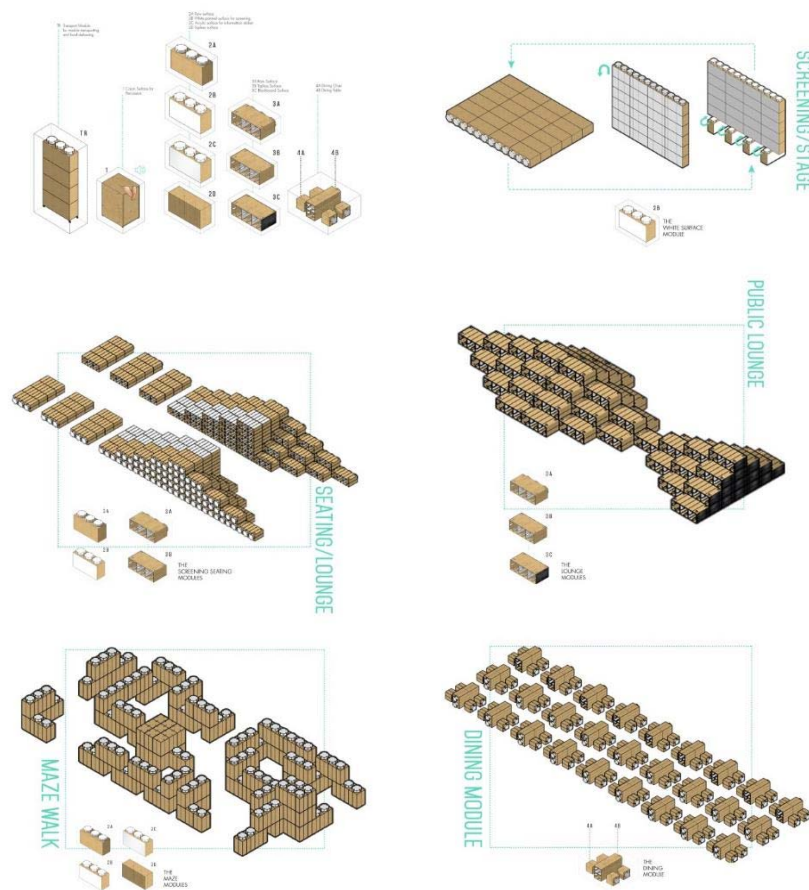


Figure 12. Modular Design Development of the Urban Journey of *Mangga Besar*
Source: <Khosasih, 2017>

The idea of the design is then to give the street vendors, performers, and consumers the ability to control the modules according to their will to establish their domestic realm. Diagram in Figure 12 provides a guide on the possibilities to assemble the modules to alter an environment that gives the street performers more

opportunity to be seen and appreciated, as well as the options to insert narration of the city's history as the new image of *Mangga Besar*. Figure 12 also shows how modules are organised through specific distinction according to its programs, functions, and users. Also, a particular surface of each module will serve a specific purpose.

The aim is to transform each module into a sign to mediate the relationship between values, functions, and narrations to be conveyed to the actors. For example, the white surface will serve as a platform for screening and information as well as trivia regarding the story of the city. The black surface will serve as a platform for occupants, street performers and vendors to convey their aspirations for the city as well as their thoughts. Figure 13 & 14 shows the effort to prevent the invasion reoccurring by providing a distinction between consumers and performers area.



Figure 13. Design Development of the Urban Journey of Mangga Besar: Consumers' & Vendors' Area
Source: <Khosasih, 2017>

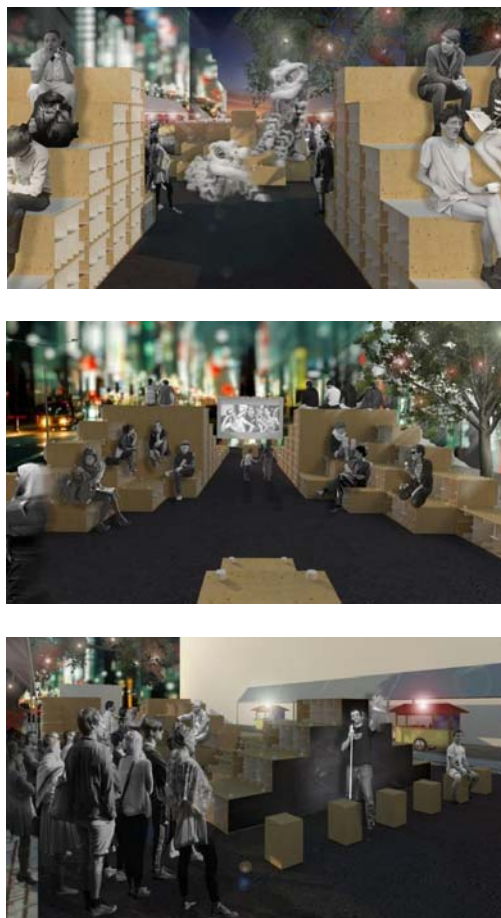


Figure 14. Design Development of the Urban Journey of Mangga Besar: Performers' Area
Source: <Khosasih, 2017>

CONCLUSION

The findings of this study are to remind how the interior can be political and tricky. It gives us the ability to govern the space according to our free will as well as its existence that is not bounded by the formality of boundaries. It also indicates how the interior can be related to informal practice on how informal actors become very adaptive to the changes in their environment to sustain their existence. It is shown on how informal actors continuously re-construct the interior space through the practice of territory invasion. The phenomena of territory invasion is a proof on how the act of governing the space, especially in the public realm, will also have its consequences and does not guarantee our well-being by just producing a domestic realm in it. It doesn't just end there. Thus, the existence of design practice could serve as the bridge to balance the pros and cons of interior making within an urban context.

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A MATERIAL INTERVENTION: STORIES OF THE INTERIOR NARRATED THROUGH MATERIAL REALITY

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ABSTRACT

This is a study not of space, or the spatial, but of the physical and tangible. Objects we see, touch, and interact with every day – materials.

The surfaces and matter we encounter within the constructed interior reinforce our relationships and understanding of the rooms we inhabit, emphasising cultural and personal associations, perception and memory, of time spent in daily life.

Interior Design often begins with an existing host space, and the narrative of this host is a complex multi-layered story, based around origins, context and locality. In this reality, very rarely is our canvas a blank one. Most buildings are already rich in the material narrative in both a physical and metaphorical sense when we commence our design journey.

As an Interior Designer, we choose what to demolish, retain, embellish, and emphasise. Some features are celebrated, and others ripped out, discarded, or simply painted over, hidden from view. Their stories are forgotten, or secrets are revealed.

Materials and finishes, methods and techniques, collide across time, bringing together a rich diversity of stuff across decades, eras, centuries, connecting people and their stories within three-dimensional space.

Each individual product or material we add, or which already belongs to the building, exists in its own right, as an object loaded with cultural weight, myths, and perceptions, aligned or misaligned with the theory of things. In this sense, the Interior is a series of layers upon layers of stuff – materials, colours, structures and surfaces, embedded with individual and combined stories, culture and narrative.

Keywords: material narrative, metaphor, interior, perception, process

INTRODUCTION

The complexity of remodelling existing buildings requires a delicate balance between old and new, and this palimpsest, the layering of the past with a new insertion or intervention calls for Interior Designers to have a heightened understanding and an increased appreciation of the use of materials. “The nature of context in interventional work is almost always more complicated in everyday practice than in pure architecture;

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working within any existing building obviously throws up more problems of context than preparing a new building for a cleared site." (Scott, 2008, p. 114)

My research attempts to define a dialogue around the material landscape of Interior Design, questioning the process and understanding of material selection, specification, representation and use, across education and practice. How we design affects what we design. How are we making decisions about materials and products we use, and why we are making those decisions? Most of our practice takes place within an existing host space, which we must first discover, engage with, analyse and critique before we begin our intervention or transformation, which may or may not also involve a change of use. This distinction sets us apart from many other design disciplines and means we often cannot make decisions or selections isolated from the context of a site. "Thus, the past takes on a greater significance because it, itself, is the material to be altered and reshaped. The past provides the already-written, the marked "canvas" on which each successive remodelling will find its own place." (Machado, 1976, p. 27)

Within contemporary commercial Interior Design practice, that change of use often means a complete overhaul of the existing, as a building is brought up to modern standards to fulfil an entirely new role, which can be completely alien to the original function. In such a project, the balance between what was original, what may have formed later or more recent additions, and what is now to be added or taken away can be delicate. Sometimes nothing of the original may remain, and traces of the previous occupation are washed away entirely. Many designers and theorists talk of a 'strategy of intervention' in terms of a deliberate approach to preserve the original integrity of a host building or interior. But often the challenges of live projects do not permit such theoretical integrity, as time and costs, legislation, client decisions, and other external factors get in the way. The job of the designer is often to navigate between many opposing sides, balancing programmes and budgets, whilst attempting to preserve the original essence of their design along the way.

Materials as a subject are unending, from the scientific study of the molecular to anthropological studies in material culture, the theory of things and notions of desire. Tim Ingold speaks eloquently of the modern obsession with materiality as a field as opposed to the study of materials in his paper '*Materiality against materials*' (Ingold, 2012), where we state his concern at our apparent disassociation with the real stuff.

Within the field of Interior Design, the current study of materials appears to occupy the realm of online material libraries, and/or physical collections of stuff, both of which allow us to view and potentially source a vast array of new polymers and plastics, smart textiles and copious amounts of composites and alloys. But it appears difficult to make immediate connections between the pragmatic specification of materials and a more philosophical approach aligned with perceptive and emotive responses. This entire approach appears isolated and rather hands-off, and these catalogues appear to teach us little about real materials insitu.

There seems to be an issue with scale and distance when it comes to how we associate with the materials we are handed in terms of the existing and those materials we may select.

In her research on polychronic objects, Dr Jane Norris discusses the creation of objects made from materials across time, so a modern material combined with an ancient one, and/or through a traditional method. "The time pleated together in polychronic objects offer a map-like aerial view, connecting knowledge and experience of materials, cultural forms, and historical functions from many different times crumpled or folded into one object" (Norris, 2016, p. 8). I would suggest that within Interior design, many remodelled buildings already do this. Our discipline inherently pleats time together through the materials used to construct and decorate each room in three-dimensional form. Every time we take something (a building or room) which exists, and we add a new layer to it, through refurbishment or decoration, we

connect and combine and experience the resulting object or artefact (i.e. the interior) in a completely new way, which is a merger of time and people and life.

Within this research, we are not seeking to become an expert on materials; it appears to be an impossible and never-ending task, which covers every aspect of life itself. The aim is to begin to critically evaluate our understanding of the use of materials within the field of Interior Design, to begin to develop new relationships, a new language of materials, and material understanding which we can apply to our practice to enhance the process and result.

This paper reflects upon a previous design project, through the eyes of material choices made and items constructed. The Interior is real, it still exists; but in this context, we read elements of the project as a set of stories to delineate a series of approaches to Interior Design practice in general.

The body of the essay is split into three sections, describing in detail three different materials and material strategies, installed within the site, to create a new Interior environment with a completely new purpose. Each material and its relevant essay serves to demonstrate a specific approach taken in the relationship between the new material palette and the existing fabric of the host building.

“Thus the past becomes a ‘package of sense’, of built-up meaning to be accepted (maintained), transformed, or suppressed (refused).” (Machado, 1976, p. 47-49)

If we are to examine the essays in the style of Machados’ argument, we see that essay 1: Exposing the shell, discusses how we take a stance to accept what we may find, and maintain it for the future. To preserve and to cherish.

In essay 2, we look at the subject of transformation through the use of reclaimed timber, which itself has been transformed many times in both form and function.

The third essay could potentially be seen as an example which perhaps exemplifies the past of the old building being suppressed or refused, in that no trace of what was underneath is seen. All original materials and meanings are completely covered up, re-written. But that the tiles, (fake as they are), begin to speak of another past, and import another layer of narrative to the room, reveals complex layers of material realities, surrounding truths and non-truths.

The context for this paper, in which the stories are set, was a live Interior Design project carried out during 2012 and 2013, near Cork, Eire. I worked as the lead designer and project manager for the Interior fit-out of an old dilapidated building, to bring it back into re-use as a VIP visitor and educational experience for a private commercial client. Working remotely, in a Glasgow design agency (Scotland) I travelled to the site at two-week intervals for almost one year, prior to and during the build.

Many decisions were taken on site, driving around looking for objects, reclaimed fireplaces, old bits of wood from other buildings, historic photographs from the archive and props to dress the rooms. The completed project has a rich visual narrative and a colourful textural palette, which is a diverse mix of old and new, found and made; which allows its use as our ideal subject matter for this exploration into the process of material selection within Interior Design.

STORIES OF THE INTERIOR

A. Exposing the Shell

As the group walked around the site, at one the earliest visits, we already knew it would be important to attempt to retain and expose some of the existing fabric of the shell within the new finished Interior. Discussions ranged from what, where and how to keep some original or historic elements; which would be

appropriate, how could they be incorporated within the new design, and what impact would any exposed elements have on the function of the new building? This early interrogation of the site can be seen as the 'first distinct stage' (Scott, 2008) in the remodelling of any existing building, when layers are peeled back, old surfaces and materials revealed. In his book on *Altering Architecture*, Fred Scot articulates this act of architectural discovery as "Stripping Back - Stripping back in its extended manifestation is the process by which the interventional designer acquires an understanding of the host building with which he or she is engaged." (Scott, 2008, p. 108).

The listed building, originally used as the mill managers house, and built around 1794 was in a very sorry state. It had gone through several iterations in its life, to include its use as a military infirmary building and in later years a chicken coup! Over recent years it had lain empty and began to be consumed by overgrown vegetation, as nature tried to reclaim the space for itself. On that first site visit, we witnessed trees growing out from the rear façade, old crumbling stone and brick walls, broken windows, missing beams, and an absent stair to the first floor. All of which gave the building a unique charm. I immediately loved it. We had looked previously at several other vacant buildings on the site and had already actually begun to design our new interior in an entirely different space before the clients then moved the project over to this little house. The detached building, had an almost domestic scale, as opposed to the sprawling warehouses elsewhere on the site. The original layout lent itself perfectly to the notion of rooms within rooms, a lounge by the fire at one end, a central feature, the bar to the other. You could see how the new functions would fit within the floor plan almost immediately. Our original design was tweaked and improved to fit the new locale, and although this building had not been the first choice, it became the most natural fit.



Figure 1 & 2. The Existing Site
Source: Authors photographs

But how to allow glimpses to this old original structure, could we and should we celebrate some of the origins, with a nod to previous uses, whilst allowing the building to operate as state of the art, all mod cons, visitor centre.

In-depth conversations took place between the design team, client and main contractor over which existing stone and brick walls could potentially be left exposed within the rooms. Any exposed walls would result in heat loss, as all other walls were to be lined out in ply and plasterboard and heavily insulated behind. We were installing underfloor heating throughout the ground floor, powered by the stills from the large operating plant beyond the visitor centre boundary, so efficiency and costs were key. Exposed bare walls mean gaps in our sealed, heated, vented, shiny new environment. M&E consultants remained unconvinced of the merits of our design intentions, and wary clients too questioned at times the balance of old and new. Do visitors really want to see these old crumbling walls?

Our dilemma was to gauge how much of the site was of merit, and of continued interest. It was not necessarily a building of great architectural integrity or importance, but its significance was that it provided us with a context and a history, a point of interest for the beginnings of the story. We saw the building as part of the provenance of the project.

“An existing building will vary according to age, condition, architectural merit and previous use uses or misuses..... Each existing building will have its own material identity, which the designer inherits.” (Brown & Farrelly, 2012, p. 34)

We decided we would retain and expose small nibs of stone, within the central entrance area of the ground floor. Here, space was conceived to talk about origin and provenance. It seemed an apt space to allow part of the original heritage of the building to peek through. Contrasted against the crisply painted plasterwork, mahogany veneers, soft drapes and eclectic mix of old and new furniture, the stone reminds us that we are not in a modern building, but something original and true.



Figure 3 & 4. Timber handrail against exposed stair wall and first-floor fireplace.
Source: Authors photographs

A new mosaic inlay sits on the floor, as a signpost to the past, it states the origin and date of the building. A nod to the traditional threshold to a public bar, the bespoke art piece is a fake. It narrates the story in a very direct way that perhaps the stone cannot. But the walls are real, and they are open to interpretation on a different level.

The stairwell also allowed itself to remain unfinished, with a three-dimensional collage of old stone, original and later brick insertions, concrete and cement render, in a grunge style that we see throughout modern interiors. We left the wall pretty much as we found it in the circulation space because we could, the client was less precious about this space. And because we really liked it.

B. Reclaimed Timber

Across the site, there were disused warehouses full of discarded artefacts, old crates, barrels, bits of timber, jewel-like finds for nosy designers on the hunt for stuff! Our client was very keen to promote the re-use of existing materials, and the obvious environmental factors and potential cost savings which could potentially be made. We wanted to find some suitable reclaimed timber to use throughout several areas, to appease the clients desire for good environmental policy, but also mainly because old timber has a unique appearance which is difficult to recreate. Worn timber evokes memories in all of us, and reaffirms our affection for all things 'natural'.

The smell and patina of the staves from old washbacks and whisky barrels only added to the appeal. They were ideal objects to recycle and reuse within our interior, as they came from the original manufacturing process, so could not be more appropriate to the story we would tell within the new Interior. The fact that we encouraged aged stains or traces of wear and tear to remain, was key to reinforcing the provenance of

our source. Visitors to the site would want to know where the timber came from and the clients had a sense of pride in providing us with the raw materials.

“The ‘retrieved’ objects – giving the interior a material quality that could not be manufactured: worn timber, rusting hinges, burnished brass – materials that evoked memories of the past and a suggestion of lives lost. The drawers’ reuse or ‘rebirth’ provided both symbolic meaning and also a sustainable approach to using materials in interior design.” (Brown & Farrelly, 2012)

Traditional or natural materials, such as timber, are charged with historic context, mythologies and narrative, gathered, remembered and retold through time; solid, trustworthy and honest. Our material culture is constructed around the journey these materials take in their lifetime and beyond. These stories surround every aspect of the material itself, from its origins to its excavation or harvest. From the earth or site to its manipulation, through to its rebirth. A material such as timber is inherent in our lives; it belongs in our psyche, we understand where it came from, how it got here, and a lot of what it may become. “Unique in its ability to self-propagate under our very eyes, with ever reassuring familiarity, wood sets itself apart from other materials that often require human intervention to make them suitable for use.” (Kula & Ternaux, 2013, p.11)

We revel in timbers lack of uniformity; we delight in its minor imperfections and all those natural variations. As a material, timber differs from many modern or man-made materials, in that we actually celebrate signs of wear and tear, and the marks that we can leave as traces of our own use through time. These are not flaws, as we view them as part of the inherent qualities of the material itself.

This makes timber perfect for recycling and re-use. Because we expect it to look old or to get old, and we don't mind, in fact, we openly encourage it! Very often, timber is ‘aged’ on purpose, battered around a bit, and flaky paint effects added to give the allure of age, as is the current preference and trend.



Figure 5. Tasting Table
Source: Authors photographs

The bits and bobs we found in the old warehouses, included crates, staves and barrels. All of which were collected and taken off to the contractor workshops to be dismantled, cleaned up, planed if required, and re-appropriated into several new objects, to include a bespoke tasting table, treads and risers for our new stair, tongue and groove wall cladding around the bar, the new bar top, and a few other small bits and pieces. We could not re-use any of the old timber as flooring, as we originally hoped, as the wood we were told was not stable enough to form large flooring planks for the project.

The resulting recycled objects as installed, actually bear little resemblance to the original found objects. You would never really know that the stair tread you walk on was made from an old stave from a wash-back. Once it had been cleaned up, sanded, varnished, cut, and installed on site, there is really no trace left from its past life. Our timber clad wall, made from old barrels, which themselves had already served several

different lives and travelled across continents, doesn't look so different from new planks straight from the sawmill.

Many of the stories are buried deep within, concealed from the viewer's eye, but they are there. Did we save any money by using recycled timber from the site? Probably very little. But those of us involved in the project believed it was the right thing to do, it made us feel wholesome and ethical and all of that stuff. The timber had no distance to travel on what may be its final journey to its new home. And it is a story to tell when the staff recite the story of the building to guests; much value is put on the origin of many of the items the interior contains, and that rich eclectic mix of old and new only enhances their tale.

Perhaps when no more of those staves exist, we will still know and remember that they are in there, somewhere.

C. Wall Tiles

“The materials may be a source of inspiration to the designer, who may wish to reveal the essential character of the existing palette while juxtaposing with the new. Alternatively, the designer may wish to conceal the existing materials under a veneer of the new.” (Brown & Farrelly, 2012)

Around three-quarters of the way through the interior fit-out, the contracts manager called me up from the site and told me they had identified a possible cost saving if we changed the proposed wall tiles, to a locally sourced product. They could find something similar, not exactly the same as we had specified but they would do the job he stated, at an astonishingly lower price. My heart sank!

The green wall tiles had been with us from the start and symbolised the essence of the bar concept. They featured in the first mood images shared with the marketing team at the client HQ and had survived many design iterations, cost control meetings, and tender issues. Our tiles had made it through a long and difficult process from freehand sketches to rendered elevations, into detailed tender and construction drawings



Figure 6 & 7. Precedent Tile Images
Source: Unknown

The idea for the use of tiles was borrowed from the usage of glazed ceramic tiles in Victorian pubs and breweries throughout Britain at the turn of 20th Century. The green colour in particular used in the concept document to the client was inspired by the much-loved pub in Manchester, The Pevril of the Peak, which has a vibrant two-tone yellowish green tiled façade. The existing pub was built in 1829, but the tiles were added around 1900 when the pub was partially rebuilt. The building sits alone on a triangular island between Chepstow Street and Bridgewater Street, in central Manchester, where it is now dwarfed by the later 19th century and modern 21st-century office blocks and residential developments. That it apparently survived a planned demolition resulting in the new road being diverted around it, only adds to the folklore and allure of the place, which now has the protection of a Grade 2 listing.



Figure 8. The Pevril of the Peak
Source: manchesterhistory.net

The Pev, as it is fondly called, is typical of public houses of the time, which were adorned with glazed bricks and coloured ceramic tiles around the 1900's, as Breweries opted to brand tenanted pubs inside and out. Colourful ceramic facades became commonplace, and many premises continued the tiled theme inside. The use of tiling in pubs echoed the brick tiling utilised within the breweries themselves, who also commissioned bespoke corporate logos, pictorial tiled freezes and intricate plaques. This Victorian style and specific use of vintage or reproduction tiling have become incredibly popular again in commercial and domestic interiors of the last twenty years, as designers and consumers seek out a retro or vintage aesthetic, and opt for a more eclectic mix of materials and finishes within interiors.

These handmade glazed wall tiles were sourced from a specialist manufacturer in London, who hand-dipped the tiles individually, resulting in a wonderful non-uniform patina and glaze, with just the right amount of crackle on the surface. We selected several differing colours, with the idea that we would mix and match in a random fashion on site, to allow a varied tonal effect. We had spent weeks searching for a match to that original source image, a lesson in the Pinterest, Google, material palette, online, the digitized method of selecting, sourcing and specifying. How do you actually find the thing you want, the thing that you have sold to the client? After receiving many unsuitable samples through the post, we eventually believed we had found the right tiles. The supplier posted up a large box, with enough samples to allow me to lay out a full-scale mock-up as a tiled corner in the floor of our office, playing around with arrangements in colour and uniformity. They were expensive, at around £200.00 per msq. But to us, they were so integral the very core of the project.

They just screamed out Pub! This was the contemporary end of the interior, where we wanted to create a feeling of energy and vitality. The story in this corner of the room was one of evolution, modern cocktails, a nod to the retro and the dude of the current trendsetters, whilst echoing a borrowed aesthetic from Victorian public houses of the past. In addition to the glazed green wall tiling, we also included a bespoke mosaic entranceway, the idea of which is almost emblematic of a traditional British pub. It was another nod to bar culture, but abstracted enough to speak of other interiors also, and an opportunity to add a layer of narrative directly in the form of environmental graphics. A local craftsman created the mosaic inlay for us, to specific dimensions to sit in place of an entrance mat well, flush with the new ceramic tiled floor. The graphics team in the office had started out with quirky messaging, or ideas of text which perhaps simply stated 'Home', but in the end, the client decided on an informative message which would speak directly to the site and the history of the people who had been there before us. The tiles are modern, their maker current, the idea is borrowed from a recent past of another context, and the message is historic and contextual. This one small installation is a good example of the highly complex layering of materials, craft and manufacturing, history and narrative.



Figure 9. Design Development – Elevational Section

Source: Image by Gina Leith & Richard Smith for contagious. Copyright Contagious. www.contagious.co.uk

Of course, none of these tiles is original to our building. They are out of context, and possibly at odds with much of their surroundings. They would be frowned upon by purists and those who set out to conserve and accurately restore. These imported materials take their place in the creation of a new story, written from a narrative of many other interiors, and lost or previous functions imported into new rooms and times. This little building on a distillery site was not a trendy dude bar in New York, or London or even Dublin, but we wanted to make visitors believe it could be. And so much of what Interior Design is about is exactly that. In this project, like so many others, we are creating a stage set, setting a scene if you like, to create theatre and drama. To transform an interior and to transport the visitor somewhere else entirely. Sometimes it is real, but very often it is not, but what is the material reality if it is not what is currently there, in front of you?



Figure 10. Design Development – Elevational Section

Source: Image by Gina Leith for Contagious. Copyright Contagious. www.contagious.co.uk



Figure 11. Bar

Source: Photo by Paul Hollingworth for Contagious. www.contagious.co.uk

CONCLUSION

As a creator of our built environment, our selection process relies on an innate understanding of not only the products and materials we are free to choose, but also our intuitive response to the existing fabric of the host space, and how both sides of this story may coexist.

Materials matter to us because they are how we interact with place. What we see on the surface, what we touch, the chair we sit on, the floor we walk on, the ceiling we gaze up at. To a certain extent, the material reality of our built environment is an extension of ourselves, as our bodies interface with the external object.

We work in a profession where representation is often our only medium, and we rely on the skills and knowledge of others to actually realise and build. Within this process Architects and Designers have often focused on space as our primary agent or material, but, as a material what is space, if not actually nothing?

We are not makers, we sample, draw, represent and model, mainly at small scale. And then pass on a set of instructions to a team of others, who create our interiors for us. In that flattened virtual realm of representation – drawings, lists, and images; it is vital that our connection and understanding of the existing host and the intended outcome remain central to our vision.

In this paper, we use a reflective study on a previous project as our research into practice. In this domain, we question our approach to material use and specification through a heightened lens and begin to articulate the design process through three separate layers of reality, in terms of the material voices pivotal to the project.

The Host: The base or shell layer. An existing site, building or room, which may or may not have already gone through alteration(s) in the past. This interior will arrive complete with a ready-made material narrative of its own. To be retained, embellished, stripped back, demolished or covered over. Some buildings may be of significant architectural or historic importance; others may not. Many have stories to tell of previous lives, and forgotten uses, visible in the layered fabric of the site. As a designer, we learn how to listen and interpret those stories for future use.

The New Interior: As a set of new finishes or materials, are installed within the room(s) they create the secondary layer; that becomes the walls, floors, ceilings, finishes, fittings, rugs and carpets, chairs, tables, decoration, lighting. All the things we immediately see and directly touch. Selected carefully, based on appropriateness, preferences and as pragmatic choices, taking into account complex considerations in regards to colour and texture, costs and efficiency, maintenance, health and safety, to name but a few.

The Third Layer: This is the unseen or consciously unspoken layer of the finished reality. Which can be described as the perceived, believed and understood. It relates to perception and intuition, the innate understanding of the materials, and equates to the theory of things. This third layer focuses on the poetic and sensual observations, aligning connections we make across time through our cultural values and set of beliefs.

Material as a metaphor.

In this story, the project speaks to us with all three voices. The old, the new, and the unseen – the sensory or the perceived, all strands collide across time, connecting materials and lives, reawakening previously buried fragments, and resurrecting old crafts and construction techniques. Historic elements sit happily next to modern surfaces and finishes in a new home, made for lives and uses perhaps unimaginable when the original building was created. In our post-modern world, the values of materials are changing, but

tactility and the senses seem to remain central to our consciousness, with a renewed desire for the familiar and the natural, grounding us in our material preferences. The recent resurgence in all things craft, a preference for hand drawings and continued appreciation of real models in design education, sparks an interesting debate about a more hands-on approach for all designers. Whereby we may seek to embrace a tectonic approach to our own 'craft', within an overall approach which sees us consider construction materials as part of a new dialogue within Interior Design.

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VISUAL NARRATIVE AND INTERIORITY: INTERIOR THINKING ROOTED IN THE SCENOGRAPHIC METHOD

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ABSTRACT

Space tells stories that attempt to decipher shared memories, traces of past, ideologies, emotions and values. Yet, in the praxis of 'drawing', when designers try to express principles and percepts through representations, they tend to become mere geometric patterns, generating default experiences. In an attempt to simultaneously address issues of representation and perception that currently stand at loggerheads, this paper introduces a narrative-based approach within an academic setting. It focuses on the body as the centre of all visual (along with temporal and material) considerations that drive designing through a crossover from the discipline of Scenography, i.e., *the mise-en-scene*.

We evolve a unique framework and articulate a design methodology for spatial thinking in discourses of architecture and interiority. Bringing the body into the centre-stage of a narrative-based dialogue allows us to simultaneously experience and theorize (hence represent), which is of critical value in the making of space. What would the steps of such a design process be? Where would it start? We look at ways in which narratives are created through spatial systems at the overlap of interior and scenographic endeavours.

We try to address:

- Can this method allow for space to be experienced with human sensory perception and be accomplished by composing the physical characteristics of size, shape, texture, etc.?
- How can space be a canvas for performance of human interactions?
- Can we shift from employing representational tools to perceptual tools, and in the process re-appropriate primitive fundamentals of spatial thinking?

Keywords: mise-en-scene, scenography, design process, percept, spatial narrative

INTRODUCTION

A. Traditional Design Processes: Issues of "Representation"

Traditional spatial design processes, within the disciplines of architecture and interior design, implicate elements such as site and context, function and programme, users, etc. and are found to be successful only when such elements can come together into a cohesive whole. No one element takes precedence over another in the final product, and the process invariably starts and ends in a repetitive sequence of putting them together. In addition, within each stage, an arrangement of Analysis, Evaluation and Synthesis

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(Lawson, 2005), in no particular order or hierarchy, occurs in recurrent though linear manner. The linearity of the process is in the fact that once decisions are taken within it, the related content is left behind, never to be revisited. Inevitably, such a process is expressed through a representational mode of interiority rather than a perceptual one.

This representation has for long been considered to be *"a fundamental architectural act that lies at the core of the discipline's self-understanding"* (Medina, 2017). In the current post digital scenario, a deluge of representational techniques attempt to develop an *"approach to what drawing might mean or do for architecture—to reassert the architectural drawing not as a window onto the world but as a way of making the world, and to reclaim the drawing as a primary site where an architectural idea is staged"* (Jacob, 2017). While this 'staging' of a representation creates provocative scenarios, it is seldom used as a tool of creation. The questions we ask here are: *what would it take for the depiction of space to no longer be just a representation, though provocative, but an element of creation just like site and context or function and programme? Can it be achieved by simply adding more variants, or does it need the creation of an entirely new process, or, better yet, a comprehensive redefinition of what a creative process in interiority is per say?*

B. Phenomenological Approaches: Issues of "Perception"

Contrastingly, at the other end of the spectrum, are processes relying heavily on perceptual thinking. Scholarly contributions have led to phenomenology, which provides the occasion to *"catch the essence of the things and phenomena, and bring us near to our existential being"* (Shirazi, n.d) and is *"a method well suited to penetrate the world of everyday existence"* (Norberg-Schulz, 2000).

Perceptual approaches simultaneously deal with visuality, corporeality, temporality and materiality. Though these processes (architectural/ spatial/ interiority based) commence with visual triggers and produce visual outputs, they attempt or rather claim to mould perception as a whole. As Pallasmaa argues, visuality takes centre stage in the design process (even of perceptual space) through the *"introduction of perspectival representations, which made the eye the centre point of the perceptual world"* (Pallasmaa, 2005). Corporeality in space, or the relationship between the space created and the body has also been taken up in very sporadic manners by architects. Peter Zumthor writes about taking cues for his architectural outputs from his essentially corporeal memories – *"how the ground felt below my feet with the sound of gravel crunching, how the smell of oil triggered a memory-based response to a space, etc"* (Zumthor, 2006).

Despite phenomenology covering all these aspects, the practice of designing essentially perceptual architectural spaces has not materialised into a method. Phenomenological approaches and perceptual thinking philosophies have contributed very little to the practice or architecture beyond questioning some presumptions or providing some pointers (Shirazi, 2009).

THE REMODELLED DISCOURSE

A. Scenography as an alternative model

In this paper, we look at the intersection of these two approaches such that the discourse can be remodelled. We attempt to investigate and initiate a methodology which

- a. Considers 'representation' as a 'creative' tool, and
- b. Is derived from the continuous superimposition of visuality, corporeality, temporality and materiality, to fill in gaps of the perceptual approach.

For this purpose, we look at another creative discipline, that of Scenography, which may provide the framework. Scenography, where spatial thinking is dominantly perceptual and 'narrative-based', allows us to build parallel processes, which can be used as catalysts for alternate methods of spatial thinking.

A study of the discipline of Scenography and the crossover of methods provides us with unique opportunities to theorise and delve into critical aspects of space making:

- How space could be created for human occupation and its contingent experience, rather than and without compromising, its usability or similar practical inputs¹.
- A re-interpretation of the roles of the designer and the participants in purely corporeal terms by the physical juxtaposition of the body within the experience and by the creation of a relation between the observer and the observed.

B. Methodology and approach

In this paper, we attempt to come up with a methodology of design that appropriates the perceptual nature of space, hence takes into account the components: visual (creative and representational), corporeal (somatic and sensual), temporal (experiential and progressive) and material (real and phenomenal). *Can we design taking direct cues from how bodies inhabit space, traverse it, be inside it or watch it, etc. making it the canvas for performance of such human interactions and interactions?*

Section 3 below is an attempt to synthesize a method within the discipline of Scenography. We begin by understanding narrative thinking and its constituents within the discipline. For this purpose and for facilitating a dialogue between architectural and scenographic space, certain relevant and extensively employed scenographic terms are elaborated in **Section 3A**. While some of the terms are commonplace in a theatrical vocabulary, this allows us to understand their value and contextualize them for perceptual discourses. Next, *in Sections 3B and 3C*, fundamental highlights of scenographic theory; the merits of the proposed methodology for spatial thinking; and the method itself are explained. Here, we elaborate on the creative process' incorporation of the visual, the corporeal and the temporal as its decision makers eventually leading to the material as its output. Further along this enquiry, in **Sections 3D and 3E**, the deconstructed components of the method are developed using a set of theoretical premises that serve as the framework to address the 'communicable aspects of all spaces.' How this communication is achieved is addressed as the nucleus of design tools that are at the disposition of the designer in **Section 3F**. Together, Section 3 aims to address the critical aspects of perceptual space and look into the interpretive and narrative role of the production of space.

Next, in **Section 4**, the articulated method of Scenography is 'tested' in various manners within an architectural setup. Using one of our academic studios titled *'Architecture as a Narrative: Design of Architectural Space as a means of Story-telling'*² As the field for experimentation, we test steps of the process – both with regards to its value within the architectural process and the type of possible outputs generated from this approach. We expand on chosen components developed in the framework above in a case-specific architectural pedagogic exercise where implementation of the design tools is elaborated.

The aim here is not to interpose verbatim the scenographic process within architectural space making but to critically assess if the scrutiny of a certain component of space making could lead to

- a) Developing a more comprehensive understanding of narrative thinking as a tool for design, and
- b) Finding a method to address the issue of architectural design processes that do not adapt to interiority.

¹ We understand and express 'practical inputs' of the process to be entities such as site and context, function and programme, etc., which become tools for action and decision making for the designer/ thinker.

² The student work depicted in this paper is a part of a design studio exercise (Second Year Design Studio Aug-Dec 2015) at the SSAA, Gurgaon, India. The studio content depicted here and the scenographic method under discussion are, however, the sole intellectual property of the authors and are the result of their personal research.

The cues developed out of the Scenographic processes are more a result of on-going explorations of the history of the subject as well as the personal experience of the authors. They do not refer to any particular discourse, and rather are a distillation of information collected and appreciated over time while focusing on spatial and design lexicon.

NARRATIVE THINKING

A. A new vocabulary/ terminology

Historically and contemporarily, 'What is Scenography?' has found many answers, intersecting at various junctions. Yet, only in the past few decades have theoreticians and practitioners of theatre demonstrated an active mindfulness to the spatial, visual and material components of performance. As such the vocabulary of describing these components is still poor (Bosch et al., 2013). It is somehow difficult to arrive at a shared terminology because different schools of thought consider scenography to either be an art or a way of thinking or both (Bosch et al., 2013). While we have tried to address the difference between scenography and stage design previously (Jain, 2017), the absence of a substantial set of agreeable terminology can also be linked to the ephemeral nature and capacity of theatre or to the fact that the boundaries between architecture, scenography and installation art are blurred and permeable.

Despite the lexical void, certain important terms that are common to performance criticism and perceptual space have been used extensively in this paper, and they can be briefly explained (for our purpose) as:

The Actor: They who inhabit the space. *What do they do? How do they move? How do they acknowledge or play with the space that is given to them?*

The Spectator: They who observe it being inhabited. *What do they all see? How do they interpret space and time together?*

Mise-en-scene: The arrangement of everything that appears in a frame, which can be looked at as the spatial envelope around the actor, and in some cases, around both the actor and the spectator. The frame is a singular instance where all perceptual components come together in a 'frozen' instance of time³.

Spatio-Temporal Continuum: A series of frame-like mise-en-scene, providing time and rhythm to the performance or a spatial experience with the body - its actions and movements - at the centre of visual consideration.

Spatial Narrative: A means of approaching, designing and describing space⁴ such that the body within the space becomes the central focus. In a spatial narrative, the space provides a physical framework and perceptual indicators, facilitating its own discovery by the actor while being narrated visually to the spectator. Experiencing (in time) through the body (and designing), theorizing (and representing) through visual storytelling can hence be looked at as two facets of the spatial narrative.

B. The criticality of the mise-en scene: the intersection of "Representation" and "Perception"

The revolutionizing works (and writings) of Adolphe Appia (Beacham, 1987) and Robert Gordon Craig (Innes, 2005) from the 19th century have made it evident that spatial thinking within scenography requires the designer to address the relationship of the (stage) space with the actor; the spectator; light as the tool that sculpts space and colours it; and sound as the tool that elevates it from being a space to an environment.

³ While it will be interpreted differently in theatre directors', actors' and dramaturges' terminology³, our method deals with the term mise-en-scene through a reductive lens of scenography alone.

⁴ Based on Christopher Innes' narrative description of the production of Hamlet by Edward G. Craig, in *Edward Gordon Craig-A Vision in Theatre* (2005).

These four relationships drive the creation of the mise-en-scene; and are implicit in the creation of experiences. The mise-en-scene is understood as the spatial envelope around the performer. It hinges on the experience of the spectator while observing the performer and is represented as a 1-point perspective. In essence, during the elaboration on a mise-en-scene, one is no longer designing for 'another' user, but using/projecting the self as the body - both of the spectator and actor - jumping constantly between these two assumed roles. This centrality of the designer, who looks at experiencing space 'inside-out' or from positioning oneself within the space, paves the way for the deconstruction, leading to the making of an experience. This is the primary purpose of the mise-en-scene. As evidenced, the tool of creation (the mise-en-scene via the projection of the self) becomes the output of creative thinking all along the process (the mise-en-scene via its visual recounting).

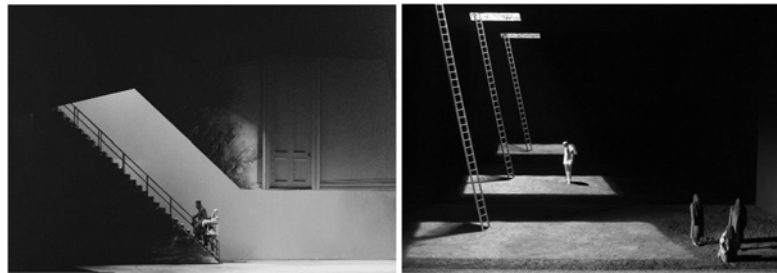


Figure 1: The mise-en-scene in Scenography

Michael Levine's scenography for a) *Wozzeck* by Alban Berg, (1989). The Canadian Opera Company and b) *The Magic Flute* by W.A. Mozart, Paris Opera (2014), *The Paris Opera*
 Source: Michael Levine Studio @ <http://www.michaellevinestudio.com/work>.

C. The Scenographic Method – processes and representations

The method we develop here is solely based on reflecting and deconstructing it to the elementary questioning of anything – answering the What, Who, How, Where and When variables.

The What is the mise-en-scene; the spatial envelope that we seek to create. This envelope is a carefully composed frame, having the power to coherently communicate itself to *they who see it*, i.e., the Spectator - the Who. Where and When is the spatiotemporal continuum, a series of mise-en scene observing the engagement of the actor in space and time. The continuum regards the body's actions and movements to be the focus of visual consideration (Postlewait). As such, it substantiates the actors' relevance further, for without them the continuum would not exist.

Because the continuum is composed of multiple mise-en-scene, this paradox is the highlight of the method wherein the process-product emerges as the output. It becomes a flowchart such that the end variable is inextricably linked to the initial one and cyclic processes of creating mise-en-scene result in the articulation of the spatiotemporal continuum.

In a discourse on design methods and processes, How this communication is achieved becomes significant, and as such, is the nucleus of our design tools. The How is answered by designing relationships - using the actor as the central tool, *they who inhabit the space*. In the language of representation, this can be understood as the storyboard.

D. What does a mise-en-scene do in terms of architectural space?

Ching decodes the constituents of a work of architecture (and by extension, interiority) in *Architectural Systems and Orders* (Ching, 2007). These are

- Systems: divided and explained as "*The Architecture of Space, Enclosure and Structure; Experienced through Movement in Space & Time; Achieved by means of technology; Accommodating a Program; Compatible with its context*".

- Orders: categorized as “Physical – the play of form and space or solid and void; Perceptual – sensorial recognition of the physical elements and Conceptual – comprehension of the relationships and meanings of the systems.”

In *The Manhattan Transcripts*, Tschumi (1994) proposes to ‘transcribe an architectural interpretation of reality’ elaborating on the “tripartite set - Object, Movement and Event - as tools-in-making” via a “non-coincidence between meaning and being, movement and space, and man and object”. As Tschumi explains, “the purpose of tripartite mode of notation was to introduce the order of **experience**, the order of **time** - moments, intervals, sequences”. He elaborates that their coming together “establishes an instant of continuity” in an otherwise discontinuous discourse. The temporal (the When), hence, comes into play as the product and a critical constituent of the spatial (the What) via the corporeal (the Who), expressed through visual representations allowing the stitch to ensue hereby giving meaning.

This is essentially what all spaces communicate, i.e., a larger, and more generic order of the ‘sequencing of communication’ as:

1. **That which exists** (as make-believe/ heightened reality) – hence we observe,
2. **That which we react to** – hence we are stimulated, and
3. **That which gives meaning** – hence we interpret.

An elucidation of scenography on stage illustrates this pivotal sequencing - the first one observes (a picture, a blank/ dead mise-en-scene), then one is stimulated (the mise-en-scene is alive - there is the actor, and as in immersive scenography, the transition is faster since a co-observer could become the actor any time). Eventually, one interprets based on the clues, signs, indicators the director-scenographer-dramaturge gives over time, making this sequence durational, with an inbuilt component of time.

E. When and Where does a mise-en-scene exist?

Each instance of creating the What (mise-en-scene) using How (designing relationships) communicates meaning For the spectator. An awareness is required on the part of the designer to recognize that for every line that is put on paper, or rather any trigger used from How will always qualify the space uniquely for the spectator and generate a response from them. This becomes the basis of the spatiotemporal continuum, or the storyboard, addressing Where and When.

F. How is the mise-en-scene created?

Scenographic method is contingent on the overlap of the Who and How as tools to create What, i.e. the identification of the mise-en-scene is defined by the position of the spectator and its ideal representation is ‘drawing’ perspective views from their field of view. This view - a blank frame to begin with and populated gradually by the designer - is the key tool as well as the output.

Populating the frame is achieved by answering How the sequencing of communication is happening. Here, we look at designing relationships

1st) between:

- 1) Bodies with each other - **those who inhabit** (Actors). For example: *proximity – adjacency or contiguity, gaze – watching or being watched, etc.*
- 2) Bodies and spatial elements - **actions in space**. For example: *Being inside, bypassing an edge, being a part of, being engulfed, etc.*

- 3) Bodies, Space and Time - **duration of the actions**. For example: *approaching, passing through, walking by, etc.*

2nd) using:

- a) Basics of 2D space - point, line, plane, shape and pattern
- b) Principles of Aesthetics - symmetry, balance, rhythm, proportion and dominance
- c) Perceptual Gestures of 3D space - light, colour, temperature, sound, touch and smell.

These triggers, or relationships, become the designers' basic tools; arming them to manipulate space and exercise varying degrees of control (Lazroe, 2001) (subconscious and conscious) over the spectator. In this manner, visual, corporeal, temporal and material phenomenological components get appropriated.

IMPLEMENTING THE SCENOGRAPHIC METHOD IN THE ARCHITECTURAL STUDIO

A. Interpreting the mise-en-scene in discourses of interiority

In the interpretation of the mise-en-scene, certain observations are made from our 'Architecture as Narrative' studio: the duality projected by the envelope around the actor and the central positioning of the author have to be appreciated as critical points of exploration within architectural space and for the creation of experience. An architectural mise-en-scene or What then refers to a space (or a sequence of spaces) where actions take place, a space that is a generator of responses from its actors, its spectators; within which meaning is entrenched by the nature of human actions that it perpetuates or sustains. This was essentially the focus of the Narrative studio.

To understand this, we start by considering a set of moments 'frozen' in time, interpreting them as spaces where specific actions can take place. These actions are 'corporeal' in nature and related to a projection of the self (the author) within the space - *being seen, approaching, being inside, passing by, traversing, meeting someone, etc.* This method brings forth Pallasmaa's words "*Projecting the body onto the world and reflecting the world in the body. We remember through our bodies as much through ... the brain*" (Pallasmaa, 2005).

B. The Who

In the academic studio, the explorations started by looking at the creation of stories within which the architecture would unfold rather than the factual content or *practical inputs* (brief, site, etc). The stories focused on the relationships between various characters that the story was built around. Characters or the Who⁵ were defined along with their interrelationships. Linking back to the corporeal as understood earlier in this paper, the characters performed the dual roles of actors and spectators while the authors (the students) performed all three roles including being the spectators and actors by projections of the self into the space.

The spectators (and the actors in architecture) interpret meaning from space using their subconscious knowledge of basics of 2-dimensional space. How the designer orients them with the other tools at their disposal also comes into play in the interpretation. As such, experientiality and the ***spatial narrative*** have both - what you can control as the designer (intent) and what you cannot (content). It is the juxtaposition of

⁵ While scenography largely considers the Who, i.e., the Spectator to be static in the duration of the continuum, it is not so in cases of immersive and experiential endeavours, including experientiality in interiority. As stated previously, in spatial narratives the spectator and actor can transition into the others' role very easily.

the content and intent that is at the heart of the mise-en-scene in both scenographic and architectural systems.

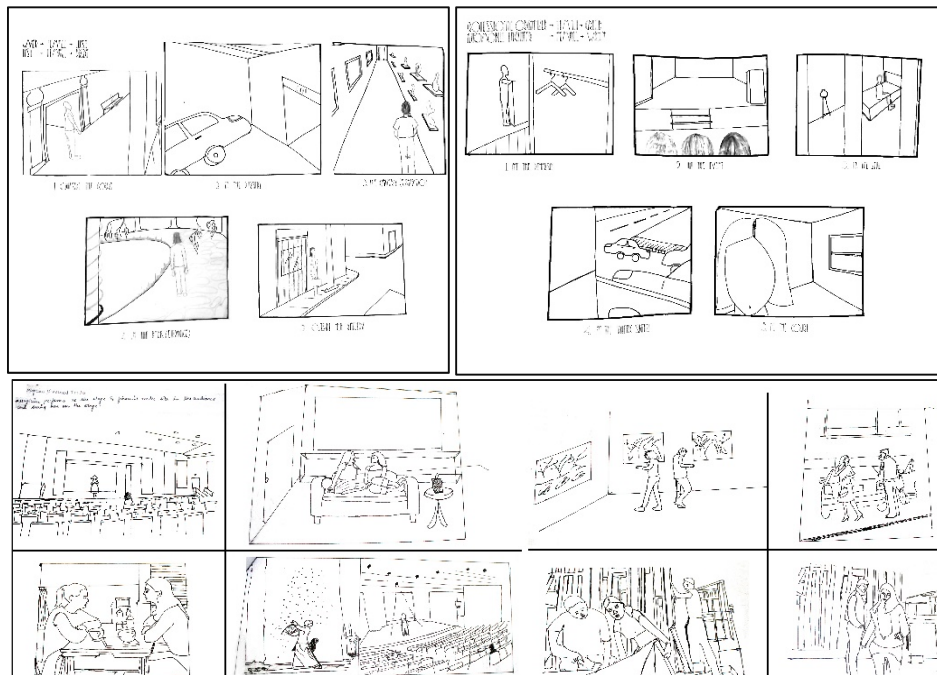


Figure 2: Some student outputs – the initial mise-en-scene showing the characters
Source: D. Gera (1), I. Sahai (2)

C. The How

i. Bodies with each other



Figure 3: The frozen moments – bodies with each other
Source: R. Rathore (1 & 2), U. Singh (3 & 4)

The content and the mise-en-scene, contributors of the What, were further developed by the elaboration of sequences of how the characters met, what action they performed, ending with the elucidation of the space (via 2-D sketches and schematic sections) within which the story unfolded. Evolution of these architectural scenarios was indicative of **that which exists** - *who the characters are, how do they feel and how do they coexist with other characters and the nature of their interactions?*; **That which we react to** - *what is the quality of the space within which each relationship can thrive or get highlighted, how do the spaces juxtapose with each other?*; and **that which gives meaning** - *what does this space communicate to its participants and how can we look at gathering meaning through simple architectural acts?*

ii. Bodies and spatial elements:

The students further elucidated alternative scenarios where similar human actions could take place by identifying the primary qualities of the space that were intrinsic to the encounters as well as what could be adapted. This resulted in a listing of rules or parameters of pure space that were conducive for the identified human actions in space to take place. John Hejduk's "*Kit of Parts*" (Hedjuk & Diller, 1996) was considered relevant for the 3D explorations of mise-en-scene using basic architectonics and all decisions were taken in an iterative manner. This permitted the frozen moments to be assembled alongside each other in purely spatial terms in a continuous back and forth between the story, the characters, the interrelationships and the rules of inhabiting space.

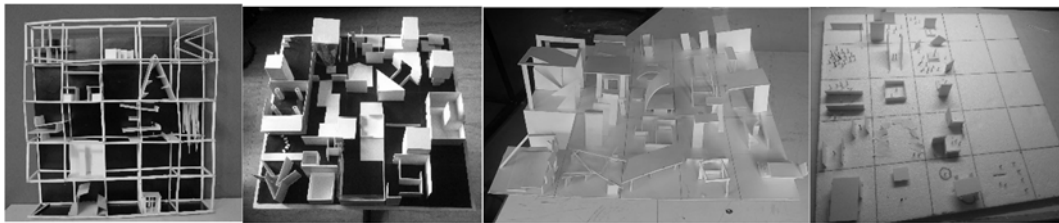


Figure 4: The initial 'Kit-of-parts' based 3D mise-en-scene
Source: D. Gera, R. Chaddha, A. Kapoor, A. Tiwari

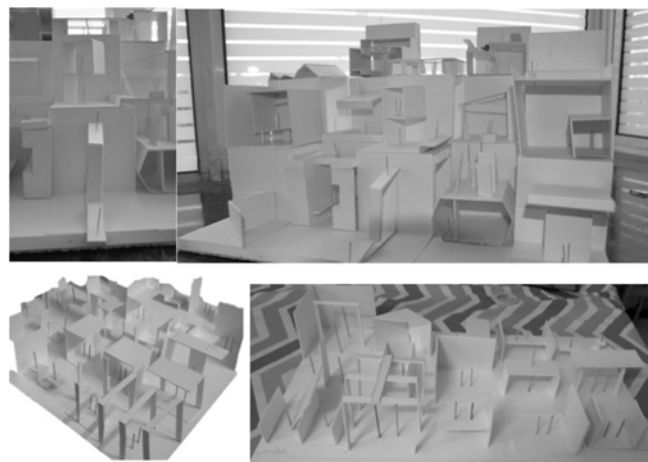


Figure 5: Bodies and spatial elements
Source: P. Jindal (1, 2, 3 & 4), I. Sahai (5 & 6)

iii. Bodies, Space and Time

Given that a 3-dimensional experience had already been evolved, the next steps comprised of scaling (up and down) the frozen moments to address the amount of time spent by the actor/ spectator inside it. The students considered the duration of each moment as well as how different moments sit next to each other. Duration of each moment was looked at in terms of their spatial nature - if something needs to be approached, how long should the approach be? If something needs to be experienced in passing, does the length of time associated with the passing impact the experience? How does one 'long' moment transition

into another – short or long? Each stitch can be a combination of many scales of spaces, different volumes, making one moment last "longer" than the other.

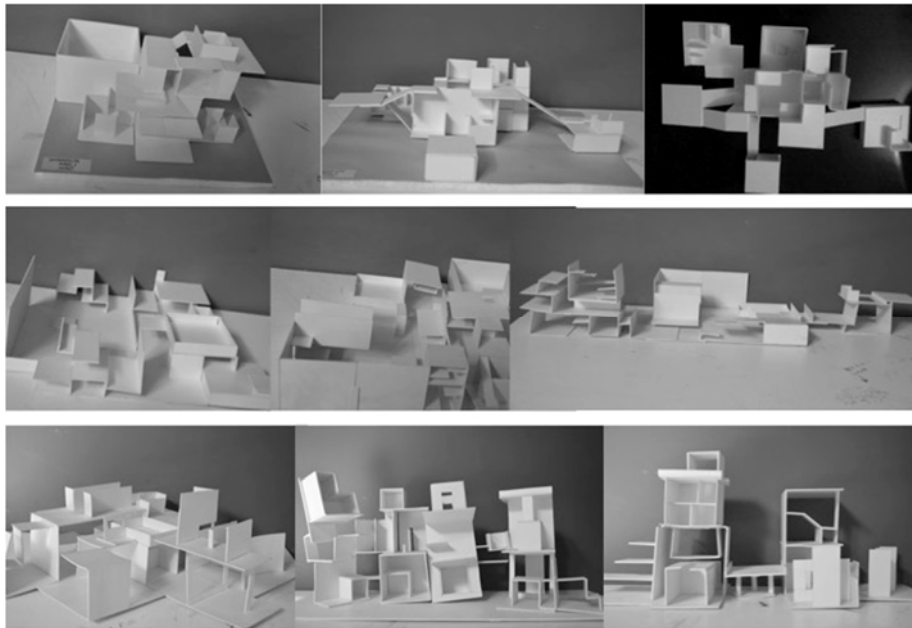


Figure 6: Bodies, Space and Time

Source: A. Bhargava (1, 2, & 3), R. Rathore (4, 5 & 6), I. Sahai (7, 8 & 9)

Hence, at this stage, the intermingling and amalgamation of ‘spaces’ needed for all individual interrelationships to coexist became critical – in essence, we redefined the What by redefining the Who. We also looked at how these relationships will exist next to each other by adding other stories/ content into the mix. The content essentially focussed on the programmatic aspects of the brief and entailed a series of questions about spatiotemporal occupation. This shift in scale of the Who and the juxtaposition of new information into the cyclic process allowed for a continuous revisit of the space, establishing the continuum. The stitching of the mise-en-scene was a means of incorporation of the aspect of scale and time into the sequence of interactions. This necessitated a discussion of scale and volumes of the spaces. The spectator’s shifting positions also allowed multiple viewpoints and frames to be created, suggesting the durational aspect of their movement in the space.

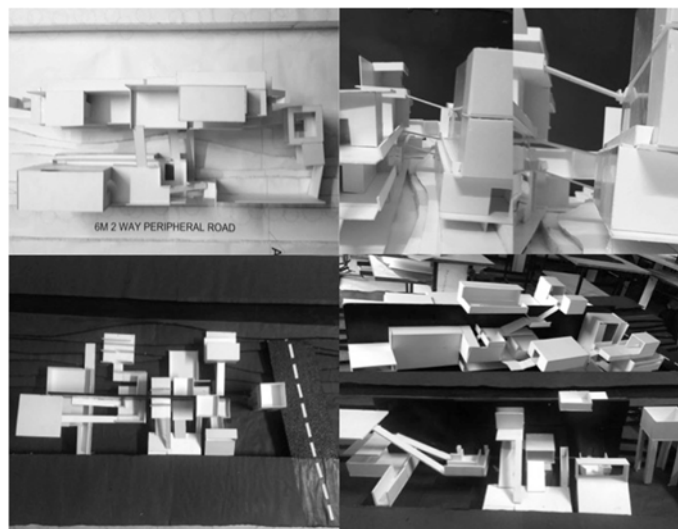


Figure 7: Architectural representations of the mise-en-scene

Source: P.Jindal (1, 2, & 3), D. Gera (4, 5 & 6)

CONCLUSION

With the highlight of such an exercise being the dual nature of the mise-en-scene - as the tool (of representation) and as the output (of perception), it is evident that it helps us evolve ways of 'creating experiential space'. The process is made cyclic, and the tool progressively feeds the continuum. The scenographic method relies extensively on the mise-en-scene's ideal and wholesome representation as a perspective view. This idea, by extension into the current architectural pedagogic exercise, enables the creator to give paramount importance to the viewer bringing forth Pallasmaa's comments on the eye as the centre point of the perceptual world. The performance and its continuum, a series of such views, would ideally be represented by a storyboard, flipbook or animation. In interiority, we see that the continuum hinges on three-dimensional thinking along with 2-D. Its implementation can ensure the creation of spaces that appreciate interior experientiality far more than the creation of 'iconic forms'.

Importantly, these modes of representation address the corporeal nature of space, which is particularly missing from discourses of architecture and interiority. In the case of the architectural studio, the process becomes more dynamic (for the designers) when we stop thinking of an imaginary and ambiguous user group, but rather consider them as spectators and actors. In other words, we began by defining the users' physicality as the strongest design tool for the method, which led to the creation of spaces that prioritized the relationship of bodies with their human and non-human surroundings and time.

Hence, corporeal, visual, temporal and material can never exist without each other and require simultaneous and continuous consideration in the designing of spaces for human inhabitation. It is evident that such a process of spatial thinking can lead us to the *material*. Its translation into the real is of critical importance and it is at that point that the process needs a leap of imagination and spatial control by the designer.

The implication of the scenographic method into the architectural one, especially as it concerns interiority, has many layers and this paper is just the beginning of this study. A further study could pertain to the manner of the causation of content and its use within the process. Factual information of site, programme and brief, etc., though not elucidated in the paper, implicate themselves into the process at various junctions. Enquiry into how this implication happens and what value it offers to the spatial narrative is an essential next step.

The criticality of the narrative-based discourse is that nothing is left behind - there is rarely a moment of *this* verses *that*. On the contrary, the moments of choice are collective in nature - the accumulate information rather than discard it. Taking this idea to design processes dealing with interiority offers us the unique opportunity to iterate and collect rather than choose and discard. The output, hence, has that much more knowledge and that much more possibility to remain true to the initial response to content that was the trigger of the process. Such an approach, because of its self-referential nature, allows the designer to not leave anything behind. Instead, it provides the field-of-play.

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NARRATING STAGE DESIGN AS A MOMENTARY SPATIAL EXPERIENCE

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ABSTRACT

Stage design is a temporary space built specifically for performing arts. Although it is created for temporary use and not permanent, the atmosphere, which is created and narrated by a stage designer, is built to determine the audiences of how they should perceive or feel. There is a space shared certain audiences who enjoy the very precise moment, confirming that all of them has shared the same spatial experience at the same time.

Case study for this paper is a musical stage: *Ariah the Musical*, a musical drama to celebrate Jakarta 486th Anniversary (2014). This musical drama performed on a massive stage, using Monumen Nasional (Monas) as a background.

This paper suggests that the narrative builds through a system of interiority which has created a momentary spatial experience. There is an engagement between the temporality of time, sensorial and social-spatial experience in a stage design. This stage serves its purpose not only as a temporary space for performance but also to exhibit Monumen Nasional to the audiences. The idea needs to be explored through an analytical design approach to articulate the idea.

Keywords: scenography, performance art, spatial experience, art in public space, *Ariah the Musical*

INTRODUCTION

This research starts with the Authors interest in performing arts. In this specific branch of art, artists perform in a stage, which is a space that is designed for the performance. Stage Design, or also known as a scenography, gave audience definitive information about the time and place from the narration of the play.

As audiences, when we are watching a performance we share the same perception of the stage. Baudrillard (1996) has linked material, form and space as elements that hold a big role in affecting the atmosphere. The three aspects linked to each other become a cultural system of signs and construct spatial experience. We no longer talk about spatiality behind a closed doors or in a four-dimensional space, but spatiality in a broader context. Spatiality now is understood by the relational condition in between one human being to another. The interior is understood outside of its historical frame as an applied, disjunctive, and randomly accumulative space of inhabitation (Baudrillard, 1996, p. 37). When people are gathering around in the same place it creates the sense of relatedness to each other, even without a particular interaction, they all belong to the place at that very precise moment.

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Douglas (2011) describe the potential of another form of relatedness when people gather to see a public art. The public art has challenged traditional sociality that might normatively gather us around identity-based categories of belonging such as being of a nationality, ethnicity, language, religion, class, gendered role, and so on (Douglas, 2011, p. 45).

Moreover, it also the same when we watched a performance. We gathered not because of our nationality, ethnicity, or gender, but for the performance itself. This temporary event creates a sense of relatedness through each other, and create a different sense of time and place, separated from the time and place context narration of the play. Audiences feel connected to each other because they are enjoying the performance together.

From this point of view, authors feel this sense of relatedness is not being brought by the narration or storyline from the play, but from other forms. There is another narration which guides the audiences from the beginning, starting from when the gate open, queueing tickets, finding seat position and watching the performance at the stage design. It is incorporated as a dynamic relation between audiences and the performances. Location of the performance is as important as the stage design itself, followed by the elements of design such as materiality, lighting, form, texture, and sound. There could be a multi-narrated story behind the scenography, because of the overflowing relationship happened in the environment.

This paper tries to discover another „narration“ behind scenography by using “Ariah the Musical” as a Case Study. To explore the idea this paper begins with a brief overview of the terms of scenography in the history and its relevance to interiority and space. Followed by a discussion about how the spatiality is narrated through site location, flowing continuously from site to the elements of design applied in “Ariah the Musical” scenography.

METHODOLOGY

The objective of this research is to discuss how spatiality is constructed one by one, through some systematical arrangements in a scenography or a stage design. Spatiality in Scenography is closely related to the idea of time and space, authors will then explore some theoretical ideas in *The System of Objects* by Baudrillard along with other references about *Scene Design* by Radivoje Dinulović and *Narrative in Scene Design* by Joe M. Rohde, along with other references from Aronson and from Joslin McKinney who describe the Future and the Development of Scenography. To understand the spatiality in scenography, especially in a site context situation, authors believe that theory from Fiona Wilkie about *Space in a Site-Specific Performance* and the *Typologies in Scenic Space* by Lloyd Llewellyn-Jones also relatable to the idea.

LITERATUR STUDIES

A. Definition of Scenography

In a theatrical production, stage design or scenography is considered as a key role in a production of theatre play as it is often the first visual thing audiences will notice when they enter the venue. McKinney (2000) and Kennedy (1993) all state that the visual is an essential part of theatre production. What audiences see will inevitably shape their theatrical experience and suggest meanings (McKinney, 2000, p. 1).

As an illustration for the audiences, sometimes a stage design equipped with painted scenery as a background, with various properties such as furniture, and other supporting accessories. According to Jones (2001), set and the costume is a major component that determines a theatrical performance. Both set design and costume reflect the themes and mood, style, and emotions of a play, as well as indicating the historical or geographic context of the production.

Historical background from the term of scenography first introduced by Pamela Howard in her book “What is Scenography?”, But the conception of scenography was first introduced by Appia. Using lighting as a key

element to create the ambience, Appia challenges the old conception about scenography. The sense of spatiality in scenography then become deeper, ambience no longer presented in background and properties but presented in a more abstract but powerful way. Pamela Howard in "What is Scenography?" also describe scenography as an "elegant synthesis of space, text, research, fine arts, actors, directors and viewers, which contributes to the creation of truly original works" (Howard, 2002, p. 152).

On his writing on "What is Scenography?" Eagan (2010) described the development of modern scenography started in the Central and Eastern Europe, at the communist era and later become popular in West Europe. At that moment, The Bauhaus Movement in architecture and design and German Expressionism in painting and the theatre are both important artistic and intellectual antecedents to modern scenography. Postmodernism concepts also gave influence to the understanding of scenography. The increasing use of the term scenography in Britain is, in part, intended to signal a practice of theatre design where visual, spatial and kinetic elements are fully integrated within the performance as a whole (Mckinney, 2000, p. 1). Scenography is no longer a presented imagination or in Aronson's word: a simulacrum of the experiential world of the spectators. Scenography, therefore, is constructed out of the architectural stage space, rearticulate of that space, and the design and presentation of all elements of scene design (scenery, props, costumes, light, sound, video projections, special effects...) (Radivoje, 2012, p. 7)

On Scenography Expanding 2: On Artists/Authors (2010) it is mentioned that in the past decade the scenographic practice and the scene design have continually wandered off from the theatrical black box towards a hybrid area placed within the points of intersection of the theatre, architecture, exhibitions, visual arts and media. In this case, scenography is no longer act as a supporting background but what makes the experience itself. Visual Experience in the theatre can be separated from the performance or the screenplay. It is a combination of our perception, our experience of space, altered or pondered by such things as our knowledge, memory and our state of mind (Clarke, 2012, p. 14). Because of its quality as a hybrid area, from this point of view the authors would like to propose an idea to see scenography not just as a visual background, but to see a scenography as a whole experience of watching the performance. Scenography cannot be understood as simply just a stage, but the whole experience of watching the performance is also part of scenography. We, as audiences are part of scenography itself.

As mention above, a scenography is purposely build to create an atmosphere, which is constructed by the elements of theatre staging which complements each other. These elements, not by particular elements only, construct a systematical organization, a whole organization which we called atmosphere in the interior world. These elements play a role in our reaction on how we perceive the spatial experience when watching a specific performance.

B. Spatiality in Scenography

Wilky (2004) in "Space in Site-Specific Performance" argued that the term spatial in the theatre production is actually found in the actual act of watching the performance, which is usually separated from the performance itself. If we see scenography as a whole process of watching a performance, the activity outside the performance such as buying tickets, queueing for entry, or meeting friends, according to Wilky, is also a part of scenography. Scenography conceived as a „spatial situation“, it also incorporates the fragile, dynamic, and emotional relationships of performers and audience in real space. (Dinulović, 2012, p. 34) These activities are the activities that create meaning in a performance watching experience, create a different level of spatiality not just experienced by the audiences, but also experience by the performers, actors, and the whole production team.

How we sense the place and its a matter as our memory gathered over the course of time, and our body with its surrounding reacts upon them. Bergson (1990) stated that memory of experience is what triggers us for our action or reaction in the present moment. Each person constructs their spatiality based on their

experience or memory. They create their own perception and at the same time, engaging their spatial experience to each other.

The characteristic of spatiality in a scenography is described in a moment of right now. Audiences believe they had shared the same experience, although they don't know each other. Space and Time here become the parameter. On Space, Time and Play in Multimedia Environments Translated by John Ashforth, Eisenbeis (2007) stated if the "Zeit-Raum" (literally "time-space" or "space in time," "timespan") describes the linear measure of a period, a duration, which is of importance in the registration of signals and contents, then the "Raum-Zeit" ("space-time") illustrates the spatial navigation or exploration of a physically defined area subject to time. Hence, the relation in between time and space in a scenography depends on visual elements combine to create an atmosphere. When all the visual elements combine, a sense of design is born, and the full impact of the theatre experience can be interpreted by the audience (Lloyd, 2001, p. 2).

Moreover, to understand the full impact of the theatre experience we also need to know the audiences. What could come off as an identity which could connect all experiences, memories and historical background of the audiences? Interpretation coming from audiences are very personal based on their experiences, memories and historical background. Memories of prior personal and cultural experiences play their part in conditioning his perception of these patterns and delight is found in the intrigue generated by what remains unsaid (Malnar & Vodvarka, 2004, p. 3). This is what a stage designer should understand. Narration in a scenography coming from the articulation of the narratives from the people involved in the production; stage designer, producer, director, includes all actors, to be delivered to the audiences, but the key person who held power is the stage designer, who has the responsibility to implemented in the elements of design.

Audiences whose come to see the performance might have hidden similarities that could form a relatedness to each other. There is an identity that is collectively hidden in the cause of people sharing historical or hereditary similarities (Hall, 2000, p. 17). This is what a stage designer should find and create, a form of similarity that connects each other.

As a part of scenography, the location where the actors will perform sometimes speaks more rather than any other visual elements. Since 1960, the development in theatre practice has changed the necessity to perform inside a theatre building. The site-specific place gives a spatial and architectural meaning, performance sometimes takes place in specific location, using the site as an instrumental part of the development of the atmosphere in the performance. Here, the representational system in "Ariah the Musical" presented through a site-specific, followed by the design of the stage and other elements of design.

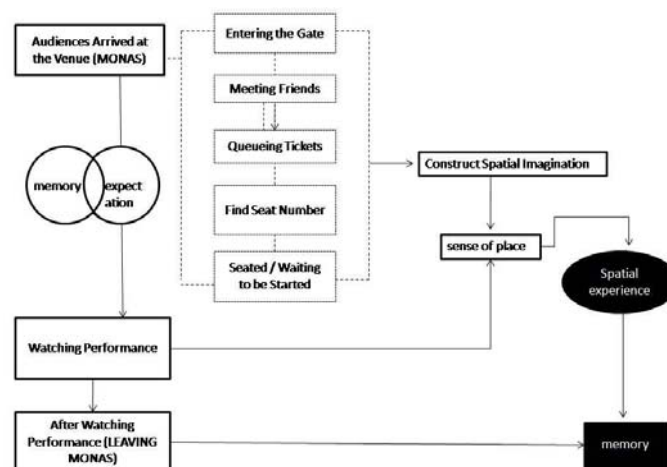


Diagram 1. Audiences activity in Ariah the Musical Performance
Source: Author

As the official national monument of the Republic of Indonesia, Monas already hold some emotional and fonding memories to the audiences before. Zumthor has stated that we perceived atmosphere through our emotional sensibility. (Zumthor, 2006, p. 11). Almost every Jakartans, if not Indonesian, has visited Monas before, through a family picnic, school visit, or they simply just passing it every day in their daily life. Monas has already been there; Monas is familiar to them. Because the familiarity of Monas, audiences already have some expectation towards the performance referring to the memory or experience they had before. Here, site an important part of narrating and create a sense of place. Moreover, audience interaction is present through this symbolic form. Spatial experience build from the previous memory audiences had about Monas. It will not achieve its purpose if this performance being held in another place, for example, in a regular theatre space.

SPACE OF INDEPENDENCY AS A NARRATIVE

This description begins by identifying narratives related to the context of space and time, and memories of the past. "Ariah the Musical" becomes the illustration to explore the narration behind scenography. As a musical performance to commemorate the 486th anniversary of Jakarta (2014), this musical performance considered relevant to be used as a case study.

Ariah the Musical storyline based on the folklore story in Tambun Area in 1869 of a girl named Mariah, a poor woman who refused to be married against oppression in the Dutch colonial period. Ariah's character coming off as a strong-willed, she was willing to learn martial arts to defend herself and her dignity and finally fight until death, as she said she better be dead rather than alive by oppression.

Rohde (2010) stated that places with personality offer a strong connection to visitors because as a human being we tend to look for visual comfort. It means, the place itself should give comfort and familiar feeling. The less anxiety it creates, the easier the place to be invested with new meanings. The more familiar the place are, the more audiences feel that they are in a natural environment. Narration must explain itself, not be explained by text, and narrative depends on visual cueing. These narratives come in the form of representation, construct identity and define how certain things are presented, taught, or learned (Hall, 2000, p. 17).

In Ariah the Musical, the performance is located in Monas, audience's memories and experience regarding Monas is used to shape their perception. As a 132-meter tower, located in the center of Merdeka Square with a 14.5 ton Bronze covered with Gold Foil as its top, Monas was established to commemorate the struggle of the people of Indonesia to win over Indonesia Independency from the Dutch Colonial Government (see figure 1) It was built on August 17, 1961, and opened to the public on July 12, 1975.



Figure 2. Monumen Nasional (MONAS), familiar as an icon of Jakarta.
Source: Disparbud DKI Jakarta

As an icon of Jakarta, Monas has already possessed the quality of narrative space; it has particular meaning to every person in Jakarta. Monas and its story already connected to audience's personal experience. When

Monas became the location for *Ariah the Musical* performance, audiences expand their experience about Monas, adding new memories and perception.

As mentioned before, Monas is located in Merdeka Square, previously Lapangan Ikada. Lapangan Ikada has been known as a historical place where Sukarno, the 1st President of Indonesia gave his first speech in front of thousands of people after Indonesia Independence was declared. "Lapangan Ikada" and "Monas" symbolize the fight of independence in Indonesia and during that time, it has raised the patriotic spirit in the Indonesian people. This previous knowledge will create a familiarity of the place with the audiences, but then curiosity will also arise. What could be done in a place that is already familiar to them? What could possibly be different? These questions are the questions audiences had in mind when they enter Monas' gate.

Monas has already been known as a tower of independence, this information is what the stage designer realize. *Ariah* storyline tells a tale of a woman that defends her independence in the Dutch Colonial period. Then the identity of Monas as a symbol of Indonesia independence reinforced with the story of *Ariah* itself.

Independence became the narration, since the beginning, followed by other elements in the design of the stage itself. Design result is created by the needs of the atmosphere. So, function in design is closely related to material, form and space in the needs of building atmosphere (Baudillard, 1996, p. 37).



Figure 3. People arrived in Monas to watch *Ariah The Musical*

Source: <http://dotadengankomputerkitabicara.blogspot.co.id/2013/07/ariah-drama-musikal-betawi-di-monas.html>

To craft narrative space, one has to think a bit more of a filmmaker, in technical attempts to create the illusion of space, an extension of the panorama (Rohde, 2010, p. 4). In our study case, when audiences arrived at the venue, first and foremost they will see from afar is Monas (see figure 2). There are several activities they have to do before they could enter and find their seat. Going inside, audiences are first directed to follow a circular path and see other audiences gathered before they see the entire stage where the performance will be conducted. A linear and straight path will give a direct information about the place, but if the path is not linear, audiences will find visual signals through other wayfinding elements along the way. This then will deepen the level of curiosity and raised a sense of expectation about what they will see at the end of the path until finally audiences found their seat and sat down facing the stage.

Ariah the Musical stage is located in front of Monas, using Monas as a background. Far from the context of space and time contained in the storyline, *Ariah the Musical* stage is a modern stage setting, with massive scale stage. In *Ariah* stage, elements of design are articulated in the scale of the stage, shape, texture, and lighting. The stage was configured to three parts with different heights in each part. (see figure 3 and figure 4) The first stage is around 3 M with 15-degree slope, the second one is 7 M with 20-degree slope, and the third one which is being the tallest one is 10 M with 35-degree slope, as we can see at the picture below (see figure 4).

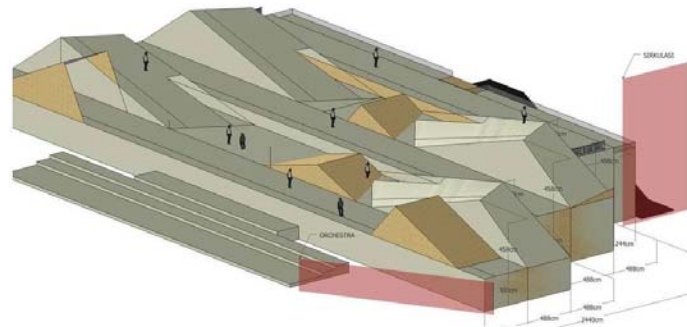


Figure 4. Stage of Ariah The Musical.

Source: <http://www.liburkeluarga.com/pilihan-moza/ariah-musikal-tari-kolosal-bernuansa-betawi-yang-dipadu-dengan-konsep-modern>



Figure 5. Ariah The Musical Stage Plan.

Source: <http://kabarinews.com/ariah-tari-kolosal-betawi-meriahkan-hut-dki-jakarta-ke-486/56859>

The contrast between its different level of heights creates more dramatic movement and blurring boundaries in between the backstage and the actual stage. This allowed the performers to suddenly appear in different spots, adding some the element of surprises for the audiences. These different level of heights and its slopes create a dynamic movement from the performers, the narration of the movement is also supported by the musical background, adding more characters to space.

Authors divided the performance activities into three parts. The first part of the performance is the opening. The opening part is the first impression for audiences, building up narration and the drama in the next following part. Then how Space of Independence became a narrative in Ariah the Musical play? Monas is the first thing audiences notice and see when the performance begin. We mentioned before that, as an icon Monas has already possess the quality of narrative space and has meaning to the audiences.

As we can see in figure 5, all lightings pointed out to Monas, embrace the monument first, showing Monas as a symbol of Indonesia independence, before the performance begins and the dancers came out from different spots on the stage. Unconsciously, audiences established their connection with Monas, before they engage themselves to the performance, and Monas itself.

Ariah as the main character showed up in the second part of the play. Standing alone in the middle of the stage, Ariah singing and dancing, followed by other dancers. In this sequences, a lot of texture, lighting use to shape visual perception about the location or background of the story, again to build the drama and intensity. Bruce, Green, & Georgeson (1996) wrote movement is the adaption of the environment. Thus, for its movement to be regulated by the environment, it must be able to detect structures and events in its surrounding, as in the ability of perception. The movement from the performers describes the struggle and their willpower to control their own body as their response to the stage. As we can see in figure 6, the dancers

and actors performs in an extremely slick and slope surface, achieved by shape, texture and lighting, showing the movement of dancers and actors, making spectacle of themselves by being in control of their own movement and rhythm so they would not slip-off and fell through the stage.

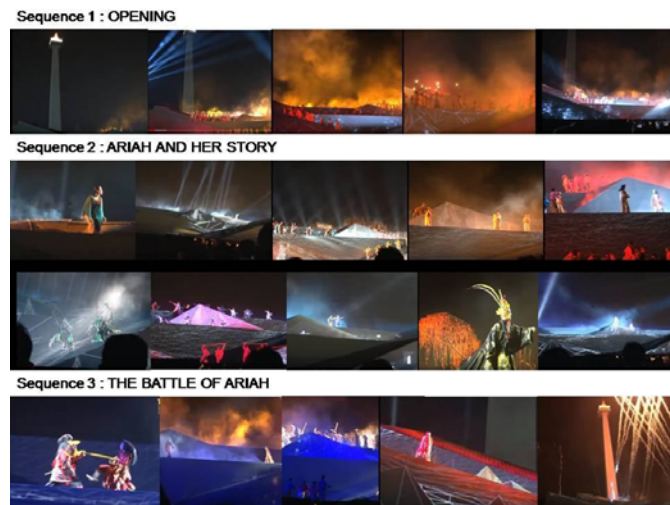


Figure 5. Ariah The Musical Sequences

Source: <http://kabarineews.com/ariah-tari-kolosal-betawi-meriahkan-hut-dki-jakarta-ke-486/56859>

Although the stage has always been a site for the changeable, the mutable, it achieved its transformations via the tangible (Aronson, 2010, p. 2). Not just from the movement, there is also an extension of the space through some texture visualisation. Bruce, Green, & Georgeson (1996) in *Visual Perception: Physiology, Psychology and Ecology* explained about the texture of a surface determines how coherently it reflects light and how natural surfaces have a rougher texture. By using lighting and mapping technology, texture change from smooth to slick to bumpy to rough. Creates the illusion of being on a slippery and sloped surface to the illusion of being in a high desert, build the tension to the audiences. Moreover, the colour itself has played a part in creating the narration, as a non-verbal communication. In sequence 3, we can see the texture and color of the stage dominated by blue and red color, (see figure 5) followed by a very hot flame as an additional visualization in the background, as a way to describe Ariah determination and courage by defend and fight for herself until she died of being killed in the battle.



Figure 6. Movement in Ariah The Musical Stage.

Source: <http://destinasian.co.id/ariah-pejuang-wanita-asal-betawi/>

These systematical objects are what creates the atmosphere. The atmosphere is not produced by one particular element only but produced by the whole organization of these systematical objects. Everything has equal parts. From the site itself, the queue at the front gate, the direction to the seating area, until the stage,

the music, the costume, and the movements of the actors. Every part has to take a role in creating atmosphere and complement each other. Audiences interact with these objects, creating a certain level of intimacy in between audiences, knowing they share the same experience when they are watching the performance, and leaving with their added new memory.



Figure 7. Texture, Lighting, Shape and Size in Ariah the Musical.
Source: of <https://hiveminer.com/Tags/ariah,city>



Figure 8. Exhibiting Monas in Ariah the Musical Performance.

Source: <http://www.focus-production.com/wp-content/uploads/2013/10/ARIAH-Production-2.jpg>

CONCLUSION

By using Ariah as a case study the idea is to see scenography as the whole part experience of watching a performance. Scenography is to create a spatial experience, not just act as a background for the performance. Visual, is first and foremost what audiences will notice, and this is what the stage designer understand. In Ariah the Musical, spatial experience is presented through a systematical form of visual representation, starting from the location of the performance.

The existence of Monas is displayed with a fireworks display and artistic lighting (see figure 5) directing audiences unconsciously to pay attention to Monas before the performance begin. When the performance start, Monas performs as a background of the stage. Audiences are more directed to pay attention to the stage itself, until texture, lighting, musical background and the movement of the actors on the stage. at the end of the show, audiences are directed back to pay attention to Monas, the symbol of Indonesia Independence. We can conclude that as a symbol of Indonesia Independence, the existence of Monas is exhibited in both physical and visual ways. Monas made as a spectacle and appear as an exhibition.

Scenography could carry a political message, and by using Independency as a narration to describe the struggle of Ariah, authors see this performance is also as an attempt to raise the spirit of nationalism or to justify the independence of Indonesia as a country, which of course need more research for this matter of issue.

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DWELLING UNDER DURESS

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ABSTRACT

The notion and structure of Interiority is increasingly important in relation to global politics. What happens when borders and boundaries are fragmented turned inwards and brought into private spaces? What do we understand about dwelling in the face of conflicting claims to the same homes or homelands or the mobile nature of contemporary society?

The power to control the private domain is everything in a world where the distinction between outside (wandering without reason) and inside (safe dwelling) has become essential. Soldiers occupying a house and living in close proximity with the owners is not unusual in a conflict zone. Over time, an uneasy and troubled intimacy may develop between occupiers and occupied. In such circumstances, people exist within two cultures, as a second, usually alien culture, is spread over an existing one. For the occupied, daily routines and activities are curtailed, moulded and adapted to a changed environment. For the occupiers, energy and resources are expended on enforcing rules and maintaining a 'protective skin'.

Christine McCarthy suggests that keywords for interiority are 'control' and 'regulation'. She states that interiority has a vested interest in regulation, which exteriority is not concerned with, because "*regulation conditions habitation*". This paper will explore aspects of interiority using a story of an invasion of domestic space and the resulting insecurity suffered. It will address questions about dwelling in an increasingly uncertain world, such as where the boundaries are between public and private, inside and outside in situations organised around separation, seclusion and control.

Keywords: occupation, control, exclusion, intimacy, territory

INTRODUCTION

"The structure of your situation is such that being inside is a privilege that is an affliction, like feeling hemmed in by the house you own. Yes, an open door is necessary for passing between inside and outside, but it also an avenue used by others to enter." Edward Said, 'After the Last Sky' (Said, 1986, p. 53)

"The arbitrariness of an external force that violently invades the life of one person, one soul, preoccupies me in almost all my books." David Grossman, 'Writing in the Dark' (Grossman, 2018, p. 13)

Interiors are constructed around their inhabitation, what people do, how they behave. Interior space is not inert, defined simply by an architectural frame. It is constantly being changed or formed, not only through the effect of borders or limits, but also by time, events and people. Thus at different times, different interior

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spaces may be produced. If a completely foreign form of inhabitation invades an interior space, it will trigger a drastic reorientation of that space. Assumptions that were held in the pre-existing interior in relation to qualities of privacy, security, inside and outside, will be disrupted. The interior will shift from a given state of enclosure to a situation, which is no longer stable.

In her paper, 'Toward a Definition of Interiority', Christine McCarthy begins with a list of words: "Containment, confinement, enclosure, imprisonment, privacy, protection, security and shelter". She says, "These are words to which understandings of interiority adhere" (McCarthy, 2005, p. 112). They are also words, which enable the identification of the particular interior, which is the focus of this paper. Several of the words carry a suggestion of malign and oppressive interiors, formed from some sort of forcible and possibly violent separation. But, as Mark Wigley suggests, any form of separation has an undertone of violence. "Try to imagine the violence of a line, any line... Architecture is all about the lines that are drawn between private and public, or, more precisely, the lines that produce the effect of private and public" (Wigley, 2002, p. 287). In this paper, it will be argued that interiority provides a multifaceted and fluid way to understand such spaces and how they might emerge in particular territories at different scales and times.

McCarthy suggests that interiority is traditionally conflated with the domestic realm, although as she points out, such an assumption is open to question. (McCarthy, 2005, p. 118) However, the home is an ideal arena for consideration of interiority. Unresolved struggles at a global scale frequently spill over into the domestic realm and interiority can facilitate discussion about the complex relationships and spatial and temporal encounters that occur in such circumstances. The home supposedly is a place liberated from fear and anxiety, untouched by social and political processes, a place enjoying an autonomous and independent existence. However, as Katherine Brickell has suggested, the home is also "a vital space for understanding the micro-geographies of social and spatial uncertainty, which influence, and are influenced by, wider structural forces of unhomeliness, alienation, and homelessness (Brickell, 2005, p. 4). Interiority enables movement beyond the assumptions of a defined place in order to make connections with macro geographic realities.

I want to begin with the following story which appeared in a British newspaper 'The Guardian' on the 4th of October 2005. The context for this was the signing of the Oslo accords between Israelis and Palestinians in 1995. In this agreement, the occupied Palestinian territories of the West Bank were divided into areas A, B and C, creating a set of lines and boundaries often invisible, but each with their own specific rules and regulations (McGreal, 2005).

"Before the Israeli withdrawal from the Gaza Strip in 2005, Khalil Bashir's house was 20 metres from the Jewish settlement of Kfar Darom, an outpost of religious settlers. When soldiers arrived in 2000 to commandeer his property, they wanted the family to leave the house altogether, but Mr. Bashir feared that if the family abandoned the property, the Israelis would take it or destroy it, and so refused to move. The soldiers then explained to Mr Bashir the new geography of his home in terms he understood only too well.

His three-storey house was to be like the West Bank, the Israeli officer said, with its areas of divided security and administrative control. The army designated the living room as "Area A", after the part of the occupied territories where the Palestinians have control, and told all three generations of the Bashirs, from 81-year-old Zanah to her five-year-old granddaughter, that they were confined there for most nights and sometimes for much of the day. It was the only part of the house they could still call their own.

The bathroom, kitchen and bedrooms were "Area B", where Palestinians administer themselves but Israel has security control. In the Bashir home that meant soldiers had priority

and the family had to ask permission to cook or go to the toilet. And then came "Area C", where the Israeli military government runs everything and the Palestinians have no authority. The soldiers warned the Bashirs that all of their home above the ground floor was Area C and if they ventured up the stairs they would be shot. The Israeli army then set up a machine gun post on the terraced roof facing into Gaza's Deir al-Balah neighbourhood, surrounded it with sandbags, barbed wire and camouflage netting, and took over the lives of Khalil and Suad Bashir and their eight children. For the last few weeks, while the army prepared for the withdrawal from Gaza in 2005, the family was confined to the living room day and night. Even the children had to knock on the door for permission to go to the toilet."

MACRO AND MICRO POLITICS

In the Occupied Palestinian territories, links between daily life and macro-political issues are both important and poignant. Micro conditions enacted in a domestic environment often allude to wider issues, particularly in relation to security, control and occupation. Commenting on an attempt to map the changing realities of settlement building in the West Bank, Israeli architect Eyal Weizman suggests that, "understanding micro conditions meant that we could speculate on their repetition and construct the larger picture on the macro level" (Weizman, 2004, p. 37). The invasion of the house mirrors the wider political situation, not only in the physical rearrangement of spaces but also in the radically asymmetrical power relations between the two parties, their negotiating positions. The Palestinian narrative, frozen in time, places the residents in a weak, precarious position.

The occupation of the upper floors of the house emulates the siting of settlements on the hilltops in the West Bank for similar motives of surveillance, control and defence. The ensuing fragmentation of Palestinian space is replicated in both home and the wider territory through walls, boundaries and exclusion. The Bashir home is no longer just separated into an inside and an outside but has divisions imposed within the interior. This reflects measures applied in the wider political realm, which not only divide Palestine from Israel, but also divide Palestine from Palestine and cities from villages, preventing people from reaching their work, schools and places of worship. In both house and territory, occupiers control the water supply and in both places, restricted mobility and temporal dislocation are key tools, with doors in the house acting as checkpoints.

INTERIORITY

Resemblance at micro and macro levels may primarily be found in issues of control. McCarthy argues that key words for interiority are 'control' and 'regulation'. She states that interiority has a vested interest in regulation which exteriority does not have, because "*regulation conditions habitation*" (McCarthy, 2015, p. 113). The house has become a controlled environment, with soldiers living side by side with a family. The family members are compelled to exist within two cultures, as an alien culture has been spread over the existing one. Confronting each other, family and soldiers inhabit the same spaces in different ways. For the family, daily routines and activity are curtailed, moulded and adapted to the changed environment. For the soldiers, energy and resources are expended on enforcing rules and maintaining a protective skin. Accidental encounters would threaten the imposed separation and therefore, necessary movements of persons from room to room are brutally managed, through a condition of subordination and domination.

Interiority has been described as a shrinking phenomenon, with space contracting, creating "*a geometry of intimacy*" (McCarthy, 2015, p. 114). The interactive and improvisational dimensions of movement, previously experienced in the house have been severely restricted and both sides are caught within a polarity of forced intimacy and unfamiliarity. The 'blurring of public and private space changes the meaning and experience of home. Soldiers and residents are increasingly dislocated from the home-space' as the living rooms take on new features or inhabitation.

"Occupation is getting up in the morning to make tea and finding a soldier in your kitchen making coffee," said Mrs. Bashir. "Occupation is when I wanted to go to the toilet, a soldier had to go with me. I wasn't allowed in my bedroom. I looked in on my way to the toilet one day and there was a soldier with no clothes on in my bed." (McGreal, 2005)

Such dramatic redefinition of the pre-existing interior shows how the conflict has been domesticated, brought into the very private spaces of living room, kitchen, bedroom and bathroom within the house. The home no longer automatically functions as a space of familiarity and comfort. The place of dwelling has been turned inside out through acts of exclusion. The invasion not only fragments the territory of the house by creating separated enclaves, causing breaks in the physical surroundings, it also destroys the homogeneity of the family.

Taking control of an interior also refers to a much broader concept than merely the appropriation of physical properties. The house invasion similarly affects the surrounding neighbourhood, its impact felt over and above the one building. The invasion brings with it security fences, guard-posts, closed circuit cameras and security personnel that monitor every movement of the existing inhabitants. The house becomes a fortified site and the character of the interior changes from a peaceful living space to a conflict zone.

WALLS AND BOUNDARIES

To fully comprehend the way that interiority contributes to an understanding of an interior, it is important to examine territorial boundaries. Israeli novelist, David Grossman states: "One cannot talk of a home without mentioning its walls, the borders. In the fifty-six years of Israel's existence, there has not been a single decade during which the country had permanent and stable borders" (Grossman, 2008, p. 107). Further on he writes: "The citizens of Israel have no clear concept of a border. Living this way means living in a home where all the walls are constantly moving and open to invasion. A person whose home has no solid walls finds it very difficult to know where it "ends" and where the next home "begins." The result of this ambiguity is that such a person's identity is always on the defense, always "contra" to those who threaten him" (Grossman, 2008, p. 108).

Irma Klein expands on this when she explains that the Hebrew language does not differentiate between house and home. She says the Hebrew word 'Bait', means both, which thus effaces the boundary between inside and outside. The distinction between the space enclosed by walls and its surroundings, earth, soil, landscape, whether urban or rural is lacking. "In fact, one could locate the entire panoply of problems of the Zionist-Israeli identities and their historical-ideological perspectives in the tensions between notions of Bait, of house/home and its extension into the concept of homeland" (Klein, 1993, p. 30).

The protagonists in this situation experience differing forms of interiority in relation to inside and outside. On the one hand, the soldiers have unfettered access to an exterior, experiencing little in the way of controlling regulations. On the other hand, the living conditions for the family are just a more intimate extension of the wider situation. In the wider political realm, occupation is experienced with walls, fences, settlements, infrastructure and other weapons and now is also encountered in private places of the home and rooms with acts of enclosure separation and containment. Seen from this point of view, it is possible to argue that, for the Palestinians, the exterior already has a sense of interiority, as controls, rules and regulations are already in place. The strangeness of their predicament is that no real sense of an exterior is positioned against their interior. The wall, the boundary that already defines an inside, has been doubled to redefine an inside in the interior.

TIME

McCarthy suggests that "...temporality is an active condition of interiority" (McCarthy, 2015, p.115). Sarah Treadwell similarly argues that interiority defies conventional representation because of the way it opens the interior to time, and reveals its transient nature. "The moment of impropriety, the sore point, that seems to collect around images of interiority (written and drawn), might be, in part, because conventional representational systems tend to fail the full circumstances of interiority, collecting instead picturesque or conventional forms and resisting the complexity of the condition" (Treadwell, 2010, p. 2). In the home, as in the occupied territories, plans and maps cannot record a situation that is rapidly changing. Walls and barriers that wrap around bits of territory are established and re-established, sometimes on a daily basis. Ever-new, seemingly temporary acts, maintain a constant state of conflict, where every situation results in further interdictions. This places 'interiority' at the forefront of the new arrangement. Family life has become constrained and static. Strong temporal connections between homemaking, permanence and memory are put on hold, as the residents no longer see their homes as being in the present. The apparent temporariness of such incursions actually allows the continuous and permanent nature of the occupation.

Richard Patterson suggests, however, that 'Occupation - being in the world - dwelling, are not statements of static conditions, as all have deep roots in action, instability and impropriety....' (Patterson, 2013). He says that the earliest example in the Oxford English Dictionary of use of the term 'occupation' is the thirteenth century, in which it registers a sense of 'seizing', of 'taking possession', and 'employment', 'taking for one's use'. It comes directly from the Latin '*occupatio*'. Occupation, thus, is a term within which illegitimacy lurks as subtext, a term which, when appropriated by English, shifted its meaning from, one might say placid domesticity, in favour of its more unstable and violent antecedents.

Tim Ingold, makes a distinction between 'Occupation' and 'Inhabitation' (Ingold, 2017, p. 75). He explains this as the difference between two knowledge systems. An occupant has a clear idea of boundaries; asserting mastery over an environment by viewing (or drawing) space from above, without inhabiting it. An inhabitant, on the other hand, has a less certain engagement with a place, paying constant attention to its layers of texture and materiality and building up detailed knowledge as lived experience. People under occupation reside in an unsettled time frame, defined by unpredictable events. This suggests an ongoing struggle between two concepts. For the inhabitant, the places of daily life are materially significant. Homes are known for their experience, maybe as simple as the places where one stops to tie shoelaces. Places and memories are evoked, not so much by the building, as an object, as by its components and furnishings. The places where personal belongings, clothes, books, photographs are kept.

The work of Palestinian artist Mona Hatoum displays the sort of uncertain engagement with home and objects suggested by Ingold. Her work articulates the loss of a familiar domestic environment. Ordinary objects, which constitute a sense of home, are disrupted, out of scale and out of place, revealing what is destroyed or missing. A doormat or prayer mat made of steel needles, which spell out the word 'welcome', is impossible to use. Seats, beds, floor coverings and even sometimes the floors themselves are treacherous. One does not know where one stands; the house is occupied provisionally and in many cases precariously. "*Familiarity and strangeness are locked together in the oddest way, adjacent and irreconcilable at the same time. For not only does one feel that one cannot return to the way things were, but there also is a sense of just how acceptable and 'normal' these oddly distorted objects have become, just because they remain very close to what they have left behind*" (Said, 2000, p. 15). Hatoum's work addresses 'not being at home' in a place where one might have felt in place, at ease and at rest. It describes conditions by which a home is reduced to being a mere house.

CONCLUSION

The invasion of this house is a 'moment' within a conflict, where many such dramatic encounters occur. In fact, the conflict seems to proceed from one such moment to the next. It is clear, however, that the tangled relationship between homes, homeland and people, at its heart, is almost impossible to unravel. This is particularly evident in disputes over territory, settlement building and also in the variety of punitive measures against houses and homes, such as demolitions, house sealing, confiscation and appropriation of property. Above all, the discontinuous and fragmented nature of borders demonstrates in a very real way, the absolute impossibility of physical separation of the two peoples. It is a problem of how to share not only a house but also a common, dangerously oppressive history - one as binding and corrosive as nationality. Interiority provides a way to think about the particular occurrence of this invasion and equally the phenomena of occupation, house and conflict acts as a lens through which to view aspects of interiority.

Perhaps what is unsettling about the invasion of a home is the way that in part, it disturbs an understanding of interiority that is entangled with metaphorical meanings of home and the nature of dwelling. Dwelling has both physical and psychological connotations - the interior of an individual and the interior as a quest for identity. McCarthy writes, "Dating from 1701, the word interiority was originally intertwined with a moral notion of truth, and by 1803, it had acquired more explicitly spatial usage" (McCarthy, 2005, p.112). According to this, interiority has shifted away from a notion of interior as an expression of some sort of inner truth of a subject. Yet, the sense of regard that one might have for the domestic environment seems not to have shifted. For the family, the private home is bound up with a fictional framework for an individual's life, whereas from the perspective of the soldiers, the occupiers, the house merely represents a collection of spaces in a convenient location.

"...interiority still hankers for its original etymology of morality (etiquette) and conceptual thinking" (McCarthy, 2005, p.122).

Doreen Massey has suggested that the identity of home derives 'precisely from the fact that it had always in one way or another been open; constructed out of movement, communication, social relations which always stretched beyond it' (Massey, 1992) However, in a world of conflicting claims to homes or homelands and where the distinction between outside (wandering without reason) and inside (safe dwelling) is uncertain, the power to control the private domain is everything. The difficulty of exerting such control has been described by Edward Said: "Even though we are inside our world, there is no preventing others from getting in, overhearing us, decoding our private messages, violating our privacy. That is how we read the history of Palestine from the crusades to Balfour and Weizman: that it was entered despite us, lived in despite us. What do you do then? You try to get used to living alongside outsiders and endlessly attempting to define what is yours on the inside" (Said, 1986, p. 53).

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FINDING SARY: A STORY IN URBAN INTERIORITY

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ABSTRACT

This paper attempts to show a story about an urban narrative of interiority in daily journey of *Sary*, Indonesian diaspora in Los Angeles setting, for nearly a decade until now. How did she adapt and make compromises even reduce doing things that usually done easily in Indonesia, or may never be able for doing again associated with spatial and cultural consequences around her? Life at the time of the global mobilisation on the present gives us a different meaning of "urban interior", the relationship with our framing (new) attachment to places such as object, property, spatial permanence where does *Sary* belong now.

This paper will investigate how *Sary* is defining her space around her – either in urban term or domestic - or generated a new term of possibility in space identifying through photography media. *Los Angeles as a city of Angels that full of "fun", a city that you can do your own thing, connected infinitesimally in context relation with universe around you* (Los Angeles, Banham, 2009). All the relation between *Sary* and her surroundings find a different connection to human and universe in different ways regarding in spatial issues.

The context of the research is *Sary's* residence in between Culver City district – Lexington Avenue, Hollywood, Los Angeles. Doing some mapping variables and tracing *Sary's* daily activities. Mapping and determining the daily activities of time and in a certain distance, places to go, what events, and the communities in closest in social groups, including the house as a centre of activity began. Mapping process and tracing activities most likely to bring many variables impact and its relationship with sensory and memory aspects that discover the relationship between architecture (included interiority and objects within) and also her urban-society as another story of urban interiority and objects within.

Keywords: urban interiority, mapping and tracing, space identifying, culture, narrative, photography

INTRODUCTION

Investigating something narrated behind photography is an interesting thing to explore. The representation of urban interiority scenes are being captured represents different perception in the understanding of urban space was derived from photographic narrations.

The origin of the interior as intermediate space, *interus*, placed on the inside, from the prep inter, in between (Patridge, 2006), so that the shots of photographs make it clear that *Sary* is in between the city space and her life. As a centre either directly or indirectly of the interior as her view of the city. By becoming a citizen, *Sary* was involved and experienced with the quality of urban space. *Sary* captured urban life such as individual homes, workplaces, playgrounds, schools, and street corners. This illustration about *Sary* and the way she placed her position in the city demonstrated through photographic records. (Xiangming Chen, 2013).

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This paper describes an approach in interiority by using the photographs of a friend who has settled in Hollywood, Los Angeles, United States and the pictures were shared with her friends (living in Depok, near to Jakarta and also in Medan, North Sumatra) by using social media. The photographs presented are not merely as a result of camera shooting but also show the quality of photography so that the collection of 600 images dated from 2015-2017 gives the feel of the city that is familiar. These records create a daily atmosphere that awakens from her side.

In this study, photography becomes essential, because it is not merely a form of photographic architecture (when the image depicted is the building and situation of the city, Zimmerman, 2014) but also indirectly the photographer has done the form of urban_ethno_photography (Sarah Pink, 2001). Photograph for David Tomas (1988), not just about light (phos, photo) but also a form of balance between light and dark, as a form of absence an presence, de Certeau; as the gigantic mass was immobilized before the eyes. It was transformed into a texture in which extremes, with an understanding of the texture as something that has a structure (given the city). There is a tangible and intangible in a city structure, that presented photographs can be done visually and literary practices in the mapping of place and space by Sary.

Interiority or the quality of the interior or inward (*Oxford Dictionaries*) has been successfully shown by Sary in the results of photographing her life in interval Culver City - Lexington Avenue. The following information about Culver City is demographic data showed 38,816 population in 2000, according to the U.S. Census with an area of 5.19 square miles and 7,475 people per square mile, about the average for the Westside and the average for the county. With this data shows the average condition of cities on the west coast.

As a Javanese from Indonesia who migrated to America, ethnic data is interesting to be discussed from the same source indicating the condition of ethnicity. Statistics show that She is part of 12.3% of the population who come from Asia and become the fourth largest of the order after white, latin and black people. Thus Sary ethnically also not classified as a minority.

Understanding the city in which she lived is closely related to this study. The first is to look for the physical form of the city of Culver-Lexington Avenue, in this case, is to see the boundary that surrounds the city so that this city plays against the city or other areas. This form was easily obtained from the administrative line surrounding Culver City. Limits become important regarding the interior, to shape the interior then the limit required. The etymology of the interior is situated on or relating to the inside of something; inner. To be able to call the interior than the existence or position inside must be determined first, so there is a limit that makes there inner and outer positions.

Studying Sary's relationship with his photograph object shows the daily qualities that have integrated Sary into Culver City - Lexington Avenue. The results of Sary's shooting, according to Foucault, are the attempt to create a new space or '*Of Other Spaces*' (also known as 'Heterotopia'). This shot shows what is often said a few examples: the moment when seeing oneself in a mirror; or being in a garden; or on a boat (Perolini, 2014).

Photograph and interiority by Sary are like "Take a picture, it lasts longer" and "a picture's worth a thousand words" (Riviera, 2010) or Pink (2001) herself says images are 'everywhere'. Sary's walking in the city and also making activity by moving through space, Sary creates a trajectory to storytelling by her photographs. Sary's interiority can be known from the photographs that are often shared to several friends through social media. There is a lot of information and stories to be gained from the results of the pictorial correspondence, in this case, is the story she was cast in her life there. Beside photography can provide another form of thinking so that can be obtained a condition of creativity become a thoughtful act.

The photographs can be interpreted as a form of writing and human representation of the environment, in this case, can be expanded the concept of the text from geography (earth writing) in the form of human

geography concept (Duncan & Barnes, 1992). The textual approach is no longer in the form of words and sentences that fill one page of paper but enough with one photo that can be translated more broadly than just a picture. This textual, pictorial approach can be interpreted as a form of narrative-descriptive (Tuan, 1991).

This pictorial form can also be referred to as narrative-descriptive, in the linguistic approach of the place (construction of approaches to linguistic place), says about maintenance and enhancement of meaning as a narrative approach in language and the making of place. And then emphasizing writing the worlds, we must pay attention to our rhetoric, as well as the rhetoric of others, with a broader emphasis on rhetorical devices is central to conveying meaning. This rhetoric will be dismantled in the discussion of everyday life.

This research explores the nature of the surrounding context from the everyday picture which *Sary* sent to her friends in social media. The final aim of the study is capturing *Sary's* space with the visual elements of her surrounds. She always captures moments every day in her daily life. By reading *Sary* in her daily life, we expected to see and understand the city, in where's space *Sary* lives. The space in the city is recorded actively and shows the connection of motion between *Sary* and the environment visually and create a coherent pouring of an urban setting. Also in the domestic environment – part of her apartment setting - as a centre of activity before doing activities out of the apartment for days. For overall *Sary's* photographs, there is no cinematic narrative sequence (Handayani, 2011), but it is more of an as a photographic essay, with some connected layers in between that translate a story about the city and its inhabitants. The condition where the moving city kinesis is obviously more emerging (Mehrotra, 2008).

INTERIORITY_URBAN_PHOTOGRAPH CONNECTION

The city limits (Sassen, 2003) imply not only administrative territory but also spatial interactions in the form of political, economic activity and cultural dynamics as shown in city data in numbers. Given the limits, the city becomes a place that has a clear tread formed by humans to shape human life (Chen, 2013). The boundaries of the city in the form of cyber drawn to meet the needs of the citizens of the city. Unlimited conditions will remove the interior properties, a line which marks the limits of an area; a dividing line. This limitation, however, can also be abstract in that it encompasses activity. A limit of something abstract, especially a subject or sphere of activity.

In searching for *Sary's* connection and interiority, Salingeros' diagram shows connections in the urban web by matching Lynch (1960) with Christopher Alexander produces various connection diagrams. Through Salingeros's approach, this paper also searches for connections between domestic spaces and urban spaces as two levels where *Sary* lives in two interiority systems; domestic and urban interiors, The domestic space and city space that *Sary* presents becomes the mainframe. Both are cinematic representation of *Sary's* life, in mainframes and in between interiorities.

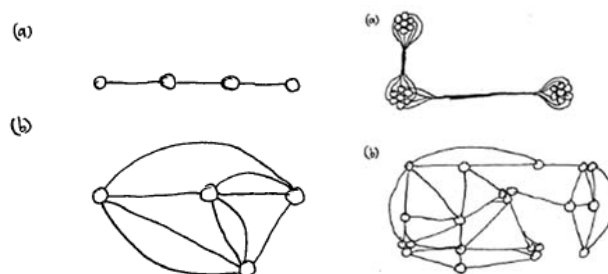


Figure 1. Types of connections between four nodes (left) and Connections between the nodes in the city (right).

Source: Theory of the Urban Web, Salingeros (1998)

Photography on its development, in this case, is not just seen merely as a collection of images. The images produced are essential when they appear not only as a matter of being suddenly present but why they are present, which is more important to investigate.

Back to the things themselves asks us to give careful attention to how things “appear” to us, but does not ask us to explain why those things appear the way that they do (Husserl).

Photography in the *Sary's* case sees territory, and urban interiority in its daily life cycle is like depicting the traces of space it passes (Petterson, 2011). Photographs taken when *Sary* sees something and wants to inform something to the nearest person across time and place is created pattern that indicates a closeness (intimacy) with people she shared.

A photograph is literally an emanation of the referent. It soon becomes clear, however, that it is not the referent itself that emanates, but rather light: “From a real body, which was there, proceed radiations which ultimately touch me, who (is) here”. The effect this has is yet again a certain kind of proximity, or perhaps better, intimacy (Barthes).

Urban interiority story in *Sary's* is a story when her apartment window appears as a signifier of *Sary's* connectedness with her world life out there, a signifier of close relationship (virtually) with her closest friends in her hometown, Indonesia. The scenic photos delivered information that in the exact time *Sary* showed a specific pattern of activity when she was in the kitchen, her nearest territory when she made a waking up coffee or tea. Such a boundary was so blurred that something of domestic space (kitchen) was facing the world outside its apartment (territory of urban public space), whose representation of *Sary* infiltrating her friends.

In another scene, *Sary* made pictures from inside of her nest, giving interiority differently. Domestic interiority showed a different poem from *Sary*. Her interiority was a wide range, cityscape to domestic-scape. Domestic-scape, *Sary* showed the boundary was clear glass so she can see outside but also the interior of her kitchen. Focus in a pig shape and a boundary made from line up stone. This can be *Sary's* tactic to describe her space in new cultural space, she do communicate with her friends with her interiority not only domestically but also as a citizen.



Figure 2. *Sary* - Kitchen window

Source: *Sary* apartment, Lexington Avenue Los Angeles (Whatsapp media)

What *Sary* does is a form of poem and photography or ethnography. The interiority showed as urban poetics and refers to Tay (2012) in combining between Carteau's tactic and interiority. This match of the camera and especially social media provides a different perspective (Mandell, 2007).

That poem still from her domestic interiority, she produced from her kitchen and uploaded to her social media. Sometimes local culinary carbohydrates but a speciality upcoming from her domestic interiority, she showed an Indonesian noodle. *Sary's* kitchen could be one of domestic nodes.

Scenics pictures are sent in various time and atmosphere, but almost all versions have the same angle. When the scenics were sent to social media via gadgets, at the same time, there was a narration of *Sary's* activity with its kitchen territory. Details of activities that may not be sequential, they could be appeared as another picture and also in texts. This overlapping scene explained just because there were combined patterns that indicate *Sary* must perform other activities in between, such as shopping for groceries and strolling city for small goods. The pattern photographs give us a vision of what *Sary* is doing, recognizing *Sary's* intimate kitchen space from the photographs she already sent. Feeling and “virtually describing” the story behind the pictures she gave to us.

In determining the nodes of the city in which *Sary* lives, there are some that can be presented in this paper. In the city's architectural scale, an old building photo reads PAINT OIL VARNISHES, NATE STARKMAN & SON. Having an interest and also her graphic design background, *Sary* found something interesting on that building marks. Architecturally, there is a history of this building. As an architectural masterpiece, it was built in 1908, 109 years ago, like a factory.



Figure3. Paint oil varnishes, Nate Starkman & Son.
Source: *Sary's* photograph

Another node that can be raised is the life of a city as a community, *Cinespia*. *Cinespia* is an open space event to watch movies in Hollywood Memorial Park Cemetery. The movie presented on one giant massive wall of Hollywood Memorial Park Cemetery. This node is shown how the city is making space for community or vice versa, and community produced space using city element.

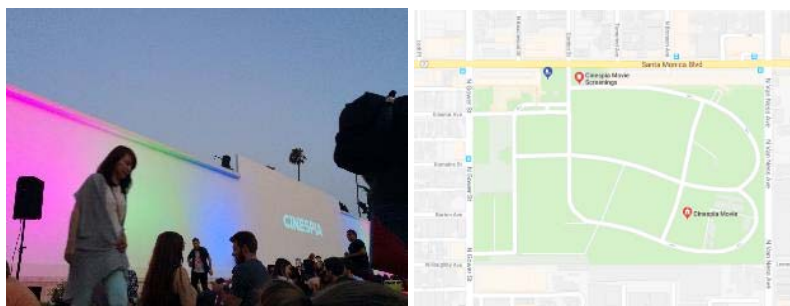


Figure 4. Cinespia.
Source: *Sary's* photograph, google map

On a city scale, the architecture that caught the eyes of *Sary*, the street photographer is necessarily furtive: she is not an adequately socialised figure. On this part show that *Sary* steals moments from her every-second in everyday routines. *He takes moments from daily routines – fifteen minutes here, thirty minutes there...* (Tay,

2012). So that what was shown was a variety of quality of the city and regarding architecture looks different styles and time so that poetry *Sary* shows broad meaning.

Below tables showing that *Sary's* pictures ingredients are so detailed, at first table showing very small things she can find in her urban journeys. Some a trashes, but also a star-sign for a movie star and even a pigeon landed or a pink throw bra. At second tables, some buildings are showing the city architecture. Old building, unique building (barrel roof), city mural, a booth, a classical facade. These are the architecture ingredients to 'cook' the urban interiorities.



Figure 5. Detailing photographs in the urban interior
Source: *Sary's* photograph (Whatsapp media) – composed by authors

SARY INTERIORITIES CONNECTIONS

Finding *Sary* in between her connectivities based on her photographs in her social media making this paper look like a forensics tracing. These hundreds of photographs shown the space qualities both in domestic and urban. *Sary* jumped from one interiority to another interiority zona. So that is the *Sary* interiorities connections, the connections rendering her multi-storey(es) and also multi-story(es) about her.

"Characterizes photographs in terms of traces: a photograph is not only an image. It is also a trace, something directly stencilled off the real, like a footprint .. "(Sontag). In his writings, Petterson also reviewed a lot of photography has the story behind it, growing further than the traces, things and states. Traces are evidence of something that has happened before. *Sary's* photograph is a trace and evidence of her manoeuvring in her life cycle in Los Angeles.



Figure 6. *Sary in between #1*
Source: *Sary's* photograph (Whatsapp media) – composed by authors

Sary in between #1

The left scenes are the compilation photos of the interval between breakfast time, lunch and dinner at *Sary's* house. Breakfast is usually a quick meal like fried rice, fried noodles or cereal with fruit with tea or coffee. One of her favourite breakfast is usually also home-made bread, which is plain or sprinkled with choco-chips. Some Indonesian signature style dish is often found in photos and lunches, such as (*kerupuk*) crackers, local Indonesian noodle products, tea bags and sometimes typical Indonesian snacking.

At right scenes are scenic sky from her apartment view. The high trees captured in three ways from the same spot. Other showing the sky ambiances from blue to orange. Both sides viewed the poetry of *Sary's* space from her domestic interiority.

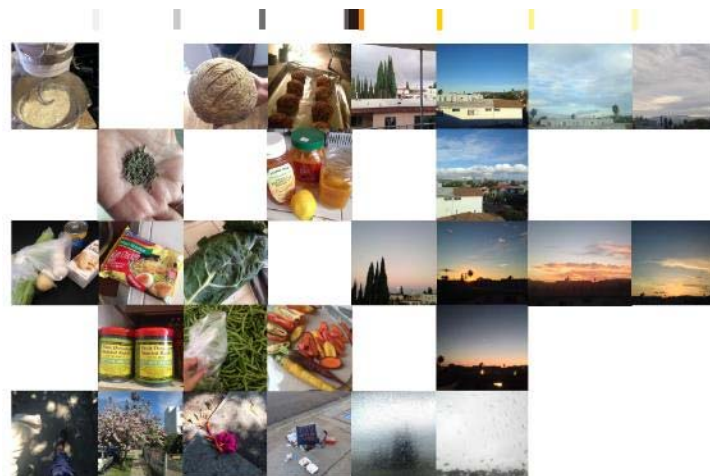


Figure 7. *Sary in between #2*

Source: *Sary's* photograph (Whatsapp media) – composed by authors

Sary in between #2

Narrated the details journey and the process how *Sary in between #1* condition was taken place. Preparation stage of making homemade bread, the baking process, bread preparation for serving on a plate.

There are also some travel photos behind the scene. For serving some specific dish, *Sary* must have a short trip to the market for shopping fresh vegetables by walking along pedestrian at Culver City or Lexington Avenue. And the view of urban interiority along the way through captured by her camera, and what she thinks its caught her attention become the strength of photographs in this paper.

The right slides are photo montage that becomes a signature scenes, which those LA urban scenic photos are the sign that in the hour, we will find *Sary* in her kitchen and doing domestic activities, cooking or just preparing hot tea and coffee. An indication that at the same time, photographs of urban scenic sent via social media also provide some information to their closest friends in Indonesia, that *Sary* was in a kitchen-room, doing detail domestic activities, like cooking, washing dishes and others.

Sary in between #3 is a map of some *Sary's* trajectory to do in *Sary in between #1*. This map was also showing the simple urban grid, which typically seen in LA. *Sary in between #3* shows a simple scheme showing the relationship between the interiority aspect of *Sary* in the private space with its domestic activity is related to the urban interiority aspect that occurs outside of it's her private space.

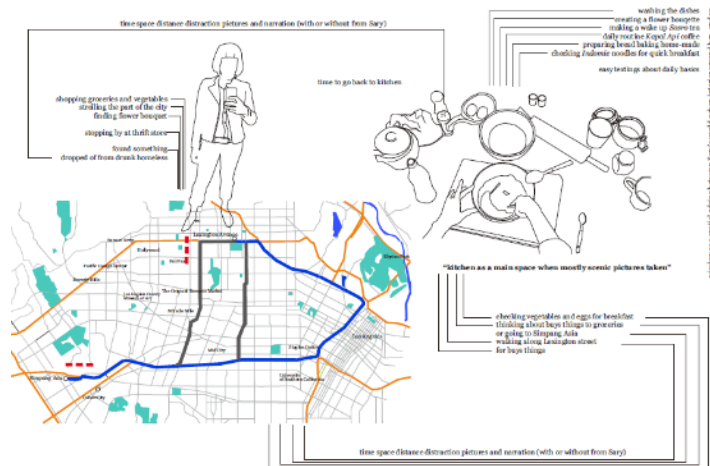


Figure 8. *Sary in between #3*
Analysed and composed by authors

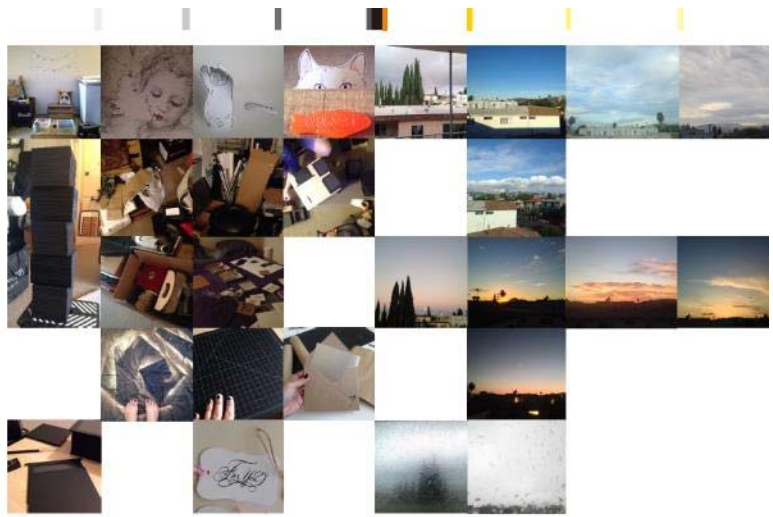


Figure 9. *Sary in between #4*
Source: *Sary's* photograph (Whatsapp media) – composed by authors

Sary in between #4 is showing *Sary's* domestic nodes, ones of her nodes are her formal workstation for working, her office. At the same time, between domestic activities in the kitchen, there are also artwork activities in the morning and evening. Because during the daytime usually, *Sary* will be in outdoors to work tintype and other art meeting projects.

Sary is an artist who pursues tintype photography, as well as an illustrator, both in LA and in Indonesia. Activities in the morning usually, are preparing photo framing, setting booth preparation, setting photos with software. These activities can ultimately happen in some spots in *Sary's* apartment, in the workstation, living room and also her bedroom.

Sary in between #5 is a scene where *Sary* and her- me time- the moment is relatively happened in a frequent time and showed in unique photographs. *Sary* and her - me time- moment occurred in time, place and having atmospheric narrative when *Sary* explores things closest around her self and its activities. Good passion for design, clothing, jewellery, cosmetics, books, photography, illustration and hand drawing.

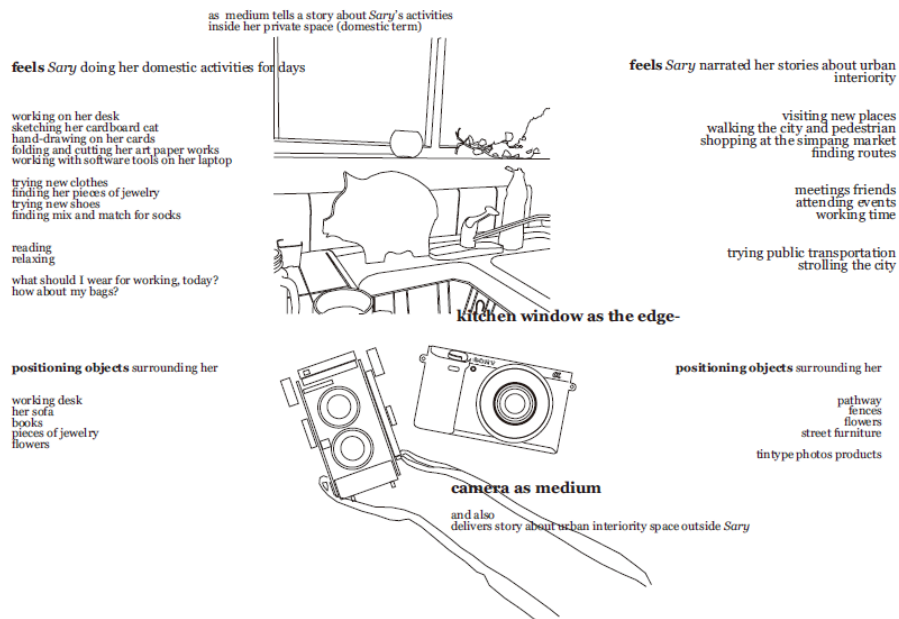


Figure 10. *Sary in between #7*
Analysed and composed by authors

Sary in between #7 tries to tell how the kitchen window in *Sary's* apartment presents as an edge of the boundary, between *Sary's* private space and the urban world outside *Sary's* territory. In a literal sense, as well as a meaningful, when the images outside the *Sary's* territory were taken, as well as a house that explains *Sary* was in a private space with her domestic activities, with intermediate photos sent via social media to the other places in the world differently.

The involvement of the camera medium becomes one of the crucial tools in this paper, in addition to the final product it produces. Using the built-in camera type in a mobile phone is a very concise, fast and very factual series of photos from the aspect of time, real-time whenever *Sary* is to be able to provide any information that she wants to share with her close friends.

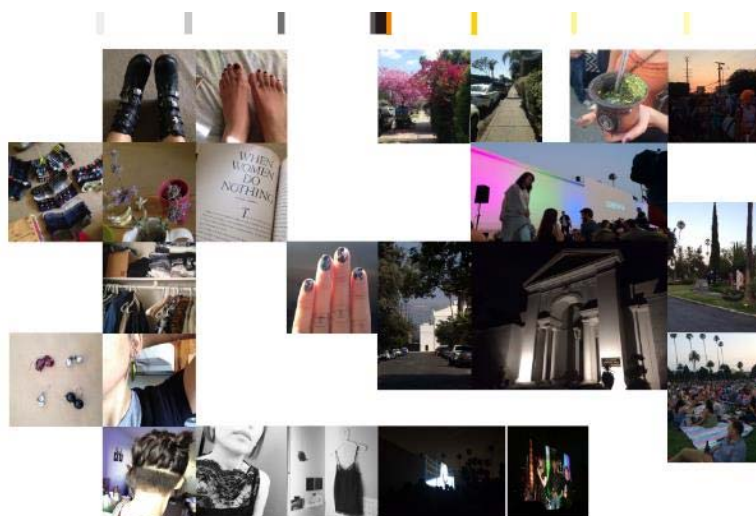


Figure 11. *Sary in between #8*
Source: *Sary's* photograph – Analysed and composed by authors

Sary in between #8 is showing the jumped-space of *Sary* from very detailed body space to an urban gestured. Mingle activities in the city with a particular event is one of the activities caught from the *Sary's* camera. One of the big events in Los Angeles is *Cinespia*, take place in Los Angeles funeral, Hollywood Forever Cemetery, which is quite legendary as one of the hosts on-site screenings event of classic films. The event, which began in 2002, plays classic films of various genres from the 1930-1990 range.

Some photos from *Cinespia* are helping us "seeing" what *Sary* is preparing and what *Sary* is finding in the city. At the same time, we also catch the preparations and what *Sary* tells us before they are there. Very quiet and private room apartment, with its domestic activities, hiked along Hollywood-Lexington Avenue, and arrived at the funerary compound, by chance this funeral complex is very close to *Sary's* apartment, just walk on foot trip.

Cinespia takes place in a colossal cemetery park in Los Angeles. Everybody is just seating on the park, sometimes in the picnic setting, with finger food, wine or beer for a small group. Together the audience is watching classic movies from a big screen. There is another intimacy term between the audience, for enjoying the moment of togetherness in a public space.

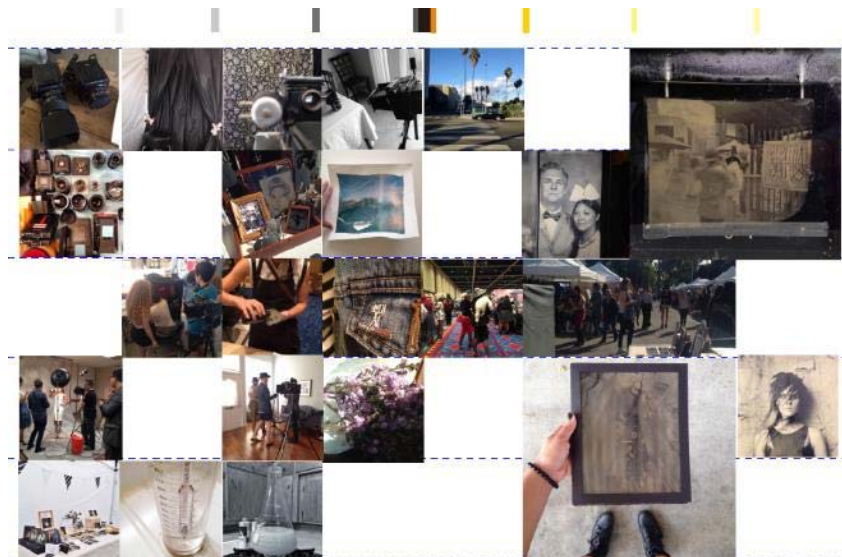


Figure 12. *Sary in between #9*
 Source: *Sary's* photograph – Analysed and composed by authors

Sary in between #9. Initially introduced in the 1850's, "tintype" photography involves creating an image directly onto a metal plate using an authentic wet collodion process (Riley Maclean-photography, 2018). Also known as a melainotype or ferrotype, *Sary* and her husband, Jason is one of few artists in the world that take the time to preserve this 150-year-old craft.

Those pictures on the left present how *Sary* and her private space in her tintype booth at the tintype market. They are working on preparing the sets, the equipment, the classic camera, the type of Rolleiflex and Hasselblad. Private space in tintype also discussed as a stage space how *Sary* would manoeuvre in producing for tintype, which showed in the left scene.

Those pictures on the right are when *Sary* and her medium, mobile phone camera translate the bigger interiority outside her territory. The venue of the market, the street heading of the market and also the whole pictures produced today.



Figure 13. *Sary in between #10*
Analysed and composed by authors

CONCLUSION

Sary has the wide narrative scene as Carreau says walking the city and her views somehow making spatial stories. These poetics scenes by *Sary* attached perfectly to an everyday activity, photographs and media social. As an ethno-photography, these photos gave a narrative urban life. These photographs can guides her friends to her city virtually.

Parts of her pictures are her journey in her domestic space like her kitchen and what she has for breakfast and lunch, her works area as an art-worker, an artist. Some of her pictorial journals are very personal, her 'me time' illustrated perfectly unique. Her friends also can trace where and what she is doing in her domestic space.

Sary's photographs are unique, not a series of photo essays but the quality of *Sary's* space and surrounding elements are giving good intentions both in the domestic interior or in the urban interior as her universe. *Sary's* interiority is *Sary's* life between urban interiority and her domestic interiority as a different connection between human and universe. We found *Sary* in between one interiority to the other interiority.

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INTERIORITY AS A GUIDE TO INTENT

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ABSTRACT

Interiority stands for the complex relationships a dweller has with their dwelling. The dweller is intricately interconnected with the home as a place, the field of work and the locus of consumption. As a concept, interiority stands for that which is occupied, the quality of being interior or inward, dwelled within and housed. Historically, these interconnections reach into the realms of meaning, identity and soul: they define the relationship of the dweller to the dwelling, the community and the larger world. It is through that relationship that the designer interacts with the dweller in the space they have designed. Interiority then is the interface between the designer and the user.

Successively, the enlightenment, the rise of industrial capitalism and digital technology have influenced our interiority and shaped and constrained the designer's role in creating that interiority. This paper will explore the changing nature of interiority from its traditional place in indigenous culture, through key moments in modernity with a view to using it as a measure of the success and value of design.

Keywords: interiority, exteriority, inside space, identity, subjectivity

THE SIGNIFICANCE OF INTERIORITY

The nature of the interiors that we occupy (their interiority) reflects much about us but also inherits many aspects of our place in the world, our external relationships and the antecedents of the space itself, independent of our occupation of it.

McVeigh (2016) states that spatialisation is the most basic feature of interiority. He claims that it allows us to inhabit new lands visible only to our mind's eye. McVeigh draws connections to interiority in the discipline of psychology by exploring the notion of the soul. The soul has been associated with a number of notions throughout history; most commonly as a spiritual entity, a vital life principle, a moral discernment and cognitive, intellectual and emotional capabilities and principles (McVeigh, 2016, p.43). The soul has also been an essential element in describing conscious interiority. Here, McVeigh (2016) is offering the soul as a cross-cultural entity with two main aspects; an impersonal, material life-force and a personal expression that survives death. (McVeigh, 2016, p. 43). In this respect, the personal soul is captured by our interiority.

Contemporary philosophers of mind often raise serious questions around the concepts of self, subjectivity, and 'the inner life'. As a definition, interiority stands for being within, being inward, internal, relating to that which is within, pertaining to the mind and soul. Psychologist Sigmund Freud has linked interiority to the unconscious mind (Steedman, 1998, p. 4). Maurice Merleau-Ponty's view of interiority is of subjectivity and of selfhood (of the inside mind). He wrote that space is existential and that existence is spatial. Being human is therefore fundamentally related to space. According to Merleau-Ponty, the body and mind inhabit space and by doing so we construct a meaning of space. Consequently, when we architecturally express

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space, we create a realisation of the thought of space. This identifies the responsibility of the designer in the creation of the interiority of the dweller. Equally, interiors are shaped by inner thoughts, dreams and memory – our interiority and inner life. (Merleau-Ponty, 2002, cited in Perolini 2014). Apart from interior spaces being inhabited, they also inhabit each individual living in them. This happens when an individual constructs his/her inner self (interiority) within the house he/she lives in and essentially, the inner self-identifies with the home. The individual's consciousness absorbs the house he/she lives in and identifies itself with the place. Metaphorically, the individual's inner self completely identifies itself with the interior of the house, and their psyche claims the space when the person moves away from the surrogate house interior (Perolini, 2014).



Figure 1. Interiority and the Sacred, Vatican Rome. August 18, 2017.

The interiority, then, is where the individual's lived experience meets the designer's intent. But interiority has deeper significance as well.



Figure 2. Augmented Interiority, Installation, Brisbane QCA. March 4, 2016

Martin Heidegger in "Building Dwelling Thinking" states that the relationship between human and space takes on the form of dwelling. He argues that the manner in which we dwell is the manner in which we are, we exist, on the face of the earth – an extension of our identity, of who we are. (The Cultural Reader, 2011). Connections can be made here to Heideggerian thought on "care". For Heidegger, care is the fundamental structure that underlies each and every particular human existence. Influenced by Aristotle's work, his work is of interest here because his unique understanding of phenomenological philosophy provides a powerful insight into the importance of interiority. If the way we dwell is our understanding of what we are, the source of meaning in terms of our connection to the world, then our interiority is the most precious and important means of defining ourselves. Care, a term used by Heidegger for the concern and caring about the self and its existence, centres on the idea that the individual human being needs to, in the first instance, care for the physical self which then also extends to caring for the emotional self. According to Heidegger, only when human beings understand this "taking care of one's self" can we instil that same care on our actions. The act of dwelling, then, is the process of creating an interiority which is the means whereby we create our understanding of ourselves, the meaning that we attribute to our lives.

INTERIORITY AND INDIGENOUS CULTURE

The notion of place and being inside in Australian Indigenous cultures rests heavily on an interconnected sense of life. In indigenous culture, everything is seen from a cosmological view, including the conception of people and human society. In its simplest form, the task of spirits is to maintain the ecological and spiritual balance, being ultimately responsible for the ongoing harmony between the natural and cultural systems. Here, harmony and balance are the keys to the health and continuity of the two systems (Johnson, 1998). The land is fundamental to the wellbeing of Aboriginal people. The land is not just soil, it is a place, and the people are connected to it on a spiritual, physical, social and cultural level. Aboriginal spirituality is defined as being at the core of Aboriginal existence, their very identity (Liddle, 2015). They never own it but see themselves as being the custodians of it.

To dwell is to exist, to create an interiority that is an expression of the meaning that informs life and forms the spirit. Aboriginal groups have lived on the same land for over 50,000 years. The depth of their understanding of that land has been fundamentally damaged by the western construct of dwelling and the taking of their land. Australia has changed greatly since the European arrival in 1788 and the Indigenous people have been excluded from their country through its conversion into 'property', herded onto missions and assimilated into towns and cities. Despite this, Indigenous culture is still strong and is integral to the well-being and future of First Nations people. This culture is maintained through knowledge of kinship, dance, art and music. This knowledge is passed on to each new generation, just as it has been done for centuries through dance, art and music. While this cultural practice allows people to learn about the Dreamtime, ancestors and families, sacred sites and stories, their separation from the country is a major hurdle to developing and maintaining a full cultural experience. The interiority which connected the culture and soul of the people to the practice of nurturing the land has been broken.

This is highlighted in the designs of dwellings inflicted by European settler society on First Nation communities. Traditionally, the layout of individual shelters in campsites had to account for kinship and behaviour patterns between group members (AHURI). While Indigenous culture is dynamic and has accommodated many aspects of western lifestyles, many customary behaviour and cultural practices also remain and have impacts on the design (and costs) of housing in remote Indigenous communities. These include: large and complex households, mobility, a desire for wide sight-lines from a house, different seasonal use of spaces, outdoor-indoor living, outdoor cooking and socializing and what Memmott (2001) calls "culturally distinct behaviours in domiciliary environments", including: "forms of approach and departure behaviour, external orientation and sensory communication between domiciles, sleeping behaviour, cooking behaviour and other earth-oriented behaviours, and particular storage techniques for artefacts and resources"(Memmott, 2001). The positioning of dwellings, openings to the exterior, the layout

of the interior right down to the positioning of the bed are connected to and in harmony with one's existence in the cosmos. This intrinsically ethical conception of dwelling and the creation of the lived space is a very different way of living to that experienced in western culture. Indeed, it is perhaps a useful reference to what is possible in terms of developing a rich interiority (Adkins, 2015).

At a recent conference - Asia Pacific Space Designers Alliance – in Adelaide in September 2016, Alison Page (2016), an Australian Indigenous Designer, presented her own work working with various urban and rural Aboriginal communities in the delivery of culturally appropriate design. In her address, Page reintegrated the importance of place that nourishes you and forms your identity. This, she claims, is achieved by having a deep connection to the country. A country binds people to place and this is revealed over time living in it. Page explains that in order to find the country we need to lose the city. "You need to live on the land to really experience and feel country". Her approach encourages designers to camp on-site prior to initiating a design. Alison also believes that our designs need to tell a story. "Everything we do tells a story and in Western cultures, we often don't think before we create something. We need to think more carefully about what story we are telling as all our creations and their stories add to cultural capital" (Page, 2016). Page claims that the land owns Aboriginal people and every aspect of their lives are connected to it. The connection to land gives Aboriginal people their identity and a sense of belonging. As caretakers of the land, Aboriginal people don't see themselves as 'owning' land, animals, plants or nature, but rather belonging with these things as equal parts of creation (Page, 2016).



Figure 3. Interiors telling stories, Retrieved: October 8, 2017, Alison Page, Conference Proceedings Asia Pacific Space Alliance Conference., Adelaide, 2016.

"In white society, a person's home is a structure made of bricks or timber, but to our people, our home was the land that we hunted and gathered on and held ceremony and gatherings" (Nala Mansell-McKenna). Similarities can be drawn between the indigenous care of the self in relation to land and Heidegger's claim to self-care and the ontological knowledge and capabilities one has on the self, others and things. Heidegger states that if one has this knowledge then one cannot abuse that power.

ENLIGHTENING INTERIORITY

Understanding the Enlightenment and the Age of Reason is pivotal to understanding interiority (Dupre, 2008). The mechanical framework of Newtonian theory and Cartesian thought replaced medieval concepts about the cosmos, providence, creation and the human's place in the world, with rationalism and the scientific method as the central mode of apprehending awareness. The Enlightenment promised lives based on order and reason. It gradually replaced the complexity and opulence of the baroque with the

simplicity and clarity of neoclassicism. As scientific reason replaced religious belief, classification and reductionism challenged previously established, and arguably more holistic, worldviews.

The resulting social climate had a profound effect on architecture and interior design. This, in turn, had a profound effect on how life was organised for and experienced by the average citizen. The herding of the peasant class into industrial cities as workers, the enclosure of the commons and the regulation and commercialisation of labour led to the rise of organised labour, the suffragette movement and socialism. All these theoretical frameworks carried with them notions about how the private domestic space is organised and about the relationship between the private interior and the public exterior as well as roles within the home. The division of class had a noticeable impact on people's connectedness with the home. New social classes, including the middle class and the industrial working class, developed.

Family dynamics, gender roles, and demographics changed in response to industrialization and so did the interiors of homes. The introduction of the factory system effectively changed people's relationship to the external world and to each other. Prior to industrialization, the family was the basic social unit. Most families were rural, large, and self-sustaining; they produced and processed almost everything that was needed for their own support and for trading in the marketplace. Women's time was almost entirely absorbed by household tasks. Under industrialisation, the family became less important. The household ceased to be the focus of production as factories took on that role and were converted into a node of consumption. Another key change was the development of bureaucracy, with the focus shifted to organisations and not the individual person within it. While rational materialism had enormous material advantages, it is important to note that this change in cultural norms had a significant influence on dwelling and how the home was understood. The impacts of the Industrial Revolution were felt both on the individual and society and had an effect on human agency and happiness. Several branches of post-Freudian theory refer to the term Iron cage theory when describing society's disenchantment with an increasingly bureaucratized world. The concept was first introduced by Max Weber to describe a trend in society to move towards a form of bureaucratic rationality that would not realise universal freedom, but rather create an "iron cage" from which there would be no escape. For Weber, this disenchantment with the world lay right at the heart of modernity.

Another important aspect of disenchantment was the challenge to the concept of home. The separation of the home from work challenged both private and public life. Before the Industrial Revolution, families worked together in cottage industries and businesses were run from the home. Even the formal institutions such as Guilds were often family affairs, with apprentices housed by the Master. During the Industrial Revolution, every member of the family continued to play a role (Adkins, 2015). Men, women and children all worked in factories or mills. The work was difficult, exhausting and, at times, dangerous. As the Industrial Revolution continued, a sharp distinction between work and home and private and public life, emerged. With the emergence of long working hours, the domestic life was damaged. Families returning home from work had little time left for any interactions. The working class felt this change the most. The domestic life transformed dramatically for them and as a direct result, the interiors of their homes changed. In this sense, disenchantment shaped the interiority of the home (Adkins, 2015). Although there was less time spent in the family home, it became a refuge away from the terrible working conditions in factories. The home was experienced as a private world that, in contrast to work, was safe, enjoyable and private.

The notion of the dwelling as a safe refuge from a harsh exterior remained, but industrial, bureaucratic society had begun to replace the wilderness as the threat from which we needed to shelter.

MODERNITY, INTERIORITY AND CONSUMPTION

After the beginning of the 20th century, new factors challenged the existing sense of interiority. The harsh external world of work and survival saw the home emerge as a place of refuge, fortifying people to survive

and in stark opposition to the workplace (Adkins, 2015). The home-based behaviours and roles adopted to achieve this fortification were significantly expressed through décor. Homes were established as happy places where one could bring up children, a relaxing refuge to recover from the awful working day. For the wealthy, this was expressed in incredibly ornate interiors, especially prominent in the drawing room, where people gathered to play games. Australian homes at that time equally featured parlours or front rooms, decorated with pictures and ornaments of happy times.

World War 2 (WW2) marks a cultural shift – a notable rise in spending power. Wartime production had helped pull Australia's economy out of depression and there was a notable spike of post-war investment in manufacturing, practically non-existent prior to WW2. Knowledge gained through wartime manufacturing inspired the production of new products, especially cars and white goods, now rendered affordable by better wages in post-war factories. More efficient production methods and better wages were self-reinforcing: a higher standard of living offered a better lifestyle through the consumption of the output of the increased manufacturing. Alongside new technologies and industries, there was an increased value put on education. People believed in the reform of education and technology as the foundation of a better future for their children. The revised school system aimed to produce a nation of higher-level thinkers to increase the white-collar workforce to encourage upward mobility (Adkins, 2015).

The 1950s-house reflected this idea of upward mobility and status. Kitchens and living rooms were still considered places of refuge from the harsh-outside world but they increasingly shifted towards reflecting the new aspirations of doing better in life. Kitchens in particular signified status by showcasing new modern designs and built-in appliances. Objects became part of one's identity. Consumption became part of the social obligation to society.

The aestheticisation of the kitchen in the 1950s shifted its importance in the hierarchy of the household. Formerly designated as back-of-house, the modern kitchen was now a display room and significant part of the homeowner's identity. The freedom provided by domestic technologies provided more leisure time and the possibility to advance careers outside the home. This was the commencement of "generations of insufferable entitlement" (Spark, 2008). Upward mobility was not restricted to middle-class Australia or the Western World in general, the post-war period was marked by independence movements and revolution as third-world countries and developing nations railed at a world order dominated by the industrialised West. A burgeoning youth culture specifically and overtly rejected the conventions and niceties of previous eras especially those social values they considered superficial and materialistic. (Adkins, 2015).

The proliferation of choice paved the way for what we now call contemporary individualism, or new individualism, with its focus on identity and consumption. The traditional forms of identity-construction based on citizenship had now moved to post-traditional forms of identity-construction, promoted by globalization and neoliberal policies. The ideas and aspirations of the baby boomers were very effectively harnessed through a system of consumption and through the organisation of work. "We have no choice now but to keep making choices. Everything we purchase now may have consequences for how the item will appear in the home" (Adkins, 2015). Taste comes to be harnessed as the personal choices one makes in terms of clothing, accessories, furnishings and so on. However, one is never entirely free in making choices about one's own identity (Adkins, 2015).

Torstein Veblen introduced the theory of conspicuous consumption in the late 19th century. Veblen used this term to refer to consumers who buy expensive items to display wealth and income rather than to cover the real needs of the consumer (Veblen, 1899). The ability to rise in class was still very prominent in contemporary individualism and having a good social standing gave the freedom to express individualism. Similarly, Bourdieu, for instance, describes consumption and "good taste" as a way for higher social classes to distinguish themselves from the lower classes (Bourdieu, 1984).

In the home, this was once again expressed in the choice of furnishings, products and decoration. The objects we buy and display in our homes not only express our individualism, they also construct our identity. It is a conscious creation of identity through interior design, an identity created from furnishings and decoration. We have, in fact, become unable to construct our identity outside of consumption. Consumption is designed for us to see a constant idea of lack and a desire to be better and have more, the notion of an unfinished self. We are so embedded in this context that we are unable to see outside of it. It is also a very powerful influence on how interiority is understood today.

Adkins (2015) gives an example of identity and work. Over history, we have seen the undermining of traditions and traditional ways and new levels of uncertainty in terms of identity and work. Adding to this are the growth of privatization and the shrinking of communal ties, cutbacks in welfare, contract work and casual work. We are now responsible for establishing our own identity in a society where values and expectations are uncertain and constantly shift. The separation of home and work is not simply the re-organisation of society; it is also the redefinition of self. It is intimately involved with the redefinition of interiority so that the expression and creation of the self through the decoration of the home and acquisition of objects almost completely subsumes any other form of identification. That this is severely constrained and directed by the predetermined rhythms and spaces of the house is not simply an accident, it is an essential component of the manner in which identity is related to broader society.

PROFESSIONAL RESPONSIBILITY AND INTENT

Architects and designers have not taken responsibility for the impact of the interiors they create and the impact of that interiority on the individual. Disciplines outside design (cultural studies, sociology, political economy and geography) provide interesting and relevant perspectives on the social, economic, political and environmental impacts of design. However, architects and interior designers keep concerning themselves with the production of objects and a deep concern with the appearance of form and style. Design practitioners fail to make connections between how and what they design and current complex issues such as poverty, environmental degradation, social unrest and many more factors that affect people's lives. In the end, all the problems that threaten the future of humanity go to anthropocentric behaviour into which we are all inducted. These practices become apparent and visible in the current global debate about contemporary unsustainability including climate change.

Christopher Alexander, Buckminster Fuller and Peter Sloterdijk all share critical positions damning designers for this introspection. Christopher Alexander is best known for his work 'The Pattern Language' defining a range of architectural elements that he claims are indisputably "good" design. He states that creating for life and for the living to be the most fundamental activity for architects and designers. He argues that the standardised, mass-produced buildings of today lack soul and identity (Alexander et al., 1977). Alexander (1977) believes that the field of architecture should be grounded in pragmatic observation rather than intuition. At the core of his idea is that life itself is an architect, designing sustainable forms through the process of evolution. As a result, he believes that people should design communities, neighbourhoods and houses for themselves, without an architect (Alexander et al., 1977). His ideas imply a radical transformation of architecture. This thought emerged from his own personal observations of beautiful, functional harmonious places in traditional cultures and the fact that those places were made by the people who live there, not architects. In his work, he developed a fully developed theory of the living process. By identifying the positives and negatives of buildings, human artefacts and natural systems, he proposes that the living order depends on those features that closely connect with the human self (Metropolis). The quality of buildings is defined in terms of identified living structures but equally in their capacity to affect human well-being and growth. Alexander believes that every culture has a system of rules, intuitively understood by everyone in that culture and which delivers good results. He claims that the non-living structures (static built environment not based on the living process) which have surrounded us since the enlightenment has undermined society at a huge cost to our well-being.

Alexander's theory on 'living systems' for the built environment was also explored by Buckminster Fuller. Fuller developed an earth philosophy which believed that nature has a basic coordinate system which will eventually reunite all scientific principles. Fuller practised architecture with the fundamental principle of doing more with less with a view to using limited resources to sustain a growing population. Fuller is perhaps best known for his Geodesic Dome project, where he enclosed spaces using nature's geometry as an inspiration.

Similarly to Alexander, Fuller understood and used building technology in harmony with nature. His Dymaxion Neighborhood project proposal in the 1930's already featured a global perspective on unsustainability and showcased composting toilets, water saving devices and natural cross ventilation for cooling. The Dymaxion project acted as the catalyst for his first Dome project with the aim to make structures more affordable for people, provide comfortable and efficient shelter and applying basic natural principles for the construction concept of the dome (Pawley, 1990).

The theory was in the difference in strength of the simple rectangle and triangle. Fuller discovered that if a spherical structure was created from triangles, it would have unparalleled strength. The sphere uses the 'doing more with less' principle. It is able to enclose the largest volume of interior space with the least amount of surface area, saving on cost and materials. Fuller created an energy efficient dome which provided good air circulation and a solid structure in wind turbulence. Fuller's structures not only incorporated technology within but were pieces of technology themselves as an item of mass production (Pawley, 1990). Fuller was predominantly concerned with the performance and interior of his buildings and unlike his counterparts, did not concern himself with the traditional conventions of the architectural profession of taste, style and form.

In his trilogy *Spheres (Bubbles, Globe and Foams)*, Peter Sloterdijk examines the history of western metaphysics as a spatial discovery from the self (in *Bubbles*) to the world (in *Globe*). One of his pivotal themes throughout the three volumes is Sloterdijk's theory of spherical relationships on humans. His work is a reinterpretation of Heidegger's 'being' in the world. Being in the world is for Sloterdijk being inside the sphere. According to Sloterdijk, human beings are creating spheres as immune systems. The spheres act as a protective shield. While for Sloterdijk 'being' in the world has a spatial-temporal connotation, we are always inside somewhere- as he says, an extension of the womb (Sloterdijk, 2011). The womb in his mind has created in humans a sense of interiority and it is the business of design to recapture and recreate this healing, nurturing, safe space; places that provide immunity from harsh outside forces, places that make human life possible (Wambacq & Tuinen, 2017).

Contrary to Sloterdijk, for Heidegger 'being in the world' was not related to being inside a container (Nieuwenhuis, 2014).

For him, being in the world meant being involved in something. For Heidegger, 'world' is an idea which is analogically different from the perspective of different entities. He gives the example of a stone. The stone is wordless because it has no access to human beings. An animal is poor in 'world'. An animal has a very narrow constricted world and only has limited access to human beings. And human beings are world makers. But the problem lies in their anthropocentrism. Humans put humans in the centre of the world and this has led to the atrocities of the 20th century. Heidegger suggested an anti-humanist model that puts 'being' at the centre and humans should be in a much more passive, submissive, receptive relationship to 'being'. Humans should listen to what 'being' wants and try to identify the world by keeping 'being' alive. This notion, this Heideggerian thought is the background to Sloterdijk's trilogy.

Similarly to Australian Indigenous thought, Spheres argues that during the mythological period, the sky provided an enclosure which helped to keep out harm. The inside of the sphere provided security, shelter and warmth for humans. With the Enlightenment, humans existed in a shell-less space, no longer defended by the sky as an enclosed cosmology. In their paintings, artists of the time portrait the human as someone outward, open, unprotected and being in vast expanses of the sky. In the West, the notion of feelings of crisis, anxiety, disorientation, existentialism emerged. A great deal of human endeavour in modern society involves creating proxies for these real-world externalities to which we were once directly connected.

Designers of the physical buildings in which we dwell, the objects that we use to both personalise that space and function within it must contend with new individualism, the primacy of individual selves, and the close connection between consumption, identity and taste. So must the communication platforms that we use to reconnect with each other through the new collective interiority of virtual space. As designers, we must recognise that our design provides the framework that both enables and constrains the interiority of the individual. We must also be aware of the dichotomy between the safety, comfort and creativity of the created interior and the sacrificed connection with the real world and the lessons it has to teach us.

TECHNOLOGY, INTERIORITY AND INTENT

Technology has been instrumental in expanding the domains into which we can extend our interiority. These technologically expanded domains stand in direct contrast to the natural or external world. Technologies, such as the mainstream integration of electricity in homes, allowed for a different occupation of spaces and for new spatial experiences in the home. With reliable lighting, we can defy the natural rhythms and read and work in the dark. Today, mobile devices and the possibilities of virtual connectedness extend this motility into the locus of connection. We are no longer restricted to communicate, and so form social groups, with those who are physically present. This is a major expansion of the notion of interiority into a virtual arena that has no physical exterior.

We now conduct our many relationships of work, health, friendship and many others from our homes with the means of devices that connect us to anywhere at any time. These become sets of convergences of fields (Adkins, 2015). We can sit in our living rooms and purchase goods. We can plan our trip on public transport from our couch. We can Skype with friends far away sitting at our dining room table eating dinner and we can continue working from home after leaving the office. More than ever before, work and consumption integrate with home. There is now an expectation to be available at any time. Equally, purchasing is no longer just an option; it has become part of our identity and the obligatory construction of us in relation to society.

“The unstoppable forward march of technology has had an undeniable impact on human culture and society” (Oaks, 2014). The home is fast evolving to take advantage of the various technologies available today. The smart home will join smartphones, connected devices, and other technological miracles in shaping the “smart life” of the 21st century. The numerous advantages of having a smart home over a traditional home have been well documented. Not only do smart homes provide dwellers with much more control over their security, comfort and luxury, they are also aiming to be more ecologically friendly and reduce running costs. This ‘smarter’ life has a promise of being a better life; one that is being more secure, more comfortable, more connected and perhaps better than ever before (Hoffman et al., 2015).

However, there is a danger that our over-reliance on technology has made us less capable of interacting with the real world (Oaks, 2014). We interact with our smartphones when in the company of friends with whom we share a physical space. We bring the digital into the physical realm of coffee shops, places originally designed to meet and enjoy conversations. The danger is that we have completed our alienation from the spiritual framework of nature by creating a totally artificial interiority in which we permanently dwell. In the smart house, devices are now able to communicate with each other as well as with the home's

occupant. Common household objects such as refrigerators, ovens and toasters have intelligence built into them. Today a smart fridge orders the weekly groceries, a washing machine can tell when the clothes are clean and smart kitchen robots control the kitchen (Hoffman et al., 2015).

Technological innovations within the home are nothing new. As this paper has discussed, new technology has always had an impact on how people interact with their environments and between each other. Equally, technology has changed how we communicate and together the impacts have had a profound effect on people's lives and their dwelling. However, the integration of smart technology and mobile devices have added a new dimension to the interface through which the designer interacts with the dweller.

It is hard to see a future in interior design without the integration of smart technology. Houses are becoming fully interactive with that interaction involving every surface. "Everything in the house can be used to communicate; the interface is ubiquitous. Through projections that are activated by the presence of a person, everything can be controlled with the movement of the hands: the lights; turning on any electrical household appliances; music; even connecting to Skype for a conference from any part of the house. Once connected to the internet, any device can be managed and switched on and off from anywhere in the world, and even controlled by the mobile phone, tablet, or from any device which is connected to the internet" (Pople, 2013).

The challenge is to integrate the newly flexible and multidimensional interiority with the holistic frameworks of traditional culture and the soul-searching of Alexander, Fuller and Sloterdijk. At the same time as population pressures, urbanisation and resource shortages challenge our capacity to build the interiorities of the future, we have better tools and a greater awareness as a community of the dangers of short-term thinking focused on commercial outcomes instead of human, or moral, values.

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THE INTERIORITY OF PROXIMITY BETWEEN NATURE AND ARCHITECTURE IN CONTEMPORARY AND TROPICAL CONTEXT WITH CASE STUDIES

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ABSTRACT

The interiority of buildings in tropical countries requires specific characteristics unlike those in countries with four distinct seasons. Buildings in non-tropical climates must protect their inhabitants from extreme weather, meaning that the architecture's connection with nature is necessarily limited by a boundary which can withstand extreme climatic differences. In tropical countries, on the other hand, the temperature does not fluctuate much throughout the year, so the temperature difference between seasons is not extreme. This characteristic is reflected in traditional Nusantara architecture, which incorporates a breathable wall so that free winds come in, reducing heat. The roof is tilted or saddle-shaped to keep rainwater away from the building. The architecture uses organic materials and includes terraces for dialogue with nature. Modern Indonesian architecture, however, particularly in large cities, is mostly closed off, severely limiting the interaction with nature. Since the advent of air conditioning (AC) technology during the 1980's, architecture has changed to seal the boundaries of the building. Advances in information technology such as Internet and smartphones have made for further changes to architecture in the area; some functional spaces are being discarded, while others are expanded. The relationship between architecture and nature is now constrained by impenetrable materials such as brick, concrete and glass, as opposed to the more traditional, permeable boundary. In contrast to this trend, modern Indonesian society is tempted to form a closer relationship with nature. This paper examines how a relationship between nature and the interior of buildings may be accommodated again, presenting some existing projects by several architects from Europe and Asian countries—including the authors' own work—as case studies.

Keywords: tropical, contemporary, relationship between nature and architecture

INTRODUCTION

Interiority may be defined not only with dimension, colour and the materials that form the basis of interior space (Petrolini, 2014), but also as an abstract presence associated with the interior space—not the interior itself, but an abstract quality bringing various possibilities and interpretations of interior space. Interiority is not static but mobile, a fusion of physical space, intangible concepts and abstractness. In 1967, Michel Foucault defined 'heterotopias', or places that are neither here nor there, as real spaces that stand outside of the accepted space. Foucault describes heterotopias as spaces which are constructed by the mind but are equally likely to have a physical presence and action (Foucault & Miskowiec, 1963).

Another theory put forward by Henry Lefebvre in his paper, *The Production of Space*, defines space as a social product. Lefebvre explains the fundamental difference between architectural space and the space of

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architects as follows: while architectural space produces social space through experiences, the space of architects is space manipulated and affected by the architects as part of their professional practice. He claims that a space of the architect of an event is not the same as the experience of everyday life (Stanek, 2011).

Architects and designers must create meaningful experiences for occupants of the spaces they design. It is important to realise that interiority and exteriority are interwoven within architectural constraints but are not defined by the boundaries of buildings. Interiority is abstract and fluid; the concept of interiority relies upon cultural, social, technological and physical developments in society.

The main purpose of this paper is to discuss the current phenomenon of proximity between architecture and nature, which may affect the quality of abstract space or interiority. The quality of the space quite specific where the architect's or designer's experience comes into play since the advancement of technology permits the integration of nature into the interior space. In contrast to previous research, where tropical architecture is discussed in terms of highly technical areas addressing only humidity and heat. Very little research addresses the abstract quality of space attributable to the incorporation of nature and architecture. This paper focuses on the relationship between architecture and nature, the history of tropical architecture as associated with post-colonial discourse, green architecture, Nusantara architecture, basophilic architecture and its relation to technological advances in communication, contemporary tropical architecture as related to proximity with nature and the quality of imaginary space irrespective of climate.

THE RELATIONSHIP BETWEEN ARCHITECTURE AND NATURE

Historically, architecture was governed by the forces of nature, and humans relied more upon their instinct to survive. The relationship between architecture and nature has changed radically over time, especially with the arrival of the industrial and technological revolutions. After World War II, the demand for construction boomed. However, heavy construction's impact on the environment has become evident, and people have come to pay closer attention to ecology in recent years. This paper discusses many architectural trends arising from an understanding of the importance of a good relationship with nature and a current nostalgia for a time when man and nature were closer, as closeness with nature is a need. It focuses on the phenomenon of re-establishing a relationship between architecture and nature in tropical climates.

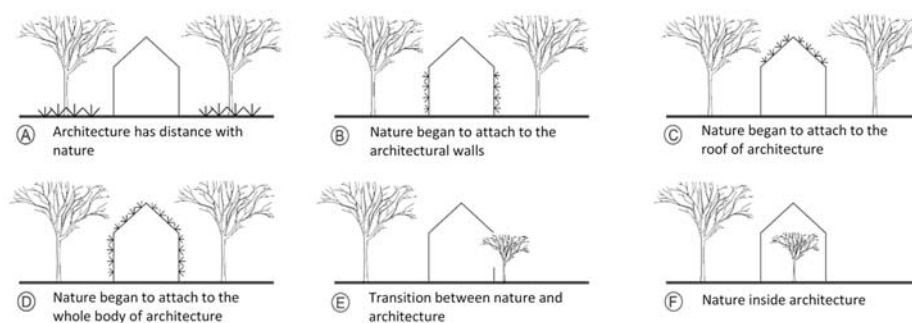


Figure 1. The different relation between Architecture and Nature
Source: Studio processing BPA- research, 2017

Mankind first began to manipulate nature as nomadic hunters. This eventually led to the birth of the permanent settlement and the development of architecture (Crowe, 1995). The permanent settlement gave humans the ability to control the environment by adjusting materials in nature to address their needs, in effect creating new nature in the form of houses. Traditional societies tried to reflect the macrocosm in the microcosm of the building, with the roof as a metaphor of the sky, the fireplace representing the sun, the walls serving as the borders of the cosmos and the floor acting as the manifestation of the Earth. This represents a strong relationship between nature and humankind. Local materials were historically chosen

due to their proximity and suitability to the local weather. For example, walls made of clay transmit heat slowly, lowering the interior temperature during the day and keeping it from getting too low at night (Khan, 2000). Clay walls may be found not only in North Africa and Morocco but also in several areas of Indonesia, including the mountainous area of Ubud, Bali. Tropical regions, with their high temperatures and day-and-night humidity, generally use wood and bamboo in their architecture. This reflects a primitive principal whereby architecture is seen as part of nature and has the benefit of using less manmade energy (Crow, 1995).

CONTEMPORARY TROPICAL ARCHITECTURE

Tropical architecture lies beyond its climatic and regional concerns. This confronts the spread of a homogenous globalism which can also be called international style. Tropical architecture is always associated with a locally and environmentally sensitive approach.

Countries in the tropical belt have seen before growth in the last 70 years and are poised to escalate in terms of economic, technological and material development. Briefly, modern tropical architecture has been adapted from modern trends in design and construction to climate, where it is necessary to note the changes in the lifestyle that the tropical climate affords. What appears often is the exploration of open and semi-open spaces, balconies, verandah, and open plan.

The challenge to define a modern idiom for tropical architecture is not just a climatic issue but also related to the problem of adapting to the modern lifestyle, o the transformation of local cultures to the modern city.

The research on tropical architecture is based on the movement of modernism in Europe and the US. The modern architecture movement was led by several master architects such as Le Corbusier, Oscar Niemeyer and Alvar Aalto who believed that Modernism in architecture ought not to be transplanted globally without some recognition of its context that emphasized the importance of understanding the region, climate and social context. At the moment there is a transplanted from temperate countries, particularly the US - in justification by the name of International Style.

This situation was criticized by many architectural schools and environmentalist writings such as Aladar Olgyay (1963) and Victor Olgyay (1952), Maxwell Fry (1956) and Jane Drew (1964) as well as by modernist architects who showed with such works Paul Rudolf and Richard Neutra (US), Frederich Silaban, YB Mangunwijaya, and Han Awal (Indonesia).

In the current era where the advancement of innovation and digital technology has changed the social order in the contemporary architectural community, it is defined as the latest architecture that accommodates the needs of the current community lifestyle. So the contemporary tropical architecture shows the geographical location of the tropics, therefore, some of the things below will explain more detail about the Nusantara architecture, Dutch colonial architecture in Jakarta, green architecture, and the influence of smartphone technology that changed the pattern of tropical space in the cities in Indonesia.

NUSANTARA ARCHITECTURE AND ITS RELATIONSHIP WITH NATURE

Indonesia is comprised of thousands of islands, with many vernacular architecture on each of these islands. "Nusantara" is an Indonesian word for the Indonesian archipelago, coming from "Nusa" and "Antara" and meaning "a unity between islands and its seas" (Prijetomo, 1988). Nusantara architecture is non-separated from nature; therefore, its materials come from nature, namely organic materials such as tree bark, wood, roots and leaves. The material is adjusted based on natural condition. For example, rumah panggung or house on stilts is common in the region. Similarly, in Korowai, Papua, the tree house is common. This architecture is merged with nature, with breathable walls usually made of woven bamboo or from the arrangement of bebak (palm tree leaves). The traditional societies of these regions hold ceremonies when

they cut the trees or harvest other natural materials for use as building materials. The ceremony is a symbol that the local people really appreciate God's creation such as trees so that cutting down trees is not as an economic commodity such as modern society but for the needs of the community creating Nusantara architecture to shelter.

This relationship between architecture and nature is different from that of the architecture in four-season countries. Extreme weather difference in non-tropical climates mean that their architecture tends to have rigid boundaries with nature; the architecture functions like a fortress, protecting the people inside from the cold or the heat.

THE GARDEN CITY OF MENTENG

In 1909, Dutch East Indies architects tried to implement the garden city concept in Menteng, Jakarta, in early 20th-century Batavia. Garden City was a middle-class, residential area in Batavia. This urban planning movement attempted to transform Indonesia's traditional architecture into a more modern form using materials used in the Netherlands, such as brick. Garden City houses were surrounded by large gardens and tall trees. To address the heat, the houses were built with high ceilings and spacious terraces. The architecture incorporated nature as a cosmetic complement; residents could sit on the terrace and enjoy the nature around it. It also benefited from nature in a practical function, as most of the houses had fruit trees to provide food. Many of these buildings incorporated a terrace, as well as large gardens in front of and behind the building, as media to connect with nature. Others, called courtyard houses, incorporated a garden in the middle of the building, which served to cool the house by creating air flow into the building. The use of plants in this architectural style may be categorized as a fence, marker, canopy and decorative element. During this period, the relationship between architecture and nature was only partly for the beautification of the house.

1970S ECONOMY BOOM AND THE INTRODUCTION OF MODERN ARCHITECTURE

An economic boom in 1970s Indonesia brought some first-generation, newly-graduated architects from the Netherlands and Germany, including Han Awal and Suwondo, who attempted to introduce tropical architecture in Indonesia. Han Awal designed houses with atriums or backyards and more spacious bathrooms incorporating plant life. In this era, as the state enjoyed the financial boon of increased exports of crude oil and other mining materials, development in major cities in Indonesia increased. Deforestation was unrestrained, even in areas such as Borneo Island, known for its forest land, and the wood was exported for profit. Nature was viewed as a commodity and an unimportant material, as it was only used as a decorative addition to architecture.

This development took place in every corner of cities in Indonesia, despite the small number of young architects responsible for it. This era of exploitation and usage of nature diminished the relationship between architecture and nature.

NATURE AND INTERIOR ARCHITECTURE

There are several reasons to incorporate nature into interior architecture. Nature may be part of home decoration, such as potted plants. Plant life may serve to cool the house, which is achieved by creating a canopy frame for plants, so they can grow in above of the terrace, and the inside of the building will become cooler. Plants may also be placed between rooms such as patio or atrium to serve as connectors between different rooms. Plants placed inside the house may indicate that the owner has a psychological desire for closeness to nature, sometimes to the point—particularly in the case of elderly homeowners—where the plants serve as companionship, sometimes even giving the owners a reason to live. Building interiors which incorporate nature have a specific character and generally incorporate sunlight, as well, via architectural features such as atriums. Otherwise, such buildings must use artificial lighting as a replacement for sunlight.

Examining R-House, as a case study, we see a house with a cohabitation theme. This house has a special relationship with nature, both indoors and outdoors. As the owner of the house has a hobby related to water, water has been used as an element of design, flowing in from the outside and filling almost every corner of the room it flows into. Plants on the flat roof penetrate into the house, becoming a non-separated part of the interior of the house.

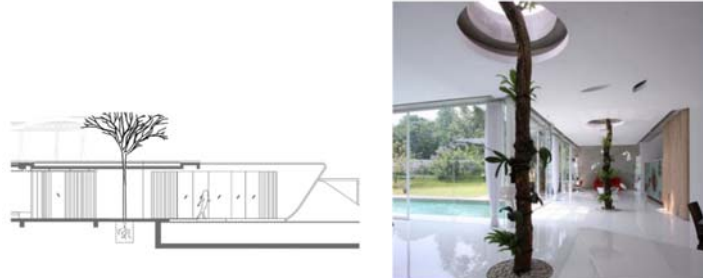


Figure 2. R-House section and interior, by BPA Architects. Reprinted from Budi Pradono's Naturally Cooled R-House Brings Nature Indoors, by M. Andrew, 2011, Retrieved October 30, 2017, from <https://inhabitat.com/budi-pradonos-naturally-cooled-r-house-brings-the-outside-in/r-house-budi-pradono-2/>, Reprinted from R-House by Budi Pradono, by A. Fearson, 2011, Retrieved October 30, 2017, from <https://www.dezeen.com/2011/08/05/r-house-by-budi-pradono/>

The second case study is A-House in Bintaro, located in the southern part of Jakarta. Here, a tree was planted inside the house to create a dialogue between architecture and nature, as well as with the inhabitants of the house.



Figure 3. A-House, by BPA Architects. Reprinted from Clay City (p. 104–105), by B. Pradono, 2014, BPA publishing

The next case study is the *Rumah Miring* or Slanted House. The entire Slanted House building was lifted on pilotis, and the pool was incorporated into the building. Many plants were sown around the building, as well as on the second-floor terrace so that the owner of this house may commune with nature when on the first floor. The bathroom was made spacious and wired for various digital activities.



Figure 4. Slanted House section and interior, by BPA Architects. Reprinted from Clay City, (p. 88–89), by B. Pradono, 2014, BPA Publishing

Reprinted from Budi Pradono's leaning house in Jakarta built as a "symbol of anti-establishment," by J. Mairs, 2015, Retrieved October 30, 2015, from <https://www.dezeen.com/2015/12/22/budi-pradono-architects-rumah-miring-leaning-house-jakarta-symbol-of-anti-establishment/>



Figure 5. Bosco Verticale, by Stevano Boeri Architects.
 Reprinted from Bosco Verticale / Boeri Studio, by Archdaily, 2015,
 Retrieved October 30, 2017,
 from <https://www.archdaily.com/777498/bosco-verticale-stefano-boeri-architetti>

REDEFINING OF THE RELATIONSHIP

The relationship between nature and architecture must be redefined, given the current prevalence of nature's degradation and technology development. The demand is high for environmentally responsible architecture, supporting sustainability. In Europe, the green architecture movement was triggered by the human desire to be close to nature and involves incorporating plants in buildings. In Indonesia, nature becomes a non-separated part of architecture. However, plants also serve as decoration for architecture. For example, the Vertical Forest Apartment by architect and theoretician Stefano Boeri features a façade covered entirely with plants. This successful Milan project is known as an example of architecture which lives together with nature. Boeri received several similar projects in Lausanne, Switzerland; Guizhou and Liuzhou in China; Utrecht; Paris; Tirana and Shanghai. His idea is to put trees on terraces to absorb CO₂. Another example of this use of nature in architecture is The Canopia Apartment in Bordeaux, designed by Sou Fujimoto, is an apartment tower with several plants on its terraces.



Figure 6. Canopia, by Sou Fujimoto and Laisné Roussel.
 Reprinted from Sou Fujimoto and Laisné Roussel Propose Wooden Mixed-Use Tower for Bordeaux, by E. Oh, 2016, Retrieved October 30, 2017, from <https://www.archdaily.com/783946/sou-fujimoto-and-laisne-roussel-propose-wooden-mixed-use-tower-for-bordeaux>

Binh House, a work by Vietnamese architect Vo Trong Nghia of VTN architects, interprets the relationship between nature and architecture as a link between rooms. The living space also serves as a link among three generations of families which live in one house.



Figure 7. Binh House, by Vo Trong Nghia Architects. Reprinted from Binh House / VTN Architects, by Archdaily, 2017, Retrieved October 30, 2017, from <https://www.archdaily.com/868963/binh-house-vo-trong-nhia-architects>

The next case study is the House for Trees project, where the building is used as a giant pot holding a large tree. Four masses of buildings create the pot and can be occupied by people.



Figure 8. House for Trees, by Vo Trong Nghia Architects. Reprinted from House for Trees / VTN Architects, by Archdaily, 2004, Retrieved October 30, 2017, from <https://www.archdaily.com/518304/house-for-trees-vo-trong-nhia-architects>

From the above examples, we can conclude that some new architecture in European countries attempts to get closer to nature by adding it to the outside or attaching it to the building, while some examples of new buildings in tropical countries unite architecture and nature in the interior. This proximity creates a certain quality in the space, rendering the space more interesting and enriching it with natural light and the colours of plants.

GREEN ARCHITECTURE

Toward the end of this decade, green architecture has become a hot topic for several reasons, one of them being aware of environmental degradation. Green architecture principles serve to conserve energy by means such as reducing the use of AC. This movement is supported by the development of energy-conserving technology, for example, light-emitting diode (LED) lights and solar energy. The green architecture movement has resulted in the passing of various rules and systems, such the Leadership in Energy and Environmental Design (LEED) rating system in the United States, which applies to all architects. In tropical countries like Indonesia, green architecture is sought by the general public as well as architects.

There are several implementations involved in green architecture. One of them is a heat-reduction strategy created by attaching plants to a building's façade. This makes the building look greener and changes architecture, which was removed from nature in the colonial era, to one with almost no distance from nature. Another trend can be implemented almost anywhere: many architects are experimenting with adding soil and plants on top of flat, concrete roofs. Some architectural works also plant trees inside the house. Thus, much architecture is covered with nature.

The awareness of the need for nature and its resulting green architecture movement has spread all over the world. Some experts call this the birth of an 'Environmental Age' which promotes sustainability. According to Olgyay, 'The greatest lesson is the fundamental principle that architecture is at its best when it is working with not against nature. That severance of the historical symbiosis with climate was achieved at a cost to both architecture and nature' (Olgyay, 1963, as cited in Hawken, 2002, p. 6). We also understand that the human body acts both physically and psychologically to reach a biological equilibrium, a type of 'comfort zone'. 'A balance shelter plays a vital role in reaching this "comfort zone", which modifies the natural environment to satisfy physiological needs. In this regard, the primary intention of bioclimatic building is to react to the climate and environment by absorbing, filtering or repelling environmental elements depending on their positive or negative effects on human comfort' (Olgyay, 1963). Some research states that bioclimatic buildings use five to six times less energy than conventional buildings over their lifetime (Jones, 1998, as cited in Hyde, 2008). Manipulating the building or microclimate may obtain thermal comfort.

USE OF AIR CONDITIONING

Air conditioning (AC) technology in tropical countries like Indonesia has changed the interior composition of buildings, as the use of this cooling technology is calculated based on room volume. Since smaller rooms require less AC, many house sizes are decreased to minimise AC use. These house sizes stand in contrast to the Dutch buildings in Menteng, which generally have high ceilings. However, in the newer residential areas of Greater Jakarta, such as Bumi Serpong Damai, Bintaro and Serpong, almost all houses have low ceilings, ranging in height from about 2.5 meters to 3 meters. The usage of AC has changed the relationship between architecture and nature in that the boundaries between them, which previously were ambiguous, are now defined by rigid materials. Rooms within buildings are segregated and isolated. Transparent materials such as glass and acrylic are used to maintain some contact with the exterior, but, as in the 1930's, nature is once again relegated to a mere object of beauty.

An example of nature becoming the mere complement of architectural beauty can be found in House N by Sou Fujimoto, which comprises a room inside a larger room which holds large trees.



Figure 9. House N, by Sou Fujimoto Architects. Reprinted from House N / Sou Fujimoto Architects, by Archdaily, 2011, Retrieved October 30, 2017, from <https://www.archdaily.com/7484/house-n-sou-fujimoto>

SMARTPHONE TECHNOLOGY IN THE HOME

Smartphone technology, which has risen in popularity since the 1990s, has changed the house floor plan typology. In the 80s, every house had a formal living room. More recently, the less formal family room has risen in demand. Today, people connect less frequently by visiting each other; instead, they are connected through social media, and there seems to be no further need for a formal living room.

Another influence of technology on middle-class houses is the transformation of the bathroom. The modern bathroom has become more spacious and comfortable. It has become a new kind of private room where urbanites may spend more time on personal devices, engaging in activities such as reading the news or communicating through social media applications. Hand-in-hand with this phenomenon is the assumption that the closer people are to technology, the stronger their urge to get closer to nature will be. Hence, modern architecture attempts to bring nature indoors.

BHIOPHILIC ARCHITECTURE

Affection for natural systems and their incorporation into design and man-made environments is known as biophilia (Kellert & Wilson, 1995). Human dependence on nature is closely related to the human mind and body, which are associated with environmental sensors, including light, sound, wind, weather, water, plant, animal and landscape.



Figure 10.1. Interaction by face-to-face contact. Reprinted from Biophilic and Bioclimatic Architecture (p. 42), by A. Almusaed, 2011



Figure 10.2. Interaction by interconnecting surfaces
Source: Biophilic and Bioclimatic Architecture, A. Almusaed, 2011, p. 42

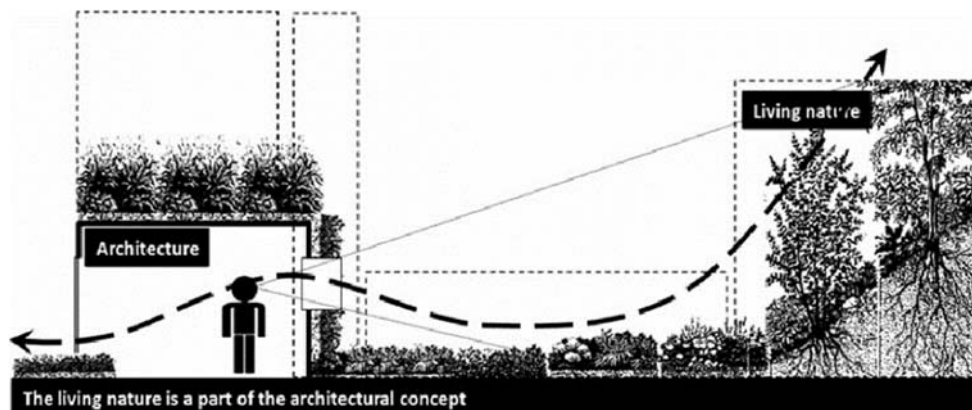


Figure 10.3. Architectural pattern in context of living nature upon biophilic architecture model
Source: Biophilic and Bioclimatic Architecture, A. Almusaed, 2011, p. 42

Biophilia is related to human health, productivity and wellbeing. According to Kellert (2005), the human brain responds functionally to sensory patterns from a natural environment, with many beneficial results. Kellert states that contact with nature can aid in healing or recovery from illness and that childhood health and maturity development correlate with contact with nature. Furthermore, people who live spread out in open areas are reported to have less illness and fewer social problems as compared to those who live in cities. He states that contact with nature correlates with cognitive functions which require concentration, as well as memorizing ability, pointing out that offices with natural lighting and ventilation improve employees' performance and reduce their stress. In short, a community with a positive environmental quality and a positive relationship with nature enjoys a superior quality of life (Kellert, 2005).

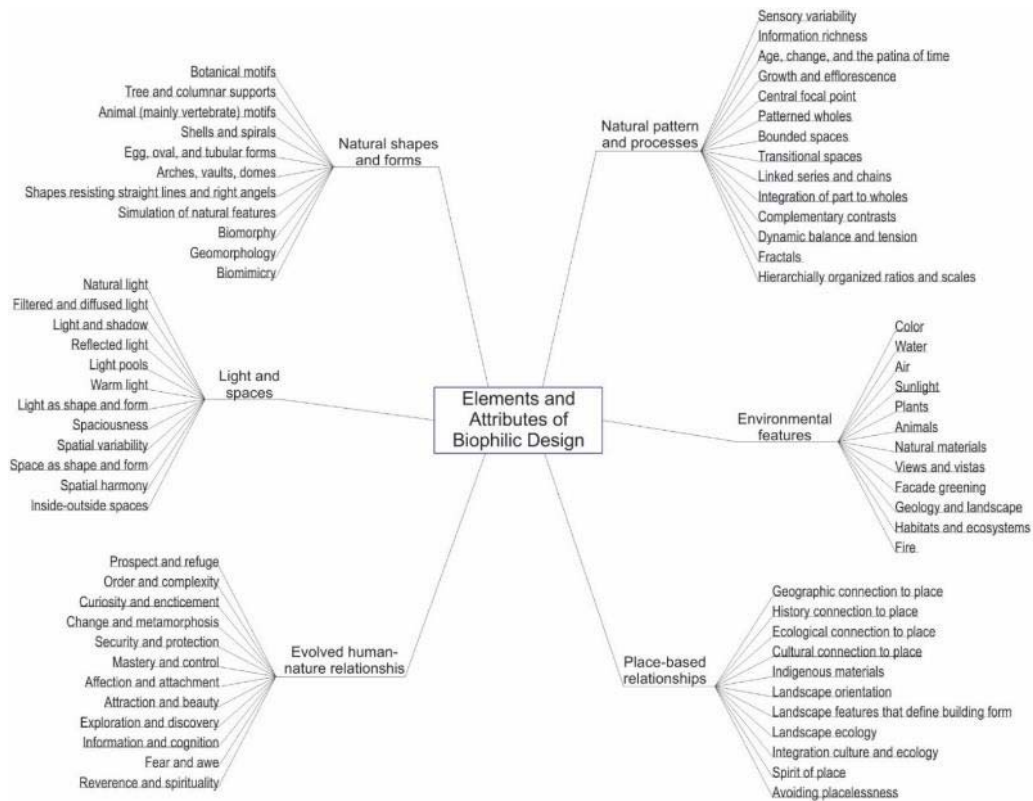


Figure 10.4. Elements and attributes of biophilic design
 Source: Dimension, Elements, and Attributes of Biophilic Design, S. R. Kellert (2005)

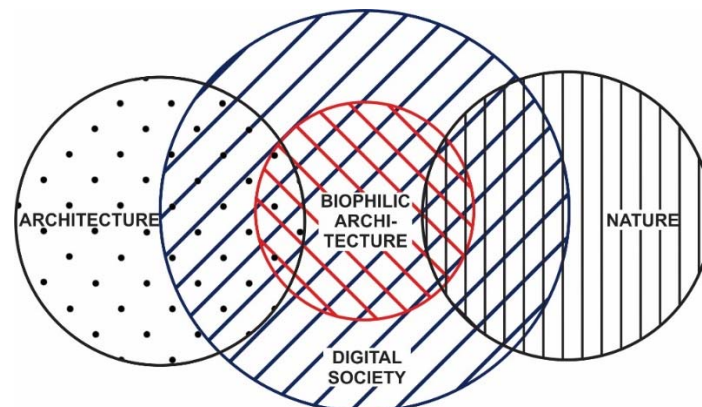


Figure 10.5. Relationships among digital society, architecture, nature and biophilic architecture
 Source: Studio processing BPA- research, 2017

CONCLUSION

The relationship between architecture and nature can be understood as a relationship of mutual need in that human history cannot be separated from nature. From the beginning, mankind has integrated its homes with trees, especially in tropical countries, where natural resources are plentiful and well-suited to the local climate. With technological progress come changes in architecture. Construction technology has allowed us to reduce dependence upon natural materials for building structures, using more sustainable materials such as concrete and steel. AC technology has also influenced new architecture, separating us from nature with the use of other materials such as glass and brick.

Segregation of nature and architecture now comes into question as humans feel a desire to return closer to nature and bring nature into the building again. Contemporary architectural exploration is no longer just

about how to overcome discomfort but how architects or designers may create abstract spaces in which nature and natural lighting may articulate a very specific interiority. This is in response to the transformation of modern architecture by Western influences.

With modern technology, roofs and walls may be transparent, and other creative explorations of boundaries are possible, such as contemporary louvers that can respond to heat as well as rain. This provides a new relationship between architecture and nature in which spaces are both beautiful and unique but also very easy to control in terms of temperature and lighting. Architects and interior designers face a new challenge to make use of these trends and technologies and to create a contemporary interiority by using all the human senses to understand abstract space.

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SPATIAL TRANSITION AND SEGMENTATION: SPECULATING STRATEGIES FOR DOMESTIC SPACES IN THE POST-ANTIBIOTICS FUTURE

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ABSTRACT

Post-antibiotic future is approaching. The overuse of antibiotics, which revolutionized medicine in the 20th century, has led to its resistance. Marching along with antibiotics resistance is the rapid degradation of environmental quality. Thus, humans are more vulnerable to bacterial infections and mechanisms of medication are becoming less reliable. When preventive care is on the front line, the built environment should serve as the threshold of defence in between environmental threats and the human body.

This paper aims to examine the idea of the “*dangerous*” outdoors and the state of indoors as the antidote. It will continue to explore the current practice of preserving indoor hygiene and speculate responses to future spatial shifts. Forms of segmentation and transitional mechanism in between outside - inside will be the critical approach to explore the role of the built environment in guarding human health. In addition, this paper will also look back to the pre-antibiotic era before the 20th century, and study the approaches in responding the air and water pollution from the industrial revolution.

A study on different practices of transitional space rituals and segmentations in hospitals will be conducted. Hospitals have different spatial functions with distinguished steps of transitional cleaning rituals in between, depending on the type of threats and the required rate of hygiene. The examination will proceed with speculations of domestic spaces in the future. Will houses in the future need to resemble hospitals' hygiene requirements? Will there be shifts and additions to spatial programs of a house in response to the post-antibiotic future?

Keywords: hygiene, safety, inside-outside, transition, segmentation

ANTIBIOTICS: PAST AND PRESENT

A. Failure of Antibiotics

The discovery of antibiotics was a significant change in the clinical world. The first antibiotics ever found Penicillin was first applied clinically in the 1940s. One of the applications was for the treatment of wounded soldiers during the World War II. Following that, more than 100 new types of antibiotics were discovered, treating varieties of bacterial disease. The invention of antibiotics and its success in curing the sick created a vision of the world without incurable disease.

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The over-optimistic future caused by antibiotics discovery was dubious when the progress of new antibiotics discovery went stagnant after the 1980s. They caused some bacterial diseases to remain untreatable. In addition, high dependency on antibiotics led to over-prescription and wrong perception of antibiotics. In many parts of the world, antibiotics are understood as the medicine to all types of disease, including the non-bacterial disease. Extreme use of antibiotics in the medical world will lead to the effectivity of antibiotics, which often called as antibiotics resistance.

Antibiotics resistant is a threat to mankind. Even a small cut can lead to life-threatening consequences if no antibiotics are not able to cure the infection. A report by Jim O'Neil (2016), an economist who has focused on looking to the problem of drug-resistant infections estimates that by 2050, drug-resistant infections kill one person every three seconds. It is equal to 10 million deaths per year. Although the number seems substantial, in fact, it has not included some procedures that are highly dependent on the use of antibiotics. Organ transplants, hip and joint replacements, C-sections, gut surgeries, and cancer chemotherapy rely on antibiotics prescription to ensure their safety. Unless the government begin to take drastic steps now, this phenomenon will continue to hit rock bottom.

B. Combating Antibiotics Resistance

There is an urgency to fight against antibiotics resistance from another point of view. The goal to either find the new types of antibiotics or reduce the wasteful use of antibiotics are doomed to failure. So far pharmaceutical world failed to discover new treatments that can replace antibiotics. Besides, the attempt to reduce the use of antibiotics went stagnant. If cure care approach becomes less effective, preventive care should be on the front line.

Infection control to minimize transmission of disease should be the major effort to combat the problem of ineffective antibiotics treatment. In an article titled *The Plan to Avert Our Post-Antibiotic Apocalypse* (Yong, 2016), several steps to fight against antibiotic resistance is discussed, among of them is to improve sanitation. The attempt to improve sanitation may be different in scale of intervention. While ensuring access to clean water becomes the priority on the larger scale intervention, the more intimate intervention resides in the effort to reduce infections in healthcare settings. Environmental condition is the key point to prevent the occurrence of infection and eventually reduce the dependency towards antibiotics.

This study examines spatial strategies to prevent the spread of infection in the built environment. A case study of hygiene management in hospital settings is done to understand the strategies used in the hospital to prevent infection. Hospital is chosen to be the sample of built environment due to its periodic exposure to infection as the space for medical care delivery. Hospital has different spatial functions with distinguished steps of transitional cleaning rituals in between, depending on the type of threats and the required rate of hygiene. Findings of spatial organization is extracted as spatial segmentation and transition methods. Later, it proceeds with speculations of domestic spaces in the future as anticipation to un-effectivity of antibiotics.

THE IMPACT OF ENVIRONMENT ON HUMAN HEALTH

A. The Dangerous Outdoors and The Safe Indoors

Extreme minimization of infections is required in the world without antibiotics. This premise resonates with the current healthcare trends that gravitate to the direction of prevention as opposed to cure. People who work in healthcare world have realized the importance of keeping people healthy. Therefore, environmental safety becomes the key point in the effort to support preventive care model.

To reduce the complexity between the two opposing environmental conditions, we classify the two states into; the *safe indoors* and the *dangerous outdoors*. The idea of both safe indoors and dangerous outdoors traces us back to the very existence of architecture. Architecture, which separates the idea of inside and

outside, acts primarily as shelter from environmental threats. Human protects themselves from the summer heat, heavy rains and freezing snow by building themselves sets of walls, roofs and floors. This makes safety as one of the cores of architectural discourse.

In the case of environmental safety, the outdoor is often perceived as the uncontrolled and full of harm to human health. Air pollution, hazardous microorganism, and the risk of getting infected by air-borne transmitted disease most likely come from the outdoor space. The idea to have an indoor space by building boundaries to separate it with the outdoor is a tactic to have more control over the environment. Thus, the invasion of hazardous substance and microorganism to the indoor can be reduced.

One extreme case of indoor-outdoor separation shocked the world in 1971. David Vetter, better known as the Bubble Boy was born with severe immunodeficiency. Vetter was incapable of having normal contacts with the ordinary environments. He spent 13 years of his life living in a literal bubble of the germ-free environment, secure from the "dangerous" outdoors (Kirk, 2012). Objects that needed to go into the bubble underwent sterilization processes, and skin-to-skin human contact is impossible. The connection between indoor and outdoor is completely blocked, leaving no access to cross between them. This case will assist us in comprehending the concept of preventive care from the dangerous outdoors especially with the fact that environmental quality keeps degrading in an unforeseeable nature.



Figure 1. David Vetter, "The Bubble Boy" was completely separated from the outside world.
Source: <https://www.sciencelearn.org.nz/images/185-david-vetter>

Without antibiotics, multiple pandemics of disease is inevitable, and each of every household must respond to the condition of the dangerous outdoors. In the following discussion about environmental health threats and its architectural responses, we will observe back to the early 20th century during the spread of plagues around the world.

B. The Fall of Architects: Domestic Sanitation Movement

The industrial revolution era in the 19th century was a strong example of the manifestation of the dangerous outdoors. The environmental degradation at the time polluted the air and water, which led to the pandemic of diseases. In response to the environment condition, a clean and safe house was one of the main concerns and an effective method for resilience. During that era, architects were said to fail to design healthy houses, since some cases of disease spread within the house through the unseemingly plumbing system or poor ventilation system.

Referring to the book "Architecture in the Family Way" that was published in 1996, Anne-Marie Adams explained about the existence of the "building-doctors". They are doctors and professionals pharmacist who expanded their medical practice to include the assessment of his patient's houses. They diagnose, treat, and heal architecture as much as they treat their patients. This group call themselves "sanitarians" and collectively as the Domestic Sanitation Movement (Adams, 1996). They were concerned with how multiple scales of spaces between bodies accommodate illness, apart from how the body itself acts as the setting for the disease. Adams continues to elaborate some of the architect's chores to use undecorated surfaces, curtainless windows, built-in furniture and toxic-free wallpapers on the design for maintaining the healthiness of its occupants (Adams, 1996). Because sanitarians were the main professional service for healthy buildings at that time, architect's work shift from exterior design to focus fully on interiors such as furniture, decoration and material furnishing of the house.

Victorian houses in the late 19th century have a dedicated space called "the sick room" for family members who are ill. The sick room is an ordinary room located aside and furnished accordingly to serve the sick (Adams, 1996). The room is far and isolated from the rest of the house to minimize cross-contamination between the air. Circulation of the sick and the rest of the people living in the house is set afar to minimize contact. The access is maintained to be reached through an interior hallway and exterior door. Usually, this room is also equipped with a window so the sick people can still be monitored from the outside through visual connection and direct contact can still be limited.

With the discourse of the post-antibiotic future, the demand for professional sanitarians might arise. Presumably, architects will have to equip themselves with the knowledge from the Domestic Sanitation Movements to be able to answer the future speculated demands. As opposed to the request for big windows and open terraces, the resistance of antibiotics may lead to a very enclosed and hygienic space preference. Our houses might follow principles for the spatial organization of hospitals in the future.

THE ARCHITECT'S STRATEGY FOR INFECTION PREVENTION

A. Case Study: Hygiene zoning system in hospital

Hospital has elaborated hygiene zoning system to minimize the case of hospital-acquired infections (HAI). To ensure the safety of medical process and products, hygiene control is necessary. Hygiene zones are divided based on the types of medical procedures to be performed in each room. In general, the hygiene standard in hospitals is guided by two general categories: clean and sterile. Clean is defined as a condition in which a place is free from dirt, stain, and marks (Rowley et al., 2010). Usually, sterile rooms accommodate major medical procedures that expose the inner part of human body. In rooms that require sterile standard, more procedure is needed before accessing them.

Avoiding contact with the objects from outside clean or sterile area is important in minimizing infection (Howard & Hanssen, 2007). The separation between different hygiene zones can be detected by the requirement of personal protective equipment. In clean zones, medical staffs are required to wear scrub and cover or change to special footwear for the room. Sterile zones have more restrictions. In addition to scrub and footwear cover, medical staffs must cover their hair, wear a mask, and sometimes latex gloves. These requirements are known as "APD" or Self Protection Equipment.



Figure 2. Left: Dressing requirements in clean zone. Right: Dressing requirements in sterile zone.
Source: Fauzia Evanindya. October 12th, 2017.

The separation between clean and sterile environment is most elaborated in the surgical department. It is the most strictly regulated area regarding the hygiene and access because procedures that expose inner side of the human body are operated here. The surgical department consists of support and clinical spaces. Based on the surgical room technical guideline from the Ministry of Health in Indonesia (2012), rooms in the surgical department are divided into five categories.

Table 1. Zoning in surgical department
Source: Widya Aulia Ramadhani. November 6th. 2017.

Zone		
Risk	Hygiene level and requirement	Color
Low	Normal	Green
Medium	Normal with pre-filter	Green
High	Semi-sterile with medium filter	Yellow
Very High	Steril with prefilter, medium filter and HEPA filter, positive pressure	Red
Nuclei sterile		

Zone 1 is the low-risk zone with normal procedure regarding the hygiene requirements. It goes through regular cleaning but demands no special treatment for accessing it. The area outside the surgical department considers in zone 1, including registration room, family waiting room, janitor room, and soiled utility room. Zone 2 is medium risk zone. There is a pre-filter procedure in this area. This zone includes doctor room, nurse room, staff pantry, patient holding room, locker room, and transfer room. As a transition zone, patients from the nursing unit or other places are received here before getting into the surgical department. Usually, if the patient is transferred to a bed, the patient is moved from the nursing unit bed to a transfer bed from surgical department. The third zone is high-risk zone or usually called as the yellow zone that requires a semi-sterile and medium filter. People accessing this area should follow the clean room dressing requirements. Including in this zone are preparation room, induction room, scrub

area, recovery room, linen room, and utility room. Zone 4 is very high-risk zone, often referred as the red zone which is a sterile area with pre-filter, medium filter, HEPA filter, and positive pressure. Surgery suite belongs to this zone. The last zone a nuclei sterile zone which is the operation table. These zones are identified with the yellow or red stripe on the floor in every threshold to access the spaces.



Figure 3. Colored-strip on the floor to define the entrance to the yellow and red zone.
Source: Fauzia Evanindy. October 12th, 2017.

Strict regulations are applied whenever people are crossing between zones. For people entering yellow zone, they must follow dressing requirements for the clean area. There are usually locker rooms positioned as a buffer between green and yellow zone. Hence, people are forced to go through it to change and store their belongings before entering the yellow zone. To access red zone, people are required to follow dressing requirements for the sterile area. Hair, nose, and mouth should be covered. In addition, there are scrub stations for additional cleaning procedure before entering the area. Dressing requirements function as the layer between body and space. It prevents microorganism from the human body to enter the clean and sterile zone. Prohibitions to wear shoes, white coat, and other accessories from outside (green zone) are part of the strategy to minimize intervention from outside hazards. Hence, to maintain the hygiene level of the yellow and red zone, two strategies are applied: adding the layer of protection between body and space and prohibiting certain objects to be brought into the area.

Restrictions on object transfer between zones are also regulated. For the case of transferring patient from nursing unit to surgical department with a gurney, there is a transfer zone. Gurney from the nursing unit is brought to transfer zone. Then, the patient is moved to transfer gurney from the surgical department. Transfer gurney is not allowed to be moved outside the yellow zone because it is considered clean. For smaller objects like surgery tools, they have to go through sterilization process in central sterile supply department (CSSD). CSSD is compulsory to have the direct connection with the surgical department. In CSSD, the flow of objects is directed in one flow. Soiled utilities enter through the dedicated soiled entrance, brought to sterilization area, and finally packaged in clean utility room before being transferred back to the surgical department. The similar flow of objects is maintained in surgical department. Clean utilities and soiled utilities should not pass through the same access. Therefore, there is usually inner and outer corridor surrounding surgical suites to distinguish flow to avoid crossing between clean and soiled utilities.

The systems applied in hospitals to minimize the occurrence of hospital-acquired infection are done in two main methods; assigning zone and regulating the flow between zones. The zoning system is assigned to ensure the limitation of exposure from outside hazards. Hence, medical staffs are required to follow certain dressing requirements when they access the spaces. Besides dressing requirements, there is additional

marking system on the space to warn the change of zone with different hygiene or risk level. Both human and object transportation between zones are highly regulated especially in the surgical department because wrong flow can risk patients who are involved in major procedures.

Separating spaces with different hygiene and risk level is important, but access in between should not be ignored. In this study, we will elaborate the strategy to maintain the connection between two areas while keeping the principal isolation between the spaces. The explanation about spatial segmentation and spatial transition methods for infection prevention strategy in hospitals will be furthered discuss in the next sub-chapter.

B. Analysis: Spatial Segmentation and Transition

Gender, age, and/or activity function often trigger the creation of boundaries in unbounded space, hence creating a segmentation system (Kent, 1991). Segmentation is implied in the way people utilize the space. Different types of functions and procedures impact the way people treat the spaces in hospital. In this case, segmentation is drawn by the hygiene level. Boundaries are defined through the assignation of color coding for different hygiene zones. Assigning red, yellow, and green zone for spaces in the surgical department can be understood as segmentation system in hospital spaces.

RED-YELLOW-GREEN ZONE

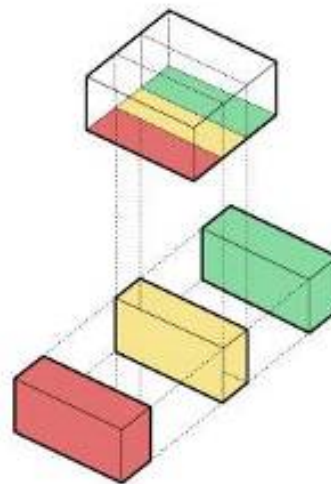


Figure 4. Conceptual diagram of the red, yellow, and green zone in the surgical department.
Source: Widya Aulia Ramadhani. December 22nd, 2017.

Hospitals are one complex system of many types and networks of rooms. Defining the many spaces in the hospital into three categories. Using color to name the zoning system in hospitals to help people to understand the level of hygiene required; red for the highest and green for the lowest one. To access red zone, people must go through the yellow zone first. Yellow zone acts as a buffer between the two very distinct space. In the hospital, green zones are basically all spaces in hospitals that can be accessed by people without having to wear additional coverage for their body. This is somewhat similar to the outside spaces beyond hospital territory. Hence, the risk of infection in green zones are the highest because there is no filtering system for people, object, and air circulation. As a buffer, yellow zone is considered a clean zone. It has some regulations for people accessing it, but not as strict as the red zone. Dressing requirements in yellow zone follow the regulations for clean area standard. Some objects that are prohibited to be brought to red zones can be stored in the yellow zone. Additional layer for outfits can also be found and wore here. This zone is crucial as an additional separation between sterile and non-sterile area.



Figure 5. Left: Tutorial on putting on self-protecting equipment. Right: Tutorial on taking off self-protecting equipment. Both posters are found in yellow zones.
 Source: Fauzia Evanindya. October 12th, 2017.

As a three-dimensional object, yellow zone acts as a spatial transition between higher risk area and lower risk area. Similar characteristics can be seen in the isolation room. It is a fixed space with the controlled environmental condition and limited access (Zardini et al., 2012). The function is to separate patient with very low immunity system or patient with high risk of transmitting infectious disease. Isolation room can be found in regular nursing unit or intensive care unit. The goal of this room is to isolate the patient room as the “inside” from the hallway that is considered the “outside”.

Isolation room always has an anteroom that acts as a buffer between the “inside” and the “outside”. The idea of segmentation in isolation room is more elaborated because it includes the prevention of cross-circulation of air between zones. Air pressure is managed to regulate the direction of airflow. Isolation room for a patient with the contagious disease has lower air pressure than the outside so the air will not circulate out. In the other hand, the air pressure inside isolation room for a patient with low immunity system is set lower than the hallway. Hence, air circulation into the room can be prevented. To prevent air cross-circulation, the door between hallway to the anteroom and the door between anteroom and isolation room can not be opened at the same time. Having an additional room in between adds more protection for the patients because the risk of air cross-circulation air flow is higher without it. Similar to the yellow zone, anteroom is the place where people put on and take off body protection equipment. Usually, a hand-washing station is a presence in the anteroom to ensure hand hygiene of people before and after giving treatment to the patient. Equipment and procedures implementation in anteroom serves as a filtration system between the “outside” and the “inside” to minimize infection risk in hospitals.

Yellow zone and anteroom is the perfect example to demonstrate the concept of spatial segmentation and spatial transition. Both spaces act as a buffer between two zones with different status of hygiene. Spatial segmentation involves a partition that defines the separation between zones. In order to move between zones, access is needed. The most common form of a threshold between two segmented spaces is a door. It is often complemented with a label or signage to inform people that they are about to transition between two spaces. In surgical departments, a colored label on the floor is the tool to define spatial segmentation. Separation system in spatial segmentation is more conceptual and demand less procedure than spatial

transition. There is no need to completely conceal one space from the other. Hence, a two-dimensional object like a wall with the door as the access is enough for segmenting spaces.

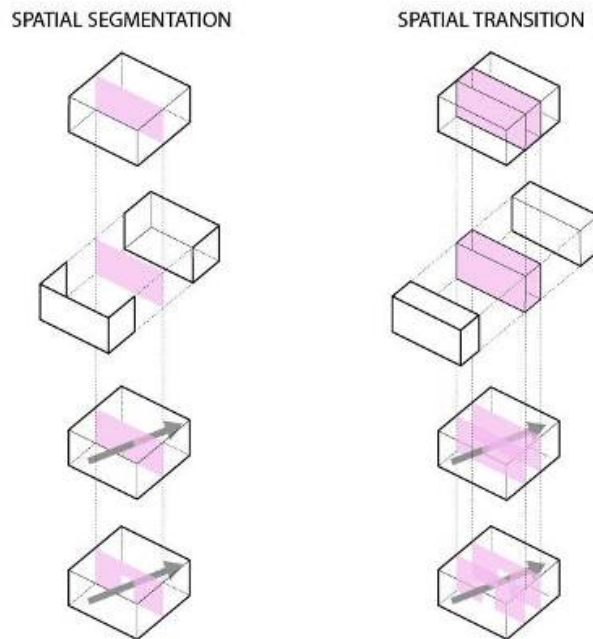


Figure 6. Diagram of spatial segmentation and spatial transition.
Source: Widya Aulia Ramadhani. October 24th, 2017.

Spatial transition needs a buffer space in between because it demands complete segregation between two spaces. Anteroom separates the isolation room with the hallway. The yellow zone has a similar function on a bigger scale. It separates surgical suites with the rest of the rooms in a hospital that belong to the green zone. Spatial transition is more pragmatic and involves more procedures. A three-dimensional buffer serves as the place to store equipment and objects needed for filtering the introduction of harm between zones. The “in between” room in spatial transition can be understood as a neutral zone. It adds additional distance between two distinct zones that are not supposed to interact in any way. People conduct the procedures and follow the requirements before moving from one zone to another zone. For instance, the availability of shoe covers, scrubs, masks, and hair covers in anteroom are part of the required dressing for people who are about to access isolation room. Similar to spatial segmentation, access is needed to transition between zones. Therefore, doors are put to allow circulation. However, strict regulations on door opening procedure are implied because a thorough separation between two zones is highly mandatory.

FROM HEALTHCARE INSTITUTIONS TO OUR HOMES

Shifts and additions to spatial programs in domestic spaces are inevitable especially in response to an ever increasing number of infections. Types of space are always evolving as reactions toward environmental triggers outside the architecture itself. Although the idea to implement spatial organization strategies into houses has long been applied in Victorian Houses in the late 19th century, adjustments to the current trends and conditions should be arranged. Spatial segmentation and transition principles as infection prevention strategy in hospitals can be used as the framework to construct design principles for domestic spaces.

In the radical future, houses will need to resemble hospital's hygiene requirements. Even though the average human spends more time outside the home, a house is very much a place where we seek security. To further explain the speculations of design principles for homes regarding the spatial shifts, we will elaborate it through situational guidelines on three critical points within the domestic environment:

1) Entering the house

This is the most critical point, which is the segmentation between the dangerous outdoors and safe indoors. A typical Indonesian house has two entrances; the main door and a side door that is mostly accessed through the garage. Houses in the future will acquire anterooms as a space for transitional activities. Adapting the concept of anteroom prerequisites in hospitals to houses is necessary to provide a transitional space as a point for filtering and cleansing. Washing basins and hand sanitizer, as well as racks to store shoes, bags, and outer clothing should be provided. The simple strategy to differentiate things that belong to the outside and limit their access to the rest of indoor space within the house can significantly reduce the introduction of outdoor hazards to house occupants. It is also possible that in the future, an additional piece of sterile clothing will be mandatory. This strategy puts the transitional space as borderline for visible dirt and invisible bacteria. In response to the post-antibiotic future, virus and bacteria acquired outside should be banned from penetrating the domestic space.



Figure 7. Objects in hospital's anteroom that can be adapted for anteroom in houses
Source: Fauzia Evanindya. October 12th, 2017.

2) Navigating between bedroom and bathroom

The idea of using the sick room in Victorian houses can be implemented in regular houses. Having a dedicated room segregated from other rooms can provide the possibility of segmenting the house in case one member of the house got an infectious disease. Although this scenario is not likely to happen, a house should have a contingency plan to encounter such case. Letting a sick person living in a bedroom with bathroom inside is the ideal scenario. This room should be put away from the main space of the house. The house should at least separate the access for a sick person. However, if this strategy is not feasible, the house can adapt the marking system in the hospital. Instead of putting a permanent mark on the floor as a labelling system, the house can use the lighting system that can be used depending on the occurrence of the case. For instance, installing an indicator lamp to communicate house members to stay away from the corridor because a sick person is passing through it. When the indicator lamp is off, it means that other people can go through the corridor freely without any risk of crossing with the sick person. The strategy to provide alternative flow and labelling system can be useful to limit the spread of germs to other people within the house.

3) Using the kitchen

The kitchen is the space where crossing among clean and dirty stuff mostly occurs. Hospital's method to use colored-stripe on the floor can be adapted to warn people that they are transitioning to the kitchen which has different hygiene level. The kitchen can be considered a higher risk area because it consists of objects and activities that expose human to potentially infectious materials. Activities in the kitchen include storing, cooking, and cleaning. They produce both dish and trash. The flow in which dish and trash are transferred should not go through the same way. We suggest that kitchen has two ways access, one

connecting to the clean zone where the eating activity takes place while the other access connects to the outdoor. Access to outdoor is necessary for air circulation as well as access to release dirty materials out from the house. Certain design objects can raise people's awareness about two distinct zones. Separating with walls and a door for access is an option. However, if open kitchen plan is preferred, the flooring configuration can be managed to announce the separation of zones. Just like the stripes on hospitals flows, they do not necessarily separate the space as a three-dimensional object, but it works as the symbol that creates two different segments of the space.

Implementing spatial segmentation and transition methods in domestic spaces is necessary to be done. Spatial segmentation in the form of zoning system used by Victorian houses and hospitals share the same principles to separate high-risk zone with the rest of the building. This method will be applied in future houses by maintaining advance control on the opening, access, and flow. Spatial transition in the form of anterooms will appear to emphasize transitioning phase in-house entrances and spaces between rooms. The flow of circulations will be more thought out to anticipate the possible case of the infectious disease in the house. The spatial organization will allow temporary separation if needed to prevent cross infection among occupants of the house. The way dirty household products are mobilized will be different from what we experience now. Object circulations within the house are going to be strictly regulated to prevent crossing between clean and dirty objects. Implementing these strategies in houses are necessary to anticipate the risks that will be brought by post-antibiotic future.

SEGMENTATION AND TRANSITION IN FUTURE HOUSES

In the future, there will be shifts and additions to spatial programs of houses in response to the post-antibiotic future. It will follow certain spatial organizations and regulations of hospitals. The house, as a domestic space, needs to be set as a safe place. As human health gets threatened both by the degrading environment and the coming antibiotic resistance, designing houses should be followed by precautions about the future situations. Therefore, learning from hospital's spatial system becomes relevant.

Hospital's hygiene requirements are translated into two main methods: segmentation and transition. As the hospital is continuously exposed to many types of diseases, it is difficult to prevent the exposure of outside hazards within the hospital environment. However, hygiene should be carefully maintained in hospitals because medical procedures in different risk levels are performed here. Therefore, spatial segmentation and transition method are implied.

Spatial segmentation is more conceptual. It involves spatial objects, with numerous ways and methods of application, to define two distinct zones. On the other hand, the spatial transition is more procedural. Due to the critical requirement to separate two zones, a physical buffer room is often needed. Both spatial approaches may be implemented in domestic spaces based on different situations.

From this study, we conclude that houses in the post-antibiotic future will need to resemble hospital's hygiene requirements as translated into spatial segmentation and transition methods. Thus, practising architects should come together to respond to this coming situation by speculating solution. Because by the end of the day, every human needs a safe place to come home to.

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BLACK HOLE ARCHITECTURE

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ABSTRACT

Buildings are like black holes within the urban fabric, channelling us through to alternate built realities, helping to create a universe consisting of multiple viewpoints or 'worlds'. These worlds or realities are to a degree created by each individual's perception and understanding of, and interaction with, the physical environment. Architects design buildings to fit into, or help manifest the world as they see it, or as the possibility of the world (or fragment of reality), they see could exist, or does exist, but is often hidden (or not noticed). Architects do not build representations of reality. Architect build reality. These multiple scattered objects are manifestations of the real, forming nodal points which reveal reality. Our buildings change the surface of reality. These architectural objects can shift our relation and awareness of the real.

These black hole objects work as systems of Interiority. How do we, in architectural or urban terms, understand our relation to the real? How do we experience and understand architectural space and surface that, like a screen-vortex in the urban fabric, mediates the internal with the wider field of reality? How do we design in these situations?

Keywords: black hole architecture, space junk architecture, Nervegna Reed Architecture

INTRODUCTION: BLACK HOLE ARCHITECTURE

Defining levels of reality is fundamental to the cinema, for both filmmakers and audience alike. Architects and designers define reality through the act of building. Due to our constant exposure to the media, a cinematic understanding of reality has become an undercurrent to our everyday spatial consciousness.



Figure 1: The PEP Dandenong exterior (L) and interior (R) has a perforated screen with optical black hole surface to the public plaza. Nervegna Reed Architecture. 2012 Photos John Gollings

Moving through the modern city there is a common splicing of 'realities' which seems to occur in both the 'imaginary' cinematic city (eg: Bladerunner), the city infiltrated by the logic of the theme-park (Las Vegas) and the 'normal', 'real' city (Melbourne, New York City). The reality system that we experience in Melbourne is similar to most modern cities. The New York City grid is dispersed with monads and zones of architectural

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reality such as Raymond Hood's Rockefeller Centre, Mies' Seagram black hole, Wright's Guggenheim vortex, Edward Durrell Stone's decorative surfaces and countless others.

Using the black hole as a heuristic system for how we interact with architecture and reality is not intended in the strict scientific sense, although the science of black holes enhances the investigation. Here I am using the term in its popular science fiction usage which infiltrates the cinema and everyday life, where the black hole is a portal or vortex to another space-time (past/future, near/far), and brings with it the notion of another 'world' or 'reality'.

The universe would seem to partly exist in our perception of it, and is necessarily made up of multiple shifting perceptions or 'realities'. Architecture forms a large amount of the matter perceived, a combination of form, surface and space that come together in the object. In this reality made of billions of perspectives, these points of view are like multiple worlds within our mental universes, a universe based on difference.

On a popular level, new suburbs and places are systematically given the aura or signification of other 'worlds' or 'realities' by their designers, developers and marketers. The developer delivered 'world/reality' borrows (often unconsciously, unintentionally) from the theme park (Sorkin, 1992, p. xiv). We are not consciously creating 'theme park' worlds and are not building a representational system, but we are manifesting multiple unique built realities (through the designed architectural object), creating pockets of an ever-folding paradoxical complex reality. This has a multi-vortex effect. This cinematic experience of reality is usually almost subliminal. A triggering of consciousness of reality can possibly occur if there is a shift or mutation in the object or the object/context relations in the wider urban field. To the developer it might look like most 'progressive' architects are all creating the same alternate 'world', but actually the differences in these explorations and manifestations of the real are infinite and vast.

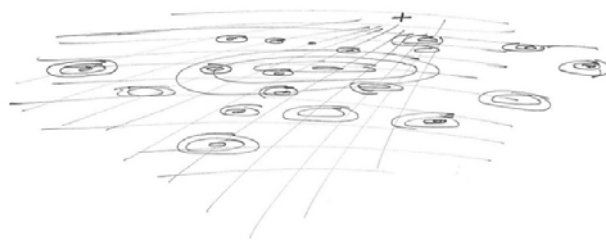


Figure 2: Diagram sketch of a city grid with superimposed black hole nodes both general (groups of buildings and areas) and specific (individual buildings and interiors) creating intersecting, folding reality vortices.

Each building becomes a mini 'reality-monad' in this heterogeneous reality of multiple objects and shifting points of view. This is what we design and build. This is the situation our design actions are inserted into, intentionally or not. The buildings we design and build allow people the possibility to heighten their experience and awareness of the real, as well as assess their relation to reality (or realities) through architectural objects, interior and exterior.

Using this metaphor to help us understand how buildings work in relation to our experience and understanding of reality can be useful and even enlightening, as it allows us to contextualise what we do when designing buildings and spaces.

The notion of architecture embodying an alternate vision of reality is most obvious in the tradition of utopian architecture and urbanism. The history of architecture is littered with attempts at manifesting possible utopian realities. We can see this in unbuilt and built urban schemes and buildings, from Boullée and Ledoux to Le Corbusier's Voisin Plan, his Obus Plan, Wright's Broadacre City to Brasilia to drop city to the Nakagin Capsule Tower, and also in a multitude of small building from the Schroeder House to The

Barcelona Pavilion and Villa Savoye. The utopian architectural impulse is the most obvious manifestation of architects attempting to manifest and insert an alternate reality, to change what is real, into our everyday experience. Many serious but 'non-utopian' works are also asserting a type of spatial and physical architectural reality into the chaos of our urban sprawl. This utopian urge within architecture is not science fiction representation but the urge to transform everyday reality.

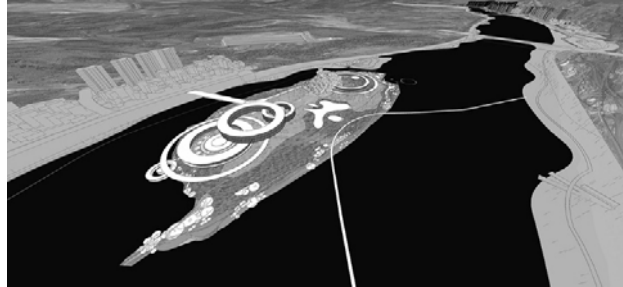


Figure 3: 30km Masterplan Sichuan. The island vortex is distinct from the other proposed reality nodes dispersed over the city. Nervegna Reed Architecture / USDG.

It would seem that it is not only 'utopian' architecture, which attempts to manifest an alternate built reality. All buildings in some way manifest a built vision of their own reality, not necessarily aiming at an 'alternate reality', but just another 'reality', sometimes defined by minute difference from others, the reality of the architectural object. We can see this if we compare a standard suburban house with a recent 'designer' speculative house, an architect 'designed' house or a mud brick house. Each situation allows us to attempt to understand an aspect of the real.

Even the seemingly non-intentional buildings that make up 95% of our built fabric manifest their visions of a reality on a fairly primitive or subconscious level. We can see how the 'Las Vegas system' of every building being a 'world' within a world has rubbed off on the everyday practice of developer-driven buildings, even if these buildings are positioned as 'real' or 'normal' buildings.

Therefore, the black hole can be useful as a metaphor or as a diagram of how we visualise, conceptualise and position ourselves in the built environment in relation to the real. The black hole as object is a collection of parts which form nodal points which on occasion awaken us to an experience and understanding of the real.

The black hole is a wormhole to another space and time. Besides the metaphorical function of the black hole being a conduit to an alternate built reality or world, the black hole is also a wormhole to another space and time, bringing them in close proximity to our own time and place. In science, space folds and the black hole is a wormhole between distant galaxies, with different space-time. Of course, this space-time disjuncture is not physically possible in architecture. This scientific aspect to the black hole metaphor has strong architectural possibilities for elaborating the relations of flow to separation and disjuncture in architectural objects/spaces.

Before we look at the specifically architectural implications of space-time and black holes, we need first to compare classical and current conceptualisations of space-time.

Space-time is commonly defined as any mathematical model that combines space and time into a continuum. Euclidean definition of space consists of 3 dimensions whereas time consists of 1 dimension, the 4th dimension.

For Aristotle the normal state of an object was static, and movement was considered the deviant situation from the mean. So for classical philosophy, space was perceived in relation to movement, but now space is

generally perceived in relation to time. However, time is not a constant (it depends on the position and point of view) so three spatial coordinates and one time coordinate are used to define a space-time position or place. As classical spatial construction usually prioritises the experience of movement over time, this foregrounding of movement would usually seem to be aligned with the expression of a metaphysical spatial experience. The foregrounding of time would then seem to express a non-chronological (or possibly 'anti-classical', or modernist) spatial/surface experience. After Einstein and Cubism, movement became the norm and time was necessary to define space, the opposite to the classical situation.

Sigfried Giedion in his 1947 book 'Space, Time, and Architecture' wrote about modern architecture in terms of space-time and that space must be considered in relation to our point of view, which changes with time as we move and change position through it (Giedion, 1947, p. 356).

The Barcelona Pavilion worked as a diagram of black-holeness in architecture in every way. In 1929 Barcelona, it was a vacuum to another reality or possible world. It also prioritised a spatial sensibility in which each element and space is dependent on a time coordinate. In the Barcelona Pavilion, the actual space and 'form' seems to change as one moves through and around it, changing depending on the space-time coordinates.

How does space-time disjuncture work in an architectural context since Mies? This may not be immediately apparent. However, if we introduce the element of the screen, and more specifically the television, then this can help us see the black-holeness of architecture in relation to space and time. Conceptually organising architectural spaces in relation to sheets of time can express this space-time disjuncture conceptually.

THE SCREEN IS LIKE A BLACK HOLE

The screen is also like a black hole. The screen exposes part of the black hole structure that we experience in the modern city, interior and exterior space, and surface. The impressions and experience of space, time, image and reality are all important experiences of the screen and architecture, and the analysis of one can illuminate the other. Linking the screen and the black hole helps us see direct applications of the black hole into architectural surface and space.



Figure 4: The screen is like a black hole bringing other space, time and spatial morphologies into our living room.

The screen has become an integral part of every aspect of our life. The cinema and television screen in all its mutant forms and manifestations is like a portal to another reality, bringing another time and space (and alternate spatialities) into our room. Space-time dislocation is inbuilt into the screens DNA. Buildings are now becoming like 'expanded screens' that we inhabit, black holes taking us to ever new realities. We imagine the world as cinema and television. Landscape has become 'screenscape' as the tabula rasa seems to have been replaced by the screen, that is, the screen as black hole that brings other space times into the present tense of our living environment.

The screen functions a bit like a wormhole that connects two distant spaces and times by bringing them close together in space time, like the screen does every day with sitcoms and news. This is a type of cathode ray spatial disjuncture, which has become our everyday spatial experience since the advent of the

television. The screen has accustomed us to a sense of space-time disjuncture within our intimate architectural spaces. This is a real space-time disjuncture: the news taking place in another continent yesterday in contrast to our place and time today in our living room. Slicing and juxtaposing spatial types and functions is an architectural expression of this modern sensibility.

This space-time disjuncture is harder to actualise in architecture, but it is something, which can be virtualised in the idea of architecture and urbanism in how we orchestrate movement, flow and juxtaposition. It is a concept which can, and has been explored in architecture since the conceptual space-time disjuncture between inside and outside in the free plan of Loos and Le Corbusier's white cube with free (chaotic/cinematic) interior. It is a conceptual shift in architectural composition that organises space and surface in sheets of time, not by continuous movement. Paul Virillio's 'The Overexposed City' (Virillio, 1980) touched on the cathode ray as the new city gate, the camera and screen as the new barrier.

THE FEEDBACK LOOP

How can we conceptualise the organisation, distribution and 'event-horizon' of these architectural black holes? Point a camera at a TV screen with a live image feeding from the camera to the TV and back to the camera until you have a CCTV feedback loop. There is a feedback loop within our universe, in which the real feeds into image and then is projected back as an 'image-of-reality' into our 'reality', becoming part of the real, that is then fed back into 'image' in a constant loop. Both image and reality are aspects of the real. Here the 'image of reality' is repeatedly grafted to the reality it presents like in a hall of mirrors.

The screen is a common surface that brings space-time disjuncture in to the everyday. The surface of the screen separates and brings together alternate space and time, and does the same with the image/reality relation. In the same way that the feedback loop fuses and grafts image and reality, one within the other, to the same surface, we see a similar effect in the architectural object and interior in the wider field of reality. A building or interior might appear as image through its difference from the everyday, but it is actually the real grafted with image via the designer's ideas and actions, intentional or not.

By making ideas into (built) reality architects conceptually turn image into reality. This constant everyday process creates a type of feedback loop between idea/image and reality, where one is inside the other and is multiplied infinitely to a point where they cannot be separated. The daily practice of an architect is to conceptually and practically insert a concept or idea into the real, resulting in a black-hole effect of a few or multiple objects as manifestations of the real side by side in the city. These objects form spatial events which trigger a relation with the real (as the wider field of reality often goes almost unnoticed). Once an idea is built, it spreads throughout the reality of the city and the environment as other buildings are influenced by it.

The image rides shotgun to reality. Architecture shows that the real and image are like a feedback loop endlessly infecting one another, ultimately inseparable and creating an unknown space between. The world has no Platonic hierarchy with image and 'actual' reality. Both are always there and always evolving, mutating, returning. The image is part of the real, grafted like looping CCTV footage.

Guy Debord predicted the current situation of the image accurately. Debord wrote: "The spectacle is not a collection of images, but a social relation among people, mediated by images" (Debord, 1968, p. 2). Part of what Debord describes here seems to be a kind of feedback loop in our lives. On an architectural or urban level, it is not just images (with their relation to signs and abstraction) but architectural surface and space. We cannot separate reality from its images as they keep moving inside each other, becoming one another, becoming part of an ever-shifting looping reality.

The interior and exterior architectural surface, which may sometimes appear as image spread throughout the reality of the city, are actually part of the complexity of the real. The idea has become reality (not representation). The relation of interior/exterior to the real/image binary in the contemporary city is like the sliding of reality into image then into reality (and back again ad infinitum) of the feedback loop of a camera pointed at its own screen. We can now see that in architecture there is not a loop from reality to image and back again. One or the other may appear dominant at certain moments, but actually the loop is the two fused as one all the way.

Nietzsche's eternal return is a way of conceiving of objects (and space) outside the system of the Platonic theory of forms. It also has similarities to the looping compositional strategies of video art, cinema and the feedback loop: co-existing loops, loops of repetition and difference within the loops, loops organising the scattering of objects (on the macro and micro scale both interior and exterior). This is a system which produces diversity. With these tendencies implicit in the loop, we can see that it may have interesting implications for the structuring of architectural and urban compositional strategies. As a diagram, there is also a strong connection between the loop and the Moebius Strip. We can see the loop structure working explicitly in Peter Eisenman's Max Reinhardt Haus tower project (1992) and OMA's CCTV, but we also see it working implicitly in the 1920's plans of Mies'. In Mies we see scattered matter forming nodal points in endlessly repeating space which then become buildings at clusters of intensity. The implication is that the system keeps repeating and scattering ad infinitum, and at some point, the elements would loop around to something similar (but different) to the start point, and then keep on looping. The world becomes an expanded field of scattered objects, elements. We can see that the loop is a particularly modern sense of composition and structure with close links to the screen that has profound implications to the composition of interior and exterior space and form in architecture and the city and the dispersion of objects on all scales, both interior and urban.

The urban field is made of multiple loops of buildings scattered like asteroids. The modern sprawl of scattered space junk is made for the feedback loop. The feedback loop is a system of the image and the real which can order the architectural vortex of the black hole system, and also provides multiple structures for the production of architectural variation and diversity, mediating the event-horizon/surface between the black hole interior and the black hole city.

The endlessly mutating and shifting loops with varying intensities of objects (and spaces) help form overlapping impressions of black hole zones which work in a more subliminal way than the intense black hole object within the zones.

SPACE JUNK ARCHITECTURE

Space junk is a conceptual framework for the architectural object that allows us to work with the characteristics of the black hole system. It has possibilities for the event-horizon/surface interface between the wider field of reality and the individual nodal points of objects and interiors. The building as space junk forces a rethinking of architectural object/context relations and can help define relations to space, time, image and reality and also explores the relations of the chaotic scattered object in the loops of modern sprawl.

There are many buildings and built situations for which the metaphor of space junk is useful as a way of generating architecture and urbanism. The space junk metaphor can help negotiate issues of context, function, semiotics and typology. Rem Koolhaas' seminal essay Junkspace (Koolhaas, 2004) feeds off a space junk metaphor to describe what Henry Miller termed the 'air-conditioned nightmare', the ever-spreading and mutating architecture of the mall, the airport, the debris of modernisation/modernism. Is it possible that continuing the metaphor and conceiving of buildings as space junk might be a way of working with and

countering the effects of the present situation? This could be a useful way of working with the seemingly endless unplanned sprawl of modern civilisation, making the antidote from the disease.



Figure 5: The Arrow Studio as space junk sitting in the field like a blurred reflective vortex. Nervegna Reed Architecture.

The modern city is defined by a complex relationship between flow and disjuncture. The loop controls flow of the city and interior, and space junk controls the internal and external disjunctures of the object. To work with this sprawl of disconnected but continuous looping junkspace of the modern world, space junk can help us explore the complexity and unknown aspects of the architectural object in the individual instance. If much of reality goes unnoticed through its everyday 'distracted' (Benjamin, 1939)¹ nature, the conscious space junk building can wake us to a recognition of the unknowable complexity of the real.

In their 1970's science fiction, novel "Roadside Picnic" Arkady and Boris Strugatsky portrayed an almost present-tense world in which aliens go space-tripping around the universe, stopping off at various worlds with curb appeal for an outer-space variation on the roadside picnic. They leave behind alien space junk like humans leave cigarette butts and tin cans by the freeway. These space junk objects are recognised by humans but not totally understood. The humans study the space junk like unknown but possibly understandable data, trying to find out the answer to the gravitational and space-time bending effects of the zone in which the junk was left. The space junk is recognisable but unknowable. It seems to have an aura, a perceptual, and a physical effect on the surroundings in which it lands. The stalkers enter the zone and steal the space junk, selling it on the black market as scientists hope to find answers and others, propelled by the hype surrounding the space junk, hope to find the mythical Eldorado of the space junk that will solve all their problems and desires. The Strugatsky brothers later wrote the screenplay for Andre Tarkovsky's *Stalker*, a variation on the concept of *Roadside Picnic*, utilising the loop structure and space junk together. The idea of buildings as the space junk left over from intergalactic picnics is evocative for the conceiving of architectural insertions into the modern sprawl and built environment in general.

Our relation to buildings, objects, matter and the fragment, and how we experience and understand them can be enlightened by conceiving of them as space junk. One of the many ways of thinking about this is like how the Strugatsky's describe our relation to the space junk after the alien visit to the zone. But there are other levels of the metaphor as well. Outside the world of science fiction, space junk is man-made debris floating in zero gravity, littering the universe. Our experience of buildings, spaces and junk triggers consciousness on levels of experience, recognition and cognition and the space between these. What are the characteristics of Space junk? Primarily there is the effect of the object (space, surface or fragment) on the viewer, the zero gravity displacement, the unknowable depths of the reality of the object and the knowledge of the object as other. This is not just the intended effect of the 'author' of the work, but more importantly the accidental effects too. In the space junk metaphor, there is a sense of the disconnection within the sign, as the meaning of the object is ambiguous and not totally knowable. This is a variation of modernism via a type of form-follows-function from another planet, in which the whole building has an

¹Walter Benjamin describes our modern experience of architecture as distracted.

'unknown' but detectable functional logic, like a fragment of a lunar module. We cannot begin to fully understand it without delving deeper. The full reality of the object can never be fully understood. This way of conceiving buildings mirrors our relation to the real. It is also an apt description of much of the modern built environment.

Louis Sullivan's 'form follow function' had the intention of a direct semiotic relation between signifier and signified, form and content. The semiotic implications of space junk would possibly break this relationship or complicate it, invert it, reverse it, mystify it. The space junk complication of the sign's signifier/signified relationship is relevant to the individual architectural object/space/event but also in the analysis of typology, and urban morphology, the relation of the interior to exterior reality and object/context relations. There is a disconnection, a disruption, between all of these.

One significant experience of space junk and its relation to architecture, is the building that is driven by an internal logic of its own, an almost alien logic, that makes sense to the 'aliens' or aerospace engineers but not to us as pedestrians. This is the half understandable building and half mysterious. The building where there is not a straight continuity between signifier and signified. Paradoxical functionalism. So, as a result, we detect the presence of a logic in the interior of the object but do not actually know what that logic is. This can help elaborate the pockets and folds of reality in the black hole system of our environment as the architectural object can awaken us the unknowable depth of the real.

The object/context disjuncture common to both the readymade and the suburban sprawl can be manipulated and mediated to interesting ends via the space junk model. The object/context disjuncture of the modern world relates to the space-time and image-reality dis-junctures and grafting of the black hole city. A space junk system or metaphor is a system for exploring context relations in new ways. It allows for various other issues to enter the design rather than just those in the immediate vicinity (reality) and determined by obvious function or program. Space junk becomes a methodology for inserting a set of alien relations and elements into a context that might not seem directly related to the immediate surrounds (social, physical, morphological or political), but is actually exactly what will achieve the unexpected (and unpredictable), but desired result. Space junk as framework allows for various other issues, political, social or theoretical, to enter the design, when previously they may be excluded due to the logic of context or rational functional planning. This can be a way of inserting a type of free association of objects which trigger a contemplation of the nature of the real, within the structure and space of the buildings in the urban field.

Space junk is a useful working metaphor when designing in the system of black-hole urbanism that I have been describing. Space junk can help mediate the wider reality field with the nodal point objects and the black hole interior.

BLACK HOLE INTERIORS

If the modern city is like a scattering of overlapping zones and architectural black holes, then what is the interior space of the dispersed architectural objects? How is the interior/exterior mediated? How can we negotiate the modern sense of space-time overlap and disjuncture and that of the image/reality feedback loop? The house is a good place to consider these issues.

The Raumplan of Loos and then the Free Plan of Le Corbusier can be seen as cinematic spatial disjuncture par excellence. The concept of the white cube exterior as three-dimensional white screen, with dis-associative relation to a chaotic or picturesque interior, relates closely to the pre-television experience of the cinema screen as white surface with other spaces and temporalities inside it.

The free plan as outlined by Le Corbusier in point 3 of his 'Les Cinq Points d'une architecture nouvelle' (Frampton, 2001, p. 72) in 1926 and as elaborated in the Citrohan houses conceived a disjuncture between

the pure white, repeatable exterior and the free individual interior. Le Corbusier also explored this idea in his larger housing schemes such as the Obus plan, where a single building could foreseeably contain multiple pockets of the real, and multiple lifestyles and ideologies.

The white wall of 1920's modernism read as a repeatable datum for an unknown interior experience. The white screen-like surface played off the dark windows and voids that acted as black holes to the interior experience, connecting the interior space and exterior reality like a wormhole. In 'Year Zero: Faciality' Deleuze and Guattari (1999) discussed the white wall of signification and the black hole of consciousness in terms of deterritorialization from face to landscape, and by extension we can apply this to architectural surface.



Figure 6: The White House Prahran. The domestic interior as reality vortex distinct from the surrounding environment. Nervegna Reed Architecture. Photo John Gollings

The 'event-horizon' interface between the surface or image of the exterior reality and the interior space was in Mies' more fragmented than the white cube/black hole formula of Loos and Le Corbusier. In Mies' buildings, the gaps between the walls became black holes to the interior experience which fragment into the garden and the wider environment. Later the advent of the television screen and then the growing proliferation of the perforated architectural surface would begin to gradate the surface, the black hole and the void into the space of the surface that blurs into the interior spaces.



Figure 7: The PEP Dandenong conceived as urban 'space junk' with unknown functional logic dropped into the public plaza. Nervegna Reed Architecture. 2012. Photo Toby Reed

CONCLUSION

The black-hole concept shows us how by eclipsing the classical concept of a single unified reality, space and time, it can open us up to an architecture and urbanism which is multi-dimensional and more in keeping with modern theories of perception and experience (as demonstrated to us by cinematic subjectivity and objectivity) and scientific knowledge of the object. In this world of multiple, spliced, juxtaposed, overlapping, realities that architects (and others) design, everything is real. The black hole system of architecture shows us a glimpse of how buildings are subliminally experienced and how even the most ordinary un-designed space junk lying on the side of the freeway can provoke a consciousness of reality.

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THE CONCEPT OF ART THERAPY SPACE FOR URBAN WOMEN MENTAL HEALTH THROUGH DRAWING ACTIVITY

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ABSTRACT

The body is a sensory receptor by which we perceive and interact with the room and the surrounding environment as well as other climates, objects, bodies, energy, feelings, spirit, codes, social and cultural signs.

Physiologically the body will receive excitatory coming from within and outside of itself. Consciously or not, this will affect a person's psychological condition if this influence is felt beyond the limits of human ability in receiving or avoiding it. The approach to art therapy especially drawing is believed to help one to describe the stress it feels. Through the methods of therapy presented by Liebman, Buchalter, Matchioldi, and Rubin, the trainees can rediscover their peace of mind. This confirms that there is a close correlation between the method of drawing therapy and the recovery of participants' mental health.

Sigmund Freud has analyzed dreams, feelings, thoughts that are mostly tangible images (visual). From these facts, Freud then concludes that a person who feels frustrated will be easier if you can visualize. The notes are non-verbal information.

The relaxation applied to the therapeutic participants, in addition to referring to theories in which the activity of drawing into the main thing in mental recovery must require the concept of interiority that suits those needs that are analyzed from the process of relaxation, post relaxation, and self-actualization needs through the drawing exercises. Intensive, subsequently exhibiting the work it has produced in accordance with needs analysis and ergonomic and anthropometric standards.

Keywords: art therapy, mental health, urban society, interiority

INTRODUCTION

Many factors in big cities could trigger problems in life that require attention and role of government and society to reach solutions, especially in terms of flow, comfort, and security of traffic and transportation. These conditions such as uncontrollable traffic density plus internal problems of city dwellers in large cities often lead to stress. The accumulation of stress which improperly handled will decrease a mental health condition of people.

The main issue in this paper is mental health women in the productive age which face working routines as their daily activity besides their duty as a housewife. Those involve burdens and challenges in both working places and home, which draw a decline of physic and mental health of these women and emerge the degenerative diseases that could endanger them.

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Generally, a life in large city demands competitiveness in the various aspects for career women and housewife, which creates almost the same pressure and challenge. Urban dynamics expects people to move efficiently and effectively in a society that could trigger external factor of stress for urban women. Every day is a challenge for them on their way to working place, facing many obstacles such as traffic, overcrowded public transportation, safet

In addition, conflict of double roles in career women life causes the higher level of stress for them compared to men. These double roles as a worker, mother, and wife at once are the internal factors leading to stress (Jacinta, 2002 in Retnaningtyas, 2005 in Widito, 2011).

Long-term of stress could lead to depression as for resulting mental disorders. In terms of handling this illness requires proper action in both of pharmacotherapy and non-pharmacotherapy. Pharmacotherapy is chemically recuperation with drugs by prescription, while non-pharmacotherapy is doing psychotherapy by having certain activities and psychoeducation to raise the awareness of their illness and stigma.

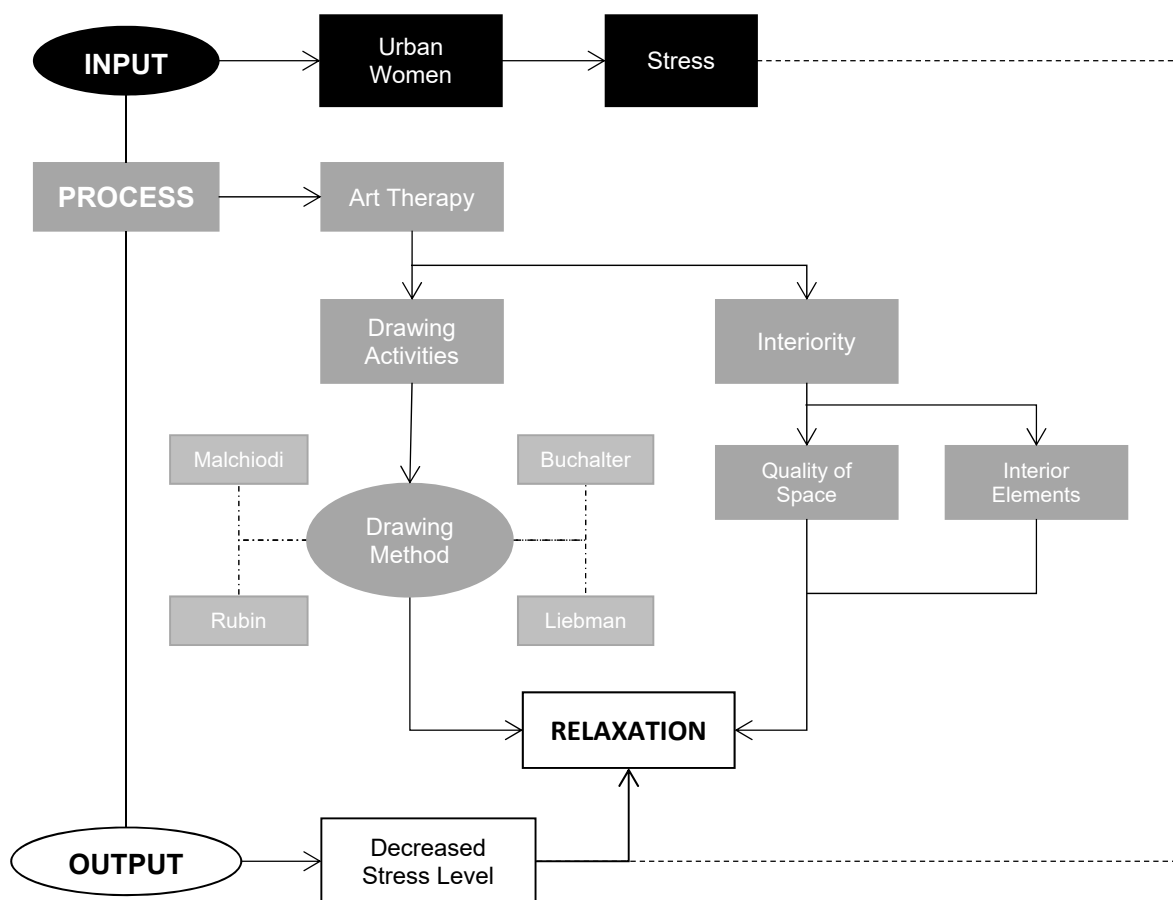


Figure 1. Diagram of Thinking Process
Source: Created by authors

Art especially painting in its application could be used as therapy for recovery in overcoming psychological problems. In the past, art therapy itself has been widely used as therapy for depression, stress, and others. Since the 17th century Renaissance in France, found evidence show many psychiatrists in that era was used painting media as a recovery tool for mental disorder treatment. The patient could express their feeling and think in lines, scribbles, and colors as a self-healing in the process of art therapy.

In order to reach a self-healing in drawing activity, space is absolutely needed to facilitate the activities. What kind of space that could maximum relaxation through drawing activities? What elements of space needed to assist this activity? The method to answer these questions is using a qualitative approach by studying and analyzing the spatial need and interior elements based on drawing activities as art therapy. The result of this qualitative analyze is descriptive data and image or gesture in art therapy by doing drawing activities.

RELATION OF URBAN WOMEN AND STRESS

Stress is an individual's psychology, physiology, and behavior reaction when a person experiences an imbalance between the demand and his ability to fulfill his duty at a certain time. Selye defines stress as a non-specific body reaction to some demands that exceed his capability (Bambang Tarupolo in Retnaningtyas, 2005 in Widito, 2011).

According to David A, (in Retnaningtyas, 2005 in Widito, 2011), stress is an automatic response from the body including people mindset and the changes, also challenges and other demands which encountered in every part of everyday life. Moreover, Hawari (2008) stated that stress is body response, which is non-specific, against his burden of demands. The body shows negative response when suffering from the excessive workload, such as malfunction of internal organs.

The symptoms of stress are often missed as for that the early stages of symptoms arise slowly. Amberg (1997 in Dadang, 2008, in Widito, 2011) divides stress into several phases. This is the table of stress phases

Table 1. Phases of Stress
Source: Thesis of Anindyo Widito, 2011

Phases of Stress	Symptoms of Stress
Phases 1	The lightest stage of stress provides unusual feelings, great enthusiasm, nervous, unnoticed of decline energy.
Phases 2	The loss of pleasure feeling as the first impact of stress, the emergence of complaints due to lack of energy, tired to wake up in the morning and all day long, heart pounding and body tighten.
Phases 3	The complaints become more realistic and annoyed, such as indigestion, muscle tension, unstable emotion, and insomnia.
Phases 4	Lose the ability to respond adequately, unable to perform daily routine activities, sleep disorder accompanied by nightmares, concentration and memory decreased, excessive fear and anxiety arise.
Phases 5	Physical and mental fatigue deepened, the inability to complete simple daily work, acute digestive system disorders, a growing sense of fear and anxiety, easily confused and panicked.
Phases 6	The climax stage has panic attacks, fear of death, heart beating fast, hard to breathe, trembling and cold, sweating profusely, vulnerable, and fainting or even collapse.

Regarding Soewondo (1995 in Widito 2011), urban life could be seen through behavior, relationships, work style, the use of leisure time, expenditure, fashion and eating habits. The main characteristics are a busy life, high workload, the desire to move forward and tough competition. Urban life is a unique lifestyle that affects and reflects on people behavior. In this kind of society, values shifts in quick pace and family life are undergoing a lot of restructuring, for example, there are more mothers who are working. As working women, they are directed to live in an urban modern society which is more complex and full of tension that could lead to stress.

Generally, it is not easy to play a double role as a career woman or a woman worker as well as a good housewife, both worlds have the same demands and consequences. Additionally, many companies judge those female employees are often less professional after marriage and having children. For instance, often

coming late to the office with reasons of taking care of the house, her husband and children (Vida in Sawitri 2005 in Widito, 2011). According to Sawitri (2005 in Widito 2011), women are required to simultaneously succeed in both domestic and career life. Apparently, the demand ultimately causes women unwittingly demanded themselves to succeed well in two areas of life. Most women who undergo this dual profession are women aged 18 to 40 years who are called as early adult woman at this age (Hurlock 1980: 246).

Natalia in Soewondo (1995 in Widito 2011) found five important things in her study that cause stress from 300 mothers who work in Jakarta. It is a feeling of guilt, sex discrimination in the world of work, frustrated by not having time for hobbies and sports, the accumulation of workload, and the influence of family life on the job. Therefore, working women have a greater risk for stress and experiencing symptoms of other mental disorders.

DRAWING AS ART THERAPY AND RELAXATION

Art in general defines as a direct inner language of a human. People could thoroughly express their emotional feelings, as well as their thoughts about others, whether done personally or socially. Collingwood (1958) stated, *"By creating for ourselves an imaginary experience or activity, we express our emotions; and this is what we called art."* It means that people could convey happiness, sadness, victory, and trauma through artwork as a visual expression. Since the era of Cro-Magnon Caves thousand years ago, the process of creating possess various meanings for improvement, rehabilitation, and transformation in relation with physical, psychological, and spiritual well-being (Sayogya,2008 in Widito,2011)

Based on the definition of art, art could be a tool for therapy or called 'Art Therapy'. Art therapy covers the linkage of the creative process to the healing powers, in which people can express themselves imaginatively, authentically, and spontaneously. After that, they can fulfill their desire to perfect their emotions and transform it.

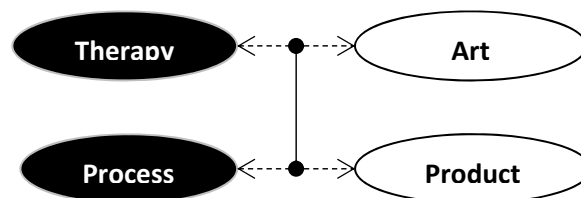


Figure 2. Diagram of Art Therapy
Source: Created by authors

The product of art in the process of therapy transforms into a means of communication that exposes emotions, conflicts, traumas, problems, and others. Getting satisfaction, conflict resolved, change the mindset, healing and development of spiritual mind (Sayogya,2008 in Widito,2011). Sayogya also stated that the process of producing art (drawing or painting) will be the easiest way to express very complex emotions. The drawing could be a vital form of communication and as a release of tension. Psychotic images are sometimes childish, primitive, and confused, but can also be very pretty (Rubin,2010).

Images can create a sensation of pleasure, fear, anxiety, or calm. There is evidence that one can change a mood and even cause a sense of well-being (Benson, in Malchiodi, 2003). For example, a picture of a favorite food will be able to produce saliva when looking at it. Each individual can inform their idea by using stick figures, numbers, lines, colors, shapes, abstractions or realism to describe their thoughts (Buchalter 2009: 31).



Figure 3. Examples of Drawing as Therapy in Ruang Induk
Source: Author's personal documentation in Jakarta Creative Hub

Art therapy through drawing can be held in various methods either individually or in groups. According to Liebman (1979, 1981, 1984), by doing group art therapy, each individual can enhance the general social purposes to reach better relaxation. For instance, awareness, recognition, and appreciation of others, cooperation, involvement in group activity, communication, sharing of problems, experiences and insights, discovery of universality of experience/ uniqueness of individual, relate to others in a group, understanding of effect of self on others, and relationships, social supports and trust, cohesion of group, and examine group issues.

Drawing allows the opportunity to communicate the thoughts, feelings, concerns, problems, desires, hopes, and dreams in a relatively short time. It serves as a vehicle for expressing unconsciousness as well as conscious issues and beliefs. According to Silver (2001, 2002) in Malchiodi (2003) in Anindyo (2011) said that images can replace words as the main channel for receiving and expressing ideas. Drawing can be used as a parallel language either oral or written words; can reflect emotions; and can help identify, assess, and develop cognitive skills.

The meaning of relaxation is to make the body and mind relaxed and there are many ways in which relaxation is performed. Drawing activities as a means of releasing emotional expression will lead to relaxed conditions. According to Malchiodi (2003: 309): Art therapy, like other forms of therapy, often occurs in groups to understand interpersonal dynamics or explore ways to interact more effectively. Group situations, including art therapy groups, of course, create opportunities to communicate, interact, negotiate, and other kinds of personal interaction.

SPACE IN DRAWING ACTIVITIES AS THERAPY

Space, in general, is not determined by the human relationship with space or buildings yet, it is more important to review from people relationship with other people. It means that the most important concerned is the way space facilitates and inhibits these relationships (Lawson, 2001). Moreover, Barker (1968 in Lawson 2001) stated that the congruence between people's action, physical, and social settings could lead to synomorphy in places. The most important of great forces work in space are privacy and community and other great forces include in ritual, display, and surveillance.

In the terms of spatial needs, Bryan (2001) argues that there are three important things needed, for instance, stimulation, security, and identity. Stimulation means that space should be able to satisfy very high-level emotional needs of people such as amusement to relieve from bored or release stress to reach relaxation. By security of space, people are able to avoid high-level of uncertainty and change, also fulfill a degree of stability and structure in lives. Identity is the need to belong somewhere, or the need to be located in space in order to return to their roots of life. The idea is that settings of space diverse based ongoing activities in order to generate security. It also can modify as an adjustment to local needs and norms.

Discussion about therapeutic space has been developed following the development on the treatment of mentally ill. Schutz and Wicki stated that psychiatric facility is no longer like filmmakers who portray the mental hospital as a prison with wide white corridors. The concept evolved to reach better result in treatment that architecture could support the healing process. It is architectural manipulation of space that can provide the platform for other natural factors like sound, light, color, privacy, views, and smell to propose a healing environment (Grinde et al, 2009).

Based on Lena's conclusion from Evidence-Based Design (EBD), there are several spatial needs that should provide be in healing environment, for instance five senses includes vision, hearing, smell, touch and taste, the connection with nature in order to get the sufficient amount of fresh air and daylight, avoidance of the stress factors such as noise, bad air, bad lighting, and lack of privacy, the working space large enough to alleviate stress, and lastly the needed of space for spiritual issues, also variation and "playfulness" in the architecture. EBD is the basis of decision-making related research about built environment to achieve the best result in healthcare as a part of accreditation and certification.

Based on the experiment of Widito (2011), the space needed to perform art therapy through drawing activities is a space that is large enough, with natural and artificial lighting. The room can be equipped with entertainment facilities such as radio or music. A good ventilation is enough for air circulation and the access to the toilet is nearby. The room must be quiet as for relaxation activities or meditation.

Additionally, lighting influences the feeling and emotion of people that it affects impressions and perceptions of the people in a room and the amount of self-disclosure (Miwa & Hanyu, 2006). Another study showed that natural light has a positive effect on stress and feelings of anxiety, which means the availability of natural light may be helpful for reduction of negative symptoms (Dijkstra, Pieterse, & Pruyn, 2008; Pressly & Heesacker, 2001). Generally, the more pleasant, relaxing, and calming lighting are dim or soft lighting rather than bright lighting. Pressly & Heesacker (2001) stated that by combining soft lighting, full-spectrum light and natural lighting facilitates greater disclosure and positive impression of spaces.

Spacing and sitting arrangement as the spatial role is one of the important things in art therapy in which space can affect and change people's feeling and determined how they interact with other or not feel pressure about the environment. According to Malchiodi, art therapy activities can be done either individually or in groups with the assistance of others such as psychiatrists or family involvement. Authors try to make an alternative layout related to the position of the table and chairs when the therapy through drawing activities is held either individually or in groups.

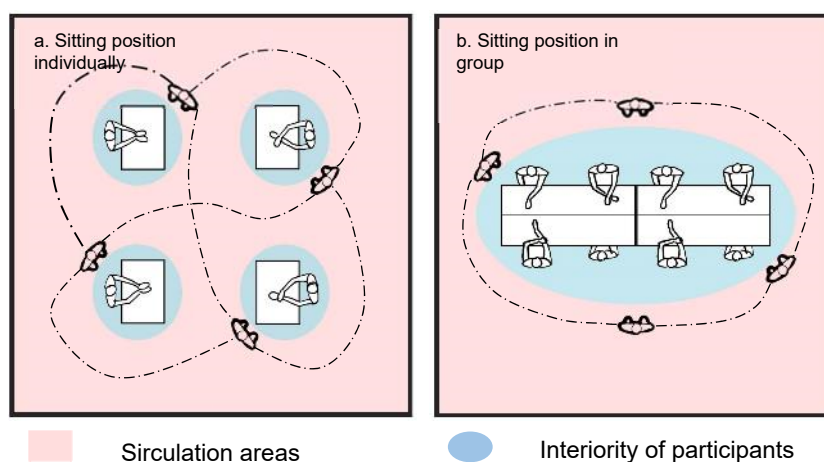


Figure 4. Alternative Layout of Drawing Therapy Space
Source: Created by authors

Widito also stated that in a group of drawing therapy activity, space affects several things in the process of therapy. Groups that have narrowed space and less lighting are strongly discouraged. As an art therapy room it needs a wide and bright place with sufficient lighting and also it could make participants comfortable when discussing and running group activities. This means that the space occupancy must be diseased with the number of individuals who will perform the art therapy activities. Additionally, the use of furniture should also be adjusted to the number of available individuals. According to Anamarie (1996), the use of excessive furniture can cause confusion in people who are sick including people who experience stress and psychiatric disorders. Because people who stress do not like the confusion or profusion of ornament and furniture in space.

Space of drawing therapy should facilitate the participant's freedom of expression through image and counseling (Fastari, 2016). Based on her research, space should provide privacy, an adequate lighting, bright enough, comfortable, and free of items that do not support the therapeutic process.

The ambience becomes an important supporting factor in the activity of drawing therapy, such as conducive atmosphere can provide comfort to the participant during drawing activity. This conducive atmosphere is built between the facilitator and the subjects in the form of good communication, mutual respect, and openness.

Moreover, Fastari (2016) in conducting her research on drawing as therapy and relaxation to reduce stress levels found that some participants were more comfortable sitting in chairs and drawing on the table, others chose to sit on the floor and do drawing activities there. These indicate the sitting position when drawing, which can also affect a person's quality in performing drawing activities, relating to comfort and preferences in a drawing. Drawing activities conducted in a group should not violate the personal space, as one of the spatial needs for healing environment is privacy. It is important in order to arrange the activities for low esteem participant so that they can be more relax and confident about themselves. There are three alternative positions that can be done when doing drawing activities, first sitting position on the floor, a second sitting position with a chair, third by standing.

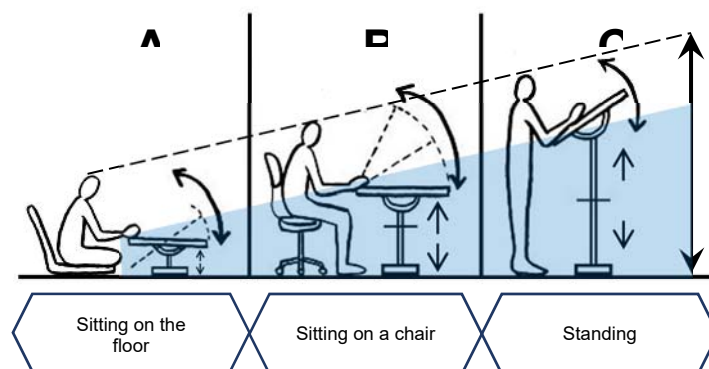


Figure 5. Alternative Position of Drawing Activity
Source: Created by authors

Based on the diagram, authors assume that using adjustable furniture can provide a variety of position choices to participants in drawing therapy. In addition, the table can also be adjusted to the angle of the slope because the slightly tilted table position is an ideal position to produce images that are not distorted in a drawing. These adjustable furniture are for individuals yet it could be arranged in the layouts as the picture below in order to hold the group activities.

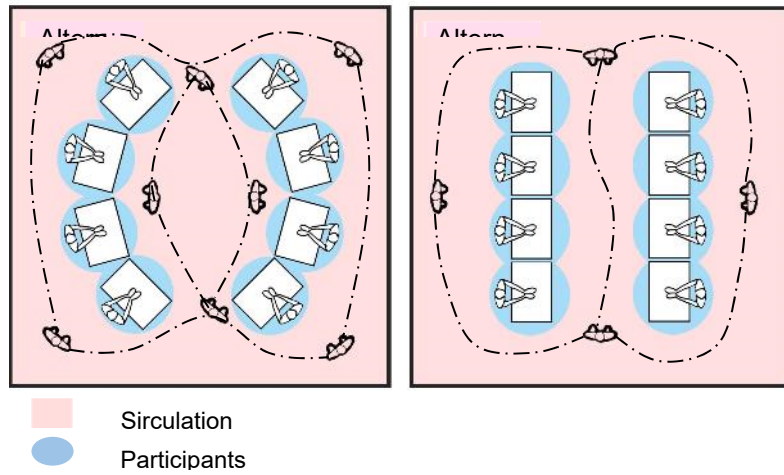


Figure 6. Alternative Layout of Drawing Activity
Source: Created by authors

The figure seven below is an example of adjustable that already used in public, which could be a reference for adjustable furniture for drawing activity.



Figure 7. Example of Adjustable Furniture
Source: <https://m.facebook.com/ARCFLY/posts/1823375291024408>

The size of the table can also be customized according to the drawing method used in therapy. For example, drawing circles, boxes, and others enough need small areas for drawing, whereas line drawings and use of watercolor according to feelings require a larger table area as illustrated.

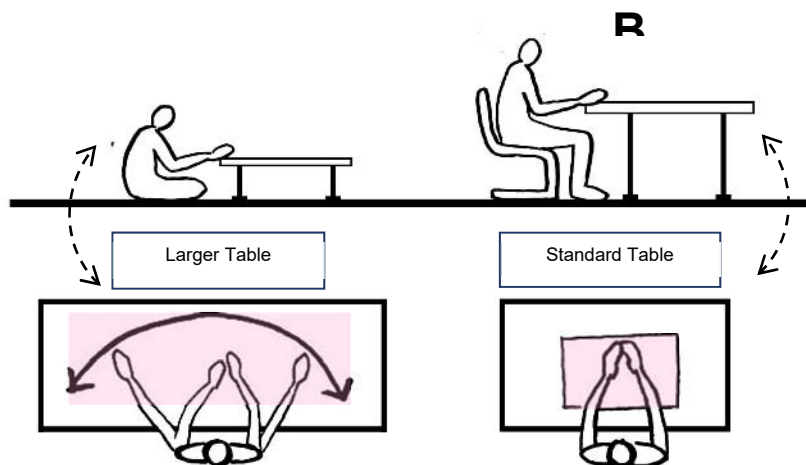


Figure 8. Alternative the Size of Table
Source: Created by authors

Surely, the use of the size of the table can also be adjusted to the drawing position preferred by the participants of the therapy. Tables with large area certainly could not be tilted and used in a standing position, but can be used on a sitting position on the floor or on a chair. The standard table area can certainly be used with a variety of different seating and tilt positions.

The use of materials for drawing and painting such as drawing paper, acrylic paints, pencils, ballpoints, markers, crayons, watercolour, scissors, glue, used magazines or newspapers, colored papers and others, can be considered in furniture selection and other interior elements used. In principle the materials used are materials that could be easy-to-clean, not exposing chemical reactions which can contain toxins and other harmful substances when interacting with the human body and materials used for drawing.

CASE STUDY: RUANG INDUK, JAKARTA CREATIVE HUB, CENTRAL JAKARTA

Case study for this paper is Ruang Induk which is a joint drawing activity organized by Egglustrian, co-office of Jakarta Creative Hub. Ruang Induk is chosen as a case study because of the location in the center of the urban area. It is located in Grha Niaga Thamrin Building, 1st floor, Jl.KH. Mas Mansyur, Kebon Melati, Tanah Abang, RT.2/RW.8, Kebon Melati, Central Jakarta, Indonesia.

The building itself is an office building which has a total of eleven floors. It is located in the central business of Thamrin and Sudirman, near shopping centers such as Thamrin City, Plaza Indonesia, Grand Indonesia, and Tanah Abang Market. Surrounded by office buildings especially Sudirman Central Business District made Jakarta Creative Hub strategic and appealing location, and there is also a local government office and an apartment in front of this building. The building also has easy access to reach several destinations because it built near the highway. Therefore, the building becomes one of the centers of Jakarta's congestion.



Figure 9. The Location of Jakarta Creative Hub

Source: Edited by authors from <http://www.streetdirectory.com/indonesia/jakarta/>

This event is held every Thursday at 17.00-20.00 WIB, except during national holidays, which are hours of people going back from office, and it has been held since last June. The program is free and open to the public. It aims for workers who are lost in traffic after office hours, and people who live in the building to relax by drawing. The proportion of male and female participants is three to two. The women that participated in drawing activity come from diverse background and different age ranges. Mostly, they are career women in productive age who are deprived of the excessive workloads in office and congestion. Furthermore, it is clear that the number of females in need of relaxation is quite a lot, which is represented by the need of drawing in art therapy for urban women.

There are two options of space that has been used to hold this event, café and *makerspace* area. The use of each area depends on the number of present participants during the event. The event usually is held in café area unless the huge number of participant comes that day

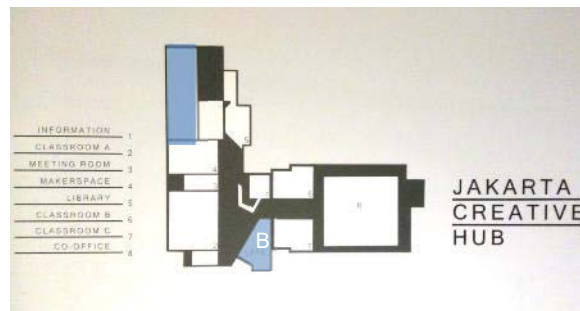


Figure 10. The Location of Ruang Induk Activity
Source: <https://www.wego.co.id/berita/jakarta-creative-hub/>

Both areas have adequate building utilities such as proper lighting, good air circulation, and the availability of supporting facilities such as tables and chairs. The drawing activity itself is done in groups either in small or big groups as the initial idea of this activity is the desire to do drawing activities together with a community.



Figure 11. Doing Art Activities in A Group by Sitting on the Floor
Source: <https://www.instagram.com/ruanginduk?hl=en>



Figure 12. Drawing Together By Sitting on the Chair in Café Area
Source: <https://www.instagram.com/ruanginduk?hl=en>



Figure 13. Drawing Together By Sitting on the Chair in Makerspace Area
Source: <https://www.instagram.com/ruanginduk/?hl=en>

In this Ruang Induk activity, it was found that participants preferred to do the drawing by using the available furniture in the area, which is table and chair, although occasionally they are doing art activities without using furniture, sitting on the floor. The participants also tend to rearrange the existing table in order to draw together when it is conducted in the café area. Another case is in the area of makerspace that the existing table is large enough to perform activities together.



Figure 14. Drawing Together By Sitting on the Chair in Makerspace Area
Source: Author's personal documentation

In the cafe area, the existing area is an open space and intersected directly with the surrounding area. The available furniture is the standard furniture that is used for most other cafes, which is a square table shape with size 80x80 cm and height 73 cm for four-seaters.

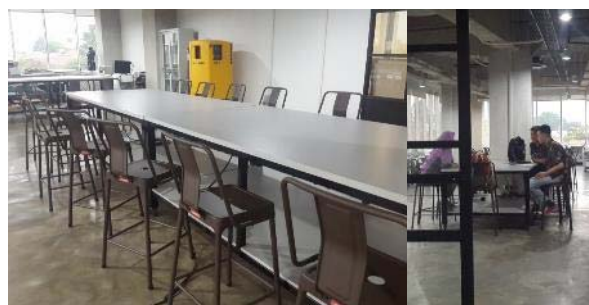


Figure 15. Drawing Together By Sitting on the Chair in Makerspace Area
Source: Author's personal documentation

The makerspace area is an enclosed space that gives privacy when doing the activities, that the area has clear boundaries with other areas. The interesting thing in this area is the availability of furniture which is different from furniture in the cafe area. In this area, tables and chairs are intended for sewing activities, which are larger and higher than standard tables and chairs. The size of the table is 240x120x84 cm (length, width, height) and the height of the chair is 65 cm. It opens the opportunity for the participants to be able to perform drawing activities in groups.

Therefore, there is no specific space that is intended for drawing activities in this event. They just used the available area depending on the number of participants. These activities are carried out jointly by utilizing the existing facilities in each space and allowing the rearrangement of furniture. Table and chair height differences do not have much effect on drawing activities and are adjusted to the participants' needs and preferences.

CONCLUSION

Drawing activities could be an alternative therapy or relaxation for urban society as our findings show that both women and men enjoyed this activity in order to decrease their stress levels. By drawing, a person can expose or express all his feelings, both the momentarily and buried feeling. It can also create the sensation of pleasure, fear, anxiety, tranquillity, and the change of mood.

Space that can maximize the relaxation outcome of art therapy activities through drawing should be able to meet the requirements from EBD which is already stated in part four. It could also reconsider the number of people taking the therapy, either alone or in groups. Moreover, space that can facilitate social interaction provides a better relaxation effect than for the individual.

From the explanation and study case mentioned before, it conclude that the the best healing environment to facilitate the drawing activity is a space where can provide the spatial needs such as five senses, the connection with nature, avoidance of the stress factors, the working space large enough to alleviate stress, and lastly the needed of space for spiritual issues, also variation and "playfulness" in the architecture. This space could stimulate and provide safety and identity for the participants that can be interpreted as, no narrow space, good air circulation, easy to reach the bathroom facilities, not noisy, not passed by many people, and good lighting. The definitely needed is the space elements, which is the extension of the human body itself that can interact directly with human, for instance, supporting facilities such as furniture desk and chair, in addition to props and the equipment of therapy, yet the use also should not be excessive so that it does not create confusion and profusion.

Ergonomics factor is very influential to provide comfort and relaxation in a drawing activity. Authors suggest adjustable furniture to be used in this activity as for that it can be adjusted to the preference and habit of participants, both of in sitting position and the angle of slope, also the layout of drawing activities space. Since options and choices can reduce stress and give the feeling of control as a part of their privacy.

Thus concluding author's observation of cases of decreased stress levels in big cities. It gives great hope that therapeutic centers to rehabilitate the mental health of people especially professional women in the urban city can be held in many places in order to create a mentally healthy environment and society. Authors hope that the results of this paper can be used as a preliminary research in order to explore deeper the art therapy space as a method of tackling the psychological problems that exist in Indonesian country, where the need for cheap, easy, and practical relaxation alternatives is very high. In the future, this art therapy space can be opened in a variety of strategic places as a relaxation to relieve stress to achieve peace of mind as long as the requirements of space are fulfilled.

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THE QUASI-MATERIALS OF INTERIOR ENVIRONMENTS

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ABSTRACT

In *Architecture of the Well-Tempered Environment*, Reyner Banham presents a parable in which, having come across an amount of wood, a nomadic tribe must decide how to use it to keep warm overnight: build a structure or build a fire (and burn the wood as fuel). The first of these uses the materials directly to create an amenable interior condition using the tangible materiality of geometric construction. The second, however, generates heat from combustion, thereby creating an intangible, graduated, thermal interiority, which one can draw deeper into, by moving closer to the fire or recede from, by moving away.

Interior architecture has largely been concerned with achieving shelter and creating an interior atmosphere through the dependability and predictability of physical materials. Less often has interior architecture considered the interiority achieved through the temporal contingency of atmospheric quasi-materials (taking a cue from Tonino Griffiero's quasi-things), phenomena such as light, sound, temperature, and humidity. While these often strike one as outside of the realm of designers, their effects profoundly colour our experiences of our environments: the smells of street food, the heat of the metro air exhaust, the veil of fog rolling in.

A selection of student projects probing quasi-materials in interior architecture reveals their nature and potential for making interior environments. More akin to building a fire than fitting out a shell, these projects question existing tenets of interior architecture, while they enable types of interiority that are fluid, graduated and temporal.

Keywords: atmosphere, materiality, interiority

INTRODUCTION

In his account of the built environment in terms of environmental management, *The Architecture of the Well-Tempered Environment*, Reyner Banham presents a parable of the origins of environmental control. (Banham, 1984) With night approaching and coming across some fallen wood, a nomadic tribe must choose whether to use it to build a structure or build a fire. Building a structure uses the materials to create an amenable interior condition with tangible, material construction, and results in defining space geometrically with walls, floors and ceilings. However, building a fire generates heat from the materials' combustion, creating an intangible, graduated, thermal space, in which one is closer or further away, upwind or in the path of the smoke. (Banham, 1984, pp. 18-20) Rather than being about the pleasing organisation of materials, Banham presented the built environment as being chiefly concerned with providing ideal light, sound, heat, humidity and air quality. In absence of these ideals, such as in the dark, arctic chill of a northerly city in the grip of

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winter, interiors effectively relocate us to a more temperate climate.(Rahm, 2005, p. 8) In managing our day-to-day living environments, our interiors transport us to an idealised place and atmosphere.

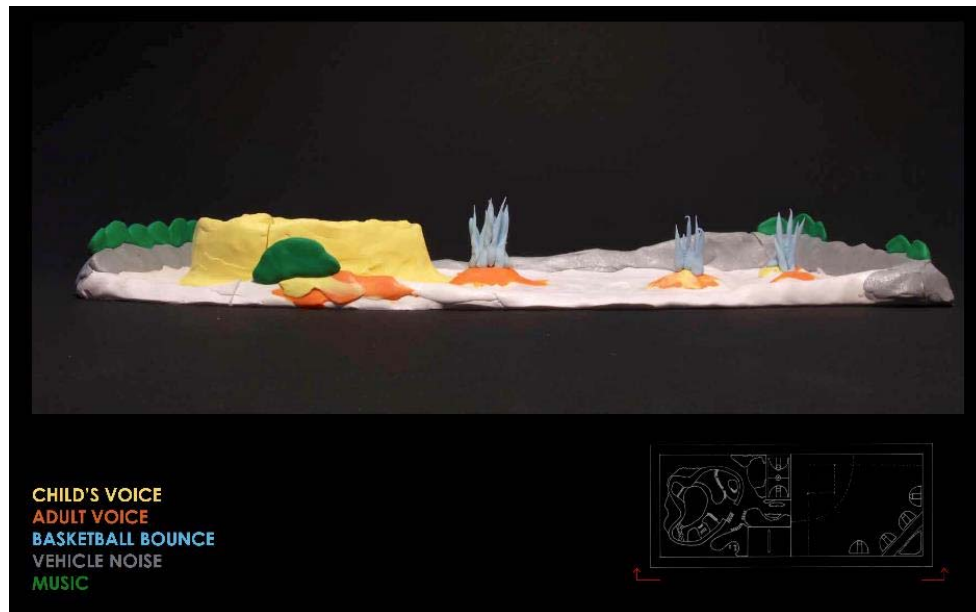


Figure 1. Mapping of sound categories and levels.

More than just providing amenable conditions, these environmental conditions colour our spatial experiences, as we experience the dimensional and material composition of our spaces through them. Yet, when it comes to interior design education, even as our growing awareness of environmental catastrophe has foregrounded energy efficiency, interior architecture has largely been concerned with achieving shelter and creating an interior atmosphere through the dependability and predictability of physical materials. Rarely has interior architecture considered the interiority achieved through the temporal contingency of atmospheric phenomena such as light, sound, temperature, and humidity. Considering these phenomena as materials (or rather *quasi-materials*) thus questions the existing tenets of interior architecture, while enabling interiorities that are fluid, graduated and temporal, as projects by interior design students for environmental technology coursework led by the author demonstrate.



Figure 2. Mapping of air movement inside (l) and outside (r).

ATMOSPHERE AS A QUASI-MATERIAL IN INTERIOR ARCHITECTURE

Architect Peter Zumthor writes that we do not perceive and experience a place directly, but rather perceive its atmosphere. The atmosphere of a place, he argues, is the result of the totality of environmental attributes

simultaneously stimulating the perceptual system, from the air and sounds to materials and forms.(Zumthor, 2006, p. 17) It is thus both material, in that it encompasses the proximity, weight or solidity of objects, and immaterial, in that it encompasses environmental phenomena and how they permeate our interiors. For these reasons, architect Juhani Pallasmaa argues, we sense the atmosphere of a place with our entire bodies: the eye, ear, nose, skin, tongue, skeleton and muscle, and the interactions between them.(Pallasmaa, 2006, p. 31) As philosopher Gernod Böhme writes, we never so much *see* the built environment as we *feel* it with all of our senses.(Böhme, 2006, pp. 399-403) Thus, when we occupy a space, we occupy it aurally, thermally, olfactory, kinesthetically, and visually. As philosopher Tonino Griffero writes, the combined effect of these manifold sensorial spaces in tandem with our perceptions of them creates that powerful, instantaneous first impression when we enter a place and know almost immediately whether we like or dislike it.(Griffero, 2017, p. ix) This is its atmosphere: an *intermediate* and *intersubjective* haze that sits in *between* — and connects — the actively-perceiving subject and the quality-effusing object, and which we move *through* and sense *through*.

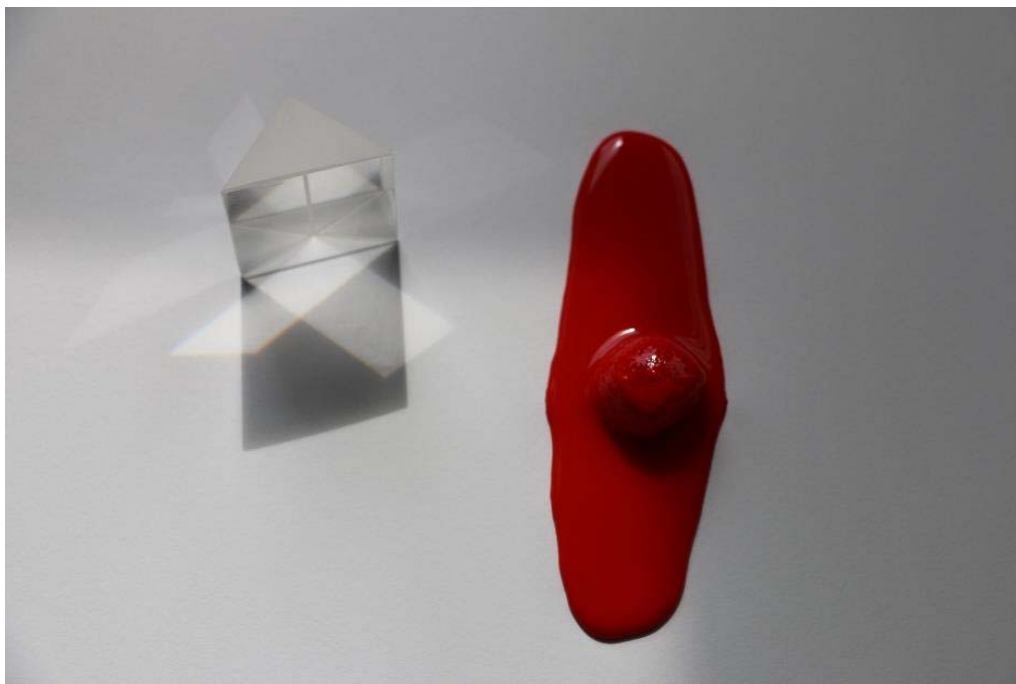


Figure 3. Mapping of heat and light.

Once we accept that architecture and interiors are fundamentally concerned with space, Böhme argues, "... then it is easier to accept architecture's involvement with non-classical, i.e., non-objective means of constituting space, above all light and sound."(Böhme, 2006, p. 405) The spatial practices of architecture and interior architecture can then take into consideration atmospheric ways of making space, from the thermal space of the campfire to the olfactory space of the perfumery to the auditory space of headphones. Suddenly, environmental technologies shift from the role of technical equipment that maintains the functioning of interiors, to that of producers and qualifiers of space with experiential, atmospheric ramifications.

Because of the *in-between* nature of *atmospheres*, they sometimes have the characteristics of tangible things and sometimes not. Griffero calls entities that are "not exactly things" *quasi-things*.(Griffero, 2017, p. ix) Quasi-things comprise an "attenuated form of reality" that can clearly be sensed, but also is clearly not corporeal which occupies the vast space between sensorily-perceived qualities and tangible things. In contrast to the material persistence and geometry of things, quasi-things have neither edges nor sides, cannot be divided, and exist in the here-and-now, without a clear past or future. Yet, despite their nebulous nature, quasi-things can be far more present than things, such as in the case of a persistent dripping sound, and cannot be readily simulated. And, unlike things, quasi-things cannot be readily simulated — only the dripping sound can be the

dripping sound. (Griffero, 2017, pp. 10-11) Not only are atmospheres quasi-things, Griffero argues, but also quasi-things radiate atmospheres.

As radiators of atmosphere, quasi-things colour our spatial experiences and offer the designer potential as materials for design, which have the potential to connect our interiors with larger systems outside. Quasi-things can become quasi-materials, used as part of the interior architect's palette to compose overlapping, gradated interiorities of sound, light, heat and smell. However, because quasi-things are immersive and defy representation, they must be experienced. Making and experiencing them is thus essential for communicating them.



Figure 4. Fog threshold.

MAPPING AND MATERIALISING ENVIRONMENTS

In the Environmental Technology class at Parsons, Interior Design MFA students investigated and experimented with these atmospheric quasi-materials. To increase awareness of how environmental phenomena affect our spatial experience and to consider how to convey their effects, the first project asked students to map two phenomena in both indoor and outdoor spaces without recourse to the usual environmental measurement tools and representation methods. The resulting representations were as varied as the students themselves, and in some cases, even became synonymous with the techniques of measuring. For example, one project mapped categories of sounds to different colours and sound levels to heights to create a topography of modelling clay [Fig. 1]. Another used gelatine, which vibrated in response to sound, to distort and animate light passing through it. Another project recorded air movement with timed photographs of a plastic shopping bag fluttering in the wind [Fig. 2]. Yet another left a glass prism and a frozen cube of red ink on a sheet of watercolour paper for a defined amount of time, which were then photographed, capturing both the melting ink and the light's refraction [Fig. 3].



Figure 5. Polyethylene film sheet undulating in response to air movement.

In exploring the relationship between materiality and environmental reactivity and responsiveness, the students opened up terrain linking the material imagination with the environmental imagination, which they then further explored in the second project, by they producing human-scaled, spatial installations which foregrounded an environmental phenomenon as a quasi-material. In one project, students' experiments with dry ice and water revealed fog's tendency to sink in air, leading them to develop an animate threshold of fog, which created subtle gradations of visual depth and enclosure. [Fig. 4]. Inspired jointly by Hans Haacke's *Blue Sail* of 1968 and their own mapping of air movement, another group suspended a large polyethylene sheet, which fluttered and undulated as it continuously reformed space with subtle movements of air. [Fig. 5]. Another project placed an infinity mirror over an existing lite (or glazed opening) to produce a view into an infinite, luminous space, and create a moment of visual depth [Fig. 6]. More akin to building a fire than fitting out a shell, in harnessing quasi-materials, these projects question existing tenets of interior architecture, as they create interiorities that are fluid, gradated and provisional, exhibiting some of the continual change in environmental qualities that characterises the outdoors.

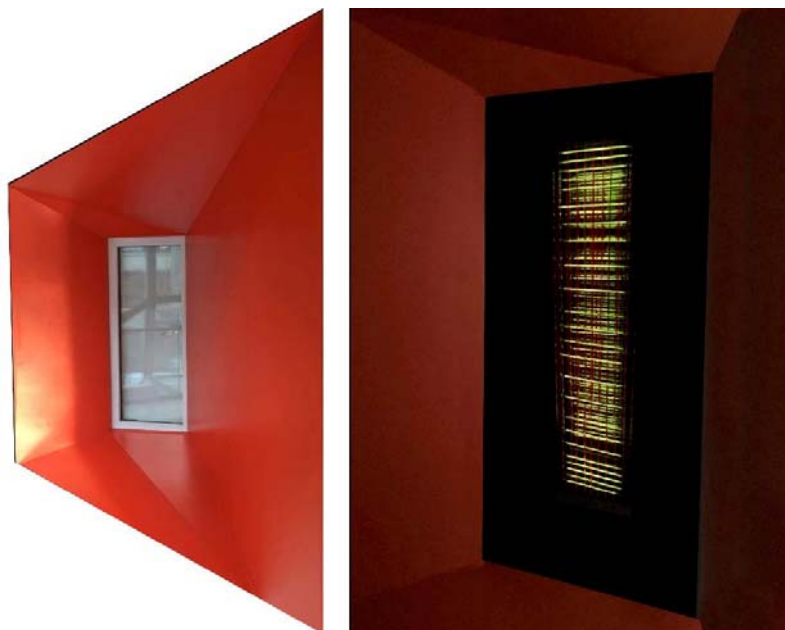


Figure 6. Infinity window (r) and initial condition (l).

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INTERIOR PAINTING AND THE PRODUCTION OF SENSATION

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ABSTRACT

Watercolour painting has a long association with interior (interior space, practice and conditions), both in the documentation of existing interiors and in the visualisation of interior designs. These modes of interior watercolour painting (referred to from here as interior painting) are generally understood as illustration or representation: either replicating an existing interior view or visualising an intended view in a proposed design. In either conception, they are 'of' the interior, a secondary to the 'real' spatial interior. This paper proposes an alternative theoretical framework with which to consider interior painting, informed by the writing on sensation by Elizabeth Grosz and Gilles Deleuze, where sensation (rather than image or representation) is understood as the primary production of art; affecting and intensifying bodies.

This paper examines what is offered up when an interior painting is considered not as a process of illustration, but rather as a production of sensation. When exploring sensation in interior painting, it emerges that interiority might be considered as a condition composed of sensation - produced when resonance occurs between colour, movement and space - a condition that affects and intensifies bodies.

A series of interior paintings (watercolours) by the author are presented here, through which the forces of sensation, vibration, resonance and colour are examined and considered; and an alternative discourse (to that of illustration and representation) in the interior painting is proposed. This research contributes to contemporary discourse around interior and interiority, and to discourse around modes of interior 'representation'; or more appropriately, interior images and 2D practices.

Keywords: sensation, interiority, interior painting, watercolour, composition

INTRODUCTION

This paper examines the watercolour painting in interior practice through the lens of sensation to see what this provokes and opens up, with the intention of developing a framework with which to discuss painting in interior design practice, as an alternative to one of representation or illustration. I am interested in what sensation in art opens up in terms of an encounter with the forces of the earth, learning, partaking in them, and how considering sensation as the primary production of art, rather than images, representations or concepts, may be rich material for interior practice.

I will discuss this topic in three parts, firstly an introduction to the theory of sensation as presented by Elizabeth Grosz and Gilles Deleuze, and the connections I have made between these ideas and my own interior painting practice. Secondly, I will introduce my interior painting practice in watercolour, to briefly discuss the approach, processes and techniques, and how they might be considered as productions of

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sensation. In part three I will present the implications and offerings of considering interior painting as a production of sensation, or order to discuss how they might contribute to the interior practice and interior design.

As this paper seeks to develop an alternative discourse to that of representation and illustration, I do not wish to go into too much detail analyzing representation. However, some explanation is needed to position why an alternative framework is being explored. When considering painting and paintings in a framework defined by representation this sets up a relation to paintings as static object-images (an artefact/object that depicts an image/view). This then opens up questions of what the image is 'of', what it is representing (something that exists/existed or is to be - i.e. a 'design'). In my research I am interested in the production of painting, painting as a verb, a painting, and also painting as a noun, 'a painting' but still 'how painting?', in that *how* the painting is a becoming, enduring production not a fixed object and endpoint. In design practice, images and drawings are often positioned as tools for communication and representation of an intended design (despite many designers working through drawing as a developmental process). Painting, in particular, has a historic association in interior design with rendering a 'view' of a potential design. I am not arguing here that this is not the case, rather I am interested in what else is happening in painting, how this production, and a critical analysis of it through the lens of sensation, might be relevant to interior design practice.

PART 1: SENSATION

"Sensation is vibration" – (Deleuze, 1981)

"Art is what intensifies, produces sensations, and uses them to intensify bodies. Whatever materials compose them, works of art monumentalize neither events nor persons, materials nor forms, only sensations" – (Grosz, 2008)

I became aware of the philosophy of sensation a couple of years into my PhD, in which I had (and continue to) explore interior relations and practices in watercolour painting. I have a practice of interior painting in watercolour, which I do through studying a space, room or landscape through watercolour, producing a pictorial view surrounded by a colour field where paint colours are tested and the brush blotted throughout the production of the painting. In the context of design, these watercolours are easily viewed as representations, illustrations of a view or a scene (in architecture and design there tends to be a desire for image making to lead to an outcome, to be a visualisation of something that is to be built). While it may be true that the paintings look like a view that 'exists' (from a photograph, or a particular period of sitting and looking) for me there is no value in considering it in this way, for what can be gleaned except a judgement of whether a 'good' rendering has been achieved, the accuracy of the likeness? I have had a hunch for a while now that there was something in this watercolour practice that is useful to interior practice. If we take from Deleuze and Grosz that the production of all art is a sensation, and no art is figurative, then we can open up these watercolours to see what forces of the world compose them, what they produce, their impact, framing and unframings of the earth and the cosmos.

This paper draws on a philosophy of sensation in art, using the writing of Elizabeth Grosz and Gilles Deleuze, in order to examine my own watercolour painting practice, to see what this theoretical framework might offer, open up or provoke. There are two key texts that are used and referred to throughout, these are Deleuze's *Francis Bacon: The Logic of Sensation* (1981) and Grosz's *Chaos, Territory, Art: Deleuze and the Framing of the Earth* (2008). In 'Logic' Deleuze writes on the painting practice of 20th Century artist Francis Bacon, using sensation as a framework with which to examine the techniques, approaches, affects and implications of/in/through Bacons work, and in turn uses Bacon's work to explain and expand on the philosophy of sensation. Deleuze's thinking on sensation is informed by biology, where sensation is that which bypasses cognition to directly impact the nervous system of living beings. Deleuze differs from phenomenology in his understanding of sensation and art, by looking at the direct forces of sensation in and of art rather than the

more phenomenological concerns of experience and perception. In *Chaos, Territory Art*, Grosz states that her goal is to create a non-aesthetic philosophy for art, not to assess art, not to judge the value or meaning of art, but to create a parallel philosophy, that addresses the common forces and powers of art, and the overlaps between art and philosophy. She does this informed by the writings of Deleuze and Deleuze and Guattari together, and from this, her discussion grows from the foundation that the primary production of art is not image, representation or concept, but sensation.

When Grosz says 'art' she means all creative arts, including design, architecture and music. Her philosophy is therefore appropriate to use in the critique of interior practice, however, a more detailed study of how this plays out in interior practice is offered here. There are certain disciplinary traditions and expectations in interior practices around the role of drawing and painting: as a representation of a design intent, a means to a 'spatial' end, but what can be gained in examining the production of painting in design as sensation not as representation or concept? Throughout this paper, I will use the term 'interior practice' rather than interior architecture or interior design. This term is meant to encompass these practices, but also includes those interior gestures, movements or acts that may not be qualified as design or architecture exactly, but fit within the gamut of interior designs practice.

Now back to the sensation. A sensation is live, vibrational, composed of forces. Grosz tells us that "Sensations are mobile and mobilising forces, not quite subjective or experiential (this is Deleuze's disagreement with phenomenology) and yet not fully objective or measurable in a way that material objects are" (Grosz, 2008, p76). It would be an easy mistake to liken sensation to sense, perception, or to the narrative quality of the sensational; when in fact sensation is in opposition to all of these things, not the opposite of, but in opposition to the concepts of them. Perception and sense are cognitive translations of sensory input, they are thinking feeling things, they relate to how humans (bodies) make sense of the world, this is a system reliant on human centred subjectivity, where we sense things and feel them, rather than what Deleuze poses for us to consider - that perhaps bodies are produced by sensations, rather than bodies are entities that feel sensations. In this case it is easier to conceive that sensation is that which bypasses cognition and perception, or rather disregards these things, and acts directly on the nervous system, to impact force onto a body. Deleuze says "As Valery put it, the sensation is that which is transmitted directly, and avoids the detour and boredom of conveying a story." (Deleuze, 2003, p. 32).

The sensation is everywhere, (not 'all around' which would suggest a human-centred subjectivity, but everywhere) it exists in and of the forces of the cosmos, which of course are infinite. "Force is closely related to sensation: for sensation to exist, a force must be exerted on a body, on a point of the wave. But if force is the condition of sensation, it is nonetheless not the force that is sensed, since the sensation "gives" something completely different from the forces that condition it." (Grosz, 2008, p48). Because I have introduced it here as impacting a nervous system, it might be logical to conceive of sensation as a force only in and of the body receiving the sensation, that it exists when it is 'felt', but this is too simple a definition. Grosz explains to us "Sensation is neither in the world nor in the subject but is the relation of the unfolding of the one for the other through a body created at their interface (see Straus 202). Perception is thus, for Straus (as for Bergson), linked to the establishment of coordinates and abstract regularities, while sensation is that which cannot be mapped or complete, always in the process of becoming something else." (2008, p. 71)

Sensation is not limited to art, in fact this inverse is true that art is limited to sensation if all that art produces sensation, but in this research context we will discuss sensation in art specifically, which has the dual benefit of being relevant to the painting research and also makes the rather difficult subject of sensation somewhat easier to grapple with.

Grosz tells us that sensation is the primary production of art, and that art is the art of affect more than representation or imagery. For Grosz art is not merely a human system or phenomenon, is it something that

many bodies (animal and human) do as a creative act of territorialisation, composition or framing, related to the sexual selection in that art creates sensations that intensify and appeal to bodies. Art is the practice of selecting from the excess of the world, the materials and forces of sensation, and framing them, to compose works of art. *“Art is what intensifies, produces sensations, and uses them to intensify bodies. Whatever materials compose them, works of art monumentalize neither events nor persons, materials nor forms, only sensations”* (Grosz, 2008). Let's use two examples of art to illustrate this concept, one animal and one human, this is so that we can bring together animal and human art practice as the same thing, not to reinforce the difference between the two. The first example, animal, Grosz describes in her book, it is how the Australian bowerbird builds a stage for himself in the forest so that he can perform his dance and attract a mate. The stage is built by selecting and arranging leaves into a patch on the ground, turning them all so that their light undersides face up, contrasting with the dark earth. The 'stage' that is made is a kind of frame, framing of the colour and quality of the leaves, creating a zone of intensity, an interior for the bird to inhabit and perform in. The bird composes with colour, a force of the earth, and performs an act of framing. For Grosz this is art, a creative act to produce something appealing to a potential sexual mate (this is not to say that all art is directly sexual, but the concept of appeal and pleasure comes from a place of sexual selection). For our second, human example, I will describe one of my own watercolours. In 'crevice' 2017, I painted a craggy cliff crevice, from a photograph taken on the south Wairarapa coast of New Zealand. In representational terms, this is a painting 'of' a crevice - an image (painting) of an image (photograph) of a place/site, rendered from observation, in order to capture and produce the observed qualities. In terms of sensation, this artwork is monumentalising not the view of the crevice, but the sensations that are composed, the forces of the earth that have been produced in the painting (which by the way are all created and enabled with colour). The forces are those of light, shadow, warm and cold, gravity, erosion, dust and dampness, mass, void and cracking geological pressure, but the primary force and material of the painting is colour, colour is the force that allows all these sensations to act and to be rendered visible to bodies.

PART 2: INTERIOR PAINTING, WATERCOLOUR

I have an ongoing watercolour painting practice, which I am referring to as 'interior painting' in my PhD research. Naming it in this way does two things: it starts to describe a kind of painting practice, or a genre like landscape painting, and in this way can start to identify some broad qualities, approaches and styles, in this case a questioning of 'interior' is always present (as often the subject of the painting is not a view of the inside of a room, a generally understood 'interior' but rather a question of 'interior?' is posed through the naming of the painting as interior painting. The second thing this naming does is to position interior painting as a kind of practice rather than a type or technique of visualisation, or as an artefact. This allows me to continue my interior painting practice as research, without the need to position it as a step in a bigger 'interior design' practice, a means to an end or a technique to do something else.

My watercolours are a range of subjects; they may be 'inside' spaces or 'outside' spaces. I have a particular interest in painting landscapes. I usually work from photographs rather than onsite, as the process is somewhat long and slow, using many thin washes of watercolour to build up the painting. This act of painting from a photograph is key in how I consider these paintings, as although I may be physically dislocated from the space and temporal conditions of a subject, I am inhabiting the space through the act of painting. Inhabiting the space and partaking in the forces that comprise it by observing the qualities and forces of colour, and selecting and recomposing them through colour and water on paper. The qualities and forces of the world that I am interested in are colour, vibration, light, intensity, density, time, movement, stillness, arrangement, resistance, flow, suspension, animation, wind, liveness, growth, material, texture. The act of painting is a kind of selection, composition and intensification of these forces and qualities. My watercolours capture forces of colour and water, and arrange them, build them, to render forces of a scene/view that is being studied. The observation and study of the scene is crucial, as these are where the behaviour and sensations of the world are captured, then selected and intensified into the painting.



Figure 1: *Kitchen Table*, Watercolour on Paper, Rosie Scott: 2013

When producing a painting I always have some kind of testing field or space on paper that I use to test colour with my brush, to blot excess pigment or to dry the brush. Sometimes this is on a separate piece of paper to the pictorial view, but mostly I use the space 'outside' the view on paper, which is a smaller rectangle within the frame of the page. There is both a pictorial spatial arrangement of colour and a manual, random arrangement of colour (the colour field/frame). The random field can only exist with its state of vibrancy, movement, vibration, because of the intensity of the observation and control that plays out in the 'centre' image. It could be seen that the centre image is the eye, and the field/frame is of the hand, but this is too simple a division. The hand and the eye, the body of the painter is active, enacting forces in the painting. But because the colour field is the testing zone, cerebral decisions are quick, intuitive dashes and dabs to test colour, then composition as considered, planned, designed is removed. It becomes action and response, force out, force in, force out to the image. Deleuze's describes the colour fields in my paintings "For these marks are irrational, involuntary, accidental, free, random. They are non-representative, non-illustrative, non-narrative. They are no longer either significant or signifiers: they are asignifying traits. They are traits of sensation, but of confused sensations..." (1982, p. 82). Here Deleuze talks about the removal of the representative through the gestural, free nature of the brushstrokes. They then become traits of sensation, I'm not sure about confused sensation I would perhaps say pure sensation, in my work at least. As these colour fields resonate the force of colour and the forces of their production, they speak to and of the pictorial view but they deconstruct the 'sensible' composition into its component parts of colour and force. Deleuze goes on to say "It is as if the hand assumed an independence, and began to be guided by other forces, making marks that no longer depend on either our will or our sight."

All painting is framing. By composing matter into art, things are selected, composed and produce their own resonance through this new relational state. As Grosz says "there is not a work of art that exists that does not have within the frame another frame" (2008). The rectangular mounting frame or the frame of the paper/canvas help us to see framing obviously, but framing isn't about the boundary or the edge. Framing is the selection, the composition, to produce a set of relations. Like the bowerbird in Grosz - who turns the leaves to display the lighter side, he creates territory, a resonant field as a stage (colour is important here).

Grosz tells us this territory making is creative, an artistic sexual act. It is not a territory of edge, ownership but of display, performance, art.

In my painting, the rectilinear frame is obvious and doubled through the field/frame of colour tests (although, a very hazy frame as a field, not as a line). The paper edge holds within it a field of colour tests, which holds within it an image of figurative space. Each framing forces (the painting itself, the page, the field/frame, the view) acts as interiorisation, selecting qualities to sit together, not isolated but intensified, producing a set of interior relations.

PART 3: IMPLICATIONS AND CONTRIBUTION TO INTERIOR PRACTICE AND DESIGN

So why is this discussion around sensation, forces and framing relevant to interior design practice? There are three key ways we can start to make connections to interior practice, and a few key contributions to consider.

The first point is the positioning of interior painting as an interior practice in itself, as mentioned earlier. So rather than seeing these paintings as a rung on the ladder towards design 'outcomes' they can be considered as interior practices in their own right, with a specific set of techniques, approaches and offerings (even though they may be included in a traditional process of design somehow, the point is to not define them in this way, so that they can be carefully considered, rather than evaluated by the relationship to an 'end point'.)

Secondly, there is value in what we learn about the world when we consider it, and paint it, in terms of forces and sensation. Interior designers usually consider the elements of our work as objects, materials/swatches (I use the term swatch broadly, this could be paint, textile or other materials) and people and programs, which are then composed by us to produce an interior, a situation. I am interested in considering the elements and materials of interior design as forces, and our designs/compositions as productions of sensation. How does a design practice shift or transform when we consider our materials as forces rather than objects? This then opens up design intents to be qualified by types and qualities of forces, rather than purely visual or spatial ones.

Thirdly, this practice of interior painting is a kind of cross-training in sensitivity and attentiveness for designers. Then to closely observe the qualities or sensations of the world is to hone skills of looking, selecting and composing. This is more than just skills of representation, as I relate to Grosz's description of painting as not to represent the world, but to partake in its forces: "It is because of the beauty of the thorny lizard, its peculiar epidermal geography, its characteristic ways of moving, its color intensifications, that it serves to spur on human art-making, which does not so much seek to imitate or represent it as to partake in some of those features and characteristics that allure and attract." P103. In this, the painter becomes an active participant in the forces of chaos, or perhaps an activator. This notion has a particular power in the context of interior practice that is producing and inhabiting concurrently, folding out and folding in at the same time. For me, this is the really exciting stuff in interior practice, the ability to be in and make in, to partake in the forces of the creative production whilst it is happening. This is also as a counterpoint to the traditional operation of architecture and interior design practice which has many levels of removal between the act of creation, design and making due to construction and legislative approval processes. This is not to say they should not exist, but rather there is value in this as an alternative .

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HOW TO MAKE TEACHING ENVIRONMENTS FOR INTERIOR DESIGN STUDENTS MORE ALIGNED WITH THOSE IN CREATIVE PRACTICE

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ABSTRACT

The teaching of Interior Design in Universities continues to be a growing field, with increasing numbers of courses and students. Whilst the pedagogical aspect of Interior Design education is debated, researched and written about in some detail, and there is minimal emphasis given to the actual teaching environments that the students are learning in. Growth in research related to the creative office workplace has led to innovations in how those spaces are planned. This has not filtered down to the university design studio, which sadly still seems like an educational space rather than a workplace. Given that interior design is a vocationally focused course, this paper looks at how the Interior Design teaching space could be improved by looking to lessons from related industry spaces. It will investigate the current situation and suggest a paradigm for change to improve the teaching studio experience for students.

Keywords: interior, teaching, workplace, environment

INTRODUCTION

There has been much written about two key factors in design teaching; namely how the pedagogical approach to design education needs a studio in which to occur (Ucar, 2011), and the importance of the theoretical, pedagogical perspective of design education (Travis, 2011). There is much less review and debate around the impact of the teaching environment itself, beyond the general layout (Knaub et al., 2016). This paper will look in more detail at how the design of the teaching environment can support the learning process, what lessons can be learnt from innovations in office workplace design, and finally to suggest a paradigm for the development of these spaces.

BACKGROUND

A. The Design Studio

The term studio is defined by Long as a space that can accommodate both the production and teaching of art or craft (Long, 2012). They can be summarised as a large open plan space in which students receive their design instruction and where they produce their design projects. They tend not to be a focus for formal lectures, which are usually catered for elsewhere in the university in traditional lecture theatre spaces. They contain desks and seats for the students, usually in rows or large clusters. Historically the teaching of interior design in UK Universities has occurred in these spaces. Within the university estate, they tend to be considered as any large open plan teaching space is, and as such are not designed differently, even though the pedagogical practice taking place within them is much different to that in say a modern language course. Studio space for more traditional art based subjects, such as drawing and painting, tend to have a focus on natural light, with orientations towards the north. Within the interior design field, this is of less

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importance. So, whilst as in a traditional art school model there are studio spaces, these currently do not adequately respond to the needs of an interior design teaching methodology.

B. Interior Design Pedagogy

As Konkel notes, “interior design pedagogy is firmly grounded in the Experiential Learning Model, developed by David Kolb in the 1970’s” (Konkel, 2014). In his work, Kolb defines four stages within the learning cycle, namely concrete experience, observation of and reflection on that experience, formation of abstract concepts based on that knowledge and testing of new concepts based on that reflection (Kolb, 1975). This can be further simplified to three critical processes of iterative learning reflected in the teaching process. These are stages of research, design development and presentation of the final solution. Concerning the interior design of the teaching space its necessary to not purely consider the pedagogical responses and outcomes to each stage, but to look more at the actual processes required to complete them. What is the focus needed for the students to complete each step, and how do their surroundings support this, and more importantly how can the interior space respond to support these? Each of these steps requires different types of focus. At the research stage, space needs to be quiet, with access to Wi-Fi and power to support internet access. There also needs to be space in which to review other research material such as books and periodicals. In the second stage, designs are developed in a many ways, including physical models, sketches, computer drawings, hand drawings. Another critical aspect of this stage is the presentation and critiquing of ideas. This needs space to show the work, and areas where discussions can be had, both formally and informally. The final stage, presentation, will be more focused, rather like the research phase. But unlike the research phase, it will require a space that supports the production of work, be it models, design books etc.

C. Current provision

An essential element of design teaching is the role of the tutor and their relationship with the students within the studio space. Unlike say a lecture based course, a studio tutor will engage directly with the students in a variety of ways. Most common would be at submission time, where students pin up work and present it to a group of tutors and colleagues for discussion. Whilst this requires a certain amount of space, depending on the number of students showing, the space involved does not necessarily have to be linear. Often more square spaces where groups can cluster together are as useful. Within the teaching pedagogy of tutor-student discussion, there is also an element of one-to-one engagement. Therefore desking arrangement has to allow for this without disturbing other students too much.



Figure 1. Typical desk and seating. University of Edinburgh, Edinburgh College of Art
Source: Rachel Simmonds

The desking itself tend to be of the collapsible format, in theory, to allow for changes to the space to be made easily. In reality the layouts tend not to alter, and reconfiguration to any significant degree is uncommon. Seating tends to either be standard office style, or in many cases stackable, for reasons of ease of storage and transportation. Whilst stackable seating tends to be more contemporary in design, and these seats are really for meetings and lecture situations where a person would expect to use them for no more than two hours at a time. The reality of an interior design course is that students spend long hours in the studio, ever more sitting at a desk using computers and laptops

As in all aspects of our lives, technology continues to play an ever-dominant role in our pedagogical practice. From lap tops and computers to large screen and white boards, the way in which students obtain and present information is evolving and changing. Ten years ago very few students had laptops, and now every student has one and Wi-Fi is present in all our teaching spaces. Where in the past there was a need to have a space for drawing board, now the need to be close to sufficient plug sockets is the battle being fought in interior design studio everywhere. In many ways these technological innovations, making equipment more transportable and able to access more information and do more complicated things, in the whole makes working more flexible. This, in turn creates a need for a variety of working environments. However, concerning large fixed screens, it tends to focus presentations to one area, that when not in use sits silently on the wall.

D. Related office theory

Advances and innovations in office workspace design have developed greatly over the past two decades. Responses such as agile working and smart working, where an office interior is split into zones for different types of working practice, are now almost commonplace. This ability for employees to work flexibility throughout the day, undertaking tasks in an interior space designed for the task, are now not just for large corporations such as Google, who famously create an environment where employees are 'stimulated, soothed, entertained, inspired, comfortable, able to create valuable ideas and feel that the office is not a mere workplace' (Morgan, 2015).

Employers have realised that allowing employees more control over their working environment supports more focused and productive outcomes. Also known as co-working the importance of interaction between people is key to driving the modern office design paradigm. Interestingly, the co-working phenomena evolved from the spatial model of other interior environments, namely the domestic, artist studio and members lounge (Groves & Marlow, 2016). It has taken historical element of these and blended them to support new ways of working. In response to the changes in our modern life and work patterns, this has in some respects began to feedback from the office to these areas. The home office is commonplace in many apartments and houses today, whether merely as a desk fitted in under the stairs, to an entire room from which people run their business or work part week from home. Members lounges have historically been places of business, and the private dining space within these are now often used for business meetings during the day. One area where the sharing and blending of interior paradigm has not been so prevalent is with the artist's studio.

So what can be learnt from the development of office design to feed back in to the design studio set up in our universities? To be able to address that it is first necessary to address the issues that currently arise to see if there are solutions that can be adopted and adapted.

THE INTERIOR DESIGN STUDIO AT PRESENT

A. Impact of pedagogy

As previously noted the pedagogy of teaching requires flexibility in the spaces to allow for a move throughout the day, between individual working and group activity, and from areas of quiet to areas of noise. Of course, not all students are doing the same activities at the same time, so there is likely to be all of

these things happening within the one space – rather like in industry. With centralised printing facilities within university buildings being the norm, then some principal activities have been removed from the studio, and in turn a space with a different function has been lost. By reviewing the types of work undertaken the interior of these studio should support such activities as individual quiet working, short term group discussions, longer term presentations, seminars and collaborative working. All these at some point may require an interface with mobile or fixed technology. In reality, however, the interior design response is still more aligned to the Experiential Learning Model when in reality it should be more aligned with activity based and co-working theories.

B. Zones

From primary research into how current interior design students adapt to their space what is clear is that there is a subtle creation of barriers to amend desk spaces to allow for solitude if required. What is happening, due to the desk focused structure, is that rather than having a variety of spaces within the studio, students are modifying their individual workspaces to suit their activity.

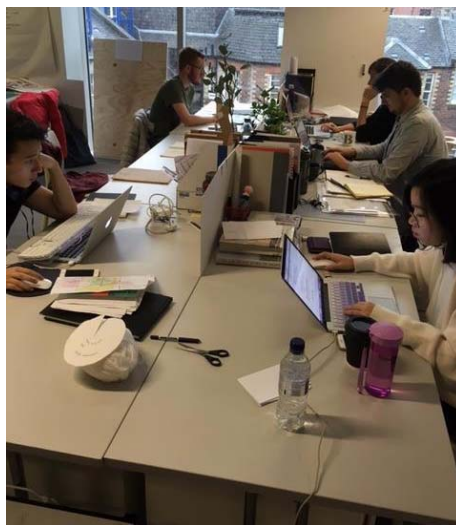


Figure 2. Students personalising spaces with semi barriers
Source: Rachel Simmonds

Traditionally, work at submission was pinned on walls and tutors and students discussed and interacted with it on a straightforward level. This created an ever-changing focus on the wall spaces. However, when the provision is just purely a blank wall over time something interesting starts to happen



Figure 3. Typical Crit Time, University of Edinburgh, Edinburgh College of Art
Source: Rachel Simmonds

All focus starts to move to the perimeter of the room, and the battle between wall and desk ensues. This results in the interior of the room spreading from the outside to the centre, quite the opposite of other interior spaces such as restaurants where the centre of a room is the focus. This also means that the studios tend to work in a more concentric fashion, with smaller links between spaces – rather like an inverted spiders web. Returning to the new office landscape, it's clear that a more linear relationship between the different activity spaces is required, such as in Hermann Millers Living Office, where ten different working activities have been defined with particular interior solutions. The result is a pick and mix kit of parts that will result in a high-performing workplace that provides better work experience for people and helps organisations achieve their strategic goals. (Herman Miller, 2014).

For universities, the student experience is moving higher up the agenda. As Peter Scott noted in his Guardian article Universities invest in better services not just to please students, but to enhance their competitiveness in the market by attracting more, or better qualified, students, and to boost their scores in the National Student Survey and league tables (Scott, 2015). With interior design teaching being so heavily based in the studio, then the physical environment itself needs to be reviewed. Given that a successful environment will support improvement in the learning experience and its associated outcomes, then the new paradigm has a valid place in the university agenda.

THE SUGGESTED INTERIOR DESIGN STUDIO OF THE FUTURE

A. Primary zones

Designers communicate through both the drawn, spoken and written word. Drawing and sketching, using a pen and paper, are a daily event for interior designers. The pedagogical model also highly utilises this. Therefore desks will remain the key focus in an interior space. In relation to the spoken word, verbal presentations are the focus of all professional bids. Therefore, space to show and discuss work is required. This should take the form of vertical space for presentation, with associated space for an audience. The form of presentation could be electronic, i.e. a screen or whiteboard, or traditional pin-up of paper. However, this does not mean that this space has to be fixed. Moveable screens and panels would provide more flexibility.

B. Missing zones

There are three spaces, within these pedagogical environments, that currently are not being addressed. Unlike other teaching environments, a studio space is inhabited not just for the duration of a specific class or task, rather it is the main focus of the students working day. As such it has a more focused requirement for activities that other students may more easily do elsewhere – namely eating, sleeping and storage. The growth of more domestic-focused spaces within traditionally work, or health spaces are becoming more common. From the rise of the office sleeping pod to the importance of the kitchen table as a place to meet and talk in Maggie Centres, the working world beyond education realises that employee wellbeing is important to productivity. It is time to address this more specifically with interior design studios. Eating, and the act of eating with others is the oldest form of collaboration, and its inclusion within the studio supports the pedagogical collaboration of interior design education.

Students sleeping whilst at university is becoming an increasing phenomenon. With many working to support themselves, and faster-paced lifestyles, it is not uncommon to see students snoozing during the day. In fact, last year Edinburgh University students voted to install four nap pods in the main library space (Scotsman, 2016). However, these have yet to materialise.

Whilst not a zone in its own right, the importance of acoustics, lighting, and the ability to control the temperature of your surroundings is vital to engage users fully with space.

Given the physical outputs of interior design students, namely models, design books, drawings, there is a need to store work throughout the academic year, along with the materials that support them. If a move towards an Interior Design studio where students are expected to undertake all types of work activities, the need for material storage will increase.

C. Evolution

With desks, we need to start thinking beyond the limit being collapsible desks that can be put up or taken down to create open space for a variety of desking clusters. Whilst this will be needed, consideration needs to be given to the variety also being at the height of these desks. It has been well documented that sitting for long periods of time is not good for us. Indeed the UK Governments Department of Health published a paper in 2010 suggesting we should take a break from sitting every 30 minutes, and there is some evidence that extended periods in a sedentary position can slow metabolism (Stern, 2017).

In relation to presentation space this needs, to be considered for not just that function, but how it can adapt to support other uses such as collaborative conversations and social engagement. As noted above, if the physical space these areas inhabit could also have multiple functions and are practical on more than one level, their reason for being in the space is stronger. The location of them can also support more purpose for an otherwise purely secondary space such as a corridor.



Figure 3. COAM Building, Madrid. Corridor Crit Space with moveable panels
Source: Rachel Simmonds

In relation to eating within studios often these have been removed for health and safety reasons. The hygiene around a communal microwave or sink can be difficult to maintain, as can the spread of smell of cooked food within an open plan environment. However, that is not to say that these spaces cannot exist. A simple zone where food can be eaten away from the typical desk area will encourage student interaction, collaboration and engagement. Building on the idea of flexibility this could double as a large meeting table, a place to display models, space to collaborate. If it were the high table, then it would limit some of these interactions to shorter time frames and encourage others such as impromptu meetings.

There has been a growing trend for sofas within studio spaces in Universities, which tend to end up with the dual function of a place to sit and chat or a place to sleep. But do we want to encourage sleeping in the studio? Referring back to office design, there is a move in some areas for rest and de-stress zones, but ultimately these have not taken off because people still feel awkward sleeping during the day, and especially when colleagues are about. However as noted in a recent edition of *On Office*, while it may seem

strange not to take a nap at work, in the future, it will be people who don't take time out to relax who are seen as being irresponsible (On Office, 2016)

In relation to storage, if there becomes a move towards more flexibility in space then rather than traditional lockers, more mobile forms of storage could be considered. Also, for things like cardboard, then an area with plan chests could be utilised, with possibly the tops being used for model making, resulting in a more cohesive modelling zone. This in turn to accommodate short informal meetings and discussions.

D. Paradigm for future interior design studios

The areas noted above can be summarised into the following zones. Horizontal working, vertical working, working together and working alone. Horizontal working should contain desk spaces with a degree of flexibility but avoid large areas of desking, to encourage groups of up to six students to work in close proximity. Vertical working needs to allow for the presentation of ideas and associated audiences. Working together relates to areas for collaboration with a focus on problem-solving or sharing of ideas. Working alone relates to space implied a student could engage in either a project focused activity or space for temporary relaxation. These do not necessarily need to be physically isolated but do need to allow the user control over the atmosphere.

The zoning of these spaces should avoid being linear or concentric in nature, rather become more abstracted and Venn diagram in form to allow for ease of movement between them and to encourage involvement in the all. There should be flexibility within each to adapt to the specific activities, but also to encourage engagement with other activities. For example in the working together zone a table for collaborative workshops could also double as a table at which to eat lunch, and a screen for presentations could alter to show images of fields and trees as a backdrop to an area for solitary or quiet working.

In relation to technology, we need the infrastructure to support advances in the equipment that students use, such as wire-free charging. Giving people control of their environment will support wellbeing at work and improved productivity. Of course, with all these suggestions, we must be careful that the decoration of these spaces does not become brightly coloured and in a sense patronising to students. As noted in Williams article there is no evidence to suggest the younger generation want anything like wacky slides, meeting pods etc. and that such interventions even increase productivity (Williams, 2014).

This shift in the importance of the physical environment in which our designers of the future are being educated is beginning to happen. At the d.school at Stanford University in the U.S, their interior has a been designed with a super flexible environment to encourage collaboration and innovation. The ceiling is used to hang panels off of that can interact with and moved in some ways. The focus of the building is to support idea generation, collaboration and experimentation, and it showcases how the design of physical space can truly shift the way in which people communicate with each other (Groves & Marlow, 2016)

CONCLUSION

Just as office design has been influenced by the design of other spaces such as the library, theatre and urban realm (Myerson & Privett, 2014), then the future teaching space for interior designers need to learn from offices design. To this end, the interior environment should contain zones to support the pedagogical objectives and activities related to the processes of research, development and presentation of ideas. However, key to the success of this is the engagement with the users before any changes are made. We need to understand how our students work and support these activities with interior spaces that nurture and guide their iterative creative learning. It is clear that learning environments are following in the footsteps of office design, all be it up to 20 years behind in some areas. We need to make sure that to facilitate the best learning environments for Interior Design Students, and these spaces support the ever-growing trend in office design of the need to do more with less (Anonymous, 2010). Within increase student

numbers and reducing budgets as Interior Designers we need to embrace modern office design theory now and evolve it to suit our ever-changing pedagogical environment. That way we will create successful Interior Design Studio for today's students and those in the future.

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EXPLORING MATERIALITY IN LEARNING INTERIOR ARCHITECTURE

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ABSTRACT

Materiality refers to “What makes a material, material”. It is related to the substance as well as the intangible matter that is contained in the material. Many materials in common use are derived from the unlikely combination of ingredients from an astonishing variety of different sources (Ingold, 2007). The materiality plays an important role in the formation of interior space where the materiality is associated with the presence of objects in space. When an object is presented from the processing of substance materials which are related to particular medium so that it produces a new surface on the object, here is where the materiality occurs. Materiality of objects in interior architecture tells how an object is formed from various processing of material substance with respects to the qualities and spirit of the material.

The Materiality of Interior Architecture course is a series of learning activities which is aimed to direct students to explore material through materiality. The class started with understanding materiality through theoretical comprehension, which included physical property of materials and aesthetic values that were encountered by human senses. Then, students were trained for experiencing the materials by direct interaction of exercises. This was required to dig deep the cognition of students by exploring the materiality through substance, surface and medium of materials. The final exercise was transforming material to become an object of interior architecture that presented the materiality. As a result, this exploration triggered the students to utilize the materials as an experience of interiority which is based on the materiality comprehension.

Keywords: material, materiality, exploring, interior architecture

INTRODUCTION: MATERIALITY AND INTERIOR CONCEPT

Interiority is an approach to understand all things in an internal way. In architecture and interior, interiority studies the spatial presence and quality through its internal elements. In the interiority approach, material becomes an important matter because a space can be studied through the story of its materials. Interiority is not (only about) red, it is not plastic, and it is not 3X5 mm, but it is the possibility of the colored, the dimensioned and the material manifestations of an interior that might be plastic, might be 3X5 mm, and might be red (McCarthy, 2005). From this statement, one of the ways to build interiority is through ideas about material whose material presence is not only as ‘material’ but also in its capacity as the constructor of a spatial quality in a work of architecture. Material is not only regarded simply as a physical entity but also revealed through both its physical and non-physical elements. It begins from the inside, and it offers limitless possibilities.

In the past, material was just a secondary topic in architecture and interior. Rapoport (1969) in his book “House form and culture” argued that in traditional and vernacular houses context, the better term for the material constructions and technologies is regarded as the modifying factor, rather than the determining

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factor. He believed that the architectural construction and final appearance was just determined by socio-culture context. On the other hand, in this modern era, material development has risen in actualizing design. It can be appeared as "honesty in structure and material". Moreover, in contemporary design, material and technology have such huge roles for architecture and interior, in exploring new aesthetic shape, creating a form that has never been imagined before. Contemporary architecture, nowadays, is centered towards materials. Loeschke (2016) argued that the material has been regarded as the primary influence for architecture and interior advancement, in both education and practice of architectural construction. For the last twenty years, the material application is used as a creative way to represent a contemporary design.

The world of material has neither interior holes nor exterior surfaces. Ingold (2007) referred to Gibson that surfaces are the interface between one kind of material and another which are varying in degrees of stability and permeability. He explained this with the relation between rock and the air that are both materials. When people touch the rock or even the wall of a cave, he argues that we can feel that rock is a material but we cannot touch the materiality of the rock. It concludes that the surface of the materiality is an illusion.

Furthermore, Gibson (1979) describes the world of material more comprehensively. From his book 'The Ecological Approach to Visual Perception', he started to classify the environment into three big components, medium, substances and surfaces. Firstly, medium is related with the movement and perception, that help humans to live, breath, move, or even touch objects, experience the artifacts and landscape surrounding the environment. On the other hand, substance is the part that gives human boundaries, including solid objects such as rock, gravel, mud, wood, concrete. It usually is used as the ingredient to build or create objects from scratch. The separated essence between medium and substance is called surface. It has a particular quality and diverse textures with the specific shape that can be deformed or disappeared. Based on the materiality of objects, the inhabits of border zone between substance and medium, which is surface, is alive precisely because of the flux of the materials across its surface (Ingold, 2007).

THE WORLD OF MATERIAL

A. Material Property: Material as Matter

Material study can be started from the substances of the material itself. Any material is comprised of either a single or a mix of different substance(s) and elements. This means that as a matter, material has some attached traits and is consistent, relatively unaffected by the presence or activities of the user / inhabitant, this is called the "material property". Material property is objective, quantifiable and inherent. It can sometimes be visible or invisible when it is in use. Ingold (2007) as quoted from Pye (1968) about the theorist of design that "every material has inherent properties that can be either expressed or suppressed in use".

B. Material Qualities: Senses of Material

Materiality can also be discovered through non-physical attributes of a material, everything that is beyond the physical characteristic and able to reach a deeper essence of a material. The intangible occurs when user responds to perceive material, this is called "material quality". It is a performance that is projected by human mind imaginatively into the material. Ingold (2007) stated with Pye (1968) argument that, "opposed to the material properties, material qualities are the mind imaginatively projects onto materials". Therefore, material quality that is subjective which is heavily influenced by humans, as it exists within the mind of the humans and is their idea. Knowledge of material that the artist possesses comes from the personal experience of each artist through a sensory perception, as well as from the practices that involve all body parts. *This is a knowledge born of sensory perception and practical engagement, not of the mind with the material world but of the skilled practitioner participating in a world of materials* (Pye, 1968 in Ingold 2007).

C. Material as Aesthetic Element

Architecture, materiality can be found in the concept of "material aesthetic", it creates aesthetic through material as the aesthetic element, expressed aesthetically to create the architectural aesthetic, either through

its traits and its quality in order to create a unique surface. In material aesthetic concept, beauty is summoned through material by many methods. Architectural beauty can occur through simple material which is exposed with the raw and rough sense of originality, or in opposite, it can also be done through a material which has a very high / luxurious value. For example, marble, granite, teak, etc. Architectural beauty can also be found through finishing techniques, construction, and details or through certain design tower the material, or artificially where the material even becomes non-existent in itself. In material aesthetic, the effect is absorbed through sensory experience to create the perception of architectural beauty in the form of imagination of its user. It can sometimes be beyond the mere interest toward the building itself.

D. Material ethic as Aesthetic

In the discussion regarding materiality, material topics sometimes cross the aesthetic context and touch the dimension of ethics. The concept of material ethics as aesthetic can simply be explained as exposing the architectural beauty through material in an honest and true way, not solely for the beauty itself but also for the functionality for human and nature. The use of material towards buildings should be to create a better life for its users by also taking care of the environmental, economic, social aspects and answers to efficiency, sustainability and affordability issues. The material benefit for human and natural use, should expose the aesthetic value that is attached on it, not artificially through design intervention where materials are only treated as aesthetic element or some shallow accessories. The architectural beauty should be able to dig the originality and simplicity of the material. In the concept of Material ethic as aesthetic, Löscke (2016) argued that 'material rawness and ordinariness held to have an inherent aesthetic value rather than one artificially imposed on a material by design, seek to provide better life experiences for their users by addressing environmental, economic and social aspects of design, and provide project-specific responses to problems rather than general solutions.

E. Immaterial Materiality

Materiality is also manifested as the concept of "immaterial materiality", as it reveals an immaterial dimension of a material. 'Immaterial materiality' is a concept about principles of "imaginary space" construction, material has no form, from the immaterial point of view it is just a quality that becomes the media to define the space, aside of its being able to be sensed by human. In architecture, it is to sense or see deeper the *wood-ness* of a piece of wood beyond the wood sense. This is to translate the psycho-perception effect of a film by employing new materials such as electrical light, color, and projection. In this context, material does no longer have to exist physically but more importantly is that it exists visually. Ultimately, material has an immaterial dimension that is either identical or more important than the physical quality. Löscke (2016) quoted stated that "immaterial materiality" as a concept that formulated the construction principles for a new kind of "imaginary space" generated by translating the psycho-perceptual effects of film to modern materials, including electric light and color. Furthermore, materials now no longer designate materials in themselves, but qualities of appearance. To bring it to the point, materials have an immaterial dimension that is equal if not greater importance than their factuality.

F. Living Material

Exploration of materiality brings us to understanding of material as a living thing with soul, 'the living material'. Factually, various materials do come from living being (trees and animals). This is why people in the past treated the material as a living object which is reflected in the naming of the other term "material" which is derived from a *Latin* word '*mater*' that means 'mother'. It can also mean a thing that gives birth to objects/beings in the process of the creation of the world. Ingold (2007) quoted from Allen (1998) that far from being the inanimate stuff typically envisioned by modern thought, materials in this original sense are the active constituents of a world-in-formation. In the concept of living material, many experiments even involve materials that are genuinely alive for some building element. A bridge that is made of living plants by employing the natural growing process of the plants in India and In a development the concept of 'natural construction' by employing living materials by Frei Otto.

EXPLORING MATERIALITY: UNDERSTANDING, EXPERIENCING, MAKING

Materiality is desirable to bridge mind and matter. Renfrew (2004) argued that the polarity of mind and matter remains the engagement does not bring flesh and blood of human bodies into corporeal contact with materials of other kinds, whether organic or inorganic, rather it brings incorporeal mind into contact with a material world. This theory relates with the process of learning architecture where students design by using material to let the mind appears through design, then material itself swallow up into the object which it has given birth. This process allows students to directly interact with a material world, henceforth it captures student's sensuous border between themselves and the things around them, between mind and matter (Ingold, 2007). There are three stages of exploring materiality to learn the process of altering the material toward the interior object:

1. Understanding the materiality of material.

This is the crucial part of knowing "what makes material, a material". The first movement to understand the physical structure of material, including matter, ingredients or the components which give birth to the material, so it has a specific character and nature. This character can be searched by involving human senses through observation, osculation, mensuration, and some experimentation that trigger the basic nature of material. It focuses on the material properties such as measurement, weight, strength, conductivity and elasticity. Then it also emphasizes the material quality which merely reveals our own personal preferences concerning the qualities we like to see in it (Ingold, 2007). Now, of course, it is true that we may hold such preferences concerning the materials we use to make things.

2. Experiencing the materiality of material.

This experience involves diving into particular character and quality of material, especially the metaphysical dimension which implicate mind, intuition, emotion, and imagination. This extract the surface and medium of materiality by observing and encountering the presence of material. It is not about commanding material as if in a one-way relationship. When experiencing material, control is too fallible an assertion. Material is not passive, brute, inert, or dumb. Material has potential and activity independent of what we may see in it, make of it, or do with it (Thomas, 2007). Clearly, material is as much force and energy that can drive you to find any possibilities. This kind of knowledge engenders the sensory perception and practical engagement, the mind with the material world (Ingold, 2007).

3. Making interior object.

The exploration of material performance is realized as a design idea through actual nature material, 'working practically with materials'. Through the making of object, material is presented conventionally and honestly embodies new design ideas that may be considered extraordinary based on materiality.

"Materials and forces are the basis for making. We apply pressure and imagination to materials, and they become meaningful to us. Energy and velocity become meaningful when used in relation to materials. Materials touch. We push on them, and they push us. We remember that intelligence is not just about information. It is not at all just in the head. There is intelligence in the body and in movement. In the moments when artists and designers take cues from their materials, they find themselves engrossed in this communal space." (Thomas, 2007)

In the Materiality of Interior Architecture course, students are directed into exploring material through materiality. The class started with understanding materiality through theoretical comprehension, which included physical property of materials and aesthetic values that were encountered by human senses. Then, they are trained to experience the material by direct interaction of exercises. In the end, students were assigned by making an object of interior architecture that presented the materiality of object.

EXPLORING MATERIALITY: BAMBOO

Bamboo has elongated circular form like a pipe. The diameter and length dimension varies depends on the type and the age of bamboo itself. Bamboo has a beautiful colour, starts from brown, green to yellow. If we look from its length, bamboo has a slick and smooth texture with parallel fibre. On gradual distance, bamboo has segments with specific texture which is rougher and protruding from the bamboo's skin surface. The segments have a various amount of length on each bamboo. Meanwhile, if we look at the bamboo further in transversely, we can see there are holes with various thickness. However, there are other species of bamboo with no hole in the centre of it. The texture on this side tends to be string with brown colour.

1. Understanding the substance of Bamboo

Student started to examine the material to understand further about the specific properties of bamboo. They revealed that the strength of bamboo is concentrated on its surface (tough but elastic, easy to be sliced, cracked then strong, straight, flat and hard). The fibrous are elastic and hold to be strained pulled, crumpled. Then they found that the moisture content is the essential property of bamboo. It is depended on the water degree that has on internode and steam based on its age and the season. The higher moisture gives low durability which is easy to be attacked by pest, fungus and moss. Furthermore, students also explored the sensory values of bamboo to understand the qualities of this material. They figured it by each sense to examine the characteristic of bamboo that can be experienced by the senses. The color of a bamboo depends on its age and type, ranging from fresh green to a shade of dull brown.

2. Experiencing the surface and medium on bamboo

Based on the characteristic of bamboo in both properties and qualities, students continued to experience bamboo with manual craftsmanship. This allowed students to know the strength and weakness while developing bamboo, especially using basic tools. So, they could create an interior object by using bamboo as the main material. Firstly, it started with cutting the bamboo from different angle, width-wise and length-wise from the bamboo. From the widthwise cutting, it showed that bamboo has several forms that are shown in the centre of bamboo, where there are several parts that have hollow inside and solid. This becomes the characteristic of bamboo as it has a hollow cylinder culm with nodes to connect the stem. Moreover, when bamboo is cut length-wise, it shows grids from nodes, the bamboo that is already cut has a lower strength to be able to stand, compared to the uncut one. This is due to the decreased surface which is why it becomes necessary to consider the solidity of bamboos.

Students decided to see the limit of how a bamboo can be pushed in regards to its flexibility because its property can be bent through certain treatments. Students tried to create the thinner layer out of the bamboo so that then they could try to bend it. This is quite difficult because it required manual craftsmanship and being heated so that it became easy enough to bend. From the result of this experience, students concluded that the manual cutting treatment on bamboo is the most efficient way of exploring the material that can actually show its characteristics. The materiality of object is presented by exploring deeper on the nodes of the bamboo so that the materiality can be reflected by the object itself.



Figure 1. Widthwise cut and lengthwise cut of bamboo

Source: Utami 2017



Figure 2. Experiencing bamboo with different treatments
Source: Utami 2017

3. Making a partition as interior object with bamboo

One of the materiality of bamboo the students had acquired from their experience is the nodes on the bamboo. These nodes were then presented on the manipulation for an interior project to show that the materiality of bamboo as its material itself. The rigidity of bamboo that can stand by itself enables the material to not be dependent on other materials to work as its object's form manipulator. Bamboo's aesthetics are also reflected by its ethics.



Figure 3. The nodes of bamboo based on cutting technique
Source: Utami 2017

The making of an interior object in the form of a partition that is made of bamboo is started by reaping the benefits from the materiality experience, through the cutting technique. A piece of long bamboo when it is cut into smaller pieces produces variously different hollows. This depends on which segment of the material that is cut, it can be solid or hollow inside. Also, the cutting technique of the bamboo diagonally can produce wider surfaces. This exploration produces a number of different forms which depends on its cutting techniques. This type of exploration is done by using bamboos with small diameter so that the cutting process becomes much easier. The cutting technique also created the structural partition as the main bamboo with holes from bamboo's shape and the support in the bottom parts that are made with larger bamboo.



Figure 4. Bamboo is cut as structural partition
Source: Utami 2017



Figure 5. The result of exploring the materiality of bamboo
Source: Utami 2017

The purpose of this exploration was to give varying nodes from bamboo as the substance of materiality. Students arranged the small cuts of bamboo by combining in the hollow inside of the main bamboo to show a dynamic impression on the partition as the design aesthetics. The material, bamboo, became an object through the exploration in surface and medium of materiality, by the gap that has been filled by little pieces of bamboo, and then part of bamboo is being gathered to become an object. Students considered about exploring bamboo not just as a material but a whole interior product that can be known as a new object without eliminating the materiality itself.

EXPLORING MATERIALITY: COCONUT LEAF BONE *LIDI*

Lidi is a material made from coconut leaf's stem that is separated from the leaf and dried by sun's heat for several days. It is often used as a broom's main material when put together or as food skewer when used individually. Both common functions work when the *lidi* is straight. It made students wonder if *lidi* still could be used when it is bent or deformed from its original shape.

1. Understanding the substance of Lidi

The structure of *Lidi* is made out of parallel-arranged palisade fiber, which all fiber starts from base but ends differently along *Lidi*, that is why *Lidi* is thick on the base and thin on the end. The strength, when used together, of the *Lidi* will form a rigid structure on the base and flexible structure towards end, similar to how *Lidi* works individually. *Lidi* is usually used as a cleaning tool and has become a typical Indonesian household appliance in Indonesia. Students found out that *Lidi* has specific characteristic obtained through sensory to understand the qualities. In the aspect of colour, its brown colour is produced by the drying process of coconut leaves. *Lidi* has a very thin form, even though it can be shaped, *lidi* still has the flexibility – bending mass which in specific condition it can break off.



Figure 6. The raw material of Lidi
Source: Anggoro 2017



Figure 7. The experiment of Lidi
Source: Anggoro 2017

2. Experiencing the surface and medium on Lidi

Experiencing *Lidi* became challenging with students because this material is never be expected to be an interior object. Furthermore, it is also a fragile and weak material that has no strength to stand up for itself. Therefore, students started with any possibilities of treatment that can change its weakness without demolishing its materiality. If we look *Lidi* as one piece, it is made from palisade fibre that is parallel-arranged from base towards end. When it is arranged together, they are more common to maintain its strength and structure. In later exploration, students found out that *Lidi* could be cross-arranged, but with one crucial condition that is each cross must be contained by more than one *Lidi*; means cross-arranged only works when it is not a piece.

The presence of medium is important to achieve the intended form. By soaking *Lidi* in the boiling water, the structure of *Lidi* will soften and cannot be broken easily. In this condition, *Lidi* would be easier to be shaped, and with the help from heating technique, the new shape of *Lidi* will be maintained. By applying this method, *Lidi* will have numerous possibilities of form making. *Lidi* that once was a strict form of material, un-modern and never be expected to have such abilities, now lifted into another one. After the boiling process, *Lidi* needs to be immediately shaped in a short period of time, or the structure would stiffen back, but not as stiff as it was originally. While heating, the surface of *Lidi* will darken if it gets direct contact with the flame and may burn if it takes too long.

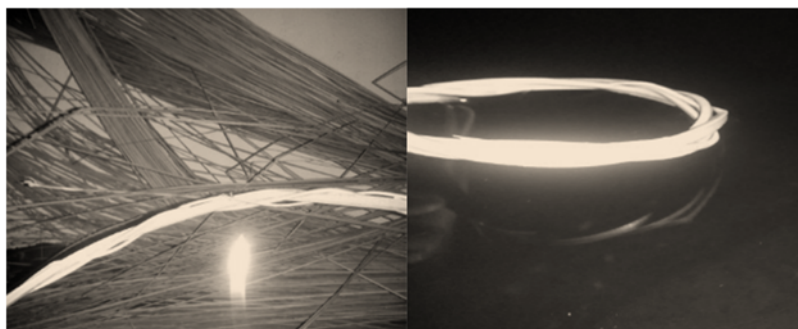


Figure 8. The experiment to bend *Lidi*
Source: Anggoro 2017

3. Making a lamp as interior object with Lidi.

Based on the results our initial understanding and experiencing *Lidi*, students did further exploration on the quality of *Lidi* in terms of its strength and bendability. As discussed earlier, one of the properties *Lidi* is pliability, on the other hand, they can become strong when a big amount of them are grouped together or when they are fastened tightly. With those characteristics of *Lidi*, students wanted to show the materiality of

Lidi by doing explorations to find the possibilities of new shapes that could be created, and also by using the strength of *Lidi* as a group to create the object.

To highlight the strength and pliability of *Lidi*, we made circles of 3 sticks which previously have been boiled and plaited so that the sticks are easily bent to form circles, but not easily broken. After that, the circles made of *Lidi* will be used as a base structure to create a weave made of groups of *Lidi*. The *Lidi* which will be used to make the weave will be arranged vertically and crossed. The arranged *Lidi* then becomes the structure of the object as a whole. Other than highlighting the strength of *Lidi* as a structure, students also wanted to show the individual characteristic of *Lidi* by utilizing the flexibility of the thinnest or skinniest part of the material.



Figure 9. The combination of experiment of *Lidi*
Source: Anggoro 2017

The materiality of *Lidi* as a fragile and weak material is gone by transforming *Lidi* into an interior object that creates an interior atmosphere. The *Lidi* lamp will make the darkening spots become recessive, and the real *Lidi* colour is enhanced for reflecting the lights more. Student achieved a new materiality of *Lidi* that is based on their explorations which are strength and bendability.



Figure 11. The result of exploring materiality of *Lidi*
Source: Anggoro 2017

CONCLUSION

Material is now regarded as an important factor in the development of interiority. It is exposed as a surface component in interior space provocatively as well as being used to represent the contemporary value of the architecture or interior itself. Materiality explores the space through its existence and engagement toward interiority. It is established that materiality for the interior space concerns itself with the following issues: the substance, the surface and the medium of the material. These three categories that relate to the practical use of interior space are classified more broadly into material properties and material qualities, material ethics and material aesthetic, immaterial, living material and material culture.

Table 1: The relation between exploring materiality and the world of material
Source: private documentation

Exploring	Understanding	Experiencing	Making
Materiality			
Substance			
Surface			
Medium			
World of Material			
Material Properties			
Material Qualities			
Material Ethic			
Material Aesthetic			
Immaterial			
Living Material			

During the exploration throughout the course, there are relations between the materiality and the world of material. It started with understanding the substance to further develop the properties and qualities. This becomes the foundation of understanding materiality before it continues to use the material as an interior object. Then, it is continued with experiencing the material through the ethic and the aesthetic as they are a part of surface and medium of materiality. In this part, students used the craftsmanship knowledge to examine the materials. In the end, students reached to the topics of immaterial and living materials that relates to the psycho-perception effect; light, color, and projection. This is to see the bamboo-ness and the *lidi*-ness of the final interior object.

Based on this exploration of materiality, students have seen evocative materials and surfaces becoming the preferred mode of presenting interior to the public. These changes are registered in contemporary design, in which notions of materiality challenge traditional considerations such as form, geometry and style. Three stages of exploring materiality are to comprehend the process of transforming the material toward the interior object. There are understanding the materiality of material, experiencing the materiality of material, and making interior object. Through the exploration of interior object, materiality which has merely been revealed through students' own personal preferences concerning the properties and qualities that were found and considered to show in it. It is presented conventionally and honestly embodied new design ideas that regard to the potential and limits of material in the effort of making interior objects.

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DECONSTRUCTION OF GRAVITATIONAL LOGIC BY INTERIORITY OF THE LABYRINTH: IMMERSIVE PARADOXICAL SPACE OF HUMAN AND INSECTS

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ABSTRACT

This paper describes a system of interiority used in the labyrinth of Parallax Insectarium, a part of design project in my undergraduate thesis. In this project, the immersive learning environment is built to provide the users with multisensory engagement and deep learning outcomes when studying insects and its ecology. They are encouraged to immerse in the insect's world, which characterized by the sense of weightlessness and paradoxical spatial orientation, inside the transparent labyrinth.

Keywords: immersive learning, spatial orientation, anti-gravity, ecology, insects

INTRODUCTION

Today, we could experience the virtual world in such a realistic way through virtual reality (VR). The technological device of VR is more advanced from previous virtual devices that it enables users to immerse in the virtual world, engaging with their real body as a whole. By the help of the VR devices, users could perform immersive learning by simulating themselves into the virtual context. This is a breakthrough to promote learner's motivation, by connecting participants to engage with the learning subject maximally (Blanca, 2011, p. 55). In the virtual world, the participant's mind more likely will shift from logical conscious to subconscious. It seems to be advantageous to explore the role of subconscious mind as recent brain research using fMRI study suggested convincing improvement of brain performance while subconscious in daydreaming (Christoff et al., 2009). By carrying out subconscious mind, we might be able to address more problems and explore the solutions creatively (University of British Columbia, 2009).

Immersive learning as a learning method has been claimed to be capable of bringing participant learning beyond the surface. Not only understanding facts and memorizing concepts, but it also allows the user to explore the networks of the subjects and furthermore the user could solve more problems with deep understanding. Besides the interactive interfaces provided in the virtual setting, it is the role of user's real body that engage with that of the virtual body which holds important emotional relationship in immersive learning (Ratan, 2011). Perhaps, the keys of this capability are the quality of boundlessness and involvement of multisensory body while performing tasks. The idea of immersion might change the way modern people interact with information. Immersive learning in virtual reality introduces a kind of interiority which put a person at ease (otherwise feel challenged) towards the exploration of knowledge in interior space.

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The concept of immersive learning in virtual reality is intriguing to be a part of architecture in an educational facility. In my undergraduate thesis project, I elaborated the idea of immersive learning as a platform to learn insect and its environment in the form of anti-gravitational setting, addressing the virtual context of insect's life. As the role of the body is predictably important for the immersive process when responding the designated anti-gravitational context, I examined some experiments subjected to the relation between body and the logic of gravity at first hand before the design process.

DECONSTRUCTING THE NOTION OF GRAVITY

A. The Body and Attachment of Gravitational Logic

Based on our built environment, there are at least three basic elements which defined our spatial recognition; floor, wall, and ceiling. Floor is the first element which becomes our ground to interact with, while the last two usually come later. While growing up, we construct our spatial orientation on the ground basis and do mental mapping based on it (Hazen, 1978). The idea of the floor might be well related to the functionality of body-landing. From a new-born baby to an infant, the concept of the ground is acquired through a considerable period as they learn to stand up and finally be able to maintain the stability of that position (figure 1).

If not strictly defined, the idea of the floor could be very subjective on every individual. The subjectivity of the floor will depend on each personal reference. Installation at Nagi Museum (figure 2) is one example of architectural works that promoted the subjectivity of the user's ground as part of its interiority. The cylindrical interior ground plane creates obscure spatial recognition. Here, the notion of the floor has become physically undefined, but subjectively depend on the capability of body strength and the willingness of exertion. In such interiority, visual cues and body balance (vestibular) system will be essential to recognize spatial orientation.



Figure 1. Architecturally Induced Effusion Studies by Gins and Arakawa
Source: https://college.holycross.edu/interfaces/vol21-22_images_section1.htm



Figure 2. Interior of Nagi's Ryoanji by Gins and Arakawa
Source: <http://www.academia.edu>

B. Questioning Gravitational Consciousness

As the sense of familiarity plays a significant role in perceptual recognition, visual cues in one place will contribute to substantial suggestion for determining spatial orientation. Special characteristics or particular arrangements of a feature in a room will evoke the consciousness of one's spatial orientation. Spatial cues to determine orientation include any elements recognizable as one of the following: floor, wall, or ceiling. Once recognized, the cue will help the person to determine which way is up.

Internal factor in a body related to proprioception is also likely the same case of familiarity, but it happens mentally. Human has a spatial reference that constantly relative to one's consciousness such as self-components of eyes, head and trunk (Petit et al., 2010). In Mittelstaedt (1983), these entities could be assembled as *an idiotropic vector* to define it as an integrated internal factor that guiding our spatial perception. It affects spatial recognition by keeping one's self-consciousness in his spatial orientation.

As it happened in parabolic flight experiment (figure 3), experiencing unfamiliar gravitation force could lead the loss of orientation (Arnesen, 2003, last section). Transitioning from the familiar earth-gravitational environment to the environment with less or more of earth-gravitational force seems to be debilitating the consciousness of spatial orientation, as what was perceived by the hyperbolic plane crews. One of the possible causes is unfamiliarity of muscle activities when adjusting towards new gravitational force which is either stronger or lesser, such as feeling different pressure on their feet when standing, and on their buttocks when sitting. Further analyses of this experiment have suggested that our vestibular body system takes a significant part in determining the perceived direction of up (figure 3 and 4).

Another experiment tried to find interrelation between the visual and vestibular variables by categorizing it based on unfamiliarity from the lowest to the highest extremity. Conducted in the normal gravitational environment, an experiment in a tilted room (figure 4) shows the spatial perception as resultant vectors in each condition accordingly. All vectors are approaching the same direction as that predicted by the researcher as that by weighting the extremity variables of the body, visual, and gravitation (Jenkin et al., 2003). Therefore, the incapability of determining up direction is in accordance with the unfamiliar extremities that is put as variables.

Interestingly, such formulation is not entirely what happened in another experiment of parabolic flight collaborated with NASA. This time, a team of researcher put more detailed test towards the human ability to determine which direction of up, run in three different gravitational environments during parabolic flight: hyper-gravity, normal gravity, and microgravity. Noted here, the researchers made an effort to avoid relatively high subjectivity due to visual cues. As the solution, they used disks as media for choosing the direction of up, because it might be neutral tools for providing the clue. It is as visual stimulation, by which they could decide the up direction depending on the perceived direction of light, likely by choosing the mostly-appear-as-convex-disk. The disk was superimposed with pictures of an environment.

As the three different gravitational conditions have been through, the results are interesting to be analyzed. While there is no significant difference between the condition of normal gravity and hyper gravity, the most distinct result of perceptual ability appears in the state of microgravity. Particularly, when the position of the body is not aligned with upright position (figure 4, right), the result becomes drastically unique, if compared with the same position in normal gravity. It suggests that when in microgravity, human tend to be less affected by any familiarity of visual cue. The participants become more reliant on the perceived light direction and self-body orientation to determine the direction of up (Jenkin et al., 2005, p.1031). By the fact that the condition between normal and hyper-gravity shows no significant difference, it is concluded here that what makes human's perceptual ability into such difference is the absence of gravitational force.

The lessening or absence of gravity is more likely to debilitate human spatial orientation. It suggests that in the condition where body experiencing lack of gravity, human will dismiss the perceived details of the environmental visual cue, and as the substitution, they will recognize spatial orientation by relying upon the direction of light or by their body orientation (*idiotropic vector*) in determining which direction is up.

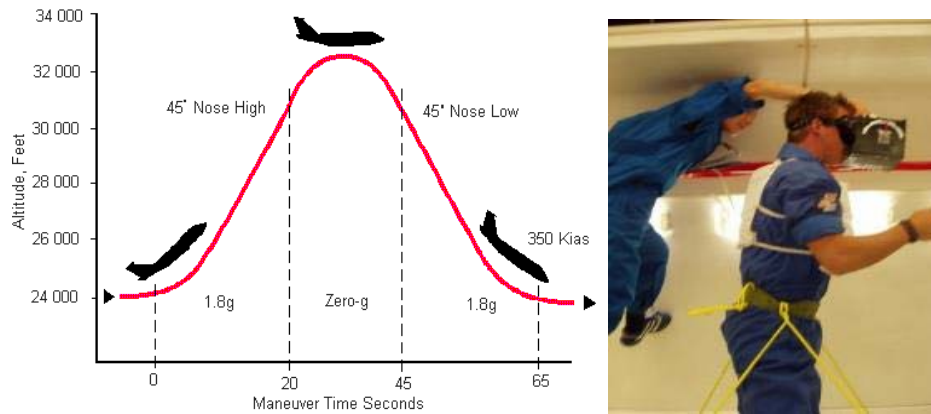


Figure 3. Parabolic flight experiment (left) with different gravitation: normal (1g), micro (0g), and hyper (1.8g). The experiment method (right) to test ability to determine spatial orientation
 Source: <https://engineering.purdue.edu> (left), and <http://www.esa.int> (right)

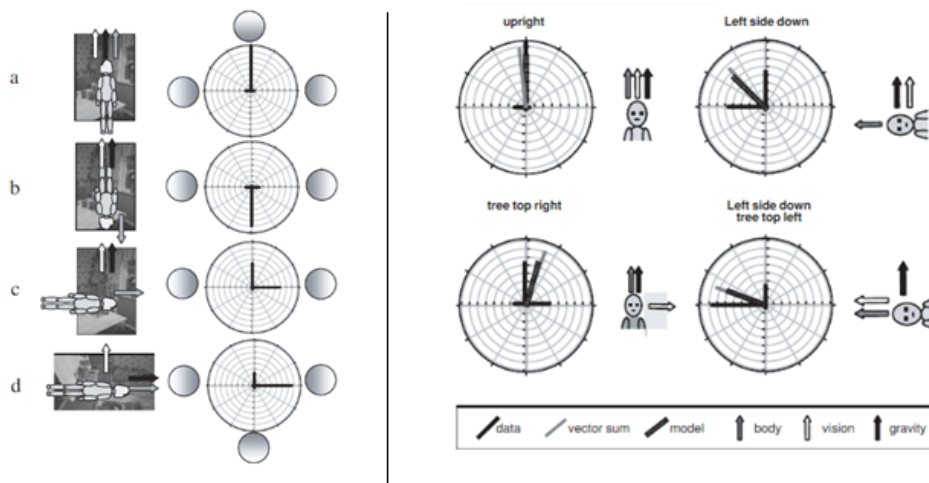


Figure 4. Resultant vector diagrams in two experiments: in tilted room (left), and in parabolic flight with various gravity environments (right)
 Source: Michael Jenkin, picture was taken from www.academia.edu

ANTI-GRAVITATIONAL SETTING FOR IMMERSIVE LEARNING FACILITY

In this section, I begin to describe my design process of parallax insectarium which consists of three phases: experiment, prototyping, and final design.

A. Wall-walking Experiment: Detachment of Gravitational Logic

After what concluded by previous scientific researchers, I was interested to test the effect of spatial extremities to an individual in an experiment of wall-walking. This experiment was meant to be a reference for the designated immersive learning environment. The experiment set was established to such a situation where an individual will become a subject in anti-gravitational context, to be challenged towards their familiarities, thus debilitating his spatial preoccupation to immerse in the virtual context. Then, by such condition, he will be assisted to reach the subconscious mind. In this experiment, the operations given to the body consist of:

1. Unfamiliar visual references that differ from the Earth-gravity environment.
2. The exertion of the body to the condition where the muscle will receive gravitational force differently than it does most of the time.

The experiment conducted in the form of the spatial installation in an enclosed room with ceiling lamps (figure 5). There are numbers of boxes in different sizes and a curved surface. The arranged hanging boxes serve for visual elements, while the curved surface is intended to filter the light coming from the lamps in the ceiling which potentially become cues for spatial orientation. I took part as the participant in this experiment. Started by rotating and suspending body towards the wall, the experiment continued with participant walking and creating movements either upwards or spin around in the wall (figure 6). The effects perceived by the participant caused by two operations above are the followings.



Figure 5. Experiment walking on the wall
Source: Author



Figure 6. The experiment to generate parallax and immersion
Source: Author

First, the unfamiliar visual references caused parallax while walking upwards and spinning around. The parallax (figure 6, bottom) led to the frequent perceived visual changing, creating continuous slight transpositions of spatial orientation. The effect of light coming from the lamp turns out to be significantly different. Not only because of the dislocated light source from ceiling to wall, but also of the increasing light intensity that usually involves indirect eye contact and indicated ceiling, in this case, turn out to be more direct eye contact and bring a lot more attention. As a result, the presence of lights perceived as a strong distinctive type of visual elements which could serve as the key point for spatial orientation.

Second, tilting body to the 90-degree extremities creates the new context of the body in unusual vestibular reaction. The lack of pressure in the feet while walking or staying in the wall is substituted by the higher needs of balance forces in the torso. Had adapted to the new balance of this unusual vestibular forces, the wall-walker was also capable of projecting the wall as the "new floor" and immerse in the visual of the new spatial orientation.

Both the factors of the light clue as a visual and tilting body as vestibular are essential to be brought into the system of interiority. The experiment of wall-walking contributes many details about the perceptual sense in the scale of the human body, and it becomes the basis of interiority in Parallax Labyrinth. The prototype of Parallax Labyrinth (figure 9) consists of the mechanism to tilt body and to filter lights as well. Its form is generated for immersive learning by deconstructing body balance and visual perception.

B. Orchestrating Ecological System to be Learning Substances

How could a media provide substantial immersive learning? One of the interesting movies that bring the audience to immerse in a virtual world of insects is "a Bug's Life", an animated Pixar movie. The story focuses on the main characters of the movie which are insects. By framing the insect's characters as the focus story, and by presenting the pictures that zoomed to the insect's body, the audiences are suggested to simulate themselves as being scaled down in the size of insects so that they could project themselves in the virtual world of insects. By the immersion, this movie provides audiences with a great deal of knowledge about insect's world (Minow, 2003). For example, through immersion of ant's life, the movie informs the knowledge about ant's life cycle and how its relation to other insect species and another animal as well. The audiences could learn the complex relationship by immersing in the story. There are also many trivial lessons about insect's life which unnoticed, like how a small amount of water drop could even be very dangerous for small insects. If not immerse in the story, it might be hard to get such trivial idea. This movie demonstrates how becoming a projection of virtual character helps us to learn the complexity.

Parallax Insectarium is a place where visitors could observe and learn the complexity of insect's life in their ecosystem with immersive learning. As a designated building and environment, this insectarium has a responsibility to provide all matters that necessary for bringing the complex relationship of that ecological life. Substantially, it provides basic ecological needs for the species (figure 10), either with natural intervention such as plantings and flowers to help them populate. A vast area of water is intended to cool down temperature which also helped by river nearby. There is also an artificial intervention such as a tower (figure 13) releasing chemical gas to control the ecological sustainability. The building provides hiding place for insects from predators while offering support to the predators as well (figure 10, bottom).

In the urban context, it is a public building which is not isolated from the city. Instead, it means to attract people coming from the urban area to the insect's habitat, where Parallax Labyrinth will enable them to immerse in anti-gravitational context of insect's environment. The journey to the Parallax Labyrinth will be progressing from very gravitational conscious into anti-gravitational subconscious (figure 8, top). It is started from the usual setting, marked by the rectangular entrance door to the urban labyrinth. The urban labyrinth (figure 7) serves for a public recreational purpose, while Parallax Labyrinth serves for immersive learning (figure 12). The immersive learning is built through the extremely transparent platform to observe insects, by which it brings people into the sense of flying while walking on the platform. It also has a bio-chemical mechanism for encouraging various insects to move along the external glass surface of the labyrinth and thus builds interaction with visitors.

Insects and humans use light as a clue of direction. Both human and insects shared a critical sensibility in common about light. The human might find lights as a useful key point for orientation in anti-gravitational context, while for insects light might affect their behavior. The tendency is whether to approach or to stay away from light. Wide ranges of insect species include those contradictive behaviors, so-called positive phototaxis and negative phototaxis (IFLScience, 2017). Naturally, some insects give a spontaneous response to light stimulation because of the taxis behavior (Singh, n.d.). This predictable behavior might be useful for controlling the insects, In this insectarium, the polarity in taxis behavior could be predicted for the observation purpose. The kinds of positive phototaxis insects will be exposed to the external parts of the building, making their movement navigated by sunlight and different light exposures filtered by physical elements of the building. Meanwhile, the kinds of negative phototaxis insects will keep hiding in the darker

area, and by the form of the building, they will be mostly hiding behind the faux stones, makes them observable for people inside the building.

Another important factor that affecting insect's behavior is weather change, as for animal as small as insects, raining could be a matter of life and death. So, it is really important for them to find a hiding place when it is raining (figure 12). The weather change will force insects to move in or out. As a result, it creates repeated transformation in the atmospheric quality of the Parallax Labyrinth. Whenever weather transformation takes place, the sky will be theatrical by insect's behavior. For the visitors, this weather show will be good for understanding insect's life in various moods of environmental conditions

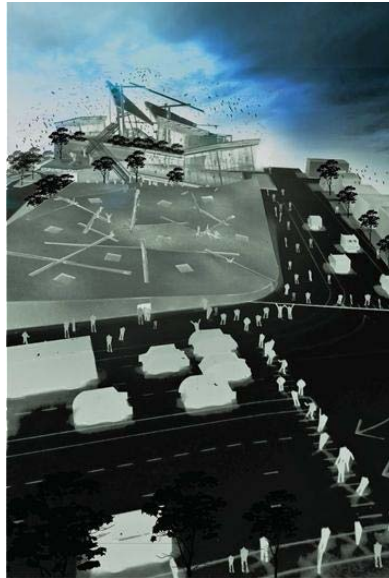


Figure 7. Insectarium is connected to urban context, inviting people to engage in an immersive journey through the rectangular entrances-open to the street.

Source: Author

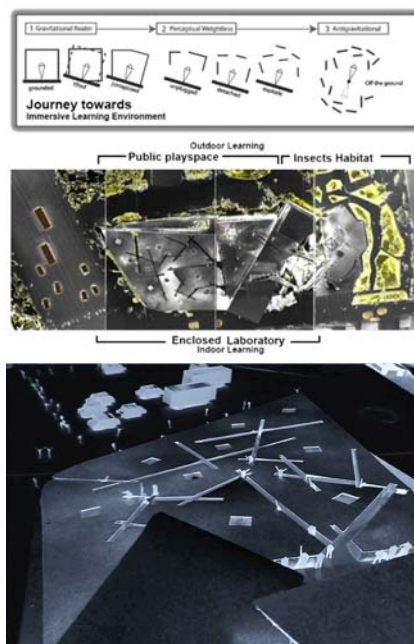


Figure 8. The immersive programming of insectarium as a journey, from very gravitational to anti-gravitational context (top), juxtaposed with aerial photo of the whole building (middle), and the quality of urban connection (bottom)

Source: Author

C. Immersion in Transparent Parallax Labyrinth

The glass observation platform is seen as a form of invisible separation between human and insects. Natural quality of the site ecology is maintained by the intervention of this transparent parallax labyrinth. It is an effort not to bring any physical material visible in the natural habitat besides humans themselves as a physical subject inside the labyrinth. Inside and outside, it provides almost nothing to obstruct the view, except the sky and dynamic movements of insects. There is no visible floor, so if a person looks below, what he will probably see is the water reflection of the sky above or insects that inhabit the sky. Because of this transparency, a person might not have any idea of where his body is landed in this labyrinth.

The role of the labyrinth is also as the field and interface for immersive learning. With the absence of perceived ground, the perceptual attention will be fully dedicated to the surrounding environment. Human will bound with insects, intermingling without obstructive visual elements. Besides, the inclined ground of the labyrinth will encourage the physical body to engage with the virtual body in the context of anti-gravity. The labyrinth's interior form provides freedom for individual body subjectivity to tilt body (figure 14) at a certain level of extremity.

By the sense of unbounded by any materiality inside the labyrinth, the experience in the labyrinth will be very subjective, like what Tschumi (1994, p. 81) called a paradox of space. There will be freedom to choose between thoughtfulness and playfulness, as well as between logic and imagination. When we project ourselves into another reality, our mind will repeatedly switch from conscious to subconscious. Geometrical simplicity of the labyrinth should not limit virtual imagination. It should bring the user's body beyond expectation, triggering the sense of immersive environment.

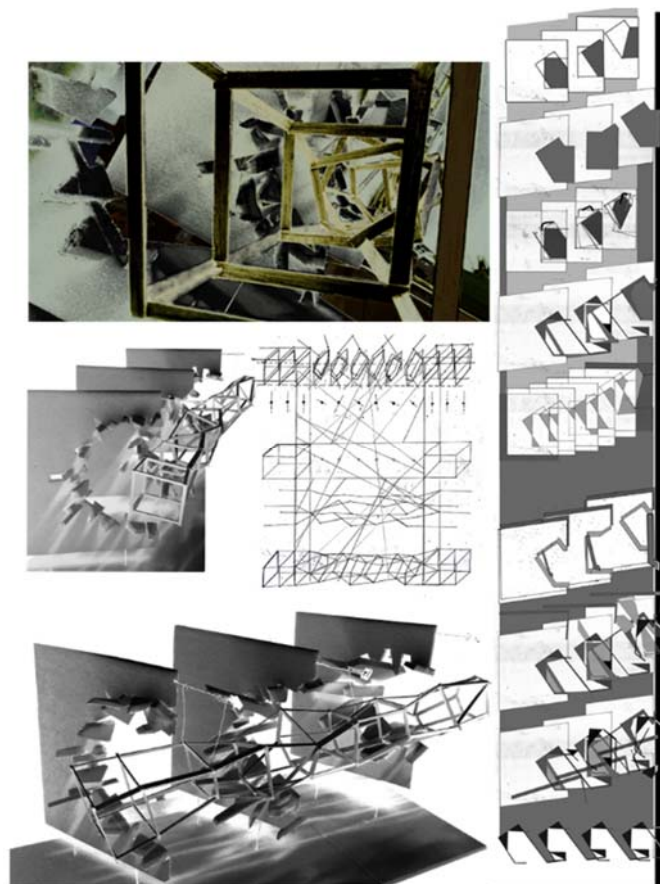


Figure 9. Conceptual Model for Parallax Labyrinth
Source: Author

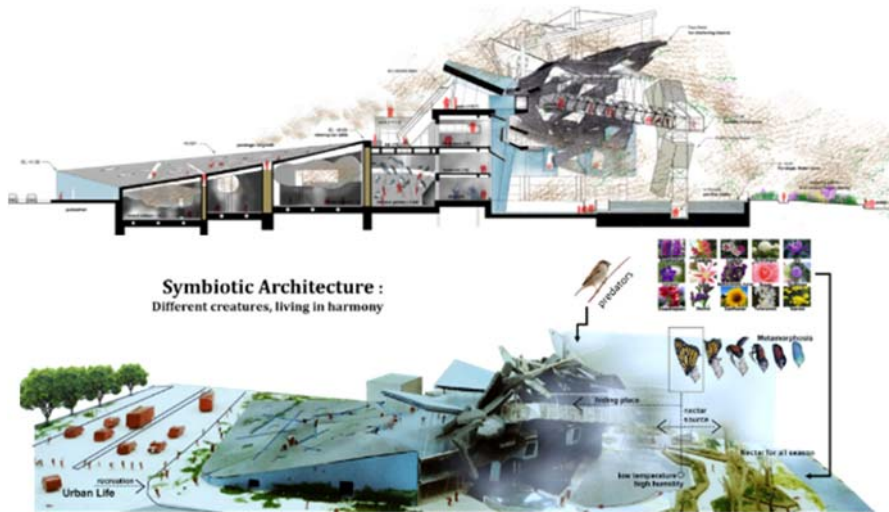


Figure 10. Insectarium's Longitudinal Section (top), and the ecological system (below)
Source: Author



Figure 11. Sky-walking: Sensation of being weightless by walking in the glass labyrinth. There is a tower that will serve as artificial ecological support by spraying chemical substances to the sky.
Source: Author

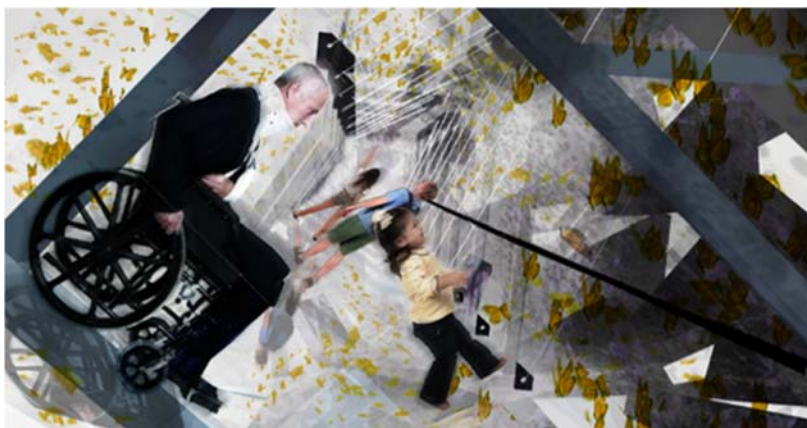


Figure 12. Ecological observation inside the Parallax Labyrinth
Source: Author

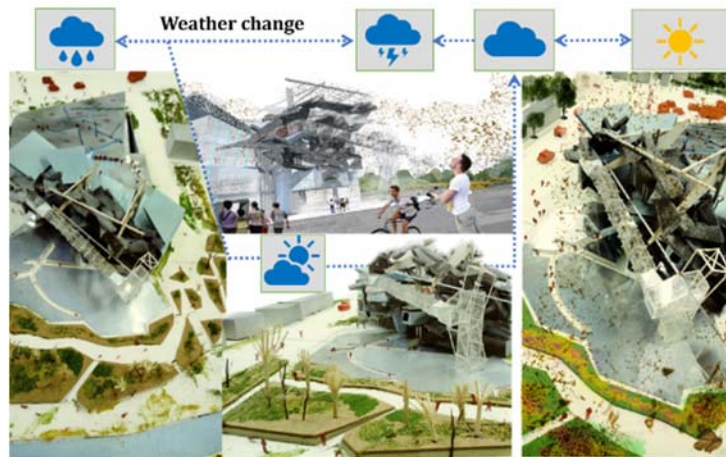


Figure 13. Weather change will determine insect's natural behavior.
Source: Author

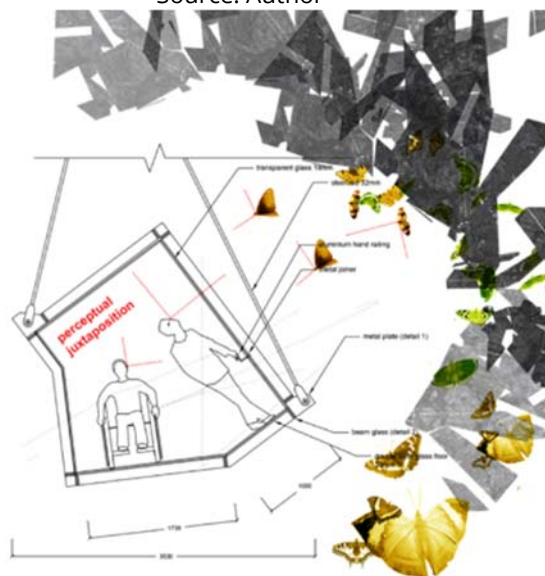


Figure 14. Detail drawing for Parallax labyrinth.
Source: Author

CONCLUSION

As an innovative educational building, Parallax Insectarium attempted to achieve the highest peak of learning performance through the method of immersion in anti-gravitational context. The method of immersive learning might be a model for the future educational facility, where learning efficiency is maximized by encouragements of creativity and exploration. To achieve that, we should not dismiss the powerful capability of subconscious mind behind immersive learning as it has been proved convincingly by neurological research.

Immersive learning is a mental process that requires holistic engagement. Qualities that enable immersive learning could be either encouraging or debilitating something. It might encourage the sense of limitless by invisibility, but at the same time, such unseen quality might debilitate spatial orientation by the absence of visual cue. In the end, all of the qualities are meant to direct the user to the virtual world. A virtual world is a reality that detached from physical reality, but it is where the real substances of knowledge supposed to be. Immersion in the virtual world might only be encouraged if the environment is enabling one's body potential as a whole. Immersion will be a success when one's physical body engages emotionally with the body in the virtual context, be fascinated with a subconscious reality that apart from his logical mind.

The interiority of immersive learning should adapt to the subjectivity of human body, and involves their multisensory experience accordingly. Freedom of the users should be promoted. The spatial elements might need to be ambiguous or be deceiving to adapt to the users' various personal references. In the parallax labyrinth, the transparent material gives spatial invisibility. Thus, it makes the spatial element could only be defined by the virtual projection of one's body, as it is not physically visible. Every person could project their virtual space differently. Such physically undefined quality will force a person to immerse in the subconscious to project their virtual body.

In Parallax Labyrinth, the attraction of insect life and its ecology may take a role to fascinate the users with the immersion towards insect's world. The fascination might be signified with debilitation of gravitational consciousness; by the absence of spatial orientation cues and provoking paradox of space. The paradox that capable of fooling the users into believing they are capable to fly.

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PROCESSES OF INHABITATION: TERRITORIALISING IN CREATIVE WORKSPACES

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ABSTRACT

Territorialisation is the phenomenon describing the behaviours of people in certain spatial environments and how they act when creating a space for themselves. This paper looks at territorialisation, how it is performed through acts of territorialising. The concept of territory is explored as an extension of ourselves (our bodies, our identities), as a way of looking at spatial identity and the way people occupy space with different objects and arrangements. This paper extends upon the research of Edney and Buda (1976) on the concept that inhabiting one's own territorialised space promotes strong feelings of identity, attributed to their own personality.

This paper explores these notions of territorialisation through a research project by the author, where 120 student desk spaces were documented, studied and analysed. The study looks at the various ways students in creative disciplines shape and inhabit their workplaces. Through observations of territorialised spaces, a spectrum of different practices of territorialisation is presented, including space occupation, functional additions, personal items, aesthetic enhancements, plants, shared territories, and expanded territories. Ergonomic alterations such as chair height, and screen height, are also considered as territorialising, in terms of comfort in one's own space. Through this exploration of territories questions of space and inhabitation are raised such as how do people occupy and negotiate workplaces? The findings of this research will contribute to discourse in interior architecture regarding workplace design, specifically in relation to the practice of 'hot-desking' in contemporary workplaces.

Keywords: territorialise, identity, inhabitation, body, spatial

INTRODUCTION

Territory has historically been used in many contexts; from a term used for describing a space in relation to animalistic feelings of ownership, aggression, and defensiveness toward that space, through to acquisition and advancement on enemy territory, through to current environmental behaviour research around the phenomenon of territorialisation. Examples such as cats and dogs "marking" their territory, or documentaries showing predator animals defending their territory against intruders are some examples which have provoked the idea of territorialising as being restricted to animals, not humans. However, there is a great body of research opening up a discussion around the territory. For example, Konrad Lorenz has a view which Julian Edney describes as "Territoriality is, in essence, the spatial expression of.. intraspecific repulsion. Man, too, is subject to his aggressive instinct and shows it is a history of bellicosity" (Edney, 1974, p. 960). Here it is made clear that there is a link between the physical environment and the behaviour within a geographical space; a link between a human occupying their land/territory, and the aggressive behaviour they have

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towards those who try to approach or invade it. Lorenz was in the belief that aggression is a natural state (Lorenz, 1969), among men, contrary to philosophers Kant and Rousseau, who see humans as naturally cooperative.

As well as territory being associated with land acquisition, other research explores the feelings of ownership over a particular space as the result of the process of territorialising. John Thompson suggests that "territories constitute an arena which the individual typically regards as his or her own, such that when others intrude on these territories it is perceived by the individual as a transgression or violation" (2011, p. 61). Although, this contrasts to other researchers understandings of territory, such as Sundstrom and Altman (1974) who refer to territorial behavior in relation to habitual behavior within spatial specific locations, or Altman and Haythorn (1967) who discuss territory as the consistent use and exclusiveness of a certain chair, or side of the table or bed.

Tijen Roshko, a professor of architecture, attributes territory to feelings such as "identification with space, sense of belonging, and cultural identity" (Roshko, 2009, p. 134). Roshko and many other authors, designers, theorists and architects have studied the concept of territory. Edward T. Hall, a theorist of the study of proxemics, stated that "To have a territory, is to have one of the essential components of life; to lack one is one of the most precarious of all conditions." (1959, p. 69). Hall accentuates the importance having a territory, or a place to call your own, and warns of the potential danger of nomadic lifestyles [living without territory] (1959). Elizabeth Grosz discusses the creation of territory as "artistically inscribed, the consequence not of a naturally selected "territorial imperative" but of an artistic movement: the creation of a marker" (2008, p. 48). Grosz identifies territory as being constructed not through the natural selection process of the desire for territory to survive [as frequently discussed by naturalists such as Lorenz (1969) and Ardrey (1966)], but as a physical movement, an action.

These concepts of territory and actions of territorialising are useful when thinking about contemporary workspace design and the move towards hot-desking and shared workspaces. The research project discussed here forms part of my master research which seeks to address transient spaces through a series of design projects that explore acts of territorialising within transient spaces, which lead me to this study of workspaces. Workspace design has been a very relevant topic of discussion within design and architecture over the past decade. From cubicles and individual desks, through to hotdesking, and activity-based working, workspace design has been explored thoroughly. However, why is it that workspaces keep getting designed and redesigned, and then updated again? Scott Compton, a New Zealand based interior architect states "a workplace which can inspire people, which can stimulate new thinking, which can spark interaction and ingenuity, is an undeniably powerful tool for companies" (2017), with technology constantly evolving, businesses need people who can think quicker, better, and faster. Most designers do not have enough time to fully investigate and study workers individual spaces of occupation, and with the hot-desking trend that works for some and not others (Hirst, 2011; Millward, Haslam, & Postmes, 2007) this means that the space for the individual worker is quite often left undesigned [depending on the imagination of the occupant]. This research responds to this by developing a process to understand how people negotiate and occupy individual spaces, through acts of territorialising.

TERRITORY RESEARCH STUDY

A. Method

This research responds to views of territorialising [acts of creating territory] as behaviours of arranging and organising objects, accumulation of objects, spatial occupation, spatial vacancy, ergonomic alterations, expansion of territory, and personal additions. This section divides the research into three parts in order to simplify the different types of territorialising and ways of looking at territory occupation: 1. [B] Individual territories 2. [C] Group territorialising 3. [D] Territory occupation over time. The site of desks as a point of the research was found very relevant in regards to individual workspace inhabitation and occupation of space, due to current interior architecture and design approaches to office layout and workplace research.

The desk study is within a semi-public, university space. Territory can be broken down into three different categories. Researchers, such as Edward T. Hall, (1959) and Taylor and Ferguson (1980), and Altman (1975) understand these categories as the primary [which can be understood as private in relation to this research], secondary [semi-public], and public (Taylor & Ferguson, 1980). This research looks specifically at semi-public territory as a ground for exploring within to refine the scope of the study.

The research includes the study of 120 creative masters students desks, performed at Victoria University of Wellington at the Architecture and Design Campus. These desk spaces are on average 1200mmx800mm [WxD] and are occupied by students for one year at a time. Four months into the year of occupation, students desks were photographed and studied through drawing overlays and observations between territories. The drawings displayed in this paper [section 3] highlight specific acts of territorialising shown from a selection of the students' desks. Learned from the drawings is an understanding of different ways of inhabiting space, habitual behaviours, how groups of people might decorate or organise their spaces to form a larger spatial identity, and how people might occupy space over time. The specific figures shown here were chosen as representations of certain types of territory representation, such as territory expansion, and use of personal objects.

B. Discussion – Individual Territories

Figures 1-8 show a selection of the drawings of the individual desk study, images 9-16 show a collection of territorialising acts but are used in this section to help illustrate patterns. The study began by taking a series of photographs of each student's desk territory. The photographs are outlined by specific objects that may act as a boundary marker. For example, figure 7 outlines a book twisted to expand out from the edge of the table. This student's territory expands beyond the scope of the photograph. However, the drawing overlays show the expansion of territory through object accumulation and arrangement. The desk in figure 8 shows the student's territory is expanded from the structure built to hold the accumulation of objects.

Derived from the photographs, the territories were then traced over in black pen to illustrate and understand object per object. Patterns such as storage placement, computer orientation, and spatial relationships between objects were developed. For example, figure's 1, 6, 10, 11, 13 and 14 are examples of how people often place their coffee cup or beverage close to the computer mouse [on the right side of the desk]. Also learned during this process was vacant, or occupied space of each desk. The vacant space on desks quite often tended to be the front and centre of the desk and the left and right sides, with the objects pushed to the back and to the side of the screen, as can be seen in figures 3, 4, 6, 8, 10 and 14. Other student's, however, can handle the clutter from the accumulation of objects, as can be seen in figures 2, 5, and 8.

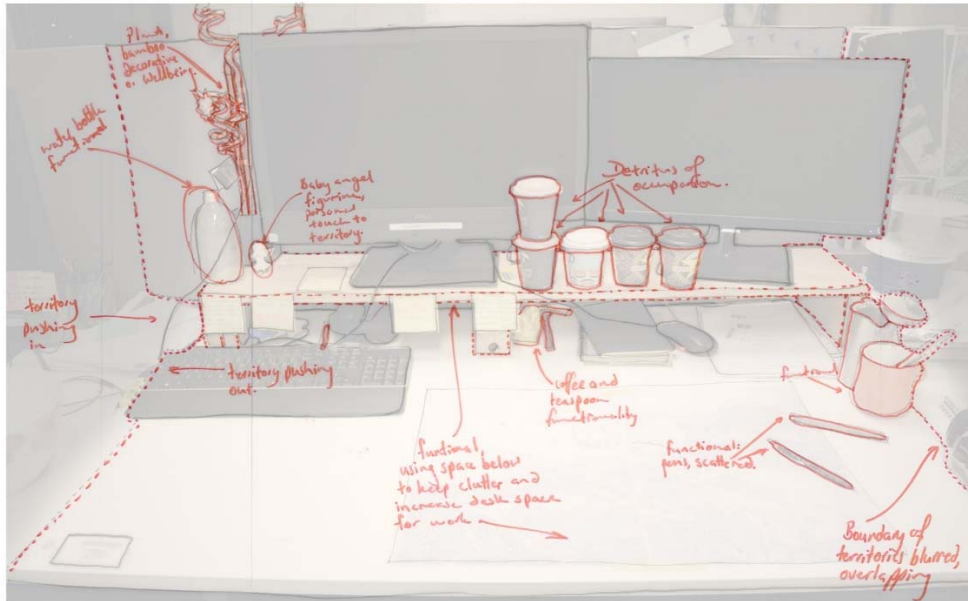


Figure 1. Desk no.63 (Author's image)

The black line drawings also acted to outline the boundary of the desk, or the territory, whichever was most defined. Some territory boundaries were only defined by the desk line, with no objects, such as in figure 4. Other students were found to align their objects with the edge of the desk at the back, but the front of the desk left open, creating an undefined, blurred territory, such as examples in figure 6, 8 and 10. Contrary to this, other student's accumulation and placement of objects are used to construct the boundary line, from front to back of the desk, such as figures 2, 5 and 7.

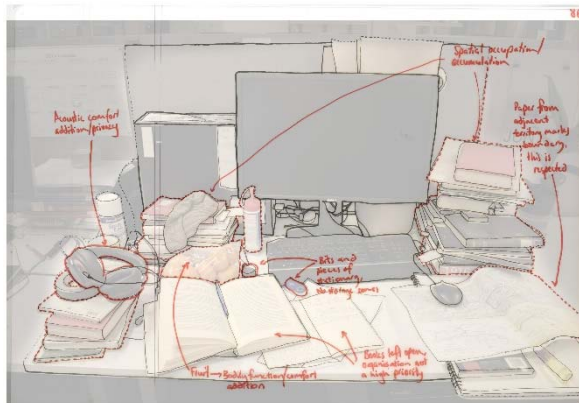


Figure 2. Desk no.86 (Author's image)

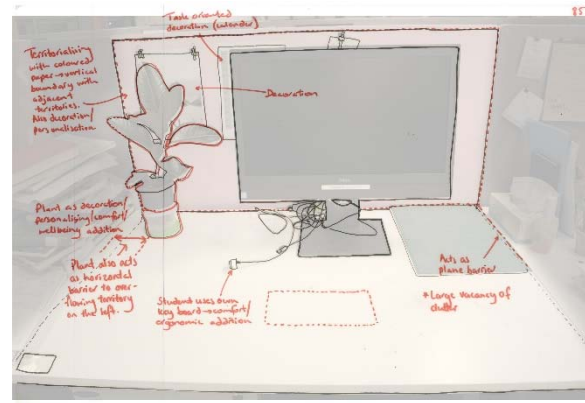


Figure 3. Desk no.85 (Author's image)

Following this layer of the study, another overlay was set down using a red pen to highlight the main features distinguishing the identity of the desk space and the acts of territorialising occurring. Here is where objects were distinguished as storage, task-oriented, personal, a bodily need, detritus of occupation, wellbeing oriented [plants], or where a large vacancy of space was identified, or the way objects were arranged, scattered, or stored was learned.

Of the desks studied, not surprisingly, the majority of objects identified were task oriented. An interesting discovery was that the number of desks that in relation to storage facilitating objects such as a pencil case, pen holder, or letter tray, averaged that 52% of desks included a storage system or storage object, and 48% not having any storage system on their desk at all. This 52 % of students are choosing to use a space-

occupying item in order to keep their belongings together and organised in their workspaces. Other students prefer to either keep their belongings in a paper or book pile, or in their bags or locker some distance away from their desk space.

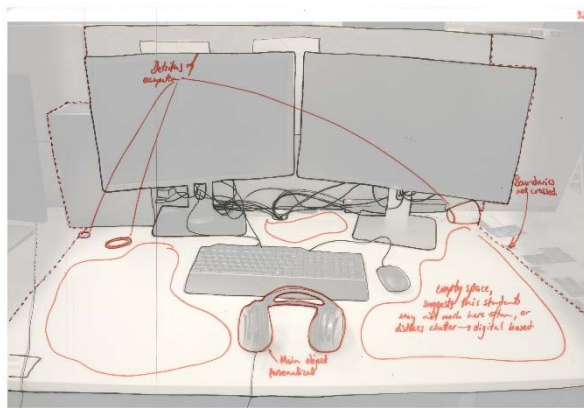


Figure 4. Desk no.92 (Author's image)

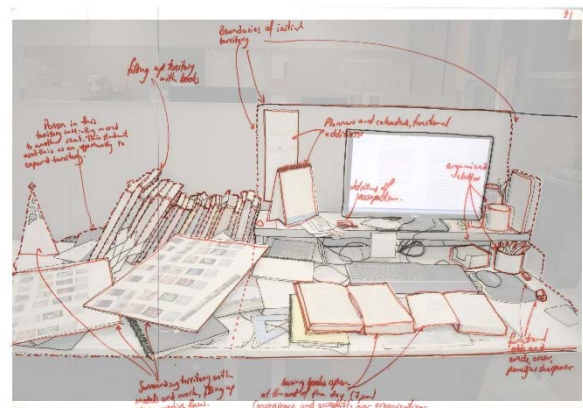


Figure 5. Desk no.91 (Author's image)

Overall, this section of the study found that people occupy space in many different ways, even though these students were all in similar spatial situations at the beginning of the year. The type of space as semi-public was found to limit some extents to the ways in which students may create and/or expand their territories through object accumulation and organisation. The authors master's research also looks into the inhabitation of private transient space – students private residences, which has found that private space allows much more freedom of territorialisation to occur than in semi-public space. The difference between private and semi-public space being who sees and the number of people who may be affected by the territory. This research understands the inhabitation of semi-public space, and produces a spectrum of individual's behavioural responses to workspace environments.

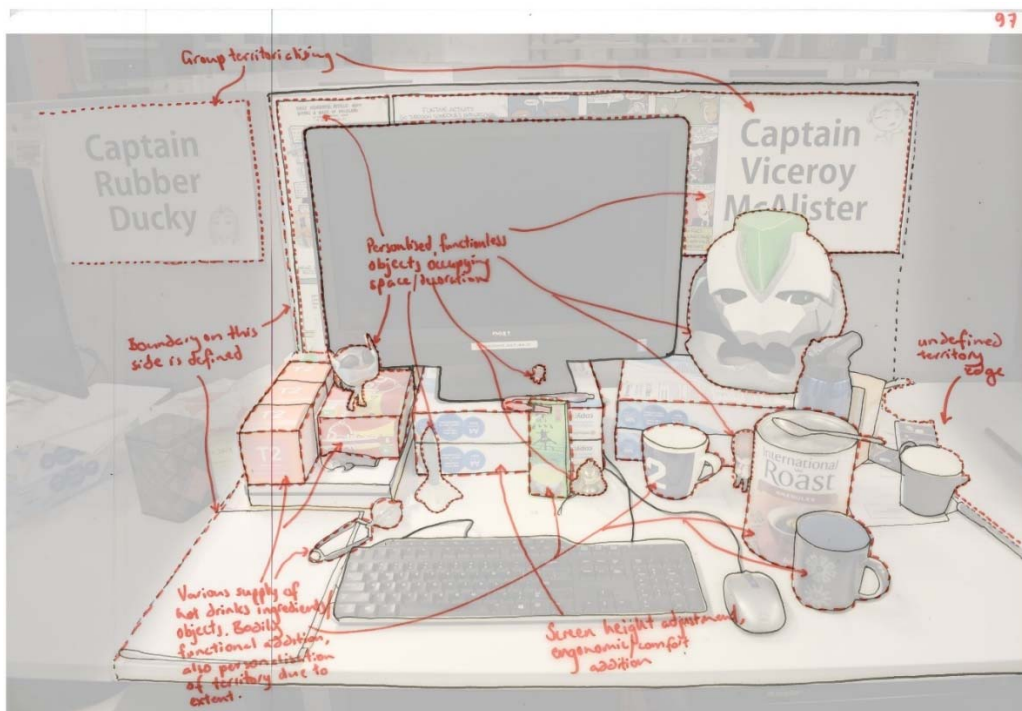


Figure 6. Desk no.97 (Author's image)

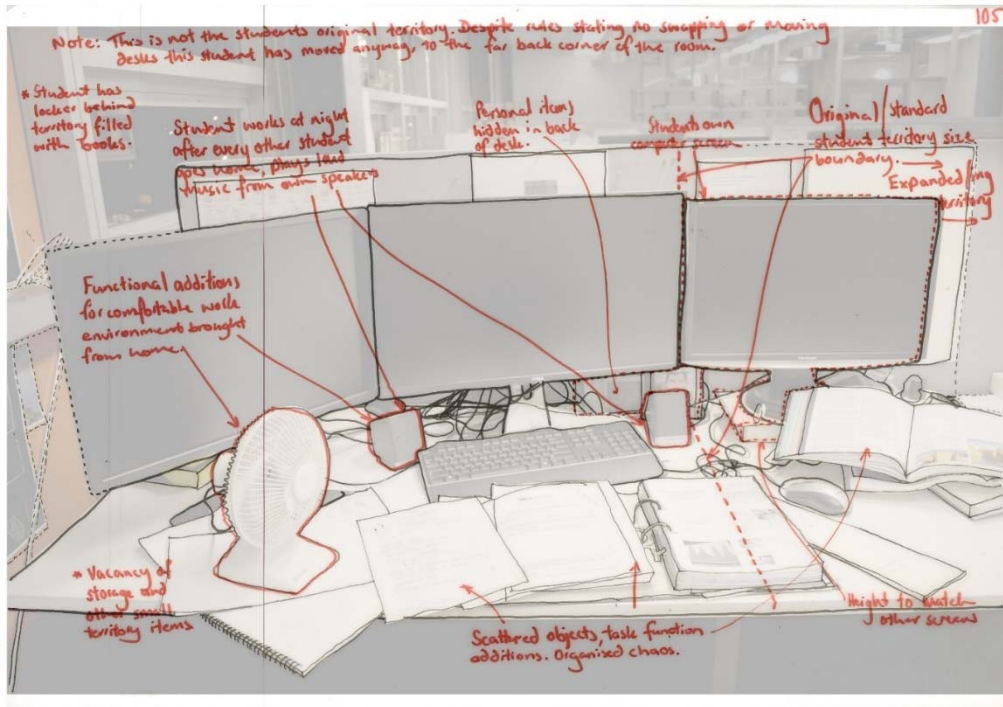


Figure 7. Desk no.105 (Author's image)

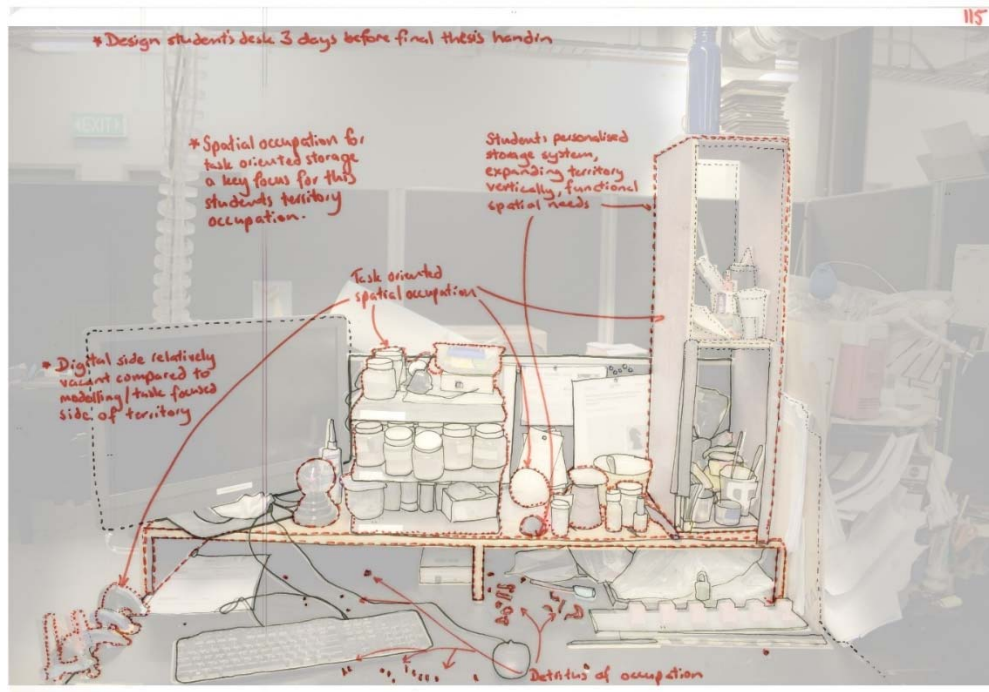


Figure 8. Desk no.115 (Author's image)

C. Discussion – Group Territorialising

Throughout the studios studied during the desk analysis, some ways of inhabiting space on a larger scale were learned. One group of students set up a structure at the beginning of the year which used string tied around timber as a method of vertical space object occupation of space [see figure 9]. Another group of students, use similar personal objects when inhabiting space, such as special helmets, posters, and naming territories [figure 10]. An interesting situation also occurred where two adjacent students used a whiteboard marker to co-create images that spread onto both of their desks, as a method of taking a break from their study [figure 11-12].

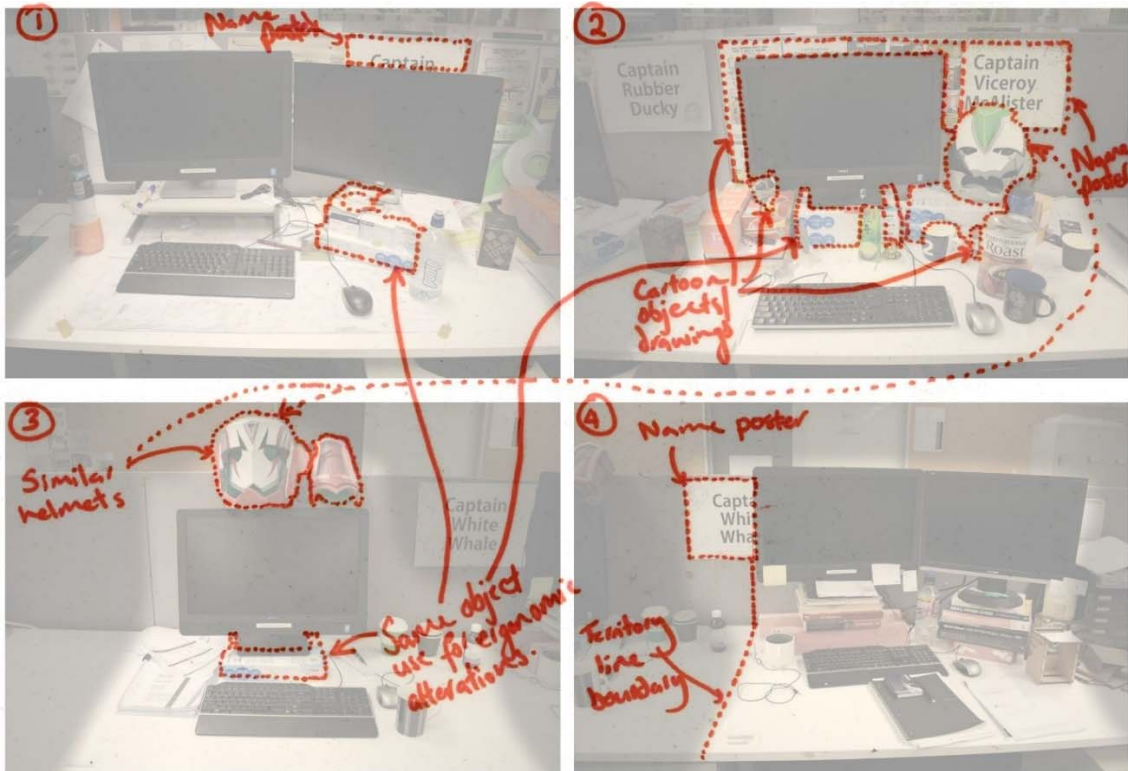


Figure 10. Group Territorialising - Personal Objects (Author's image)



Figure 11. Creating Shared Territories - 1 (Author's image)

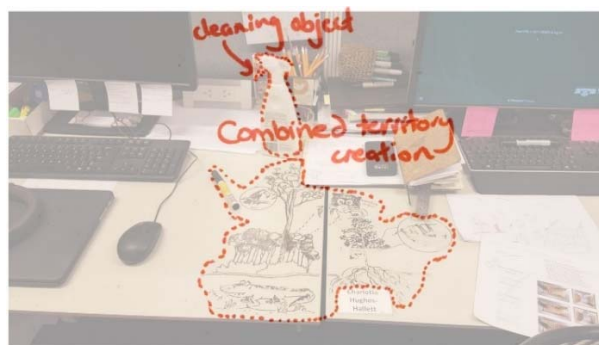


Figure 12. Creating Shared Territories - 2 (Author's image)

D. Discussion – Territory Occupation Overtime

From the above study of individual desks, different behaviours are learned across a spread of different students. This research understands that people will organise things in different ways, and have different preferences for the type of work environments they can work in. However, this research is also interested in the inhabitation and occupation of space, which may not be clear through an observation of a specific point in time. This section explores how people have occupied space over a series of four days.

Figures 13-16 show how four student's territories have changed over four days. By studying the movement of objects within the territory, an understanding of how exactly people might occupy their workspace over time may be developed.

This study found that most small objects such as stationary, tend to float around the desk space, even if a pen holder or pencil case is present. This can be seen in figure 13, where the student shares a blurred boundary line with the desk on the right. For example, the movement of the tissue box [object 7], ruler [object 3], and a piece of paper [object 2] between days 1, 2, and 3. Also found was the pile of paper to the left of the territory does not move as a whole; the student tends to take out pieces of paper singularly when needed. For example, object 8 [a drawing] is in a pile for the first 2 days, and on days 3 and 4 it comes out to be worked with, like a storage system

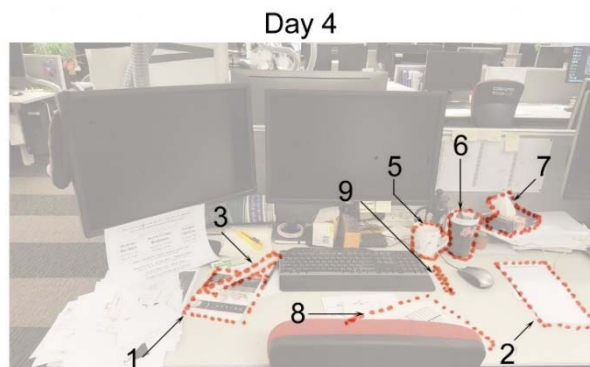
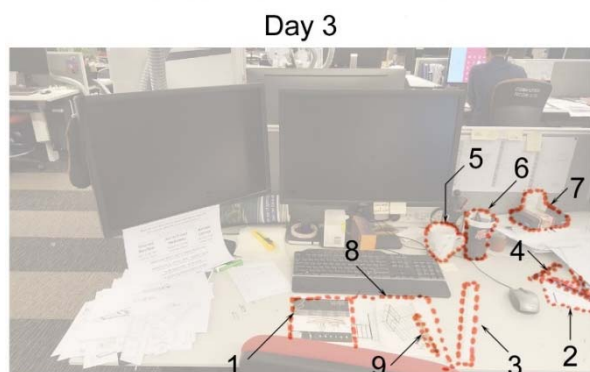
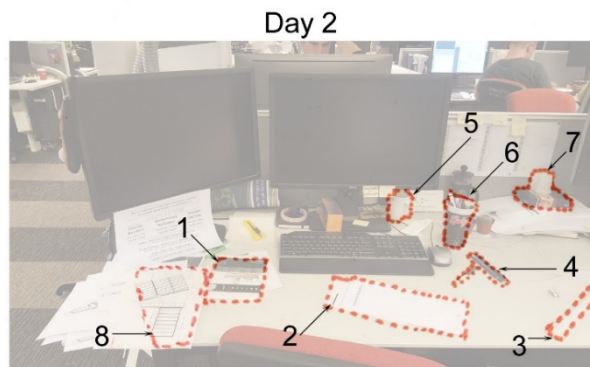
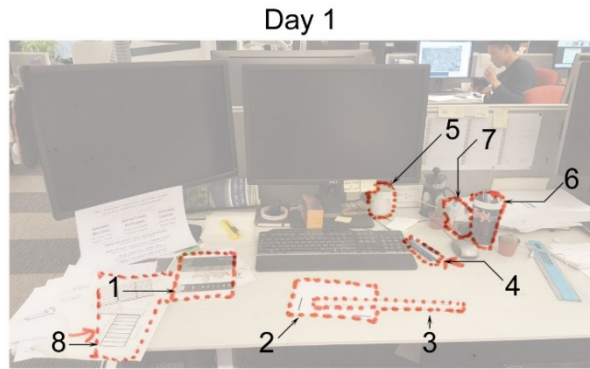


Figure 13. Territory over time - desk no.12
(Author's image)

Figure 14 was a student whose territory has 3 plants and is quite organized with a storage system for books, another system for pens, and another space allocated for other books and drawing pads. The occupation study fell during a time the student was making models on their desk, so the territory was left much less organised than how it normally might be. This was shown through the movement of objects such as the rulers [objects 8 and 9], and pad [object 6].

Figure 15 and 16 show desks 86 and 85, as studied in the individual desk studies. Desk 86 [figure 15], has multiple stacks of books which stayed relatively stationary during days 1-4, although the top books and pieces of paper tended to shift around. The paper roll, object 3, is stood up on day 3, appearing to make space for another pile of paper where there was vacant space earlier. Desk 85 [figure 16], ends up vacating much of the desk on the fourth day with the disappearance of the booklet [objects 2].

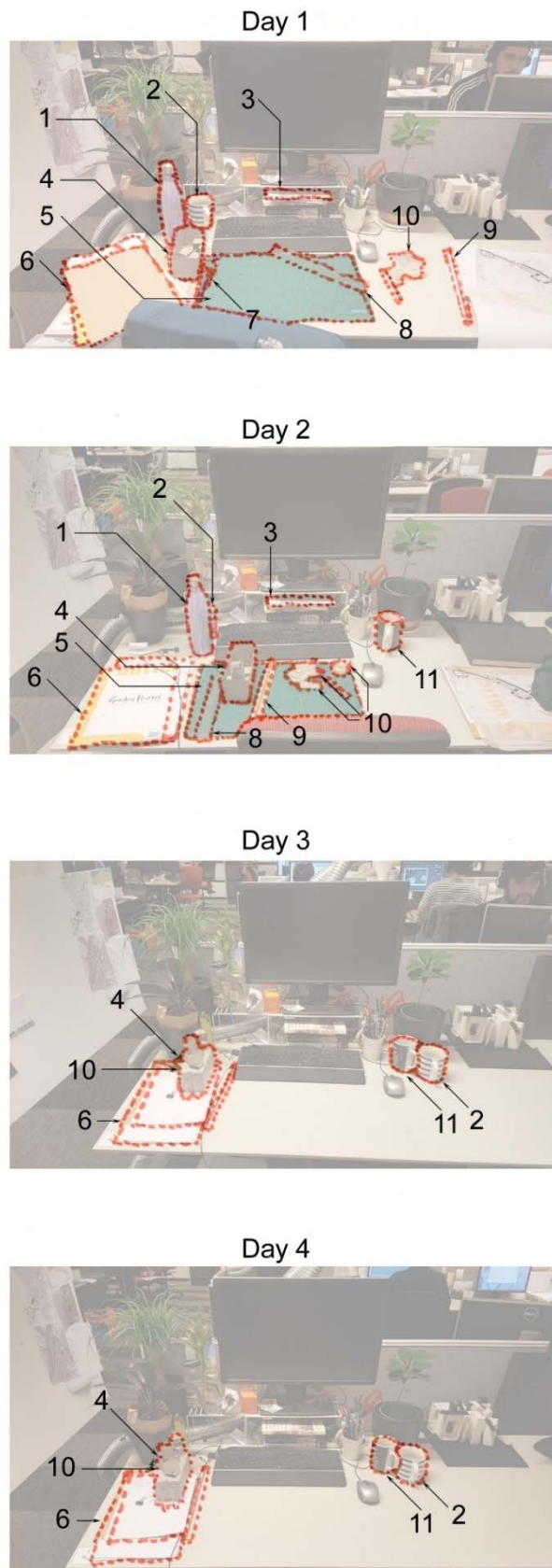


Figure 14. Territory over time - desk no.27
(Author's image)

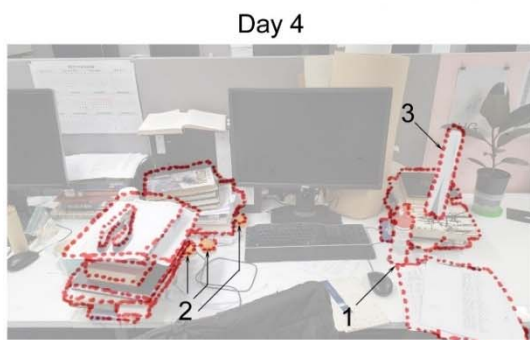
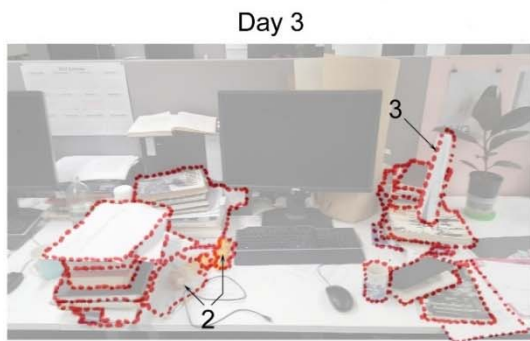
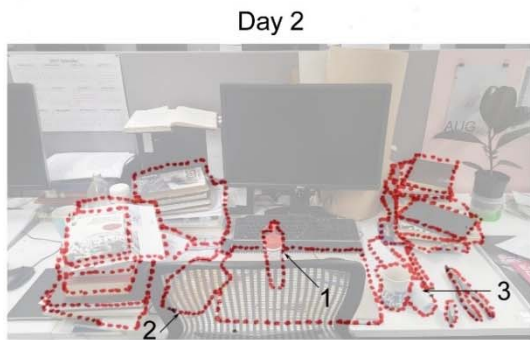
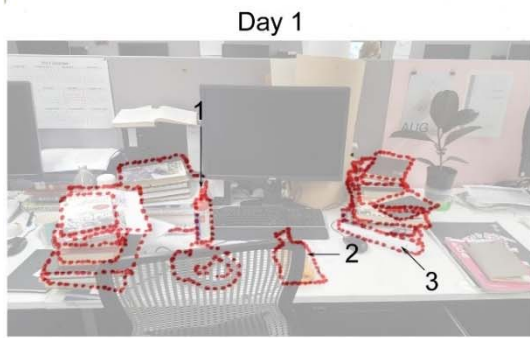


Figure 15. Territory over time - desk no.86
(Author's image)

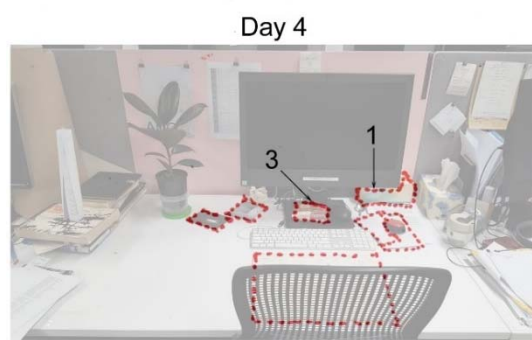
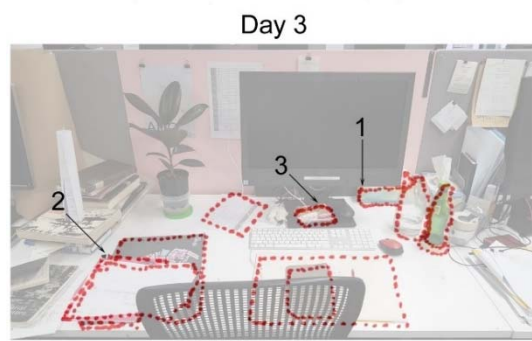
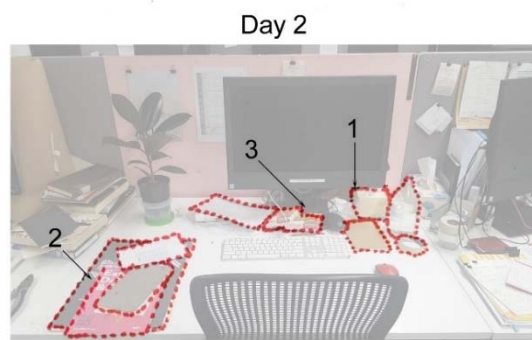
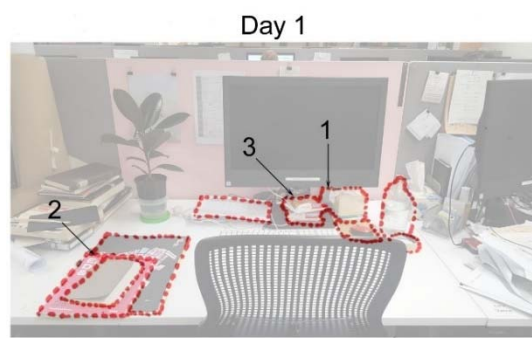


Figure 16. Territory over time - desk no.85
(Author's image)

CONCLUSION

Overall, this series of studies and drawings of territories has developed an understanding of the way people occupy and inhabit space. This research is an explorative process that offers a view for designers to consider the individual workspace through understanding ways of shaping and inhabiting space. By looking at acts of territorialising, such as organization systems, display of personal objects, or the inclusion of plants in individuals workspaces, this research understands that workspace design needs to accommodate for this to occur for workers to be able to create a place in their workplace that they can identify with.

Acts of territorialising noted, such as 52% of students using storage systems, is relevant in relation to hot-desking arrangements. It would be difficult to accommodate the transportation of storage elements, as hot-desking requires if people prefer to have a more-permanent method of storing their belongings. It is through close up studies such as this desk study that these sorts of findings are brought forward, allowing for a wider spectrum of inhabitation to be considered.

This paper questions how people might negotiate and occupy semi-public space and finds that for designers it is important to consider and allow for the potential ways people might inhabit the workspace at both individual desk scale, and for surrounding group territories also. From this opens up a question of the extent to which the design should allow for territorialisation. By providing design options where workers are allowed to create territory, yet still have transient qualities to the design, workers will be able to better identify with space and company they work for.

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FRAMING INTERIORITY: INTERIOR AND LANDSCAPE ENCOUNTERS

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ABSTRACT

This paper focuses on the emergence of framing interiority from the relationship of the forces of the earth, time and living bodies. The emergence of framing interiority of the earth, time and living bodies offers an understanding of the role of framing as interior-making in the realm of the theoretical and practical basis of interior architecture in connection to the natural landscape. This study addresses the context of a volcanic site with the existing ruins of sulphur factory that argues for and establishes the process of investigating various acts and forms of framing interiority. The process of framing interiority from the relationship of the forces of the earth, time and living bodies provokes a dialogue on the interior-making in particular to the three interrelated processes – framing as cut or separation, framing as view or selection, and framing as contrast or relation. This study aims to establish a picture of how the intensification of bodily experience of the natural landscape may arise and be generated in the manner of these acts of framing. The question of how interior practices and techniques can be implemented to intensify the bodily experience of the landscape is the basic intention of this research.

Keywords: framing, interior, interiority, landscape

INTERIOR AND LANDSCAPE ENCOUNTERS

This paper addresses the relations between interior and landscape, in particular how the processes of framing may signify the encounters of interiority between interior and landscape. These encounters of interiority will particularly reveal the way of intensifying bodily experiences of landscape and the forces of the earth. They will also promote the connection between body, energy and surface. The research explores framing as 'interior-making' in both the theoretical sense and practical tactic for interior architecture practice. Framing as interior making is explored in three different ways: framing as cut or separation, framing as view or selection, and framing as contrast or relation. These interrelated processes – framing as cut or separation, framing as view or selection, and framing as contrast or relation engage site's visual material and develop an alternative form and framework for spatial propositions.

These three framings of interior and landscape relation will be considered: first, framing the spatiality, a consideration of the forces of the natural landscape, and second, framing the temporality, a consideration of its temporal quality. Framing the spatiality addresses the volcanic site as a specific context of its mechanism. Framing the temporality promotes the reflection on the Anthropocene, the era in which human intervention is considered as the dominant influence on the geological, atmospheric and ecological shifts and transformation (Turpin, 2014), with the existing ruins of sulphur factory as a key part of its properties. These two considerations emphasise speculations about how framing interiority enable production that deals with two-time scales: one of is devastating and uncontrollable and one of the outside the concept of entropy in which human activity can influence. Within the Anthropocene, the continuous transformation demands the

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understanding of forces as poetic brief that does not produce objects but rather interiority, relationships to context – intensification within interior and landscape.

The understanding of spatial and temporal dimensions as composing forces is highlighted by Suzie Attiwil (2005) as vital components to interiors and landscape, insides and outsides. Following the redefinition of Elizabeth Grosz (2008) the process of composition, the interior-making, addresses the act of framing which establishes territory from out of the chaos that is the earth, fabricates interior in which sensations may emerge, from which a rhythm, a tone, a pattern, colouring and texture may be extracted (Grosz, 2005, p. 19). Rethinking the very nature of the interior and exterior, inside and outside, Bernard Cache (1995) proposes a theoretical framework for approaching architecture as the art of the frame, an act of separation, selection and arrangement regarding the engagement with wider geographies – thereby merging territorial and bodily scales.

“... it is possible to define architecture as the manipulation of ... the frame. Architecture, the art of frame, would then not only concern those specific objects that are buildings, but would refer to any image involving any element of framing, which is to say painting as well as cinema, and certainly many other things.” (Cache, 1995, p. 2).

Regarding the act of framing as composing forces and establishing territories, tracing the ‘material energies’ of the extraction from geographical and atmospherical entities can be both explorative and generative. They can be engaged to create physical boundaries, surfaces and edges to define space, facilitate activities, organise hierarchies, provide security, and produce an architectural shape that can inform the body's behaviour (Lally, 2014). In this way, understanding the forces as poetic brief means that without energy there are no processes or continuous transformations, as Addington and Schodek (2005) suggest. Within the Anthropocene, the continuous transformation demands the understanding of forces as poetic brief that does not produce objects but rather relationships to context – intensification within interior and landscape.

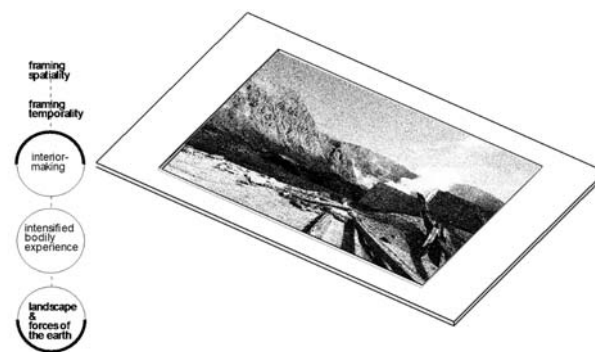


Figure 1. Diagram of research intention
Source: Ujung 2017

The understanding of interior as the best medium through which to address the interaction between human beings and design that is highlighted by Shashi Caan (2011) is one of the key ideas in response to the Anthropocene. She looks through interior space as a medium in which the relationship between the internal and the external, the tangible and intangible, human and non-human qualities emerged. In this way, Caan (2011) emphasises the interior space connects to our being on multiple levels (p. 38). The multiple levels of considerations on interiority related to our being and the new becoming are addressed within the intersection from the bodily conditions (Waghon & Smith, 2009) and sensations (Pallasmaa in Weinthal, 2011) to the affective qualities of spatial experience (Rahim, 2010).

Meanwhile, Johnston (2005) suggests that landscape is the background and foreground in which humans are embodied (given body in, given life in), and in which they are embedded (given shape and space). The idea of framing the embodied and embedded notion within the landscape and interior joint with very human capacity and penchant for telling stories (Pottinger & Purinton, 1998) that mediate the crossing of spatial and temporal experience. Here, the link between interior and landscape is promoted. Within this link, this paper will further emphasise the act and art of framing of interiority in regards to the spatiality and temporality terms.

A. Framing the Spatiality

The consideration of the forces of the natural landscape addresses the volcanic site as a specific context of its mechanism. White Island/ Whakaari, a volcanic site, is being chosen as the testing ground for the design investigation and experimentation. 'Te Puia o Whakaari', the Maori name for the island which means 'the dramatic volcano' is rising 321 m from the sea in the Bay of Plenty, 50 km from the coast of the North Island, New Zealand. The built architecture of this site including a sulphur factory and workers accommodation located on the island was destroyed in volcanic activity in 1933. Nevertheless, the landscape environment is represented as habitable. Seeing the site as a palimpsest of active territorial components through the natural events and the temporary structures is the key of this research that tests the role of design within the encounters of interiority in the era of the Anthropocene.

The ruins of sulphur factory that consist of the concrete foundation, the walls of the remaining building, the timber (Oregon pine), the machinery and the rubber on the wheels of the old factory reflect the act of framing (and *deframing*) as the act of cutting, removing and bringing something in a way of interior-making. Those actions are reflected through the shifting from the natural landscape to the *architectural floor* (flat surface of sulphur factory) and now return to the initial, to the landscape again (ruins of remaining sulphur factory). These shifts are conveying the message that the formal affinities between the manmade properties and the natural theatre attest to the interior-making as an act of framing within the encounters of interiority in the era of the Anthropocene.



Figure 2. Diagram of the relation between framing interiority with materiality and topography
Source: Ujung 2017

Framing the spatiality includes context and moments touch issues intrinsically linked to our bodies. It heightens our consciousness about the relation between the human body, the ground and the built space. It discusses the relationship between the materiality and topography of the ground that opens doors to the origins of life on earth (birth), to fluidity, transformation and expansion (see Figure 2). Framing the spatiality

also introduces the issues of heat, the flow of energy, that reveal the blurred boundaries through moments and movements. In this research, the spatial quality, position and orientation of these boundaries responds to the possible forces of living bodies as Grosz (2008) noted while experiencing the encounters of interior and landscape. In this way, the relationship between interior and landscape through the act of framing challenges the way we investigate the internal negotiations of the human body and the environment.

B. Framing the Temporality

“In addition to the material, spatial and practical aspects of the topography, there is a third characteristic to which I alluded earlier that is just as important as these first three: its temporal quality. Seen over time, the materials of landscape continually renew themselves” (Leatherbarrow, 2011, p. 212).

Framing the temporality refers to the issue of ephemerality which implies the significant role of time in defining the dynamic of spatial experiences and properties. In this way, the act of framing signifies the issue of instability, volatility, changes of status: liquid to solid. It is not only about the changes of each consistency, the disappearance of such elements, but also the return to the initial that represents contacts and encounters of past and present, inside and outside, interior and landscape. Framing the temporality also represents “a site’s metabolism as the key to its capacity for continued relevance.” (Leatherbarrow, 2011, p. 212).

“The frame is what establishes territory from out of the chaos that is the earth. The frame is thus the first construction, the corners, of the plane of composition” (Grosz, 2005, p. 19).

The attempt to frame the temporality is then determined by the influence of the composing forces on the earth’s surface, such as the effect of eruptions and the acidic atmosphere that challenge the multiple events. It requires us to think about another form of encounter between body, energy, surface, matter, chaos, in which intensifies their networks and relations. Framing the temporality that generates the continual transformations opens the possibility of spatial sense, enacts blurred boundaries that promote a transitional element of depth at the visual and experiential section between inner needs and outer existing (see Figure 3). Here the act of framing then articulates the diaphanous piece of surfaces, the plane of composition (Grosz, 2008) to be enhanced by nature’s ever-changing spectacle.



Figure 3. Diagram of the act of framing temporality
Source: Ujung 2017

There are various images and approaches about encounters of interior and landscape, which may be manifested and reflected in pragmatic and/or poetic way of a design according to the specification of the context. As Leatherbarrow (2011) suggests to look at “the spatial aspects of a place – its enclosures, continuities and extent – can thus lead to interpretations of its potentials for occupation and use, which are not only, or not essentially pictorial but practical” (Leatherbarrow, 2011, p. 212), this paper attempts to investigate various past embodied encounters of interior and landscape that will be explained briefly below.

Lally acknowledges the forces of natural landscape including the connection between thermal properties, forms of energy, environmental variables, with the informed human behaviour as directed movement and

composed spatial hierarchies (Lally, 2014), which he explores in his installation *Wanderings*. *Wanderings* (2014), engages existing energy systems within surrounding environments, then intensifies and fortifies them to become architectural materials. Lally suggests, "the intensification of the environmental context that the body moves through creates a layered makeup of particulates working together in parallel, overlapping with and integrated with one another" (2014, p. 64). Encountering the ideas of the intensified control and advancement of material energies to define geographical boundaries, this project also suggests the new potential of architecture to increase the sensory sensitivity of the human body.

Similarly, James Turrel's Roden Crater promotes series of site-specific strategies that activate a series of events and territories where the cycles of geologic and celestial time can be directly experienced. In Roden Crater, the design process demonstrates the framing, in particular, to intensify the experience of light by two mechanisms: first, isolating and selecting the different portion of the sky and the limited number of events for each of the spaces; and second, occluding by using light to explore the meaning of perception. This design strategy promotes a state of reflexive vision that he calls: "seeing yourself see", in which one becomes aware of the function of one's own sense and of the material aspects of light. Demonstrating an interior that translates ecological resources: geology and landscape into the understanding of forces as poetic brief, Peter Zumthor's Therme Vals produces relationships to context and bodily experiences- intensification. Acknowledging bodily experience such sight, hearing, touch, and other logic of senses, the Therme Vals (opened 1996) expresses the interconnected systems between geographic entities, schematic and the accompanying spatial and temporal dimensions can create an intensified bodily experience of landscape.

Those examples serve as the act of framing that opens to the capacity of intensified bodily experience of landscape through the interior-making. Here, where we are concerned with the act of framing interiority within spatiality and temporality that emphasises context, moments, movements, and forces; and challenges the way we investigate the internal negotiations of the human body and the environment. In what follows this paper goes on to give an overview a series of framing interiority which showcases the idea of interior and landscape encounters within the project. Looking at all the pieces, all the moments together creates activity and relation between interior and landscape. The story behind the ruins, the solidified surface, is the interesting part to be employed through processes of collage and assemblage diagrams of framing interiority.

FRAMING INTERIORITY AND SPATIAL PROPOSITIONS

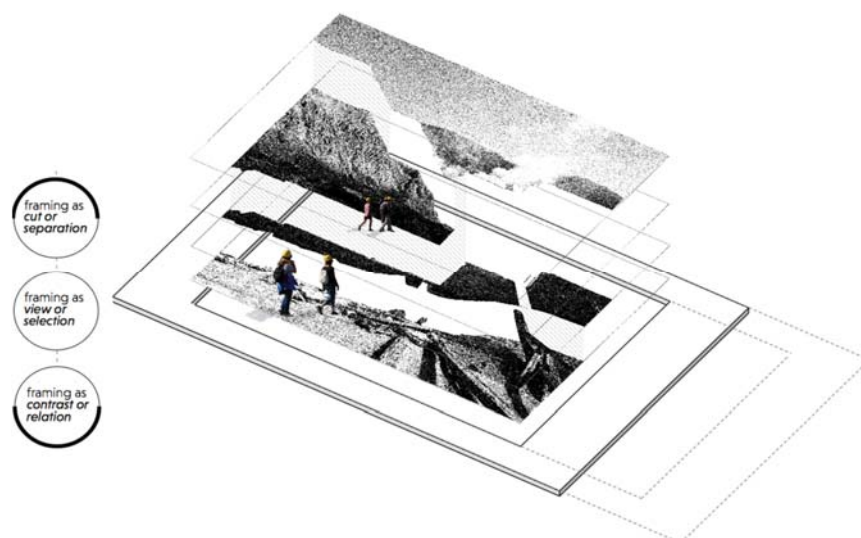


Figure 4. Diagram of the framing interiority
Source: Ujung 2017

To explore framing as ‘interior-making’ in both the theoretical sense and practical tactic for interior architecture practice, this study engages the interrelated processes – framing as cut or separation, framing as view or selection, and framing as contrast or relation to the site’s visual material. The exploration of framing interiority develops an alternative form and framework for spatial propositions. It has taken place through a variety of methods including theoretical research and writing, experimental design explorations into the framing. Within the experience of key moments and situation of being on and off the site, the acts of ‘re-frame and re-graph the geo’ imaginatively and critically determine contextual imperatives. Transforming photographic records into a series of exploratory tools helps to determine design language and outcomes. In this study, employing thought experiments through processes of collage, assemblage design diagrammatically and iteratively enhances the interior and landscape encounters within interrelated processes – framing as cut or separation, framing as view or selection, and framing as contrast or relation.

A. Framing as Cut or Separation

Framing as cut or separation introduces the act of taking away, of isolating, of removing, and the act of abstraction. In this study, it remains interesting that here too the encounters of interiority between interior and landscape continues to develop its inevitable moments of the bodily, spatiality and temporality contacts to the earth. In this paper, the bodily contacts with the acidic environment through the accessible crater may well eventually yield some intentions and stories for healing that are embodied in the encounters between interior and landscape. The act of framing as cut or separation is also embodied in the encounters between the ruins and new arrangements: a place where geography and emotion leave their traces. This framing process expresses the form of disappearance as the ultimate camouflage that marks the presence and theatre of appearance, a highly visible display or partition that also expresses invisibility. The invisibility that represents the loss of nearness generates the distance and the alternate location, constructs another place and records the movements.

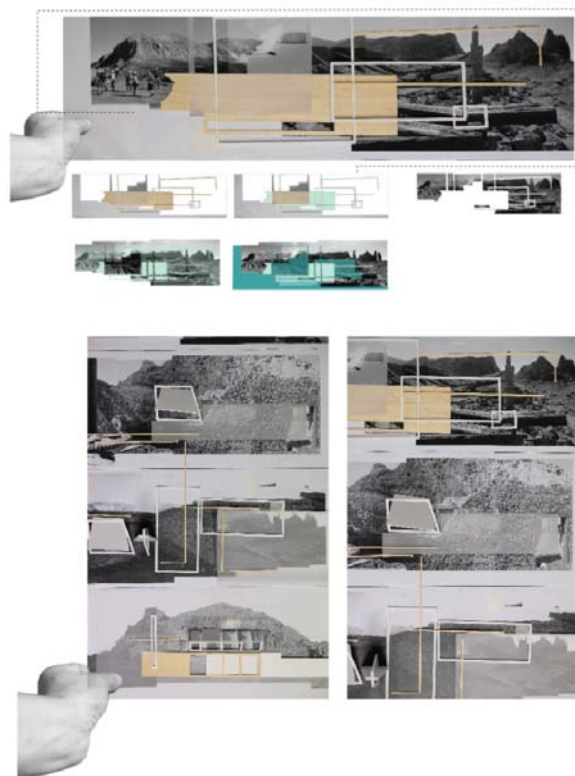


Figure 5. Diagram of the ‘interlocking-framing’ process
Source: Ujung 2017

Framing as the act of isolating and of abstraction expresses the surface that may perform as boundaries separating the interior and exterior. In this way, the surface acts as an exchange between two different substances or entities. The diagram of framing helps to investigate the construction of the flow of temporal occupation within the context. Within this process, the frame as the construction of plane of composition expresses the different techniques, methods and resources, and sensory variety as the very gesture that composes both inside and outside, interior and landscape at once (Grosz, 2005, p. 19). These shared planes of composition create “interlocking of frames” (see Figure 5) that are separated, opened up, inflected or cut open to slow the chaos into space and time, a structure and a form where they can affect bodies (Cache, 1995, p. 22).

B. Framing as View or Selection

Framing as view or selection introduces an act of using the device to select one of the spatial qualities from the external topography. In the process of selection, framing of the surface through the device that performs both as enclosures and as objects establishes a visual sightline directing the experience of the eyes. The encounter of interiority through the process of selecting promotes the differentiation of intensity to heighten the user’s experience within key areas. These heightened areas engage the invisible forces of the site such as the intensities of smoke, mud, and sulphuric gas with the consideration of such factors: the size, shape, and orientation of the frame. The device of the framing such a ‘window’ not just establishes the view distance of elements in a landscape but also identifies the frame and its relation to the human body. In this study, framing as view or selection also expresses the temporality that generates the continual transformations and the depth of the visual and experiential section between inner needs and outer existing (see Figure 5).

The process of framing of eruptions on the closed surface of the plane of composition selects features that characterise a site. The built frame that is produced through partitioning of orientations in the site selects and views that which of the territory. The view can directly identify the inside, the divisions and selections of spatial and temporal experience.

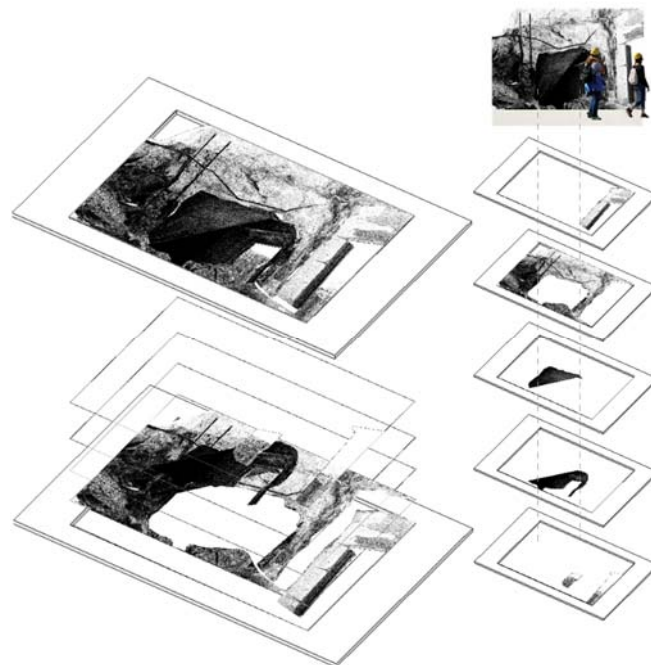


Figure 6. Diagram of the depth of the visual and experiential section through the framing process
Source: Ujung 2017

C. Framing as Contrast or Relation

Framing as contrast or relation introduces an act to arrange the spatial and temporal experiences in such a way as to intensify an intended effect. Contrasting the surface that could be luminous or illuminated; more or less illuminated, volumes or sheets/ films; semitransparent or translucent; smooth or rough; homogeneous or conglomerated; hard, intermediate or soft is being explored. Expressing this act of framing promotes the framing of the qualities of what is there and applying that contrast, for example putting smooth surface that reflective, contrasting to what's there (see Figure 7).



Figure 7. Representations of framing interiority
Source: Ujung 2017

Within the built frame, as a frame within a frame, the living body becomes intimately connected to and informed by the exterior part of the interior within contraction and expansion, of the forces of the earth. Living bodies and the forces of the earth, entwined in mutual concavity/ convexity, floating/ falling, folding/ unfolding are directly joined by that outside it frames, creating intended spatial and temporal experiences and sensations from their coming together. The consideration of the thickness of each interlocking frames generates the idea of contrasting the rustic construction, the tectonic massiveness and the geometric rigidity, with the harsh, turbid, petrous characteristic of the volcano (see Figure 7). In this way, the framing process that generates the most elementary form such as series of partitions, provide new connections, not only joining the body to the chaos of the universe according to the body's needs and interests but also breaking up systems of enclosure in order to retouch chaos (Grosz, 2005, p. 22).



Figure 7. Representations of framing interiority
Source: Ujung 2017

CONCLUSION

Testing the idea of the interrelated process of framing into White Island unique context generates certain parameters and encounters in interiority in which the spatial proposition can operate. As the interior is the best medium to approach the interaction between body, energy and surface, the act of abstraction, selection and relation have been created within the larger context of the environment, forming a spatial and temporal experience of the space. The island's unique habitat, the accessible crater, the acidic environment, the sparse plant growth may well eventually yield some interesting stories, studies, spatial experiences and benefit to the health and wellbeing. The consideration of wider ecological processes and how they are framed upon each individual or communal spaces suggest that the future of interior depends upon this key relationship.

This project allows the reflection of the inhabitation of a new era, the "new normal" and its potentials for occupation and use. The encounters of interiority through acts of framing as cut, view and contrast will provide a framework from which to consider interior as a practice engaged with the landscape of the specific locale. How the framing of the key moments and journey on the island promotes the intensification of bodily experience of the landscape. Framing interiority as the encounters of interior and landscape also promotes the critical examination through the potential role of 'framing' as interior-making; in both the theoretical sense and practical tactic for interior architectural practice.

ACKNOWLEDGEMENT

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THE ANALYSIS OF BATIK WORKER'S COMFORT TOWARD IMMERSION TOOL ON COLORING PROCESS OF BATIK TULIS CASE STUDY: BATIK PERANAKAN OEY SOE TJOEN, KEDUNGWUNI

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ABSTRACT

Batik Peranakan is one of the batik variations in Indonesia, as a result from acculturation of Javanese culture with Tionghoa. Batik Peranakan Oey Soe Tjoen is famous for its distinctive color with intricate detail pattern. The process requires an extended period because batik is made by hand to keep the authenticity of the process to date. The repeated and time-consuming process of coloring causes discomfort in the lower body of workers because the traditional immersion tool is considered less ergonomic. However, along with the advancement of science and technology, the tool was transformed to support the convenience of its users. The purpose of this study is to examine the use of appropriate technology in a traditional tool, especially in the process of batik coloring.

This research uses ethnography with observation approach, documentation and deep interviews directly with the batik worker in the coloring process at Batik Peranakan Oey Soe Tjoen's workshop for a period. The research concludes that the knowledge and awareness of comfort factor in activities affect and transforms the tools, thus indirectly influencing the work system and space layout. More profoundly, this change of work system will have an impact on the value of tradition from the activity itself.

Keywords: batik tulis, coloring, comfort, ergonomics, tools

INTRODUCTION

A. Batik Oey Soe Tjoen

Batik Peranakan Oey Soe Tjoen is one of the work of coastal batik originating from Kedungwuni subdistrict, south of Pekalongan city. Oey Soe Tjoen batik house was found in 1925 by Oey Soe Tjoen, a descendant of Peranakan batik from Oey family, which has produced batik works from generation to generation (Liong, 2014). Batik Oey Soe Tjoen is famous for its buketan motifs, intricate details and coloring techniques that produce pastel colors and three-dimensional effects, typical of Kedungwuni Peranakan.

Mrs. Widianti Widjaja, as the third generation of Batik Peranakan Oey Soe Tjoen, adhered to the tradition of making batik that was inherited to her from generations. The long process which requires a high level of accuracy, and with the human resources to make batik declining, the Peranakan batik business is threatened to stop in the next ten years.

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The making of Peranakan Oey Soe Tjoen batik has several stages. Starting from the preparation stage to the delivery stage (Liong, 2014). The making of Oey Soe Tjoen's delicate batik still maintains the process from the first generation of Oey Soe Tjoen until today. Batik goes through the *chanting* process twice, on both sides of the fabric, while the coloring process uses only a dyeing technique. The level of complexity is not solely based on the motives and details, but also from the color selection. Dyeing technique utilizing this dye takes place repeatedly by the design of cloth motifs.

It takes two immersion tools to do the dyeing process. The first is a traditional tool that is hereditarily used in the immersion process of the first generation Oey Soe Tjoen, while the second is a new immersion tool used since the third age Oey Soe Tjoen. The specific designs for new immersion tool are the result of complaints from workers, including Widianti as a business owner.

The consideration of making this new immersion tool is the emergence of lower back pain complaints that attack workers when doing the dyeing process for the huge amount of cloth. Another consideration is the lack of personnel capable of performing this operation so that sometimes the process is delayed. Therefore, it is designed to be an immersion tool that can be used by one worker, even with less time-consumed.

The fabric coloring process takes one full day from morning to evening. Fabrics that have been through the process of *chanting*, totalling about ten to fifteen cloths, then go through the process of coloring by the concept of design. The dyeing process for blue color using sol takes longer, due to more dyeing process.

B. Ergonomics in the Perspective of Traditional Works

Knowledge of ergonomics in more traditional work based on culture is not easy to find. However, ergonomically repetitive activity with bending posture causes strain on the spinal muscles and pressure on the abdominal muscles. So if the action occurs for a long time, it could cause back pain.

The coloring process using traditional immersion tool with low working platforms, just a few centimeters from the ground, can cause discomfort for the workers. Condition supported by a monotonous movement and carrying the load can cause fatigue at some point on the worker's body (Grandjean, 1969). It is because the body has an uneven load on one pedestal.

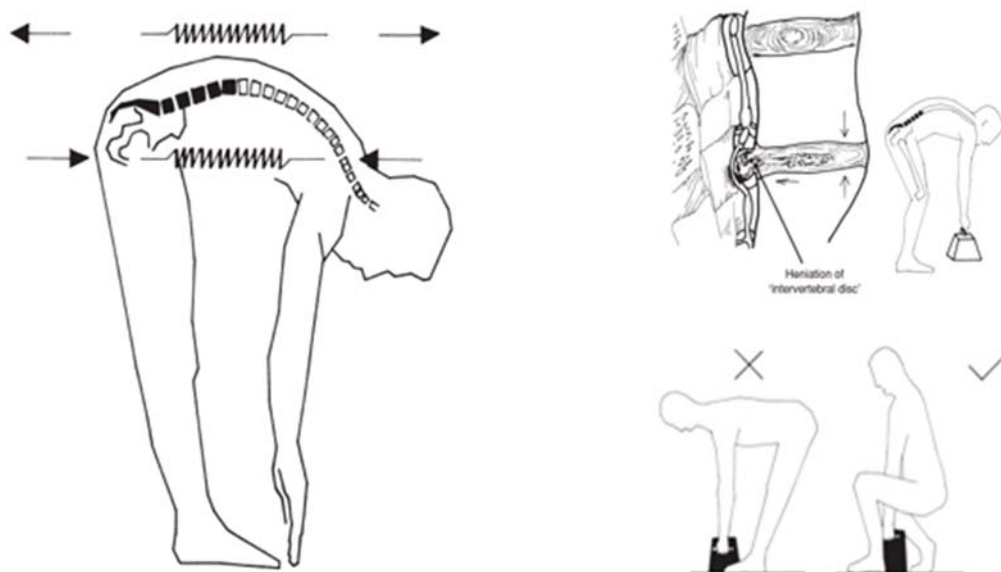


Figure 1. Picture of worker activity with posture bending and lifting weights
Source: Bridger, 1995

At first, the traditional batik process on the batik house Oey Soe Tjoen has not considered the ergonomic factors in the process and workspace. But along with the development of science and technology, awareness of the comfort of the body in work raises critical considerations to make changes in tools and workspace.

<i>Task requirements</i>	<i>Male</i>	<i>Female</i>
Precision work	109–119	103–113
Light assembly work	99–109	87–98
Heavy work	85–101	78–94

Figure 2. Table height recommended platform for work with standing position
Source: Bridger, 1995

METHODS

This research uses ethnography method through observation, documentation and in-depth interview with the immersion process workers at batik house Oey Soe Tjoen, which is located eleven kilos to the south from Pekalongan City. This batik house is in a building that has three functions at once, namely as a dwelling, grocery store, and batik workshop. The batik workshop which is for the process of *chanting* and coloring is on the back side of this building.

Interviews with immersion workers, Mrs. Widia and her assistant who has worked with her for about twenty years since the second generation of Oey Soe Tjoen, about the process and the constraints. Mrs. Widia directly took a role in the process of coloring because this process includes mixing batik chemical preparation, which is a heritage where only the offspring of Oey can inherit it.

The data retrieval process takes several months. In the early stages of data collection in the coloring process, the worker uses two units of modern tools and a traditional tool. However, due to ongoing research, several considerations have had an impact on the changing use of the tools used to bring changes to the layout in the coloring process.

Initial data retrieval begins with an unstructured interview with Mrs. Widia as the owner and worker in this batik house. The early data generated in the form of background and history of this batik house, documentation of the signature pattern of batik Peranakan Oey Soe Tjoen which most of it is the bouquet of flowers, and also documentation of spaces used in the process of batik. The next data is the dimension measurement of equipment and space used in the process of batik and data about the process of making batik itself. Starting from making the pattern until the process of drying the batik. The data of the batik process is taken in several stages because of the complicated and lengthy process of batik and the limited number of workers. Subsequent data collection is about the worker's behavior and how they interact with each other as well as the interaction of the workers with the space used in the batik process. Therefore this study will be limited to the following:

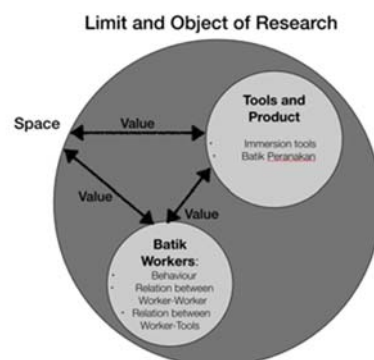


Figure 3. Chart of the relationship between tool, worker and space

RESULTS

The coloring space is located in the front area of the Oey Soe Tjoen batik workshop, directly adjacent to the main house that serves as a dwelling. Coloring space doubles as a laundry room on the function of residence and directly adjacent to the nglorod space. The coloring space is substantially flexible. Traditional tool is dynamic so that the location can follow the needs of space. But modern devices are static, so they cannot change.



Figure 4. Traditional immersion tool made of wood and bamboo

A. Traditional tool modification

Traditional immersion tools are made of wood and bamboo with the original design that has been maintained since the first generation Oey Soe Tjoen. The coloring process by using this immersion tool is supported by business owners as well as coloring workers (*kuli keceh*) because they want to keep the tradition in the process of coloring that has been going on for generations since the first age Oey Soe Tjoen. The coloring process that must be done by these two people is believed to be more efficient in giving color to the fabric because the process is more thorough and assisted by a bamboo stem in the middle of the tool.

The process of coloring in Peranakan Batik Oey Soe Tjoen uses the dyeing technique entirely, which produces colors through a series of staining procedures through placing the fabric into artificially dyed water according to the dosage of the chemical of the color. The coloring process takes place repeatedly until the tone permeates into the material according to the desired color. Especially for the blue color that uses the type of artificial drug color made of *sol*, the immersion process takes longer. The blue color is the color that characterizes the Batik Peranakan Oey Soe Tjoen, which makes it famous for the "Blue of Pekalongan" color.



Figure 5. The coloring process using traditional immersion tool

This time-consuming process makes the immersion tool become a very influential tool in the coloring process. In the beginning, the process of coloring is done by male workers, but in the third generation, the process is entirely done by women. Traditional tools that are used early in the Oey Soe Tjoen's workshop, low-sized and in direct contact with the ground. This results in the workings of the up and down workers

forming a curve of about one hundred and eighty degrees repetitively, by supporting the weight of the wet cloth. This movement then causes discomfort in the worker's body, especially at the lower back.

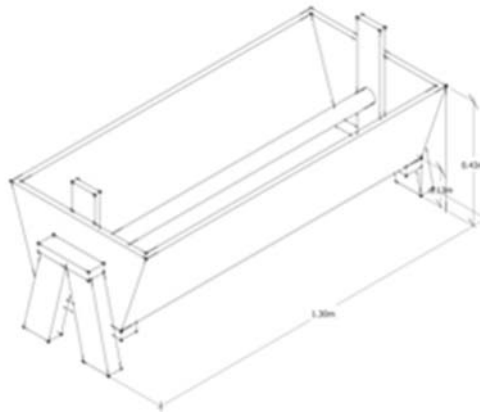


Figure 6. The traditional immersion tool

This standard immersion tool is a wooden box with bamboo pieces in the middle. In general, the form of immersion tool in each traditional batik house is the same with a view modification according to the needs of each worker. The traditional tool in batik house of Oey Soe Tjoen has been around since the first generation and is still maintained until now, the third age. The wooden box dimensions are adjusted to the width of the fabrics commonly produced by this batik house. Meanwhile, the bamboo in the middle serves as a tool to help chemical color into the fabric.



Figure 7. The coloring process using modern immersion tool

The coloring process using this immersion tool requires two workers. When the first worker stands up straight while pulling the fabrics, the second worker bends down and strokes the fabrics in colored-water. Bamboo helps the entry of color when the process of pulling the cloth from the first worker to the second worker. This process occurs repeatedly depending on the type of coloring chemical used and the color they want to produce. The more colors to produce on the fabric, the more often the coloring process. The coloring process takes more time for blue color as Pekalongan's signature color. The type of artificial color and prescription has been a secret for generations. This time-consuming coloring process makes the workers feel less comfortable on the lower back.

Based on this consideration, the business owner as well as the immersion worker, Mrs. Widia, decided to modify the immersion tool to be more comfortable for the worker's body. After getting a reference from another batik house located in Yogyakarta, she began to make her immersion tool based on the consideration of fabric size, number of workers, coloring process that has been going on Oey Soe Tjoen batik workshop, and the coloring process space.

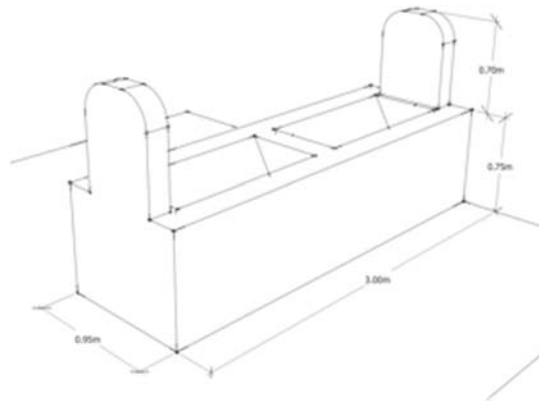


Figure 8. The modern immersion tool

Modern immersion tool that uses brick and ceramic materials were initially designed to perform the coloring process independently. It takes two modern immersion tools for time effectiveness. The new design makes the rear body of the workers more comfortable. It has a higher platform than the traditional immersion tool which causes the body to move and makes a shorter curve, about ninety degrees. The massive and large dimensions makes the modern immersion tool less flexible to the coloring process space.

Modern immersion tools made of homely material consists of two units to accelerate the process of coloring. The coloring process is the same as when using a traditional immersion tool. By form, these two immersion tools also have similarities because it has the same function. The bamboo is replaced by a PVC pipe which is not always installed in this tool. This modified immersion tool has proven to be more comfortable for the workers because of the higher work platform, making the worker's body movements still within comfortable limits for the lower back. However, there are some notes on this modern immersion tool:

- Because of the higher work platform, the ability to pull up the fabric by the workers becomes limited. Therefore the fabric is more often placed on the surface of the tool and then soaked in colored water.
- It uses more space because it has bigger dimensions than the traditional immersion tool. Its massive and static form makes this modern immersion tool less flexible, affecting the circulation in the coloring process workspace.

B. Transformation on Modern Immersion Tool

However, due to research progress, there are several considerations taken by the worker as well as the owner of this batik workshop, such as making the modern immersion tool that was initially two units becoming one unit. Based on thoughts:

- They usually use one of the modern immersion tool making the other unit not function optimally.
- The unit that does not function maximally restrict circulation in the coloring space.
- By using traditional and modern immersion tools, the coloring process becomes more efficient and productive.



Figure 9. The situation and circulation of coloring space with two immersion tools

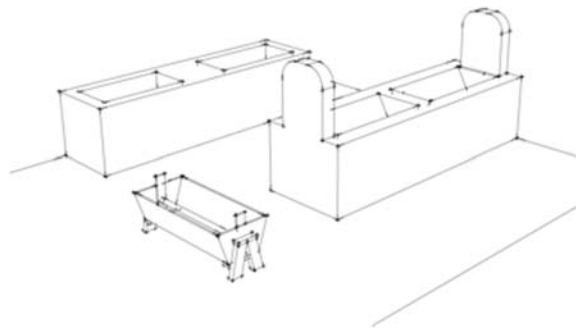


Figure 10. The Layout of coloring space using two immersion tools

C. The Impact of Changes

Changes made to the immersion tool affect equipment and space layout in this batik workshop. The dynamic traditional immersion tool can quickly adapt to the space as well as the users. The modern immersion tool, however, does the opposite. With the reduction of the modern immersion tool into a single unit, the traditional tool is placed next to the modern one, making it easier for circulation and production flow. This new layout increases the effectiveness of space that supports productivity in the coloring process.



Figure 11. The changing of immersion tools and their impact on the layout in coloring process space

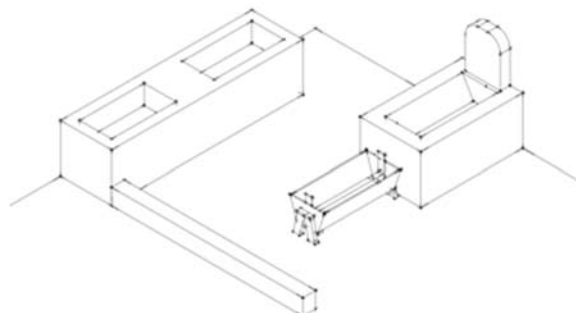


Figure 12. The Layout of coloring space using one traditional immersion tool and one modern immersion tool

The addition of solid partition aims to direct the flow of the wastewater of the coloring process to the waste channel. Because even though there has been a waste channel, the mixture of the chemical water and the

chemical color is still thrown on the floor of the working area first. The solid partition is also indirectly a marker of the work area for the coloring process.

DISCUSSION AND CONCLUSION

Changes in the need for coloring process from the traditional immersion tool into the modern one begins with the awareness of the function of the instrument itself. The workers who are involved in this process feel the discomfort in doing their job. Therefore some efforts for adaptation through science and technology are conducted to support the processes, especially the coloring process. Awareness of effectiveness also makes business owners who are also workers in this coloring process, sense that two modern immersion units are less efficient. Now they are using one traditional immersion and one modern immersion tool.

In other words, raising the work platform as high as a work table or about seventy to seventy-five centimeters may reduce complaints of lower back pain due to work with a bent posture. Changes in the number of immersion tools also create comfort in the circulation of space and the flow of production, thus increasing the productivity in the process of coloring.

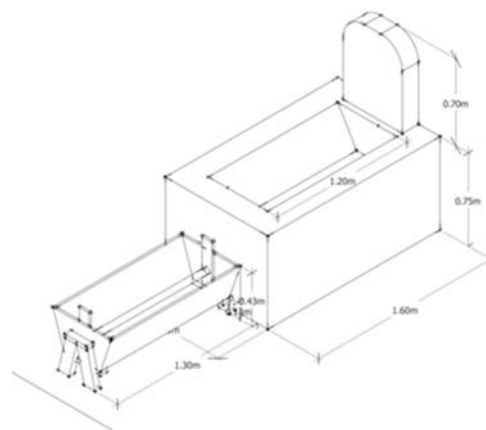


Figure 13. The comparison of dimension between traditional and modern immersion tool, help to explain that higher working platform can support the comfortness of the worker

Peranakan batik process that has been going on for generations since the first generation of Oey Soe Tjoen is still maintained until now, this includes the use of the traditional immersion tool. It aims to preserve the hereditary traditions from the ancestors and be inherited directly only to the offspring of Oey. By maintaining this tradition, the traditional values contained in every process of making this Peranakan batik is still preserved. The use of the traditional immersion tool that must be done by two workers also keeps the value of cooperation in producing a product, although in the process puts aside the comfort factor of the lower body of the worker. Two people who work as well as establish communication to coordinate will be able to strengthen the bonds of fellow workers that improve alignment in the work system. Thus this Peranakan batik workshop embraces the technology and preserves the tradition.

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MEDIATING INTERIORITY: FILTERING ECOLOGY AND ARCHITECTURE

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ABSTRACT

Architecture is becoming an inversion of interiority and exteriority. This inversion transforms the interaction between human space and natural space. Mark Pimlott (2007) proffers an illusion of transparency, naturalness, and freedom expressed in the concept of open spaces flowing from one place to another, resulting in artificiality and fantasy of naturalness. As a narrative of interiority and exteriority, this essay begins with an allegory of public governance and its impact on the landscape. The second part involves an analytical method that postulates a condition of 'blurring' spatial boundaries to substantiate the hypothetical inversion between interiority and exteriority. The distinction between the duality of architecture and landscape results in a 'blurred' boundary, a dynamic space whose narrative conveys an interaction within and control over nature. The research considers the spatial qualities of pavilion archetypes to identify ecological networks of interiority and exteriority for public spaces. The research methodology centres on the theoretical analysis of high tech facilities and performance space typologies. Regarding constructing and materializing architectural typologies. The 'pavilion in a park' tradition in architectural discourse concerns three case studies: namely, the Barcelona Pavilion (1929) as a Modernist icon and then two contemporary hypermodern, high tech pavilions, MPavilion 2017, (Fig. 1) and Steve Jobs Theatre in Apple Park (2017), respectively. The research findings conclude that Apple Park exemplifies an ecological network, thus mediating interiority and exteriority as well as filtering ecology and architecture into a 'pavilion in a park' typology.

Keywords: exteriority, interiority, sustainability

INTRODUCTION

"Exteriority is not architecture: Interiority is not architecture Architecture exists in how exteriority and interiority are connected." (Suo Fujimoto, 2009).

The ecological network of interiority and exteriority is predicated on the flow of people in spaces in-between interior and exterior environments. This filtering of people through space occurs within an architectural system of space, structure, and light. The binary expression of interiority and exteriority connotes a symbiosis of opposites, existing in harmony with each other. Exteriority expresses the qualities of being outside, whereas interiority connotes the opposite, of being inside. The duality between interior and exterior is defined as, "Implicit in the word *interior* is its opposite, *exterior*, which delineates its outline and form," (Shapiro, A., Jensen, J., and Lee, L.M., *The Chicago School of Media Theory*, 2003). Furthermore, the analysis of exteriority to include exteriorization, in which the prefix of *ter* is shared with 'territory,' thus extending the definition into the landscape.

In terms of philosophy, Jacques Derrida explores the notion of interior/exterior. According to Lisa Foran, "Derrida's consistent claim, throughout his work, is that this interior/exterior division is not impermeable,

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but is always already porous, (Foran, L., 2016, p. 222). Therefore, the boundary between interior and exterior could be interpreted as a 'blur.' This amorphous edge or filter defines the typological and topological relationships between functions of interior spaces and architectural enclosures and the surrounding territory.



Figure 1. MPavilion 2017 Rem Koolhaas & David Gianotten of OMA, Melbourne, Australia
Source: <http://www.archdaily.com/873757/rem-koolhaas-and-david-gianotten-reveal-omas-design-for-australias-mpavilion-2017>

When considering exteriority in the landscape, architecture becomes a porous border, a filter, intervening between the continuous flows of space, thus acting as an intermediary between ecology and architecture. This observation recalls the Age of Reason or Enlightenment (1685-1815) debates between 'naturalists' versus 'classicists' and 'romantics' versus 'naturalists'. In a future sense, Abbé Mark-Antoine Laugier (1713-1769) and his theory about the 'Primitive Hut,' became the architectural DNA of organic and neo-classical architecture. Similarly, Antoine-Chrysostome Quatremère de Quincy (1755-1849) proposed that architectural typology differentiates between the classification of 'type' and 'model,' the former being an idea and the later being a reproduction of an object, (Güney, Y.I., 2007. p. 6). On the other hand, Jean-Michel Kantor defines, "Topology, as its name indicates, is a (mathematical) way of conceiving of TOPOS: the place, space, all space, and everything included in it," (Kantor, J.-M., 2005, p. 13). It is the relationship between spaces rather than either the types of spaces or the scaled distances in-between the spaces that determine the topology. A pavilion is a typology within a freestanding structure, whereas topology is considered as the relational aspects of auditorium-stage-backstage.

The pavilion, as an archetype, embodies the physical manifestation of exteriority and interiority. Miles David Samson (2015) defines a pavilion as follows: "In common usage, a pavilion is a lightweight and largely open structure dedicated to a single purpose, often made for a function outside the normal run of life, like a World's Fair display or a garden shelter," (Samson, M. D., 2015, pp. 7-8). Continuing the narrative about Modernist pavilions, M. D. Samson describes Mies van der Rohe's reaction to the commission for the Barcelona Pavilion, "Mies said in later life that when the German government approached him about designing a pavilion to represent it at Barcelona, he said to himself, "What is a pavilion?...I did not know what a pavilion should be." (Samson, M.D., Chapter 2.) In actuality, the Barcelona Pavilion became the archetype for Modernist pavilions.

The first part of the essay is an introduction, narrating interiority and exteriority in terms of public governance and its impact on the landscape. The second part involves typology and topology to postulate conditions of 'blurring' interiority and exteriority. The first case study is the Barcelona Pavilion (1929) with its significance as a pavilion archetype for Modernist pavilions. The second case is OMA's hypermodern MPavilion, (2017) which is based on a classical topology for an interactive, high tech amphitheatre. The third case is Norman Foster's Steve Jobs Theater at Apple Park (2017), which evokes the materiality of a glass pavilion to create an enclosure of liminal space, conceptually located in-between exteriority and interiority.

Mark Pimlott (2007) proffers an 'Only Within' proposition in which architecture is no longer an object. Architecture is becoming the inversion of interiority and exteriority in a dynamic network of public spaces.

This inversion transforms the interaction between human space and natural space. Pimlott believes the illusion of transparency, naturalness, and freedom expressed in the concept of open spaces flowing from one place to another result in artificiality and fantasy of naturalness. In the context of winter gardens and interior networks ranging from 1960's urbanism to 1980's shopping malls, Pimlott describes the atmosphere of interiority as: "Continuous, system-based interiors – with their controlled and calculated interiority – offer themselves as normal, as spectacles, as entertainments. Their success relies on their purported naturalism," (Pimlott, M., 2007, p. 298).

In contrast, Rem Koolhaas (2016) discusses the issue of humanizing techno spaces, and he expresses concern about the dehumanizing qualities of cyberspace created by computerized environments for SuperNap, Google, and Tesla in the Tahoe-Reno industrial complex. These techno spaces are allocated to a wide range of functions, from data banks to electronic battery chargers to hydroponics. This kind of urbanity is seemingly not a world for people, but for processes, which is of great concern. In relation to this 'invisible' complement, akin to a high tech doppelgänger, Koolhaas points out:

"Silicon Valley has shifted a large portion of its implementation apparatus to an industrial park just across the Californian border near Reno. The Tahoe-Reno Industrial Center serves as the Valley's 'invisible' complement and offers a radically new urban condition with an unprecedented practice and aesthetic" (Koolhaas, 2016).

Consequently, the prospect of an ecological network mediating between exteriority and interiority proposes a paradigm for sustainable architecture in direct contrast to what Koolhaas refers to as "...an immense proliferation of boxes totalling more than 14 million square feet has emerged in this landscape," (Koolhaas, R., 2016). On the contrary, Apple Park, known as the "Mothership," symbolizes both exteriority and interiority, in what portends to be a collaborative and communication-oriented workplace in the Silicon Valley.

NARRATING INTERIORITY AND EXTERIORITY

"With roots in the Latin verb *narrare*, a narrative organises events of a real or fictional nature into a sequence recounted by the 'narrator'" (Coates, 2012, p. 14).

In recounting the narrative of interiority and exteriority, Ambrogio Lorenzetti's frescoes, entitled the "*Allegory of Good Government*" (1338-1340) located in the *Sala Palazzo Pubblico* in Siena, portray the human qualities of good and evil. The artist, as the narrator, sets forth on an illustrative allegory of good governance in Siena. Good governance is symbolized by the patriarchal figure of the 'Common Good of Siena,' who is holding a chord linking the citizens of Siena to a matriarchial figure entitled 'Concord,' thus symbolizing the harmony achieved amongst the citizens. Human values expressing 'Magnanimity, Temperance, Justice' are portrayed on the right of the mural and to the left are 'Prudence, Fortitude, and Peace.' Above Siena's head are 'Faith, Hope, and Charity.' At the far right are prisoners from a vanquished town, who have yet to become good citizens. At the upper left sits 'Justice,' who is balancing the scales with civil and criminal law on either side. The positive effects of good governance are shown in the "*Effect of Good Government in the City*," (Fig. 2). A myriad of activities encompassing everyday life narrates the story of living in the city. Nigel Coates (2012) observes that "As opposed to blueprints of the architectural kind, in the painting, the buildings constitute a backdrop, and in many ways, their purpose was exactly that - a naturalistic *mise en scène* for the families that flourished and hopefully lived, in and between them," (Coates, 2012, p. 17). Even with a legal structure, dancing, which was illegal at the time, occurred in the streets of Siena. The next scene, "*The Effects of Good Government in the Countryside*," is shown as an orderly progression of nobles overseeing the peasants in the field with an allegorical figure of 'Security' suspended in the sky above, (Fig. 3). Exteriority has been tamed by the values of interiority. Conversely, the "*Allegory of Bad Government*" personifies 'Evil,' orchestrating man's futile efforts, seemingly into a series of bribes paid in

exchange for satanic favours. In a sense, Lorenzetti's murals are a timeless allegory stressing the need for good governance in both urban and rural environments.



Figure 2. Ambrogio Lorenzetti, The Effects of Good Government in the City, (1338-1340)
Palazzo Pubblico, Siena, Italy

Source: <http://flashbak.com/lorenzettis-allegory-of-good-and-bad-government-a-revolutionary-painting-for-then-and-now-373579/>

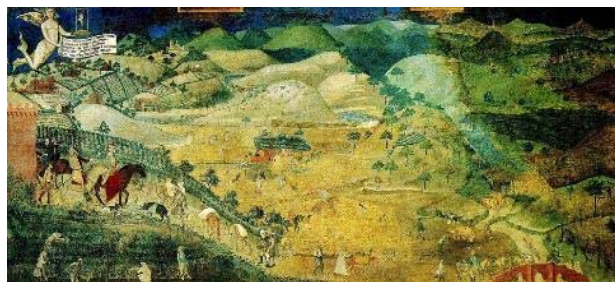


Figure 3. Ambrogio Lorenzetti, The Effects of Good Government in the Countryside (1338-1340)
Palazzo Pubblico, Siena, Italy

Source: <http://flashbak.com/lorenzettis-allegory-of-good-and-bad-government-a-revolutionary-painting-for-then-and-now-373579/>

Continuing with the narrative of interiority and exteriority, the distinction between the duality of architecture and landscape results in a 'blurred' boundary, a dynamic space whose narrative conveys an interaction within and control over nature. To support the argument for the flow between exteriority and interiority, Ian Thompson describes the groves (*bosquets*) at Versailles in the formal *Jardin à la française*: "Versailles' *bosquets* in effect served the court as a palace outside the palace. Some of the names of these features make their relation with architecture very clear, for there is a *Salle de Bal*, or Ballroom, a *Salle de Marronniers*, or Chestnut Hall, and one progresses towards the Grand Canal along the *Tapis Vert* or Green Carpet" (Thompson, 2015, p. 8). Engineering feats and mechanical systems at Versailles included pumping water from the Seine in an attempt to provide water for the fountains. Military engineers along with an army of soldiers built the waterworks under the command of King Louis XIV's lead gardener, André Le Nôtre. The 'Machine de Marly' was "a contraption driven by 14 giant water-wheels that employed 221 pumps to lift water from the Seine up to the level of the gardens" (Thompson, 2015). Technological ingenuity created a system to control nature.

Nature as a metaphor is also a spectacle. A generation later, at the Yew Tree Ball, on 25-26 February 1745, King Louis XV and six other courtiers arrived at the masquerade ball disguised as yew trees, thus adding to the indulgent spectacle of the marriage of the Dauphin Louis and Marie-Thérèse d'Espagne, (Hollis, 2014), (Fig. 4). The disguise implies a symbolic relationship between society and its gardens.



Figure 4. Costume Ball at Versailles, Source:

<https://defilendentelle.wordpress.com/2016/07/10/costume-de-travestissement-indien-et-grecque/>

To substantiate the argument for the systematic engineering of nature, Sir Thomas Lee devised a 'ha-ha' at Hartwell House in Aylesbury in England, as depicted by the Spanish painter Balthasar Nebot (1738), (Fig. 5). The 'ha-ha' is a grassed-covered, earthen ditch designed to keep the animals out of the house and gardens. In this particular painting, the gardens behind the Jacobean mansion are shaped as monumental topiary arcades, extending the architecture into the landscape. Equally, in the tradition of Versailles' 'bosquets,' interior 'rooms' in the exterior gardens were created out of topiary, which extended the perspectival space towards the long canal and a view of the town of Aylesbury. Another topiary exhedra frames the view of an obelisk in the distance with a pictorial narrative of the landed gentry riding their horses. Balthasar Nebot's paintings encapture the quintessential essence of 'blurring' the boundary between exteriority and interiority with the creation of 'interior gardens' framing the view towards the exteriority of the natural landscape. In 1750 Lancelot 'Capability' Brown re-designed the gardens at Hartwell House. 'Capability' Brown (1716-1783) was also well-known for a stylistic shift from Neo-Classical formal gardens to picturesque landscape design.



Figure 5. 'Ha-Ha' and Topiary Arcade, Hartwell House, Aylesbury, (1738)

Sir Thomas Lee (1687-1749) with Spanish painter Balthasar Nebot

Source: <http://www.buckscountymuseum.org/museum/collections/fine-art/see-the-collection/hartwell-house-the-gardens-series/>

Along the lines of a naturalistic spectacle, Hyde Park in London combines both neo-classical and naturalistic qualities, (Fig. 6). The earthworks for the Serpentine Lake resulted in one of the largest artificial lakes at the time. Landscape gardener Charles Bridgeman (1690-1738) was the landscape gardener for the *Jardin à l'anglaise* design in Hyde Park for King George I and later Queen Charlotte (1726). The Great Exhibition of 1851 at Hyde Park heralded the archetype of the 'pavilion-in-a-park' with Prince Albert's selection of gardener Joseph Paxton's sketch for the cast iron and glass 'Crystal Palace,' (Fig. 7). The materiality of the vast cast iron and plate glass structure provided ample public interior spaces for the spectacle of the Great

Exhibition, (Fig. 8). Rem Koolhaas notes, (2016) “The first appearance of the big box — Crystal Palace? — was progressive, in fact, revolutionary in defining the spaces for the industrial era,” (Koolhaas, 2016).



Figure 6. Kensington Gardens and Hyde Park, London, Charles Bridgeman (1726).
Source: <http://www.gardenvisit.com/blog/2010/page/2>

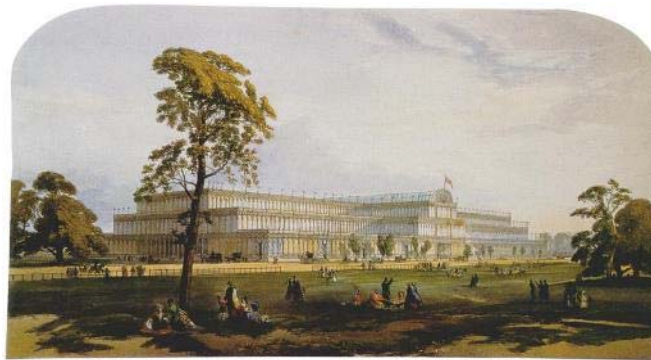


Figure 7. The Great Exposition, 1851, Prince Albert and Joseph Paxton, Hyde Park, London (1851)
Crystal Palace *Dickinson's Comprehensive Pictures of the Great Exhibition of 1851* (1854).
Source: <https://kayedacus.files.wordpress.com/2012/09/001-exterior-view-of-the-crystal-palace.jpg>



Figure 8. The Great Exposition, Joseph Paxton, (1851)
Source: <https://thecharnelhouse.org/2013/05/15/paxtons-crystal-palace-at-hyde-park-1851/#jp-carousel-9203>

CONSTRUCTING AND MATERIALIZING ARCHITECTURAL TYPOLOGIES

The research methodology focuses on an analysis of high tech and performance spaces to construct and materialize architectural typologies related to the porous boundary between interiority and exteriority. Database collection concentrated on Internet searches for case study identification with related

historiographical and philosophical research. The 'pavilion in a park' tradition in architectural discourse concerns three case studies: first, the Barcelona Pavilion (1929) as a Modernist icon and then two contemporary hypermodern, high tech performance pavilions, namely the MPavilion (2017) and the Steve Jobs Theatre in Apple Park (2017). The research methodology of constructing and materializing architectural typologies is extended on the macroscale to the Apple Park headquarters, as an architectural paradigm to substantiate the porosity and the hypothetical inversion of interiority and exteriority.

A. The Barcelona Pavilion: A Modernist Icon in an Ecological Network

Ludvig Mies Van der Rohe and Lilly Reich designed the Barcelona Pavilion (also known as the German Pavilion) for the International Exposition held in Barcelona, Spain (1929-30). The pavilion's purpose was to hold a reception for King Alfonso XIII and the German delegation to showcase Germany's technological progress. Planar elements of book-matched slabs of Onyx *Dorée* and Greek *Tinos Verde* marble, along with tinted glass set in chrome frames define the boundaries of the interior and exterior space. The exterior is clad in Italian travertine, offset with Green *Tinian* marble. The eight cruciform columns, which hold up the planar roof, are wrapped in chrome plating, with the effect of dematerializing the structure. Andrew Kroll observes, "With the low roof projecting out over the exterior and the openness of the pavilion, there is a blurred spatial demarcation where [the] interior becomes a [d] exterior and exterior becomes interior," (Kroll, 2011), (Fig. 9).

In projecting a response of exteriority to interiority in modern architecture, Caroline Constant focuses on the relationship with pavilion typology, as the leitmotif of the English landscape garden. Her analysis of the Barcelona Pavilion melds the theme of Architecture and Nature. "Mies overcame the pictorial limitations of the Picturesque. Transcending the appearance of nature, he affirmed the power of architecture to achieve the status of nature," (Constant, 1990, p. 53). The green marble reflects the green trees; the landscape is clipped and contained within an impression of stacked cubic volumes and planar walls, which composes an ecological network of interiority and exteriority (Fig. 10).

The Barcelona Pavilion, as a Modernist icon, was rebuilt from 1983-1986. Under the auspices of the Mies van der Rohe Foundation, the Barcelona Pavilion, (renamed the Mies van der Rohe Pavilion), hosts a variety of interactive demonstrations and events. CL3VER's VR technology bridges the physical and virtual realms of exteriority and interiority through a digitized version and attests to the Modernist icon's longevity as a poetic artefact in the modernist architectural gestalt.



Figure 9. The Barcelona Pavilion: Ecological network of exteriority/interiority

Source: <http://www.worldarchitecturemap.org/buildings/barcelona-pavilion>

<http://www.archdaily.com/109135/ad-classics-barcelona-pavilion-mies-van-der-rohe>



Figure 10. The Barcelona Pavilion: Exteriority in an ecological network
 Source: <http://miesbcn.com/the-pavilion/images/>

B. MPavilion 2017, Melbourne: Blurring the line in-between inside and outside

The Serpentine Pavilion in Hyde Park, London is the inspiration for the annual MPavilion design competition that is located in Queen Victoria Gardens in the city of Melbourne, Australia. The typology of the MPavilion is based on a dynamic cultural laboratory with an opening theme of “Grandstanding: A Reconfigurable Future.” The Naomi Milgrom Foundation commissioned Rem Koolhaas and David Gianotten from OMA for MPavilion 2017. OMA describes MPavilion as being composed of two ‘tribunes’ or grandstands, one side is fixed, and the other rotates. “Taking its cues from the ancient amphitheatre, this year’s pavilion blurs the lines between inside and outside, and the lines between audience and performer in a skilful yet empathetic manipulation of the surrounding landscape in the Queen Victoria Gardens,” (Melbourne Festival, 2017). In its fourth year, MPavilion 2017 offers a space for ‘public debate, design workshops, music and art events,’ and it functions as a stage, as an auditorium or a playground.

MPavilion’s tiered seating moves within a landscaped berm either to face the city with a ‘flexible civic space,’ or to provide an intimate auditorium setting for events. Rem Koolhaas describes the design concept as follows: “We’re interested in treating this pavilion not just as an architectural object, but as something that injects intensity into a city and contributes to an ever-evolving culture,” (Frearson, 2017). The materiality of MPavilion 2017 is expressed in relation to its dynamic orientation to the city environs. (Syed, 2017).



Figure 11. Exteriority/Interiority
 Rem Koolhaas & David Gianotten of OMA, MPavilion 2017, Melbourne, Australia
 Source: http://www.baunetz.de/meldungen/Meldungen-Pavillon_von_OMA_in_Melbourne_5192881.html

MPavilion’s typology recalls Pliny the Elder’s description of C. Scribonius Curio’s wooden-theatre-amphitheatre built in two halves in 52 BC. E. Guhl (1889) in a footnote states that “Amphitheatrum means literally a building with a spectators’ place or caves on two sides,” (Guhl & Koner, 1889, p. 433). The typology allowed two performance and seating spaces, back-to-back, which could be moved on a pivot to form a single set of slanted seating. (Welch, 2007, p. 63). The main exception between the ancient and the modern

typology of the MPavilion concerns its function as a theatre for debate in sharp contrast to the Roman gladiatorial spectacles.

MPavilion's roof grid and the cubic massing is reminiscent of the Barcelona Pavilion. However, the roof massing in the Barcelona Pavilion is an elegant, thin plane. In contrast, MPavilion's 2-meter high roof structure contains high tech, multi-coloured lighting and sound infrastructure in an interstitial space. MPavilion's roof is clad with translucent glass, connecting the interiority of the auditorium and the exteriority of the sky, (Fig. 11).



Figure 12. Materializing Interiority/Exteriority

Steve Jobs Theatre, Apple & Norman Foster + Partners, 2017

Source: <https://www.cnet.com/news/new-apple-campus-tour-cupertino-ring-spaceship/>

C. The Steve Jobs Theater, Apple Park, (2017): Materializing Interiority/Exteriority



Figure 13. Apple Park 'Spaceship' Cupertino, California, (2017) Apple + Norman Foster + Partners

Source: <https://www.thesun.co.uk/news/2804587/apples-spaceship-campus-is-almost-finished-and-these-aerial-pictures-show-how-amazing-it-looks/>

A view into the Steve Jobs Theatre entrance lobby at Apple Park in Cupertino, California reveals the sky reflected in the ceiling, thus dramatically 'blurring the boundary' between interior and exterior with the materiality of glass expressing its qualities of reflectivity and transparency, (Fig. 12). The lobby of the Steve Jobs Theater is a 20-ft tall, 165-foot diameter glass cylinder with a carbon fibre roof and an interior reflective surface for the ceiling and underside of the dome. The lobby acts as a liminal space, literally floating between interiority/exteriority, in-between the exterior and interior and at the contiguous threshold of people descending into the full interiority of the auditorium and demonstration space below. In relation to theater topology, the *théâtre à l'italienne* model is a "closed space with a covered auditorium, and, more importantly, a three-partite topography of auditorium, stage, and backstage, a curtain which serves as a temporary screen to the stage..." (Dietmann, 2016, p. 95). Similarly, the *parti* of the 1,000-seat Steve Jobs Theatre is a bi-partite typology composed of a fan-shaped auditorium with a stage and backstage and a circular demonstration room for press events and product launches. Visitors arrive at the pavilion level and

either descend down two flanking sets of semi-circular stairs or enter the revolving glass elevator to the lower ground floor. The elevator design is patented, in keeping with Apple's concern for product design and intellectual property rights. Inside the auditorium, customized brown leather seats accentuate values of physical comfort, visual aesthetics, and interiority.

D. Apple Park Headquarters: Filtering Ecology and Architecture

On a macroscale, Apple Park, known as the 'Spaceship' or the 'Mothership' or the 'Ring,' is a 2.8 million square foot (260,128 m²), hypermodern, hypertechnic corporate icon, which reportedly cost in the region of US\$ 5 Billion, (Fig. 13). The four-story building, measuring one-mile in circumference, will accommodate 12,000 people on a 150-acre site with a 2,000 space car park. Drone flyover aerial views of the 'Spaceship,' convey as much fascination for the general public as did the bird's eye view renderings of English country estates in the 18th-century. In the context of Apple Park, "The paradox of nature's 'exteriority' and 'interiority' finds a parallel in the new allocations of center and periphery produced by the overlay and play between physical and digital infrastructures, networks and centralized and renewable sources of energy," (Kennedy, S., 2012, p. 19). This soft, elastic context of the ecological network mediating between exteriority and interiority proposes a paradigm for sustainable architecture. Additionally, solar panels generate power for 100% renewable energy along with bicycles for daily transport.

'Connection and Collaboration' are the keywords for Apple Park (Apple and Foster+Partners, 2009-2017). Sir Jonathan (Jony) Ive, Apple's chief designer remarks about his trips to Hyde Park with Steve Jobs, "When we used to go to London together, we'd spend a lot of time in these parks. We began talking about a campus where your primary sense was that you were in parkland, with many elements that were almost collegiate—where the connection between what was built and parkland was immediate, no matter where you were," (Levy, S., 2017). Steven Levy (2017) also cites Norman Foster, who was appointed to work with Apple in 2009, "This building rose out of the passion of Steve Jobs," he [Foster] says. "The idea that a beautiful object descended on this verdant, luxurious landscape and that it will be inhabited by 12,000 people: That is a true utopian vision," (Levy, S., 2017).

To underscore the porous border between interiority and exteriority, the monumental circular panopticon with its interior workplace pods has a landscaped garden at the core of a design *parti*, which encompasses Steve Job's vision for the future of Apple. "To consolidate his employees, he [Steve Jobs] wanted to create a new campus, a verdant landscape where the border between nature and building would be blurred." (Levy, S., 2017). Recalling the public space in the 'Quad' at Stanford as well as the plum and apricot orchards reminiscent of the Santa Clara Valley's agricultural origins, the master plan recreates the golden undulating hills of California. David Muffly, a Stanford arborist, is in charge of planting of up to 9,000 drought-resistant trees. Muffly is the 21-st century's 'André Le Nôtre' for Apple Park.



Figure 14. Exteriority: Apple Park set in the Silicon Valley Landscape
Source: <https://www.cnet.com/pictures/apple-park-campus-spaceship-ring/30/>

Exteriority is expressed in the bucolic rendering of employees in the idealized, golden landscape outside the horizontally streamlined Apple Park corporate headquarters (Fig. 14). The materiality between exteriority and interior is conveyed in the perforated metal sheets and the glass fins on the facade with the reflections of the surrounding landscape. “The materiality of it is inspiring,” she [Laurene Powell Jobs] said, of the ring-shaped building. “The quality of the wood, the quality of the stone, the quality of the light — that’s what makes it so beautiful,” (Jobs, L.P. in Zibreg, C., 2017). Interiority occurs in the contiguous ‘blur of space’ with the landscape reflected in the glass perimeter (Fig. 15). However, Roland Moore questions the authenticity and provenance of the iconic, hyper tech Apple Park headquarters building as follows:

“For the tech giants are now in the same position as great powers in the past – the bankers of the Italian Renaissance, the skyscraper-builders of the 20th century, the Emperor Augustus, Victorian railway companies – whereby, whether they want to or not, their size and wealth find expression in spectacular architecture” (Moore, R., 2017).



Figure 15. Interiority: Apple Park: ‘Blur’ of Space Reflected in Glass Perimeter

Source: <https://www.wsj.com/articles/how-jony-ive-masterminded-apples-new-headquarters-1501063201>

CONCLUSION

Consequently, the research findings indicate the presence of a hypothetical inversion between interiority and exteriority. The Barcelona Pavilion is a Modernist icon which expresses the porosity of interiority and exteriority in space. The MPavilion typology ‘blurs’ the lines between inside and outside with a rotating stage. The Steve Jobs Theater materializes interiority and exteriority with the reflectivity of glass. Apple Park with its pure geometry is an inversion of ecology and architecture. Following Mark Pimlott’s rationale, does Apple Park’s circular typology result in artificiality, which by definition negates the feeling of naturalness? Whether Apple Park and its narrative will become known as this century’s equivalent of Ambrogio Lorenzetti’s fresco, the ‘Allegory of Good Government,’ depends on the perpetual iteration of inversion between exteriority and interiority

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