

SUSTAINABLE
TROPICAL
ENVIRONMENTAL
DESIGN
EXHIBITION
STEdex 17

SUSTAINABLE TROPICAL
ENVIRONMENTAL DESIGN EXHIBITION

STEdex 17

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EDITORS IN CHIEF

OSMAN MOHD TAHIR

SUHARDI MAULAN

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FOREWORD

OSMAN MOHD TAHIR

Sustainable Tropical Environmental Design Exhibition 2017, or STEdex17 marks its 8th year. Since its inception, STEdex has become a very important event for FRSB to propel art and design field to the highest level. Therefore, we are proud to include STEdex as one of our agenda in the Faculty Transformation Program (FTP) Plan 2016-2020.

It is the aim of STEdex to disseminate ingenious creative and innovative ideas coherent with the sustainable solutions in the field of the built environment in the context of tropical environment. The exhibition showcases artifacts and design ideas from various discipline which include architecture, landscape architecture, and industrial design. Unlike the previous STEdexs, STEdex17 provides a theme; [Re] place for all the participants to ponder how to make significant changes to our planning and design works. The theme is not confine to a single discipline but able to be shared across discipline. The exhibitions are derived from three format, research base, studio base and creative writing. It is our hope that the theme and new format will foster new and improve knowledge and resourceful ide-as among multi-disciplinary professionals. Hence, the exhibition will continuously inculcated through teaching and learning to students, research activities, consultancy works and professional services.

It is our hope that STEdex17 will be a basis for future sustainable tropical environmental design solution in solving our built environment, product design issues and problems concerning sustainability. STEdex17 is the collaborative effort of all the academic staff and student of the Faculty of Design and Architecture from the three departments; namely Department of Landscape Architecture, Department of Architecture and Department of Industrial Design. Therefore, I am very grateful for their commitment and efforts. My sincere appreciation goes to the curatorial teams and committee members who have work hard to ensure STEdex17 is a fruitful effort.

CURATORIAL NOTES

REPLACING PLACE AND MIND
IN DESIGN EXHIBITION

MOHD NASIR BAHARUDDIN

In order to move forward, Stedex17 exhibition is looking to open more possibilities in extending the research design with a transformation of perceiving and consuming. How we perceive the difference between the past and the new, shifting the place and mind in constructing the future of design environment. How the mind of researchers and scholars perceive their past, often reveals the ways in which they manage the present, and welcome the future. To construct a reflective respond in building this transformation, a systematic chronological phenomena and factual manifestation were applicable in representing the research discipline process and the beauty of the design ideas. In this episode, the direction of the exhibition tries to impose the hidden mind of the materiality in a manner of systematic process of the information as a visual statement. Projecting the thinking ideas and how things being accumulate in a certain position and area. The artworks are displayed through a process of 'creative determination and research evidenced'. It is not only are new design meanings being fashioned from a denial of former activities, even new memories are established through a strategic reworking of the

'exhibition-scape', associated with the visual process about reinterpreting thing and place based on research conceptual frameworks.

It starts with the plan of the exhibition space, in which to refine the generality between the common space and replacing the display design by combining the scientific exhibition technology and the design method. This method will drive the public to choose between the service design and the exhibition effect. It explores how to apply the service design thinking efficiently in the concrete practices of the exhibition space design. How the arrangement of the service design being communicated, organised and displayed as a product of visual memory and information about the meaning and subject content. The audience will be guided by the information of the research flows and able to interpret the layers of process and its meaning systematically. It is also to show the ways of public involvement to determine the research pattern and ideas, thus it can help the users to develop complete systemized space cognition.

So the execution of the exhibition process will go through deep investigations on every item of conceptual process before design space are plans. Exhibition space, as a kind of service of trans-information should emphasize the “audience-centred” thinking mode and design method in the process of design research display. In doing so, the process start by combining the spot research method of contextual interview and discourse with selected researcher. The discourse will focus on the content of the exhibition and will explore the real needs of the researcher. Basically the process will figure out, how to understand the cognitive pattern and the behaviour mode of the researcher to the visitors and make the visitors stimulate and efficiency when they get the information.

Furthermore, the rich and diverse design theory made by interdisciplinary design discipline, will guides the designers to blend and improve the service design system on all sorts of different levels of production. As

a field of researching service by the design method, the exhibition will try to plan and develop the entity elements and unsubstantial elements to improve the audience experience and create the visual value. Significantly, the exhibition space is the place to inherit human civilization and drawn-out scientific knowledge and visual culture. Hence, it's improved the process of development by absorbing new design display idea or method in visualising and reading the subjects. The exhibition space is regarded as the visual carrier of the service design and the communicative channel of participants with design researchers. Furthermore, the representational and service concept is used to guide the exhibition space, thus it can diffuse the exhibited content for the public, improve the formation and material of the exhibition place, service and visual systems. Thus, it creates the service value which is beneficial for users and overall public appreciation to a new way of interpretation in placing new way of ideas.

sons and rationality. The ‘differences’ become valuable common essence which develops the ability to appreciate, listen and ability to change reason. All this make and sustain human dignity, rationality, peace, prosperity and health in our contemporary life. With the scientific analysis together with the prediction of social determination and hoping that this will enhance the potentiality in every individual to create sense of fullness, in total agreement using the concept of sharing, especially in the context of a borderless world. It is the mission of the exhibition to search potential solutions in upgrading the research knowledge and evolve within a broad programmatic frame and able to project thinking strategy rather than by a pre-conceive brief of ideas. It is with hopes that research provides sufficient freedom to all researchers in distributing the knowledge production in order to flourish and establishing a new form-function relations. In this case, the theoretical construction can be our point of departure in liquefying the knowledge obstacle by activating

intellectual discourse of multiple territorial distinctions and demographic morphological differentiations as a product to build creative intelligence. Researchers should be more aware and sensitive enough to point out higher levels of overall form of rationality, from the linear and pre-determined purpose to an evolutionary formation of new purposes. The reason being is that information and data pose the question of synthesis through mapping and communicating within self analysis and criticism morphology. These will serve as an innovative form-function correlation, which researchers can create a network organization and can continue to make a valuable contribution to the on-going innovation of the built environment as part of the overall evolution of contemporary society.



STEDEx 17 EXHIBITION
(RE)PLACE

MOHD. SHAHRUDIN ABD. MANAN

We live in a world populated by structures—a complex mixture of geological, biological, social, and linguistic constructions that are nothing but accumulations of materials shaped and hardened by history.

- Manuel De Landa (2000: 25)

(Re)Place is both a proposition and a provocation. On the one hand, it proposes an amalgamation of two different texts: between ‘replace’ and ‘place’. On the other hand, it provokes dialectics, questioning our habitual understanding on the idea of place, placement and replacement in design research.

We may perceive place as a geographical space. It is phenomenological; at once situational, social and environmental. Place in this sense turns to be an anchorage; a way by which a specific determined area is anchored towards a specific location, within a specific ambience, of a specific time. Place is indeed a ‘noun’ of specificity. A noun that brings together within its specificity general geo-codes which include terrain, topography, site, biodiversity and ecology. Such a generalized specificity thus forms a “structure”, a linguistic construction, to reiterate De Landa’s term (2000: 25), of what we later apprehend as place identity or the spirit of place (*genius loci*). While the Cartesian geography assigns the empirical system of latitude and longitude in defining place, we argue that design research may open up new paradigms. With this in mind, **(Re)Place** provides a platform to seeking responses on: How can we further enhance the idea of place?

As a ‘verb’, place, also replace, describe the mathematics of distant spaces and locational differences. Both speak of an act of shifting, transgressing from one vector to another. But, beyond these parametrical descriptions, the verbal idea of

place and replace suggests axiological meanings: in negotiating the diverse interpretations of value. In the discourse of sustainability, for instance, place may connote resilience whereas replace points to depletion. Place otherwise hints to status quo while replace indicates anti-establishment, newness in cultural studies. The current issue of international migration puts the value of place and replacement into perspective. Pursuing further the idea, **(Re)Place** thus looks forward to readdressing the contemporary understanding about placement and replacement in design research. From what perspective we can enrich the idea? Is the idea still relevant in today’s polemics? are some questions that **(Re)Place** hopes may offer open-ended discussions.

At last, **(Re)Place** becomes a structures that reflects the aforementioned statement of De Landa: the “structures [as] a complex mixture of geological, biological, social, and linguistic constructions” (ibid). Perhaps, after all, **(Re)Place** itself is a reminder, a reflection on the historical agenda of the STEdex exhibitions. After 8 years, since its inception in 2009, it is timely to question the established placement of STEdex as a curatorial space for displaying design works. Or perhaps it needs for a new replacement. The question now is: What kind of replacement?

Reference

De Landa, Manuel. (2000). A Thousand Years of Nonlinear History. Cambridge, Mass.: MIT Press.



RESEARCH OUTPUT BASED 1

1. Placing Fistutrek in Reporting Complicated Fistula-in-Ano Cases: A Co-design Approach
2. Placing Screwpine Leaves Into Another Level of Craft Industry
3. The Spirit of the Living Material from Tekalong Fabric
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5. Application of Organic Material as a Praxis in the Eco Batik Sartorial Culture
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7. Co-Designing Space through Crowdsourcing
8. Rafflesia, the Largest Flower in the World at the Royal Belum State Park Perak, Peninsular Malaysia

PLACING FISTUTREK IN REPORTING COMPLICATED FISTULA-IN-ANO CASES: A CO-DESIGN APPROACH

SAIFUL HASLEY RAMLI,
RAJA AHMAD AZMER RAJA EFFENDI
MOHD SHAHRIZAL DOLAH

Abstract

Some colorectal surgeons are facing issues in understanding MRI textual report for complicated fistula-in-ano. This fistula is an unusual connection between rectum and anus, currently being scanned using MRI to get the view of the connection. A textual report from radiologist will explain the connection in coordinate system and given to the surgeons for further action. Simple fistula-in-ano is easy to understand (e.g. single canal). However, a branches fistula is hard to be understood by the surgeon when they were translated into a textual report. A colorectal surgeon came up with an idea from his experience playing a game 'Kerplunk' with his children where he reflected the coordinate system used to explain fistula circumstances with the game physical appearance. He believed that complicated fistula-in-ano could be clearly understand if it can be explained through a physical artefact rather than a textual report as well as digital 3D model generation. A co-design project was setup to develop this idea. The product FISTUTREK targeted to be used by radiologist and this artefact will send together with textual report to the surgeons as visual tools which replicate the fistula track through current coordinate system. Introducing a physical tool in this procedure is new and still need a space for further development. To do this, a user's validation is needed to be undertaken for the product.

Introduction

Fistula-in-ano (Fig.1) is an irregular connection between the internal bowel system (anus) and the surface around the outer anus (perianal skin). Current technology such as MRI has been used in the UK to scan the tracks of fistulas. Currently, MRI scans are transferred into text reports without images, since the reports are combined observations from many images and radiologists have specialist expertise in interpreting the MRI images. The reports, which consist of descriptions of the fistula on coordinate grids and layers, enable surgeons to understand how the fistula tracks emerge and to decide the best treatment for it (Fig.2).

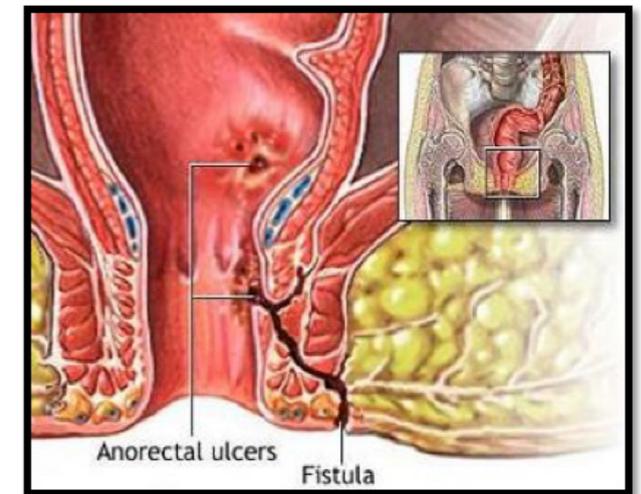


Figure 1. Fistula-in-ano.

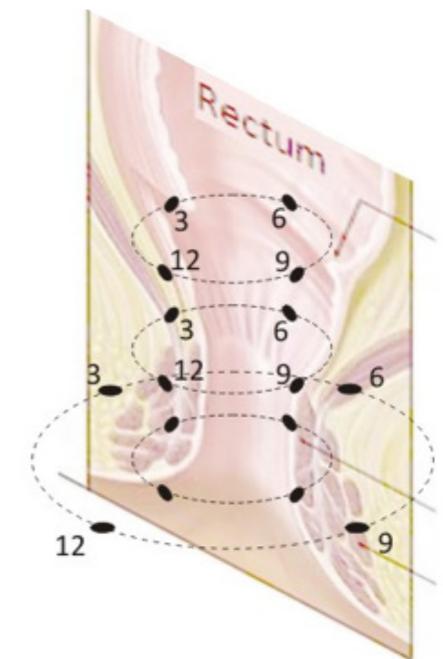


Figure 2. Coordinate system used by radiologists to indicate fistula track in the MRI report. Researcher impression.

Reports for simple fistula-in-ano are easy to understand (for the surgeons). However the surgeon explained that he and his colleague had a problem in understanding reports for complicated cases of fistula-in-ano; they had difficulties in visualising these complicated tracks through reading the MRI report. Some alternative has been attempted in order to visualise the fistula tracks, such as further explanation from the radiologists in weekly meetings with surgeons and by using digital 3-dimensional images of the fistula tracks. They worked well for some cases, but the issue has become a routine problem in this particular domain.

From the surgeon's explanation of his colleagues' feedback, digital 3-dimensional images helped the surgeon to understand the tracks. However, the surgeon believed that a hands-on model may work better when referring to the use of images and models to understand human anatomy, which is familiar to him from his professional practice. A model may give a more direct experience than images.

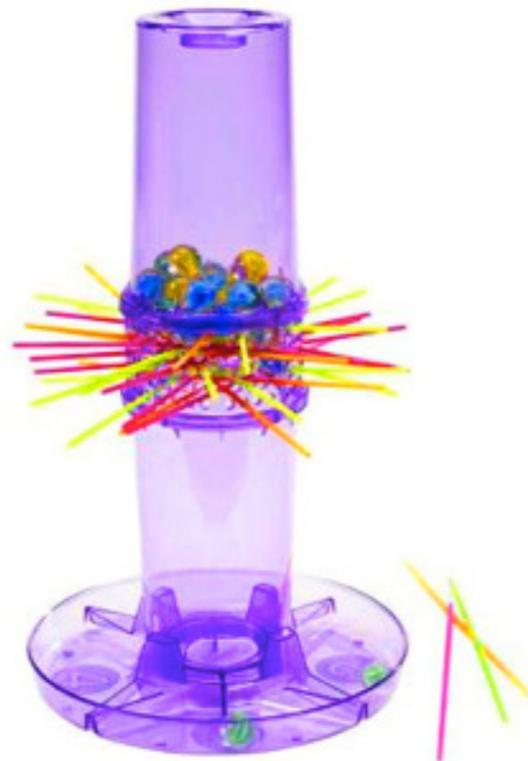


Figure 3. Kerplunk™.

He explained that he may also have the solution for this issue by taking an idea from a children's game called Kerplunk™ which he played with his children. The game starts with a complex network of plastic sticks passing through a tube (Fig. 3) and this seemed to be analogous with fistulas which pass through the anus although the fistula is a single 'snake-like' object rather than the many straight sticks in the game. He discussed this idea with radiologists and they agreed that this idea may be useful. Working together on this would give him opportunities to take forward his idea for further development. So we agreed to collaborate in a design project and proceed with a co-design session.

Method of designing

The research used Mocking-Up (Ramli 2014), a co-design method that focused on making as the idea development activity. The Mocking Up consisting three principles, which were also the activities undertaken in the design collaboration: user's proposition, contextual immersion, and the co-evolution of problems and solution through making mock-ups (Fig. 4).

MOCKING-UP :A Collaboration Design (Co-Design) approach for Designers and Expert Users

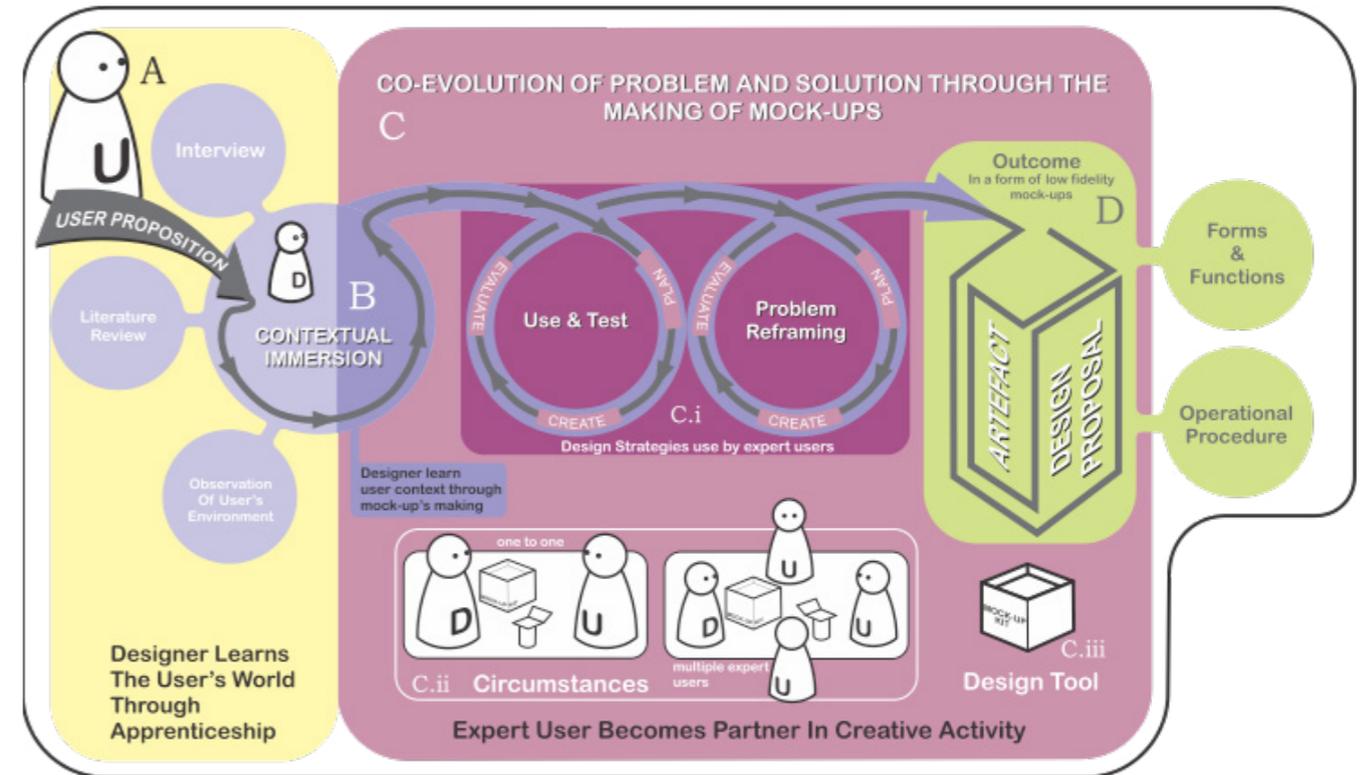


Figure 4. Diagram of Mocking Up (Ramli 2014)

Mock-ups and the activity of making the mock-up is the main design tool for such collaboration. The significant difference in the use of mock-ups in this approach then other research (e.g. Ehn and Kyng 1991; Vaajakallio & Mattelmäki 2007) was that the mock-ups were built from scratch into a tangible outcome and maintained their 'openness'. In this approach, mock-ups were built for the purpose of exploring the user's ideas and were focused on them. For this purpose, below mock-up kit was used



Figure 5. Mock-up kit 01



Figure 6. Mock-up kit 02

Co-creating with the surgeon

The design objective for this session was to develop the surgeon's idea of a model of fistula-in-ano using the mock-up as a co-design tool. The agenda was to discuss initial ideas and move on to mock-up building. This session was set-up in the meeting room and lasted for two hours.

This session started with the designer briefing the surgeon about the plan for the session including offering the surgeon to use the mock-up kit whenever needed. Then we continued with some contextual immersion, e.g. the surgeon describing the context of the issue (Fig. 7). The surgeon did this verbally, through sketching, and using the mock-up kit to model the particular anatomy which was also the design concept (Fig. 8)



Figure 7. The surgeon explain the context to the designer



Figure 8. The surgeon used material from the mock-up kit to explain the context

The designer then continued the mock-up 'making' by providing the main construction of the mock-up (Fig. 9). The surgeon took part in the making by altering and annotating the mock-up with details (Fig. 10). He did this after role play with the mock-up they built (Fig. 11)

At the end of the session, the designer asked the surgeon for his opinion of the session and the designing process (Fig. 12). Then the designer also briefed the surgeon on further planning for the project.



Figure 9. The designer making the main construction while the surgeon applied the details



Figure 10. The surgeon altering and annotated the mock-up



Figure 11. Surgeon role play with the mock-up to plan the operation procedure



Figure 12. The designer and the surgeon discussed for further action for the project



Figure 13. Mock-up built during co-design session with the surgeon.

Conclusion

The project aim is to develop a model of fistula in ano - a 3-dimensional visual tool for use by radiologists to recreate a complicated fistula in ano pathway model based on MRI scanning, to be used by surgeons to understand the nature of the complication and to plan further action. Through the design process, below product was discovered,

'Fistutrek', a brand name given to the fistula model developed through the collaboration – designed to aid the radiologist in replicating a complicated anorectal disorder and in case fistula-in-ano detected through MRI scan. This model also will be given to surgeons to aid them as a way to understand the case and for them to made further plan for the surgery (Fig 14).

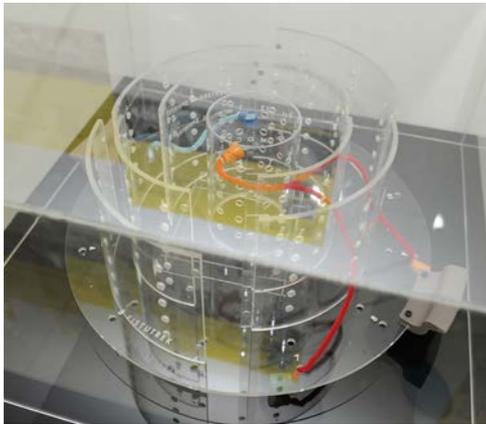


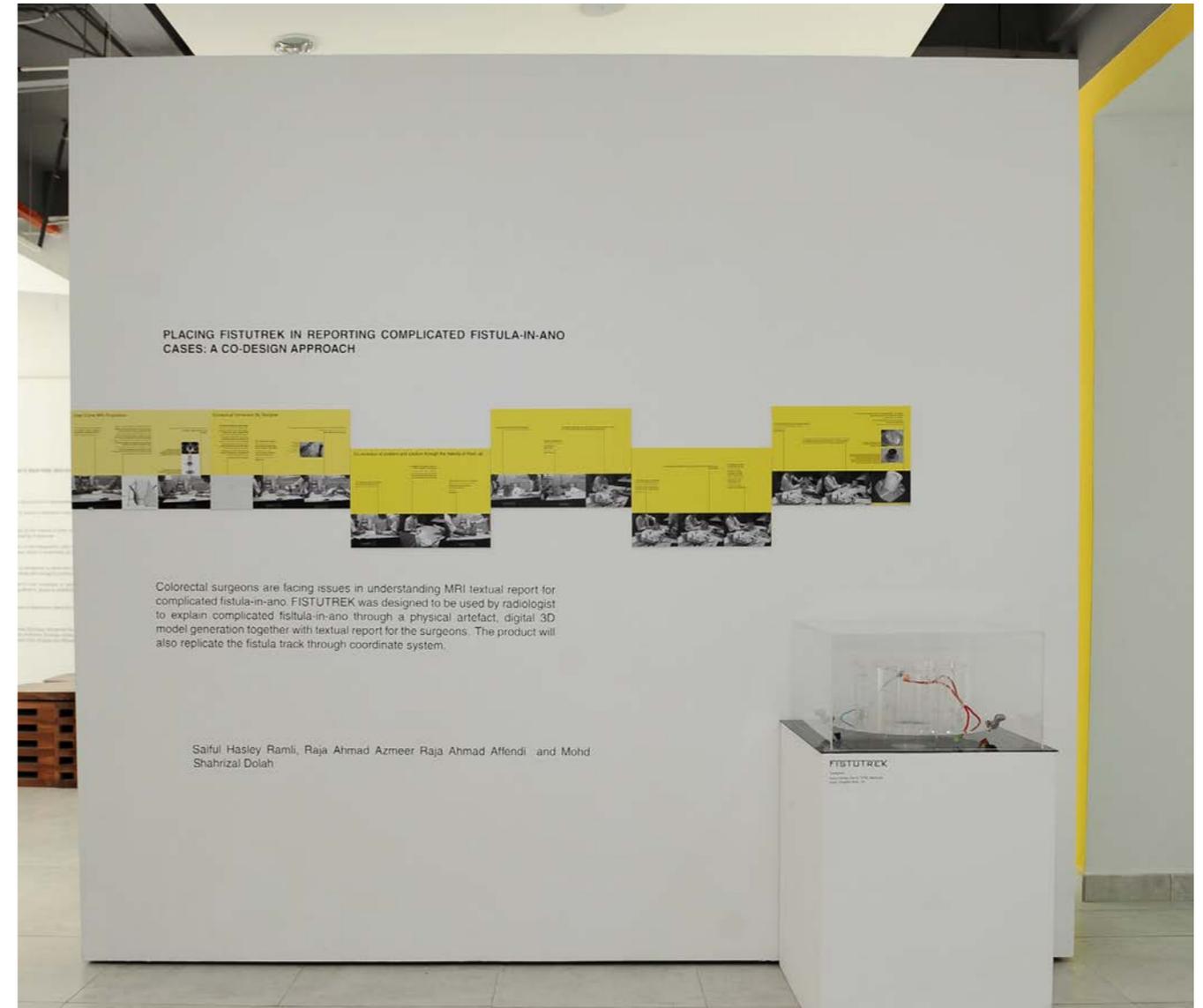
Figure 14. 'Fistutrek', the product co-designed by the designer and the surgeon.

Through the co-creating activity, new product was proposed through the collaboration reported and the collaborators believe that these could be usable in a further conceptual development stage as they may have value in the medical equipment market place as there being a need for such item. These are also part of the outcome of this research. Nevertheless, they still need to go through a further iterative process of designing for it to become a product.

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Evolution of design

PLACING SCREWPINE LEAVES INTO ANOTHER LEVEL OF CRAFT INDUSTRY

IZYAN SYAMIMI ZAINOL
KHAIROL AIDIL AZLIN,
SAIFUL HASLEY RAMLI

Abstract

Screwpine Leaves as known as Mengkuang Minyak or Mengkuang India by local. The specific name of screwpine leaves is *Pandanus atropurpureus*. It is one of the Pandanaceae species had been found mostly in South East Asia, Australia, and several Pacific Island. Screwpine leaves had been used as Malaysian traditional craft product in plaiting craft such as bags, place mat, and baskets since the Neolithic age was a low value added product. For certain reasons, this craft industry is facing the extinction issue if the heredity is not continued. Through this study, there are opportunity shows on the potential of the screwpine leaves to be proposed as bio-composite material for industry usage for example furniture material which is a high value added product. Therefore, this study is conducting the experiment on compatible process to produce the bio-composite materials that use water soluble glue as adhesive. The cold compress method proposed also to ease the production of screwpine leaves bio-composite by the rural community without using the high- machinery tools. The result shows that the bio-composite screwpine leaves can be applied as furniture component, for instance, lighting product and surface veneer as furniture furnish. Due to another issue on lack of specific data regarding the *Pandanus Atropurpureus* had been dated, the study also shows the documentation of screwpine leaves data as material. Hence, the screwpine leaves is potential as an alternative craft material that implicate the Malaysian identity into another level of the craft industry. Furthermore, given the opportunity to the community to improve the rural screwpine leaves industry.

Introduction

Pandanus Atropurpureus or screwpine leaves habitats is the swampy area, near to the sea [1]. This species mostly found in South East Asia, Australia and several Pacific Island [2]. Screwpine leaves also an evergreen tree that grow throughout the year [3]. In several country in South East Asia, screwpine leaves is a traditional material for making mats, hats, and other craft product [4]. According to Kamaruzaman (2016), the legacy of craft industry will be extinct if the heredity is not continued [5]. Most of the professional plaiter in Malaysia is receives the skills by learning from their ancestor and make use of their skill to support their life[6]. However, when the times change the lifestyle, the living can be effort by doing other jobs, the heredity skill seems not necessary to be learned [6]. As per the young generation that mistreatment the traditional lifestyle, the operation process of producing the screwpine leaves product that required patience and the lack of indication on developed the product line, is all the reason for the extinction of the screwpine leaves art craft industry. By the time, screwpine leaves being a neglected material. In order to acknowledge the industry, this research used the screwpine leaves to produce a bio-composite material without changing the image of the screwpine leaves as traditional material. This innovation of utilizes the neglected material also as the material that presenting country; is replacing the market value of the screwpine leaves product one step further in craft industry.



Screw pine Leaves or locally called as Mengkuang Minyak (Pandanus Atrocarpus) is a material that usually used in art craft industry for making bags, mats and others.

Chemical treatment
A modification that improves the adhesion between fiber surface and the polymer matrix



Screw pine Leaves Bio-composite screw pine leaves + water based binder



alkali treatment (Sodium hydroxide)
or
acid treatment (acid boric)



PLACING SCREW PINE LEAVES INTO ANOTHER LEVEL OF CRAFT INDUSTRY

Screw pine leaves or Mengkuang Minyak is a Pandanus spp that been used in Malaysian traditional craft products. The experiment to process screw pine leaves as bio-composite materials that use water soluble glue as adhesive and cold compress method to ease the production shows that the bio-composite screw pine leaves can be applied as furniture and product design components.

Izyan Syamimi Zainol, Khairul Aidil Azlin Abd Rahman Saiful Hasley Ramli

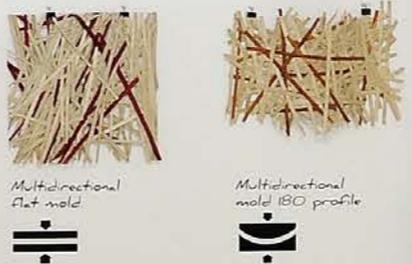
- Processing the screw pine leaves into material:
- i. Menetak (cut from the tree)
 - ii. Mengeram (cut into same length)
 - iii. Removed the middle torn
 - iv. Melayur (searing into heat of ember)
 - v. Menjanka (cut into strips)
 - vi. Melurut (soften the leaves to be tied up)
 - vii. Soak in water for 2-3 days
 - viii. Wash it out & hang it
 - ix. Dried under the sun until the colour change into off white



Hot press molding machine (40 tonnes)
Temperature 80°C - 100°C
20-30 min press



Manually Cold Molding Press
Room temperature
24 hour press



Method and Materials

The dried screwpine leaves in this study were prepared by local community from Kampung Seri Bentan Kuala Pahang, Pahang and Pandan Molek Enterprise, Alor Gajah, Melaka. The process to dry the screwpine leaves are;

1. Cut the selected leaves from the tree using a machete.
2. Mengeram; using the same machete, cut the leaves into the same length.
3. Remove the middle torn. If not, the leaves can stand up to seven days to the next process.
4. Melayur; searing the leaves into the heat of ember until the leaves tilt a little bit.
5. Melurut, is an act that soften the leaves firmness by using plate metal.
6. Menjangka, is when the leaves turn into strips by the wanted size. The size of the 'jangka' tools is variable. The common used is 5mm and 8mm.
7. Melurut, soften the leaves again to ease the strips to tie up.
8. The tie strips is soak in water two to three days, by changing the water daily. This process is changing the leaves green colour into light beige colour.
9. After three days, loose the bond, hang or the dried the leaves under the sun for several hour.
10. In order to colour the strips, the leaves need to tie up again and boil in a mixture of water and pigment.

The screwpine leaves bio-composite in this study is a mixture between the treated screwpine leaves and water-based adhesive. Due to the fiber circumstance, some experiment on chemical treatment is studied aimed to improve the adhesion between the fiber surface and polymer matrix [7]. Chemical treatment in the study involved the alkali treatment and acid treatment. While, the water based adhesive, P16001, are supplied by a local adhesive manufacturer; Techbond Manufacturing Sdn Bhd.

Alkali treatments in this study are using the sodium hydroxide (NaOH) with several percent of the solution content. The dried screwpine leaves are soak into the alkali solution for 1 hour before the dry it up for another 24 hour and mix the strips with the adhesive [4,8,9]. The mixed strips are pressed using hot and cold press method [9]. Same the situation are applied to the acid treatment that used acid boric as the solution.

Result

Based on the study above, the result is a screwpine leaves bio-composite that potentially can be applied into parts of the furniture. For example, lighting, seat, veneer as furniture furnish, and etc. The study also shows the application of the cold press method in applied the materials are the easier method in several perspectives. This shows the biggest opportunity to the rural community that used screwpine leaves as

their income to improve their product development. Therefore, these innovations are taking steps in producing high value added product which could generate more profit to the community and brought the image of the country into a better platform.

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THE SPIRIT OF THE LIVING MATERIAL FROM TEKALONG FABRIC

SITI NURAIN NABIHAH MOKHTAR
NAZLINA SHAARI
NORHAYATI SULEIMAN
EMILY EVELYN ROIPIN

Sustainability communicates and interprets its values in many ways. Sustainability is considered as an essential value and also an inspiring principle, a fait accompli and a constant commitment. Sustainability in textile chain is crucial that lead to the impact on the society. The term organic, natural and biodegradable is are generally benefited to the textile green or sustainable lifestyle. As such, the traditional knowledge from the urban group in Sarawak was explored and the bark cloth represents their sustainable art work. Historically, the fabric has been used in home furnishings, such as curtains, drapery, upholstery, and slipcovers. Among the indigenous people, the Tekalong bark represents the biocultural context in expressing the relationship between man and the environment. The bark cloth mainly used as a ritual cloth, jackets and crafts in certain countries in Asia and not fully explored its beautiful appearance in textile and fashion. The barkcloth is usually made of densely woven cotton fibers. This research aspires to offer a new perspective on experimenting the fiber, reinterpreting the formula and process in a contemporary twist.

Research efforts have been made to foster the use of bark for higher value-added products. Beyond its reflection as a wood bark, Tekalong nurture its capability in various characteristic which is interesting and mysterious as in cotton and linen. There are a few types of tree bark that is found suitable as textile materials. Tekalong, of the breadfruit family (*Artocarpus* spp) is one of the popular species that is suitable for textile materials. With some care, the strips of bark can be peeled off without killing the tree. Tekalong produces a light brown fabric, darkening with wear; considered very serviceable especially for loin cloths. The wood bark of Tekalong is an extremely versatile material, fitting an almost various range of textures from rough to soft cotton-like materials after being treated.

In creating the textile sheets, the strip of bark is moistened, rolled up and carefully beaten with a wooden mallet and this operation has to be repeated many times to get a sufficiently thin fabric without

actually tearing it. The collected bark was dried in an oven- dry at 60 °C to a final moisture content of 5%. Bark density and wood content of the bark residues were determined. A total of bark fiber content (50% and 60% based on oven-dry weight), and bark fiber size (fine: 0.19–0.25 mm, medium: 0.25–0.50 mm, and coarse: 0.50–1.00 mm), respectively. Furthermore, the enhance process emphasized the experimentation with various levels of alkali and acidic treatment in developing the aesthetic values of bark characteristic. This procedure mainly to develop an unusual soft-liked characteristic to the materials for the purpose of fashion. Through soaking and boiling processes, the textures and its durability were highly observed and controlled. The application on resisting, printing techniques and embroidery methods were also being tested as a value added to the bark surfaces in the testing. The application of reactive dyes has been tested through the suitable steaming finishing process. The results show that the resist and printing method where suitable in creating interesting textile surfaces. While the embroidery methods embodied in the material create an interesting texture and maintaining the soft like appearance of the bark material. With these parameters the bark materials appear to be more durable, less elasticity, light weight and aesthetics.

This material provided an unexpected insights to the textile designers to integrate traditional knowledge and adapting new approach of creating surface textures with various textile treatments. The design created with the resist and printing application featured new ways of testing naturally non-woven fiber with the colours applicability to absorbed and react to each other that intensifies the design fade into a soft glow and add more earthy hue due to its characteristics. This approach is an initiative to boost the product appearances while optimizing environmentally conscious design by replacing resource incentive with fiber bark alternatives. The fashion ought to become an expression of a conscious way of life and of a responsible personality, listening to not only his own desires but also the needs.



THE SPIRIT OF THE LIVING MATERIAL FROM
TEKALONG FABRIC



Tekalong bark and cloth represents the bicultural context in expressing the relationship between man and the environment. Nevertheless, after the treatment with various levels of alkalinity and acidity together with batik application, Tekalong features naturally woven fiber with colors that intensifies fade into a soft glow and adds more earthy hue due to its characteristics.

Siti Nurain Nabihah Mokhtar, Emily Evelyn Roipin, Nazlina Shaari and Norhayati Suleiman

DEVELOPMENT OF DESIGN IN THAI MCEs PRODUCTS USING SUFFICIENCY ECONOMY PHILOSOPHY

PALANG WONGTANASUPORN

Sufficiency Economy is a philosophy based on the fundamental of Thai culture created by the late King Bhumipol Adulyadej, King Rama the Ninth of Thailand. Sufficiency Economy philosophy aims to develop economic sustainability through product development (Sathirathai & Piboolsravut, 2004). The way to achieve this was applied to the improvement in manufacturers operating in rural communities (UNDP, 2007).

Applying Sufficiency Economy philosophy delivered its inspiration from the late King Bhumipol Adulyadej' numerous visits to far-flung districts all over Thailand. Wherever he went, the late king stimulated the local people to recognize their own heritage, and developed their own handicrafts and lore into products that are unique to each place. Sufficiency Economy philosophy also aims to establish sustainability in the community through local handicrafts development (Macan, 2015).

The success of this project has allowed Thai local handicrafts to present their own local sentiment, geographical Identity, and craftsmanship heritage, to be known to wider audience as beautiful products.

The products presented with added historical note and interesting information concerning the products would also add value and interest (Office of the Royal Development Projects Board, 2004).

As an industrial designer, the author sees opportunities that design can enhance sustainability of Thai local products through the potentials that are available in village-based enterprises.

Ethnography approach was chosen for the data collection phase. The survey of selected Thai village-based enterprises was undertaken by Bangkoktee subdistrict administrative organisation for applying accumulated experiences and exemplars in providing Design Development Services to MCEs.

The four exemplar projects following was developed to succeed within the government's framework to add value to existing products, thus providing greater profit. The privilege solution was expressed through the design of design strategies that supports sustain economic development of MCEs in rural Thailand in a way that aligns with product design development (Kumar, 2013).



Figure 1: Jewelry from coconut shell

In Thailand Coconut shells are known for their great versatility material as evidenced by many traditional Thai goods and artefacts (Ferguson, 2013). To support local trade some coconut shells are turned into souvenirs for tourists. Unfortunately, appearances of those souvenirs does not motivate buying demand from tourists and selling price are not satisfied for the makers.

Designer try to solve the problem by upgrading the value of the products from Thai village based manufacturing through local material

and craftsmanship. To enhance perception of Thai local products, traditional coconut shell souvenir are replaced through the use of integrated design that amalgamates geographical identity and local craftsmanship (Masera, 2001). The design of this jewelry set was inspire by shape of an indigenous flower named "Barringtonia asiatica," which is a common flower in Southeast Asia coasts. The main structure of jewelry are from coconut shell cutting and implanted by perforated brass.

Coconut shell is one of by-products of coconut farming.



Figure 2 : One coconut one artefact

In Thailand Coconut shells are known for their great versatility material. As evidenced by many traditional Thai goods and artefacts. Thai ancient uses this peasant material in company with local craftsmanship to create required artefacts that addresses their needs in local leaving.

In present day, many traditional coconut shell products do not fit the existence requirements. Demand of products from coconut shell has dropped, since the emergence of industrial material.

Nevertheless, massive of pollution problem has been reported and became a growing concern over the industrial revolution period as more and more industrial products have been produced.

Coconut shell is a natural material that may replace industrial materials because of its strength (Ohler 1999). Designers had the idea to develop some new proposed products that use coconut shell as a main structure of products by using less of production process.

Fronde of coconut is one of by-products of coconut farming. From past to present, Thai villagers use this peasant natural material along with local wisdom weaving technique to create products or artefacts to address their needs in local leaving (Goodloe, 1976).

Conversely, features and usages of these antiquated products cannot meet the requirements of the modern consumption (Osterwalder, 2010). Even more, the makers try hard to increase the exertion, demand, and

value of these products, but the value of the products remain lower than the breakeven point.

To solve this problem, the designers had the idea to develop some new proposed products that still use the same peasant natural material along with local wisdom weaving technique. However, the old-fashioned features and usages are replaced by necessitate of contemporary lifestyle.

Thailand is one of the developing country that has



Figure 3 : Product from coconut frond



Figure 4 : Locally made desk tidy

many construction sites throughout the country. The concept that inspires designer is the notion that these discarded materials are introduced as functional objects instead of filling up local landfill.

Designers plan to use reclaimed timber in the manufacturing processes. The raw materials were taken from the building construction sites, such as scraps of wood. The new proposed products exhibit sentiment and lifestyle of Thai villagers through contemporary functional objects that assemble between discarded materials and carpentry skill.

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3Dimensional display

APPLICATION OF ORGANIC MATERIAL AS A PRAXIS IN THE ECO BATIK SARTORIAL CULTURE

NAZLINA SHAARI
MUHAMMAD ZAKARIA

Batik is a type of sartorial culture that originally comes from the Malay Archipelago from the 15th century, which traditionally uses a wax-resist dyeing technique. Paraffin wax was always the main character in the batik process. The wax mixtures emit toxic chemical fumes when they are melted at a high temperature and are harmful to the human body. Furthermore, during the removing of paraffin wax process, high level of toxic will be discharged into the rivers that will affect the water quality and the environment. Due to the environmental concern, the demand on natural sources became crucial in textile processing. With an increasing of people's living standards and the concept of consumption, the development of fibers and fabrics focusing on green and environmental in apparel is in trend. The orientation of the aesthetic value of apparel returns to look innocence and tends to be natural representing comfort and beauty. Organic batik formula is a representation of an Eco textiles research that expresses the concept of an eco-friendly batik fashion products where the replacement of synthetic to natural dyes and usage of natural textiles play an important role in addressing its aesthetics.

The research explores instances where organic material from algae and plant can place and replace the resist textures with its unique and expand the used of natural colorant in the dyeing process. Dyes and colorants from natural sources are gaining importance mainly due to health and environmental issues. The objective is to obtain natural dyes from a sustainable and renewable source such as algae (micro, macro and cyanobacteria) to use them in the textile industry to replace synthetic dyes currently employed. Algae contains a wide range of photosynthetic pigments. Three major classes of photosynthetic pigments are chlorophylls, carotenoids (carotenes and xanthophylls) and phycobilins. Phycoerythrin is a red pigment extracted from red algae (Rhodophyta) while the Phycocyanin is a blue pigment derived from blue green algae (Cyanophyta). This algae known as spirulina platensis is the most popular algal source of this pigment. It requires an alkaline pH range of 7.2 to 9.0 during the process of extracting the pigment.

The photosynthetic green pigment is mainly derived from Chlorella sp. also another colorant found to be a potential pigment in textile dyeing. The Chlorophyll produces a green base pigment with subdued tones of light to warm green. Some turn out to be in brown tones of color during the dyeing process, especially for the red algae or Rhodophyta. The red color of these algae results from the pigments Phycoerythrin and phycocyanin. It is depending on the pH of the water used as well as the boiling process. Chlorophyll derivatives are used for dyeing of fabrics such as silk, crepe de chine and cotton. The whole process of production of natural dyes from algae does not involve the usage of harmful or polluting chemicals. The majority of these effluents is biodegradable and can also be reused as fodder, bioplastics etc. The pre-mordating process of dyeing mainly based on the natural source of metal salts in order to get the highest substantivity of natural colorants. The textile materials treatment with mordants prior to dyeing is called as pre-mordanting, which provides exclusive, sufficient time and sites on textile material to bind to the mordants. A proper layering of dye, mordant and textile material from cotton and silks formed in this type of processing of natural colorants on textiles.

The formalization of this natural colorant formula is representing the tranquility of organic color tones in various emotions as the cloth of soul in the fashion statement. Through the exploration of algae pigments has the drawback of being unstable at high temperature, an effective solution involves using thermophilic algae pigments. The unique character of this research was the result of using different mixtures of natural dyes and mordants that creates various color tones. Basically the color appearances aesthetically appear in color harmony. Investing in these fields would both increase profitability and reduce wastage of resources for those involved in algae culture. Maximizing this green approach in designing lead to the Eco friendly to the fashion industry. This experimental implementation focused to adopt the novel technologies for making natural colorants as a compatible as well as eco-safe alternative with synthetic colorants in different spheres of our life to make a greener world.



APPLICATION OF ORGANIC MATERIAL AS A PRAXIS IN THE ECO BATIK SARTORIAL CULTURE

Paraffin wax is the main character for the batik process but the wax mixtures emit toxic chemical wastes harmful to human and environment. Organic batik formula represents eco-textiles research that explores instances where organic pigments from algae and plant can [re] place the resist textures with its uniqueness and expand the use of natural colorant in the dyeing process.

Nazlina Shaari and Muhammad Zakaria



EXTENDING 'OPEN BUILDING' AND FLEXIBLE HOUSING STRATEGY THROUGH FLEXZHOUSE

MOHD ZAIRUL MOHD NOOR

Abstract

At present, mass housing industry does not truly satisfy the needs and changes in lifestyles of Malaysian family. Attention for customization to address individual needs and (changes in) lifestyles have increased globally. Some even argue that house buyers are no longer interested in standard designs produced by housing developers. Replacement and modification are almost common in today's housing, however, customization has always been associated with extra cost and can, therefore, increase the housing price. It is often difficult to physically adapt shelter and modify existing dwellings, and this often leads to much waste and environmental burden. Understandably, individual spaces in the house may become obsolete at times due to the changes in users' needs. The objective of this paper is to provide an analogy of flexible housing through the introduction of 'flexZhouse' as a potential solution that allows future lifestyle among Malaysians family in the urban areas. This paper summarises the terminological discussion on the 'flexZhouse' subject and the feedback that we gathered from first focus group towards young starters on its practical application. The article provides a first insight on the concept and contributes to the discussion on alternative affordable housing for the M40 group of Malaysians under Malaysian Eleventh Plan.

Introduction

In Malaysia, the mass housing industry plays a crucial role in the country's socioeconomic development. It contributes more than 4% of the gross domestic product (GDP). Many downstream activities are dependent on this industry, and it creates a domino effect when the housing industry is not performing: the whole construction industry is affected. It is important for the government to ensure that this industry is working efficiently and at the same time supports the environmental sustainability agenda.

Despite the importance of the mass housing sector to the country's development, the industry is tainted by several pertinent issues. One big issue is related

to the supply of housing for young starters. Private developers give affordable housing programmes low priority (Teck-Hong, 2012) and are especially keen to concentrate on high-end properties in order to make more profit (Cagamas Berhad, 2013). The construction of higher-end properties has thus exceeded the target laid down in the previous 5-year Malaysia Plans (2011–2015) (Economic Planning Unit, 2010). There is an oversupply of higher-end properties and new units remain unsold (Radzuan, Hamdan, Hamid, & Abdullah-Halim, 2011). The government has failed to meet its goal of supplying affordable housing to the middle-income group. According to the recent census by Department of Statistics Malaysia, (2015), the demand for residential units in the RM 250,000 – RM 300,000 price range makes up 50–90% of the total demand and most of the units were easily sold.

Given that the demand for home ownership is increasing in the market, the debate about current housing policy is shaped around the issues of affordability, particularly for the middle-income group (Cagamas Berhad, 2013 & T. Tan, 2013). First-time house buyers (T. H. Tan, 2009) or young starters aged between 23 and 30 years old (Cagamas Berhad, 2013). The middle-income group makes up 50% of the total population. Young starters constitute almost 60–70% of the middle-income group. The demand for housing is continually increasing, especially in the urban centres such as Kuala Lumpur, Selangor, Penang and Johor Bahru (T. H. Tan, 2009). However, the country is still facing difficulties in meeting the housing demands of young starters (Cagamas Berhad, 2013; T. H. Tan, 2009).

Homeownership, especially in the two most developed states in Malaysia (Selangor and Penang), remains inaccessible to many despite many changes in the macroeconomic environment and government incentives for tenure and housing assistance. Some of the reasons for this are caused by the location of the housing, especially in the prime area where the higher cost of land is driving house prices. Another issue is the deposit, income and credit obstacle: the middle-income group do not earn enough to meet bank lending criteria (Cagamas Berhad, 2013).

Nevertheless, in line with the country's aspiration to achieve high-income status by 2020, both government and private sector approaches have evolved significantly. The government is open to new suggestions to improve the current business model, and any innovation and proposal are significantly welcome at this stage (Sulaiman, Ali, & Ahmad, 2012). This paper presents the needs of new innovation of flexible housing in the country. The objective of this paper is to provide an analogy of flexible housing through the introduction of 'flexZhouse' as a potential solution that allows future lifestyle among Malaysians family in the urban areas.

Problem statement

In the previous development plan (Malaysia Plan 2011–2015) the government pledged to provide 500,000 units of a quality affordable housing to meet the demand before 2018 (Cagamas Berhad, 2013). However, the latest development plan reports that only 102,200 units have been completed (Economic Planning Unit, 2015). Therefore, a new strategy to support the effort is needed.

Although the government has made efforts to meet the demand for affordable housing for the middle-income group, we are concerned with the rising household debt among young Malaysians. Given the rule of thumb concerning the affordability rate of 30% of the expenditure of income on housing (for median incomes), the price of housing offered under the scheme is still unaffordable for many. This is partly caused by the increasing price of construction and raw material resources (Chia, Skitmore, Runeson, & Bridge, 2012), the shortage of land and increasing land prices (Cagamas Berhad, 2013), 2013). In addition to the high housing prices and the issue of affordability, purchasers are faced with inflexible housing designs and the poor quality of the built housing. Furthermore, the term affordability touches interconnected elements that cover a range of issues on both the demand side (housing needs, demographics, household income, quality housing) and the supply side (authority requirements, design, cost, sustainability and procurement). Therefore, in this paper, we examined some of the problems that relate to the supply and demand issues that are

looking for solutions on the affordability, and ways to improve the housing quality and increase the design flexibility.

Proposed solution

The current system of affordable housing provision in Malaysia seems not able to produce sufficient and adequate housing, particularly for young starters in middle-income groups. A solution could be found in a hybrid option that integrates the concept of industrialised, flexible housing with innovative tenure, which we refer to as the flexZhouse scheme (Zairul & Geraedts, 2015). The main idea is to secure a flexible scheme that allows the flexible structure of the house and the flexible leasing of the property, while also improving the quality of the housing through an industrialisation process. The potential solution is to give an alternative housing product to the present housing industry while giving an alternative for the users in mass housing choices. In the current housing situation in Malaysia, customers are given only a few choices. Although the government is trying to provide more affordable houses for the middle-income group, the solution for housing customization is never on the plate. Key players in the housing industry are reluctant to change and will keep producing standardised design and charge a premium price for a customised house. The same applies to the quality of the housing; if it is improved, the price will increase and buyers will have to absorb the extra cost. This will make house prices even more unreachable for young starters. Therefore, re-establishing the valuable connection between those three components are necessary to promote an alternative yet affordable housing industry in Malaysia.

The research project called for an exploration of structure and infill concepts. Structure or the support could be made from RC (reinforced concrete) materials or steel structure. The building's services will be run through the structure and here, infill is defined as a modular box structure of a standard size. It can be added on and be dismantled. The box structure itself consists of columns and beams. Although the size was benefits from the size of the container, the design brief allows designers to use any size that is habitable and movable by the road (logistics).

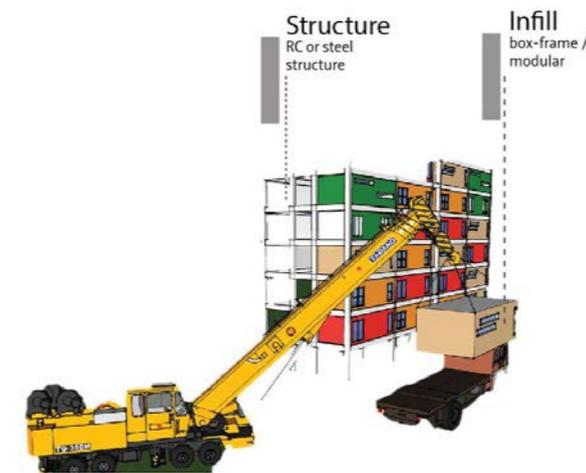


Figure 1. The composition of structure +infill

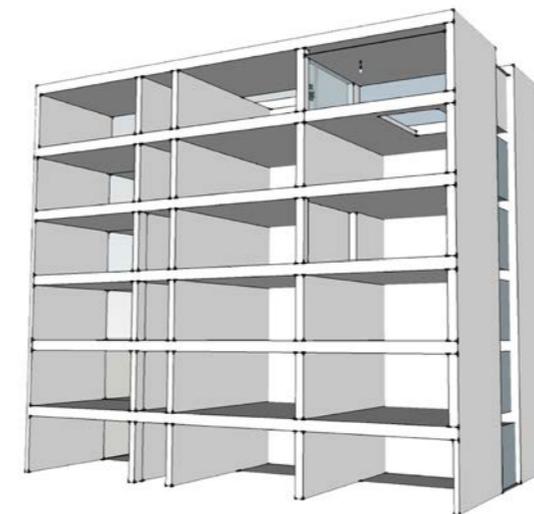


Figure 2. The shell of the structure

The figure above show core area for the services and the support system, which combines the structural sub-system and the collective services. The principle of the open building for the new concept of flexZhouse was used to support the design. The structure acts as the platform for the services and utilities (water supply, sewerage, electricity and gas) connection to the infill. The figure below shows the infill (i.e. the prefabricated components of the dwelling) in place. The infill can be formulated based on one module. Later, the module can be added on horizontally or vertically. The infill design is subject to customer preferences and is designed for relocation.



Figure 3. The conceptual mechanism of the replacing the unit

The flexZhouse model requires the design brief to include a unit that can be easily relocated within the compound or moved somewhere else. The box or the components will be equipped with bedrooms, kitchen equipment complete with piping, bathroom with all necessary utilities and choices of bedroom designs. We further refined the unit based on the earlier feedback into the following module/unit:

Module:

- Module one: 2.5 m (w) x 2.5 m (l)
- Module two: 2.5 m (w) x 7.0m (l)
- Module three: 2.5 m (w) x 12 m (l)

Unit:

- Studio unit (2.5 m x 5.0 m) (11.88 m²)
- Single unit (2.5 m x 7.0 m) (16.90 m²)
- Long unit (2.5 m x 12.0 m) (29.1 m²)
- Premium unit (2.5m x 12.0m x 2) (58.31 m²) vertical/horizontal (combination of two nos of module three)

The proposed flexZhouse arose from the idea of 'open building' with 'flexible infill' with the flexibility of the unit or infill to fill the spaces between two load bearing columns within the unit. In this module, the notion of empowerment is reflected in the choices of the infill and the spaces inside the unit. The unit will allow users to take control of their own design during the design stage. This is a way to support the idea of involving the user at the beginning of the design development chain and promote interaction, participate and co-evolve with the layout (Till & Schneider, 2012). The flexibility of the infill is the capability to be produced systematically in the factory and designed for ease of assembly and disassembly.

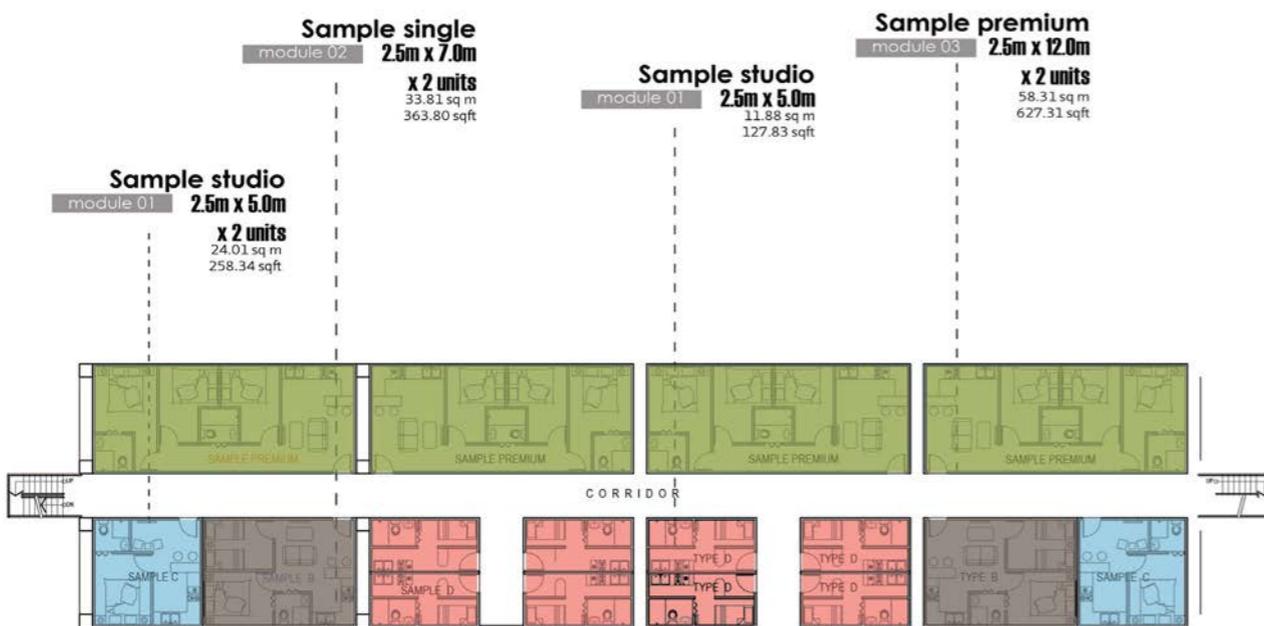


Figure 4. The typical layout plan

Although the proposed model benefits from container technology, they are not necessarily shipping containers. Each module will be developed and manufactured according to the client's requirements in terms of a number of rooms, internal fit-out and external façade. In this system, the user will be able to change the design after an agreed period of time. In terms of the sequence, the customer will place the order at the factory after choosing from the available designs and customising the internal and external features. The rent will then be determined after both parties have agreed to the terms and conditions. At an agreed time, the unit will be transported to the site and the user moves in. After a certain time (e.g. 18 months) as per conditions agreed in the contract, the user will be able to change both the inside and the outside of the unit. The new unit will be transported to the site and replace the old one, which will be taken back to the manufacturer's to be upgraded or downgraded.

For this concept to work, the factory should be located within the vicinity to support the transport of the module from manufacturing facility to the allocated site. The initial idea shows the notion of the structure is determined by a very basic RC (reinforced concrete) structure with the support of RC slab with metal rail to assist the installation of the unit into the 'slot.' Traditionally, people move to a new place when their personal needs change over time, but with this concept, the idea of growing and shrinking with the same spaces is possible with the support of the manufacturing strategy. The idea of this flexible dwelling is that it can be transported using one or two trailers, depending on the size chosen by the client, and assembled in one day. The flexibility of the housing allows the user to change the interior and exterior façade of the house according to own preferences. It is argued that it is unlikely that the flexibility of the house would depress the housing market and limit the continuing sales of housing. This is because leasing the unit and allowing changes to be made to it will prolong the lifecycle of the units and provide continuous investment for the developers.

Special attention is given to the uplifting and the slotting mechanism, forecasting the engineering input that allows for the heavy structure to be in place. This is to ensure that both the unit and the structure are ready to be replaced and adapted to possible changes in the future. The module options provided by the

company allows configuring the unit as is needed by the people who inhabit them. Moreover, it may entail an economic improvement throughout the lifecycle of the building according to the people affordability. A flexZhouse idea offers the possibility of leasing as part of the moratorium agreement in the first 5 years and then the user will be offered an option for ownership option in return for their loyalty. After ownership, the user has the option to stay in the current structure or remove the unit somewhere else. The concept also allows a young couple with no children to choose modules that they only need and add on in the future when the needs come and return the component again when the descendant leaves their home.

The proposed flexZhouse process starts with (1) acquiring land for the development of the structure for the housing development. In this case, the development requires a piece of vacant land to develop the concept. Next (2), the company begins constructing the structure with the basic services and facilities needed for the medium-rise development. After completion of the structure, the empty slots are filled with the empty boxes that had functioned as advertisements. In the next step (3), the customers go through the process of design consultation, financial discussion, leasing agreement and confirmation of the date of delivery of the units. The company then starts manufacturing the infill components. After 18 months (step 4), customers are allowed to change or modify the components and revise their monthly payment.

During the focus group with the young starters, the participants agreed that the minimum leasing period for the units would be 12 months. After 12 months, a customer would be allowed to move out or surrender the component(s) to the company. After a further six months (i.e. after a total of 18 months), a customer would be able to upgrade or downgrade the unit. However, a customer would have to inform the company three months in advance to ensure that there is an available slot for a new unit. The early notification would promote the smoothness of the production process in the factory and the delivery. Notifications would be sent to allow existing users at the particular slot to prepare for the relocation of their module to another available slot in order to allow for the reshuffling process. In step 6, the customers finalise the design with the consultant, agree on the final cost of the products (leasing), sign the agreement, and decide on the moving and delivery day. Finally, after a

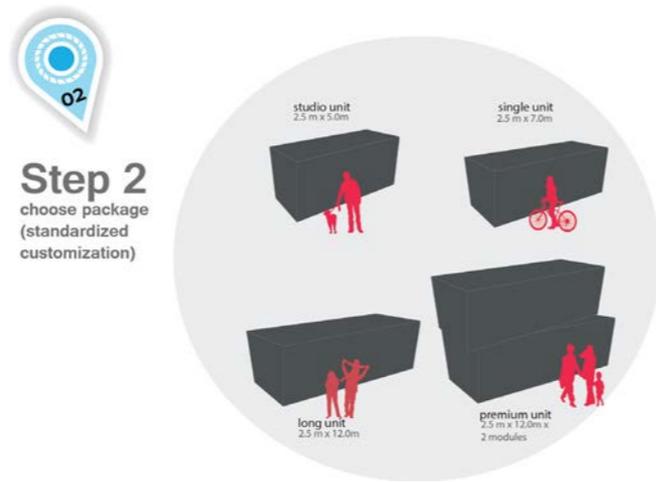


Figure 5. Step in the flexZhouse installation process

minimum stay of 18 months, the customers can change the components (add/reduce them) and agree to the relocation process to allow another component in the case of unit reshuffling (Step 7).

From the perspective of after sales, production, maintenance and refurbishment will be done by the enterprise or the maintenance company hired by the company through a partnership. Since the unit is modular, the walls, ceiling and floor are flexible to allow for expansion and reduction. The unit will be sealed and delivered to the site. This is to ensure the quality of the unit is preserved from the factory.

Conclusion

In this new strategy, which integrates innovative leasing using the circular economy principles, the housing component is designed to last longer and allow changes. The products (interior + exterior component) will be designed for durability and to make it easy to refurbish and recycle them for the next customer. Under the flexZhouse concept, the more durable product means more income for the company. The new principle suggests that the initial cost of production could be reduced if the product is built for recycling, reconfiguration and replacing, and this might change the linear economy as currently practised in the current housing industry, where housing developers spend huge amounts of resources and money on raw materials. The current lifecycle chain is not built for flexibility and the housing always requires further renovation, changes and reconstruction according to the different needs of the users. The affordability challenge will be addressed if the new company adopts the principle of the circular economy in its business operation. The initial investment could be recouped within 3–5 years and the sustainability of the products will be potentially guaranteed.

The flexZhouse will solve the quality issue through off-site production and a fabrication process that involves high precision and a product installation that has close tolerances. The quality will be assured by the factory and, contrary to conventional construction, the workmanship of the products will be at its best. The supply chain will involve skilled and semi-skilled workers who operate the machines and involves personnel with automotive background. The flexZhouse opens up the possibility of customer involvement during the early

design stage. This will definitely add a new dimension to the mass housing industry in Malaysia.

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CO-DESIGNING SPACE THROUGH CROWDSOURCING

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Abstract

There is increasing interest in the project involved the public and designers participation in co-designing spaces. However the evidential support in participating in a co-design process provide people with equal opportunity to show their preferences as well as to create a valuable restorative, experience has not been well exhibited. The purpose of the paper is to explore the viability of crowdsourcing for co-designing restorative spaces as part of landscape design process. We conducted a crowdsourcing approach in the STEdex'17 exhibition to collate and synthesise the eight of perceived sensory dimension of nature to the preferable place that is restorative to release the daily stress. The result shows that the most preferred perceived sensory dimensions among Malaysian are 'Space', 'Festive', 'Nature' and 'Rich in Species' compared to others. Overall, the studies are suggestive that crowdsourcing tools are a viable option for researchers as providing information for co-designing the space with the certain characteristic that promotes health for the public.

Introduction

Present knowledge of the natural environment in human health studies has been developed over the last 30 years by most prestigious scholars around the world. The interaction between natural environment and human has been found imperative on physical well-being (Ulrich, 1981), social (Taylor et al., 2000), spiritual (R. Kaplan & Talbot, 1988), psychological (Cimprich, 1993); (Hartig, Kaiser, & Bowler, 1997). Over decades, many researchers have highlighted that stays in natural environments and viewing the images of thr restorative environment such as forests, green spaces, water's edge and gardens offer positive stimulation of cognitive, emotional, psychological, social and physical benefits ((Ulrich et al., 1991); (S. Kaplan, 1995); (Marcus & Sachs, 2014).

Looking at the restorative environment in Malaysia, most researchers are only able to provide evidence the usability of spatial design in both public and private healthcare. Local studies conducted on the demands in creating safe and restorative outdoor environments have shown that no existent connection to nature as well as the lack of garden or landscape area creating shading and rest area outside the building (Haron,

Hamid, & Talib, 2011); (Mansor & Harun, 2014). Providently, there are private healthcare facilities which well-designed and integrated with restorative outdoor spaces including therapy garden at wards and physical therapy, contemplative gardens, social spaces and outdoor waiting areas. These findings, however, are too small and have no apparent relationship between people and restorative garden for health promotion purposes. Aforementioned, there is not enough evidence at this point to conclude that there has been an outdoor restorative environment studies conducted can improve society outcome in tropical climate and culture in Malaysia and more in-depth studies are needed to confirm these findings.

Therefore, the purpose of co-designing space through crowdsourcing approaches in landscape design process is to identify the people's preferable restorative design solutions to release their stress in the outdoor spaces. But first, we need to understand the terms of co-designing and crowdsourcing applied in the study. Co-designing or design participation is well-suited to bring users into the creative process by taking part in activities, providing them with material to descriptively discuss their personal experiences and express their ideal design solutions. Since the 1970s, this participatory approach has been led by Northern European and distinctly created according to the behaviour of collective creativity shared by the collaborating of only researchers and designers. Currently, most of the designers have been empowering the possible avenues of research outcome in collaborating the creativity of designers and the users who are not normally part of the design world, working together in the design development process that is passed over because of issues on the habitual assumption that only "lead" people can become co-designer. According to (Sanders & Stappers, 2008), articipatory approach is not new since it has been numerously practised in the US and Europe in the fields of design, architecture, planning, building science and mechanical engineering and economics. Whilst, crowdsourcing is a new phenomenon of a process or platform (Stewart, Lubensky, & Huerta, 2010) (Kittur, Chi, & Suh, 2008)) which has been steadily growing over the years. It is becoming a dynamic and vibrant research tool or recognized sourcing mechanism to solve problem-

solving in society and organizations by outsourcing problems to the crowd. For this study, it takes a different approach which mainly to the participants will introduce questions and they may choose simply vote for and against ideas posted by others. These open-ended tactics are man-made socio-technical systems to support interaction and connectivity between people behaviour and indoor-outdoor environment (Geiger, 2015); (Doan, Ramakrishnan, & Halevy, 2011).

Methodology

Eight images of the perceived sensory dimensions were used and put separately on the wall panel in the column to collect data according to the question of 'Where is your favourite place to release stress?'. It is also incorporate the colour-coded smiley stickers that will become part of interactive activities to create a visual art in order to explore the Malaysian people

preferences for the perceived sensory dimension of nature as such; Serene, Refuge, Culture, Rich in Species, Prospect, Festive, Nature and Space.

Basically, the participants who walked into this exhibition to be able to react and rate whimsically by placing smiley stickers on the all eight photos in creating a visual art. In addition, colour-coded smiley stickers were represented by 7 measure as such (1) Like Very Much, (2) Like Slightly, (3) Like Moderate, (4) Either Like or Dislike, (5) Dislike Moderate, (6) Dislike Slightly, and (7) Dislike Very Much as indicator to rate the photos. Above all, these interactive activities encourage an engagement between people who are not normally part of the design world and creative designers towards their preferred attributes that will contribute to the landscape design process.

In response to that, environmental psychology studies have classified the attributes of the natural environment according to how they are perceived. This is showed by recent evidence concludes that the latest version of classification system distinguishes from the studies that have developed over the last

30 years by researchers at Swedish University of Agricultural Sciences which also known as perceived sensory dimensions consisting eight sub-categories (Grahn & Stigsdotter, 2010) such as: Serene (sensation of being in an undisturbed, calm and safe environment); Nature (sensation of the inherent force and power of nature such as wild and untouched); Rich in Species (sensation of finding a wide range of expression of animals and flowers); Space (sensation of spaciousness and connectedness through undisturbed by too many roads and path); Prospect (Sensation of open and plane view of well-cut lawns and scattered trees); Refuge (sensation of an enclosed and safe environment to play and sightseeing other people being active); Social (sensation of an environment that is equipped for social activities of entertainment and exhibition); Culture (sensation of cultivated, man-made surroundings shaped by history and culture of decorated with fountains, statues and ornamental plants). Therefore, this environmental assessment method becomes the most important part of landscape design process for society in some contexts.



Figure 1: The Eight of Perceived Sensory installed on the wall.



Figure 2: Colour-coded smiley stickers provided.



Figure 3: Exhibition go-ers, designers, non designers and individual rated the photos.



Figure 4: Participation from people encourage interaction and active engagement.

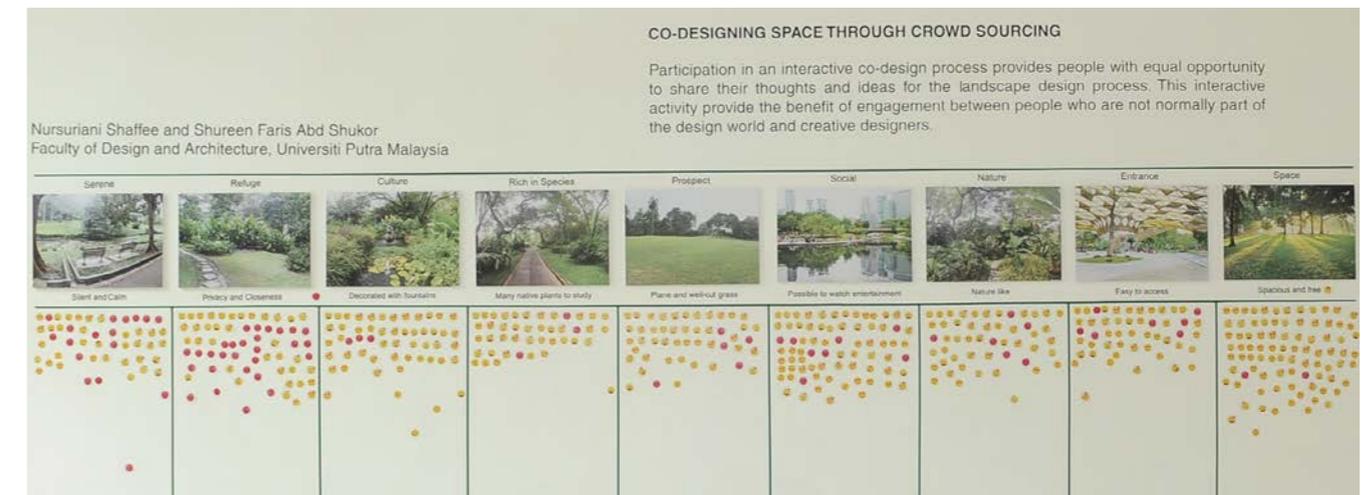


Figure 5: The Eight of Perceived Sensory photos with colour-coded smiley on the wall

Results

Mostly, crowdsourced data is richer and if the linear result of the data is readily processed through traditional statistical analysis and the results are reliable and comparable. However, in the end of STEdex 17' exhibition, since this crowdsourcing is open-ended tactic yet simply interactive, random, rate and uncontrolled experiment, it is important to acknowledge the limitation of this form of data collection in retrieving the preferable restorative design ideas. Therefore, based on Table 1, colour-coded smileys data are collected, they were descriptively calculated (Table 1) for all the to describe and summarize types of dimensions among the eight of perceived sensory dimensions that had the most potential and valuable dimension to be considered when designing preferably in designing restorative environment in Malaysia local context.

Based on Table 1, the results indicate that the majority of Malaysian were most preferred the dimension of 'Space' (F= 37, M=6.17, SD=1.451) compared to 'Refuge' (F=21, M=3.31, SD 2.151) among 60 Malaysians. The findings clearly showed that the most preferred dimensions were 'Space', 'Festive' and 'Nature' followed by 'Rich in Species' as well as 'Culture'. However, they have not preferred the 'Refuge', 'Serene' and 'Prospect'. Interestingly, according to the previous study, the results from rating exercise in Denmark, showed that the dimension of 'Serene', 'Rich in Species', 'Refuge' and 'Nature' are dominant with the highest rated. Above all, from the findings, we can suggest to include more design character of 'Space' compared to 'Refuge' character in the restorative environment and landscape design in order to encourage more accessible spaces than being as unutilized spaces.

Perceived Sensory Dimension	Frequency		Mean	Standard Deviation
	Like Very Much	Dislike Very Much		
Space	37	1	6.17	1.451
Festive	28	4	5.40	1.967
Nature	24	2	5.17	1.870
Rich in Species	22	3	5.10	1.840
Culture	21	8	5.05	2.100
Prospect	19	4	4.95	2.000
Serene	13	12	4.03	2.201
Refuge	6	21	3.31	2.151

Table 1 : Frequency, Mean and Standard Deviation on the Perceived Sensory Dimension of Nature

Discussion

In this study, we sought to identify whether crowdsourcing is a viable alternative to use in co-designing space for restorative environments in the landscape design process which often criticized for their limited work experience in landscape design field. Our findings show that the use of crowdsourcing can be potentially viable resources for researchers wishing to collect survey data on many types of organizational phenomena. However, there are some considerations which include financial and oversurveying. The benefits of crowdsourcing options do not come for free, the more research involved surveys or experiments studies requires higher levels of compensation. While the possibility of oversurveying also become a concern as the given the short timeframe of observation for crowdsourcing in the exhibition gallery due to the researcher can not be at the gallery at all times. Thus, all the participants commented that these activities were relatively more engaging than other tasks. It is also imperative to acknowledge the limitation of the study in terms of the high data quality and undesirable motivations of participants to complete the rating photos activities during the activities. In conclusion, this study provides initial evidence that good quality data can be obtained through crowdsourcing tools.

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RAFFLESIA, THE LARGEST FLOWER IN THE WORLD AT THE ROYAL BELUM STATE PARK PERAK, PENINSULAR MALAYSIA

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NOOR ASMAH

Rafflesia has been world-widely known as the giant flower in the world. This organism has been discovered since 1791 in Java by French explorer, Louis Auguste Deschamps, and later in 1818, it has been found once again in Bengkulu, Sumatra and named after Sir Thomas Stamford Raffles, which until today it is called as Rafflesia. In Royal Belum State Park, Rafflesia has been found since 1908 by H. N. Ridley during his expedition to Gerik. There are three Rafflesia's species present within this area which are Rafflesia cantleyi, R. kerrii and R. azlanii where R. cantleyi and R. azlanii are the endemic species from Peninsular Malaysia while R. kerrii is a species which can be found in Thailand and Peninsular Malaysia. As holoparasite, Rafflesia is really choosy. It only parasitized on the liana of wild grape family, the Tetrastigma species and their nutrient requirement is completely depending on its host. It lives without roots, stems or leaves like other normal plant structure. The nutrient is acquired through the thread-like-structure that absorbs the nutrient from the host and transferred it to the Rafflesia. The existence of these species, together with its virgin forest and beautiful natural landscape, it becomes one of the main eco-tourism attraction in Peninsular Malaysia. By 2016, there are about 23,400 of tourists throughout the world visit this park, and Rafflesia's population sites is one of the main attraction especially when the flower is bloomed. However, a full study on the Rafflesia's parasitism and its living requirement is still not fully understood yet. Any disturbance within its habitat will eventually affect the survival of the Rafflesia's species due to its complicated life cycle which depend on others to live, reproduce and distribute, habitat specific, rare and sensitive parasitic plants. Therefore, study on the Rafflesia's life cycle is performing for a better understanding on Rafflesia's living requirement in order to maintain the survival of the Rafflesia species in Royal Belum State Park.

Until this stage, the existence of these species in Royal Belum State Park is believed to be affected by the ecological factors, e.g. climatic, edaphic, topographic, biotic and limiting factors. The climatic factors which affect the establishment of Rafflesia is believed to be the light intensity, temperature and

humidity. These factors can be seen when this giant was found commonly in moist, shaded environment and located near to the water sources, like river and stream - topographic factors. However, too wet or too dry environment will eventually make the Rafflesia buds prone to death. Therefore, these factors should be measured within several months in order to get a correct estimation of Rafflesia's preference environmental condition.

The edaphic factor which is the soil, function to hold roots and provide water, air and all necessary nutrients for plant growth. Soil is composed of weathered rock and mineral particles, like clay, sand and silt, and organic matter. In this study, it is found that the soil type where the Rafflesia were existed are clay loam and sandy loam with acidic soil condition. There are a high proportion of sand inside the soil, followed by clay and silt.

The surrounding vegetation might act as the limiting factor as there might have association between the establishments of Rafflesia inside the host with the neighboring trees. This association can be traced by determining the species diversity and measuring the similarities in tree's species composition by comparing each Rafflesia population site. The existence frequency of the same species in each site will reveal the species that are associated with Rafflesia.

Rafflesia is a dioecious plant where the female and male flowers are separated far from each other. Therefore, animals – biotic factors, act as the pollinator and dispersal agents for this miraculous parasitic flower. The pollinators which are the carrion fly will be attracted to the rotten smell of the male flower and enter the flower, searching for food and brood place. Inside the male flower, the pollen accidentally attached to the flies' body. When the flies found there is nothing inside the flower, they leave the flower. When they found another flower, perhaps, female flower with the same stinking smell and entering the female flower searching for their needs, the pollen that attached to their body might transferred to the female reproduction organ. Therefore, pollination is occurred.



Close up display



Research instrument

A successful reproduction produced a fruit inside the ovary of the female flower. In order to increase their species distribution, they need the help of the small mammals such as the plantain squirrel and it's relative to dispersed the Rafflesia's seeds. They usually run, travels, nest and feed on vines and will avoid open areas. This behavior makes them easily to come across the Tetrastigma vines. The seeds of Rafflesia is really small and numerous and it is assumed to be swallowed whole. As these mammals are small in sizes, the fruit is believed to be eaten many times by more than one individuals and later disperse their small feces extensively within their territories. If the seeds successfully transferred to the Tetrastigma vines, there are chances of the Rafflesia to propagate on the new individual Tetrastigma host. In general, the life cycle of Rafflesia is about three to four and half years.

Aside from its amazing size and life style, most of the Rafflesia species today face the risk of extinction. This threat can be divided into natural threat and human threat. The natural threats that faced by this parasite is it is only presence in four countries in this entire world which is Malaysia, Indonesia, Thailand and Philippine and most of the Rafflesia species are rare. Most of the species is existed in different places.

For example, *R. cantleyi* and *R. azlanii* is only existed in Peninsular Malaysia, *R. keithii* and *R. tengku-adlinii* only grows in Sabah and *R. tuan-mudae* and *R. hasseltii* is only present in Sarawak. As Rafflesia is separated female and male flower, their blooming event is un-synchronized. This situation makes the pollination become harder. When the pollination is successful, there are low chance of fruits to be produced. This makes their chance to increase their population and distribution become lower. Then, when the seed is successfully germinate inside the host, there are high mortality rates faced by the buds, only a little of them are successfully grown until bloom.

However, this natural threat unavoidable and it is happened since this species is firstly evolved. Thus, the human factors becomes the major cause of the extinction of this species though the unsustainable eco-tourism in Royal Belum State Park. As the Rafflesia's bud is normally camouflage with their surroundings, people might accidentally tramples on it. The ecology of the Rafflesia might be disturbed when too many people visited the Rafflesia site in a time. This situation causing the soil become more compact and the top soil which provide the nutrients from the decaying organism to the trees within the habitat might be

leached. The nutrient's leaching will affect the entire vegetation there. Then, the surrounding vegetation also might damage when people make a walking trek to get closer to the Rafflesia's flower. The activities of the related animals will be disturbed as human keeps visiting the flower. This situation will eventually affect the pollination and dispersal activities.

Royal Belum State Park facing increasing in tourist's number tremendously from 2006 to 2016, which is from 2,909 people to 23,375 people. A continuous increasing number of tourist without any conservation efforts will definitely bring damage to this site. Therefore, the conservation efforts which is through research, education and sustainable eco-tourism should be done in order to maintain the survival of the Rafflesia species in this area. The conservation effort can be done by performing a further detailed studies on the Rafflesia's living requirements and it's life cycle in order to get a better understanding on how it live and for the purpose of conservation. Through this effort, the condition of each Rafflesia's population can be identified and the rehabilitation efforts can be taken in order to prevent the dying or extinction of Rafflesia species not only in Royal Belum State Park, but in entire world.

The knowledge on Rafflesia also should be delivered to all tour guide and local communities about this magnificent plant and the do's and don'ts while visiting the Rafflesia population site. With the involvement and cooperation from every party, the conservation of Rafflesia species in this area can be successfully achieved.

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STUDIO OUTPUT

1. Floating Hexagonal Kelong Tourists Pontoon: The Placemaking of Aquatourism to the Extreme
2. Smart Setiu Wetland Placemaking: Reincarnating the Voyage of Eco Warriors
3. Replacing the Wood to Bamboo for Sustainable Furniture
4. Bangsar South RTM Media-logy Annex: Re-placing Broadcasting Archive as Interpretive Public Participatory Facility
5. Urban Georgetown Heritage Zone Jigsaw: Self-contained Sub-cities Placemaking towards Gentrification of Modern Society Lifestyle

FLOATING HEXAGONAL KELONG TOURISTS PONTOON: THE PLACEMAKING OF AQUATOURISM TO THE EXTREME

MOHAMMAD YAZAH MAT RASCHID
RAJA AMAD AZMEER RAJA AHMAD AFFENDI
EZAZ FETAMI

Offshore aquaculture is an emerging approach to marine farming where fish farms are moved some distance offshore. Recognized as open ocean aquaculture, the farms are positioned in deeper and less sheltered waters, where ocean currents are stronger than they are inshore (Sturrock et al. 2008). They are notable industries along the shoreline to 5 nautical mile sea area. Within this area, coastal and marine tourism includes those recreational activities which focus the marine environment and fishing industry. In retrospective, as oceans industrialise,

conflicts are increasing among the users of marine space where natural resources can be seen as publicly owned and can be conflict with the tourism industry. The problems can be aggravated by the remoteness of many marine areas, and difficulties with monitoring and enforcement (Skladany et al. 2007). On the other hand, remote sites can be chosen that avoid conflicts with other users, and allow large scale operations with resulting economies of scale and also alternatives for countries with few suitable inshore sites. (Figure 1)



Figure 1: Alternative Inshore Sites

Despite their potentials, until today, offshore cage culture has yet to make a major breakthrough in Malaysia with a coastline of 4,809 km, as a unique place making marine tourist's destination with diverse tourism related activities that could lead to profitable economic receipts. Faculty of Design and Architecture, in collaboration with Malaysian Fishing Industry and Tours Sdn. Bhd. proposed a new breed of offshore cage culture which design could enhance tourists place attachments whilst still remains operating as an aquaculture hub. An action research approach

via technical and global product analysis on floating and existing pontoon structures were conducted. The preliminary outcome is an floating hexagonal Kelong Aqua tourism complex consisting of appropriately scaled hexagonal shaped floating pontoons as enablers to the construction of aqua resort facilities and accommodation in compact, transportable and flexible configuration system as alternative to the fixed and single function aqua culture (Figure 2 and 3)

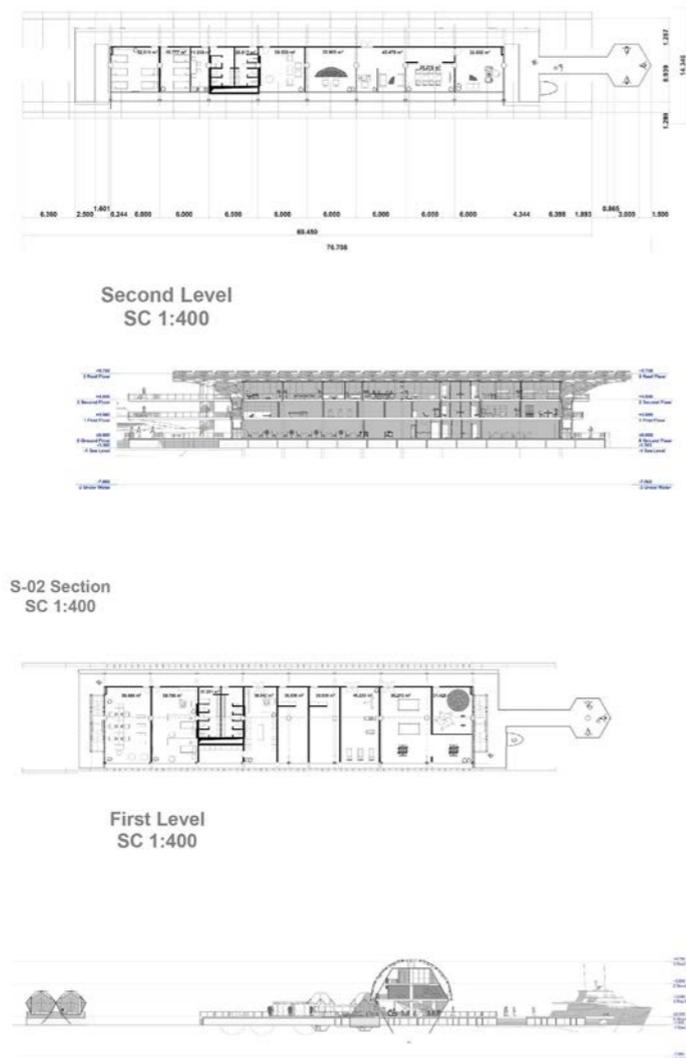


Figure 2. Basic Plans and Sections

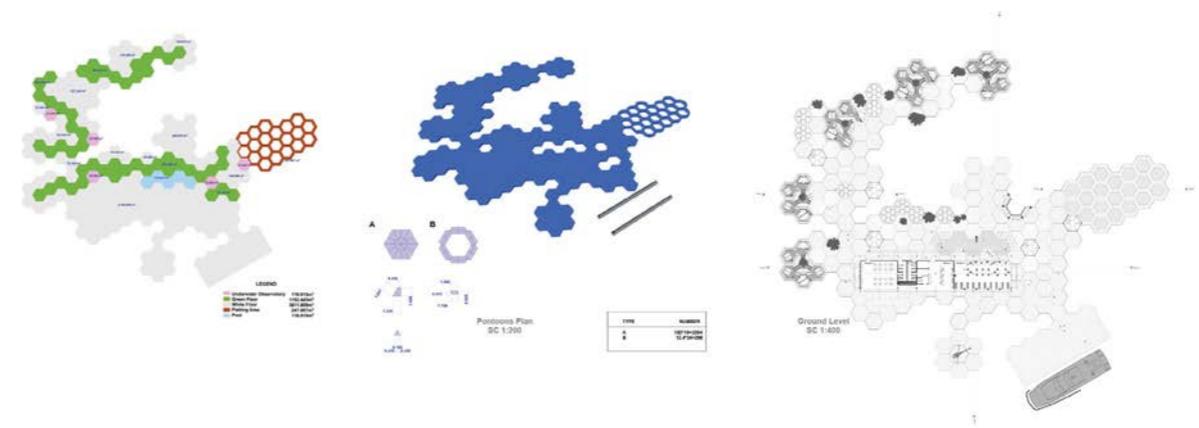


Figure 3. Hexagonal Floating Pontoon

Technically, to withstand the high energy offshore environment, the proposed Kelong must be built to be more robust than those inshore (Cressey, 2009). The researchers acknowledges the fact that the offshore aquaculture entails high equipment and supply costs, and therefore will be under severe pressure to lower labour costs and maintenance through automated production technologies. It uses submersible cages; each one able to hold many thousands of fish; and are anchored on the sea floor but can move up and down the water column (Naylor and Burke 2005) and

attached to buoys on the surface which frequently contain a mechanism for feeding and storage for equipment (Mann 2004). The maintenance capacities of the Kelong is being optimized through the flexible modular hexagonal pontoons configurations that are transportable whenever the maintenance is required. Modular building also accelerates the path to occupancy, reduces material waste, ensures exceptional quality and lessens site disruption which is much needed in marine environment (Figure 4).

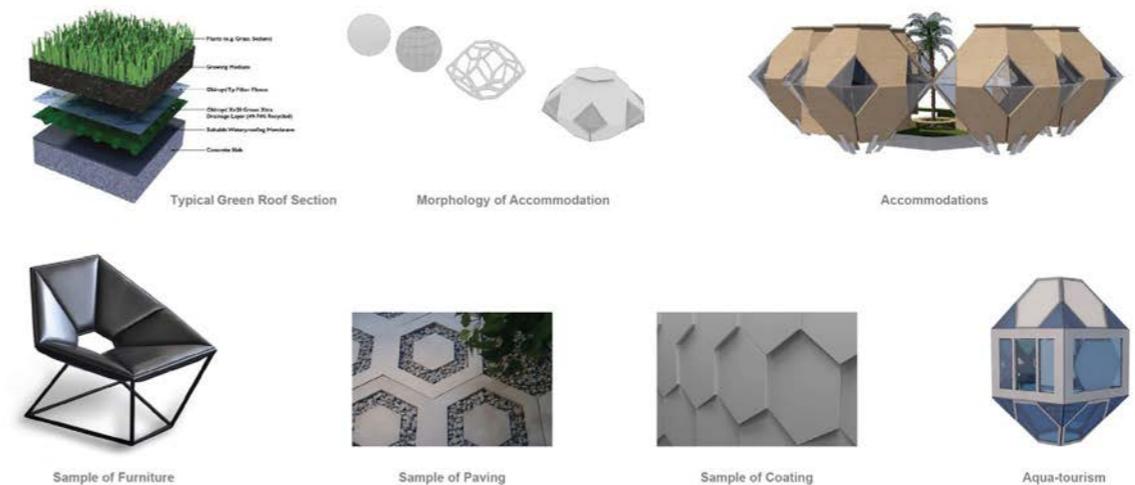


Figure 4. Modular Construction

The Kelong also programmed submerging buildings to enhance tourist experience of marine environment. The concept of submerged buildings in this proposal is closely connected to concept of placemaking in tourism which aimed at offering visitors an opportunity for maximal immersion in the aquatic environment by enabling the utmost viewing of the oceanic surroundings. This goal is reflected in the morphology of the building proposed: increased surface area using hexagonal shapes pontoon, multiple windows and an enlarged proportion of transparent materials in the outer walls of the structure (Bitterman 2013).

The Kelong is an alternative to main land's coastal tourism. The primary reason for coastal tourism is proximity to the beach and in terms of natural disaster it is unreasonable to require set-backs for a hazard whose return interval is largely unknown and which may not justify a retreat from the shoreline if other measures could be equally effective in protecting lives (Birkland et al., 2006). The technological approach in the propose Kelong also allow a much more resilient adaptive measure towards tsunamis or natural disaster by the virtue of being tranportable to alternative coastal areas tourism development. Thus, the Kelong offers a temporal place making of a tourism destination.

It is widely expected that the technology will assist in enhancing the placemaking of new aqua tourism destination whilst enhancing their lifecycles to be remained competitive. In a nutshell, it is expected

to transform the aquaculture industries landscape by providing a two in one alternative in diversifying its activities enhancing the economic livelihood of aquaculture and tourism operators. The technological, economic and social changes placemaking of Kelong is achieved through sustainable destination planning and management and new packaging of travel products and business opportunity in tourism.

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SMART SETIU WETLAND PLACEMAKING: REINCARNATING THE VOYAGE OF ECO WARRIORS

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The Setiu State Park was gazetted by the Terengganu state government in 2015 due to biological diversity, protection of the natural environment, and potentials for ecotourism which were intended to benefit the local community livelihood. Despite these intentions, currently, there are no specific integrated physical master plan proposal available not only to enhance the placemaking potentials of Setiu Wetland as a premier global wetland ecotourism destination. Subsequently, Team Inventour FRSB was appointed by Unit Perancang Ekonomi Negeri (UPEN) Terengganu in 2016 for the Setiu Wetland Master Plan development initiative.

An action research-based on the stakeholders brainstorming session, site visit and SWOT analysis and responses to the Local Setiu District Structure Plan 2015, Satoyama Initiative of Biodiversity Index Consultant by TZR Resources Sdn Bhd's and Community participant workshop were conducted to formulate a conceptual Master Plan of Setiu Wetland. The idea of placemaking based on the "Reincarnating the Voyage of Setiu Eco Warriors" is vehemently explored and realized in a 3 phased development strategies.

Phase 1: Development of Stakeholders Vision and Mission

The key stakeholders proposed 5 objective strategies as the way forward to develop a comprehensive master plan; to increase people livelihood within Setiu Wetlands with Eco-heritage tourism approach; to conserve Setiu Wetland biodiversity as a natural Heritage; to preserve Setiu Wetlands Heritage; to enhance Setiu Wetland connectivity; To provide green infrastructure with local sensitivity; and to intensify Setiu wetlands as Research, Development and Experiential learning lab

Phase 2: SWOT Analysis

The SWOT analysis concluded the need to facilitate; green energy techniques; increase visibility of Setiu Wetlands; protect and enhance local livelihood, social-economic environment, culture and heritage. The analysis also recommends the enhancement of R&D capacities to boost local livelihood and culture; maintain and mitigate the biodiversity system; interconnecting places of tourism interest; enhance sense of place and identity among locals and

opportunity of re-clustering tourism niche within Setiu Wetland.

Phase 3: Implementation

The stage allows for the concept of reincarnating the voyage of Setiu Wetland Eco-warriors to be tested through 3 pronged planning and design strategies:

• Smart Inter-connected zoning

The result is a continuous placemaking process combining ecotourism and research component to enhance; Setiu Wetland visibility, local prides of heritage, sense of belonging and Destination lifecycle survival capacities.

• Smart Green Planning

Green technology is the way forward in the overall master plan involving the application of; Water Sensitive Urban Design Technology; Localized Sewerage Treatment Plant; Centralized Waste Management system; Green Transportation; Digital Earth Index Biodiversity monitoring, and flexibility for future expansions. These are imperative for enhancing the resilience of Setiu Wetland.

• Smart Eco Transit Building (Eco-visual and Spatial Relief)

The strategies is towards energy efficient building via solar panel, Rain Water Harvesting system and smart electrical appliances; Passive vernacular design technique via optimizing natural ventilation, daylight and acoustic; modular Portable Building (timber and steel hybrid) for low carbon emission construction and flexibility in planning; integrating traditional Terengganu heritage architecture and lifestyle features; and Indigenous landscape integration.

Phase 4: Community Participation Focus Group

This is the final stage towards the formation of the master plan, Generally, the Setiu Wetland communities responded positively to the proposal on the manner the projects will benefit the local livelihood, biodiversity and ecosystem. Essentially most agreed that the proposed master plan scale is appropriate and the gearing towards the green economy as the way forward in developing ecotourism and research development. However, most are worried on the external threat of incoming tourists and indecisive political development will have on a sensitive Setiu

Wetland environment. The other main concern is for the development to ensure that the existing traditional lifestyle and rustic environment could be blended altogether in the master plan to enhance the resiliency towards external impacts.

Impact

The master plan which conceptualizing the reincarnation of the historical eco-warriors voyage depicting as early as the legendary Tok Setiu era and the lifestyles of the local farmers and fishermen is expected to reenergize the placemaking of Setiu Wetland as research and ecotourism destination.

In parallel, it Increase the connectivity and visibility of Setiu wetland as ecotourism destination; local livelihood benefits via existing aquaculture, fishing, local products Small Medium enterprises, tourism activities and new portable building construction industry. It also facilitate efficient ecosystem and biodiversity maintenance through synergy of research and ecotourism offering a Unique value added community based ecotourism for all year round tourism activities and facilities supporting the local resources. Furthermore, it ggenerates green economy by complying with Satoyama initiative and securing future green grants and will worthy as local and state pride ecotourism.



Figure 1. Smart Integrated Zoning



Figure 2. Setiu Wetland Master Plan development initiative

REPLACING THE WOOD TO BAMBOO FOR SUSTAINABLE FURNITURE

KHAIRUL AIDIL AZLIN ABD RAHMAN
ABDUL RAPIZAM ABD RAZAK
ABDUL GHAFUR ABDUL HAMID
FANDI AHMAD SHAH

Bamboo species are considered “poor timber” has the clear potential to be popularized as furniture. But this depends on the suitability and practicability of technology towards the production of bamboo products of high quality and competitive. Bamboo is a fast growing plant that can grow from 30 centimeters up to 30 meters. Bamboo belongs to the family of grass, i.e. Gramineae. It grows abundantly in the tropics or subtropics area. This plant requires a humid and hot climate for a good growth. Most bamboos grow wild in the foothill of the main range, secondary forest. Currently, the bamboo industries are mostly small scaled and craft-based. They are mostly small enterprises and associated with the excess of raw material and cultural influence of the local community. The increased global awareness and demand for bamboo as one of the emerging green products from sustainable resources has led to more use of bamboo in commercial application, realizing the potential and the importance of bamboo. Bamboo is one of the most important non-wood resources as their utilization varies and will reach maturity faster than wood plants. Bamboo is considered as one of a sustainable material for the future. Bamboo can be a natural substitute for tropical timber species that is facing supply shortage due to the emphasis the government’s efforts towards the forest conserved Malaysia still depends on wild bamboo resources, commercial bamboo plantations need to be developed in order to fulfil the future demand. Bamboo was chosen as an alternative material that has been synonymous with human life that is useful in daily life. However, bamboo has its limitation in term of size, length and the tube form. The main objective of this research is to utilize the natural eco-friendly bamboo material into a robust furniture products. The study emphasizes on strength, durability, design, ergonomic, functions, manufacturability and environmental aspect that benefit the users and manufacturers. The process includes the study of the physical characteristics, experiment of lamination process, producing new materials and applying the new materials into products. Malaysian bamboo were mostly thin and not much application for high value added product. The inner part of bamboo or veneer,

known as “Berapak” by the Bidayuh community in Sarawak was made into laminated bamboo boards. Commonly, they use “Berapak” as the main ingredient in the production of handicraft known as “Terendak”. The characteristic of veneer from the inner part of the bamboo is water resistant, long nodes, thin and easy to shape. Thickness of veneer from the inner part of the bamboo is 1mm to 2mm and width that can be achieved between 30.48 cm to 60.96 cm and 45.72 cm to 60.96 cm long. Adhesive materials used are polyvinyl acetate (PVAc), thermoplastic polymer resin glue which is available in the form of solutions or emulsions. Among the advantages of these adhesives in the manufacture of laminated bamboo is a line of glue on the surface at the board is not so visible, it has no limited duration and easy to use. Furthermore, bio-composite bamboo is a material formed by a matrix (resin) and reinforcement of bamboo natural fiber. Its use of environmentally friendly products and biodegradable composite. However, matrix resin is carefully selected with the ratio of 70% bamboo fibers and 30% polymer for easy to recycle. This to minimize usage of plastic in everyday products. The bio composite bamboo material is suitable for extrusion process due to the character of the material with high dimensional stability and durability. It has wood like aesthetic appearance. The result shows that bamboo material is suitable for furniture as a sustainable material. Bamboo is an alternative material and potential product application for future eco friendly in the furniture industry for high value added products. The product presented here is a knocked down system stool design that provides a DIY assembly system that applied two different materials which are wood and laminated bamboo. The product represents the same quality, stability and functions. However the surface grains of the wood and bamboo finishing is different. It will influence the audience preference to suit with their own home interior. The design criteria emphasis on the limitation of laminated bamboo material characteristic, easy packaging, assemble, disassemble, multifunction and modularity for users in the small space living.

BAMBOO FOR SUSTAINABLE HIGH VALUE ADDED PRODUCTS

Bamboos are considered "poor timber" but have a potential to be popularized as material for furniture. Laminated bamboo boards were developed by using inner part of bamboo or veneer, known as "Berapak" by the Bidayuh of Sarawak. The laminated bamboo were been tested for strength, durability, ergonomic, manufacturability and environmental aspect before been applied into product designs.



Khairul Aidil Azlin Abd Rahman,
Abdul Rapizam Abd Razak,
Abdul Ghafur Abdul Hamid
and Fandi Ahmad Shah



Sample of materials



Sample of materials

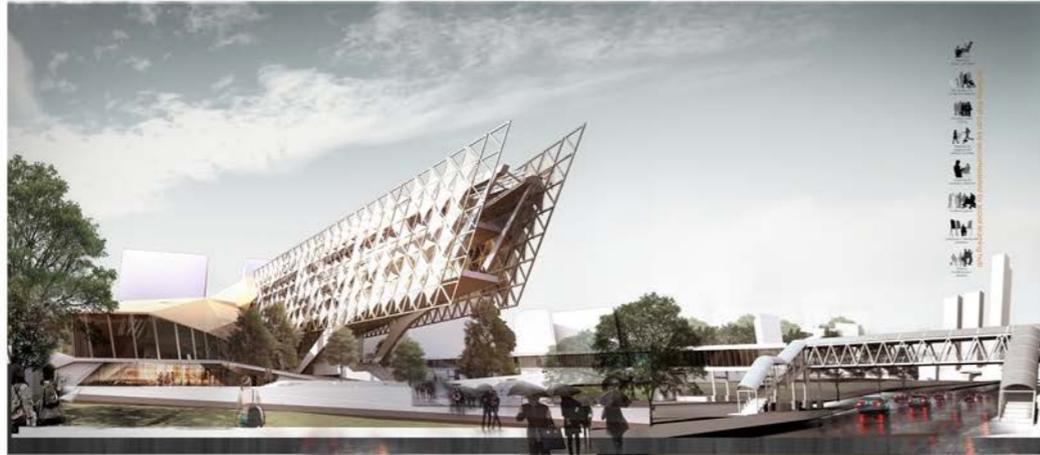
BANGSAR SOUTH
RTM MEDIA-LOGY ANNEX:
RE-PLACING BROADCASTING ARCHIVE
AS INTERPRETIVE PUBLIC PARTICIPATORY
FACILITY

MOHAMMAD YAZAH MAT RASCHID
SUMARNI ISMAIL
MAREK KOZLOWSKI
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WAN SOFIA WAN ISHAK
JIMMY LIEW JUN MING

Archives and Record Storage Buildings are facilities that provide a proper environment for the purpose of storing records and materials that require permanent protection for historic and lifetime storage, upkeep, and preservation. Archives and Record Storage Buildings must be high-performance buildings whose systems must be designed to operate permanently at a very high level with zero tolerance for failure. The often irreplaceable nature of the materials to be permanently stored and preserved in this type of building requires a life-cycle analysis and approach to its design and construction, with extensive redundancy in its building systems (Hanus and Hanusova, 2012). Despite its main purposes, The archive, which is still a combination of the past (print collections) and the present (new information technologies), must be viewed with a new perspective and understanding if it is to fulfil its potential in adding value to the advancement of the learning mission and in moving with that institution into the future. With this notion, a new archive perspective is vitally required by Radio and Television Malaysia (RTM) in Bangsar South.

Whilst it must be of high-performance buildings, designed to operate permanently at a very high level

with zero tolerance for failure, it must also be highly accessible to the public for interpretive experience with the archives. The challenge faced by the designers therefore is to replace the single function archive as public participatory facility that could enhance the interpretive experience of users. Jimmy Liew Jun Ming, in his final design thesis entitled Bangsar South RTM Media-logy Annex, explored the utilization of courtyard as the architectural mediator between high tech and pedestrian environment to enhance its interpretive environment. Jimmy exploited the common spaces pockets created by the multi layered spatial arrangement as public participatory passive and active space. First, the interior atrium spaces sublimely connected the vertical spaces whilst creating the openness within a compact archive facilities as a passive zone to the users. It is the opposite of dynamic neighbouring Kerinchi Street atmosphere enriched with unique urban fabrics of modern and old streetscape and pedestrian traffic. The main atrium and pocket courtyard spaces is like an urban oasis, protected but visible from outside.



To let the archive remain dynamic, the spaces continually stimulate users to create new ways of searching and synthesizing materials. The articulation of the perimeter wall, the introduction and control of natural light, and the placement of core areas for stairs, toilets, and heating, ventilation, and air conditioning are capable of adapting to changes in use (Strange et al. 2001). The new archive successfully combine and locate evolving user service points while respecting the unique configuration and quality of public space creating a seamless flow of intellectual inquiry and exploration throughout the facility(Falk et al. 2012) (Figure 1)

The programming of the spaces are towards enticing communities to be involved with the archive. Large, open spaces were designed to be re-constructable, so that they could be reconfigured to meet future needs. Enclosed areas for conference rooms, private and semiprivate offices, seminar rooms, and auditorium were planned so that in the future, these spaces could be incorporated into the open reference and computing commons area (Council on Library and Information Resources, 2017). It reimagines the community role by strengthen community based learning and foster critical thinking, problem solving, and engagement in an archival space (Figure 2)

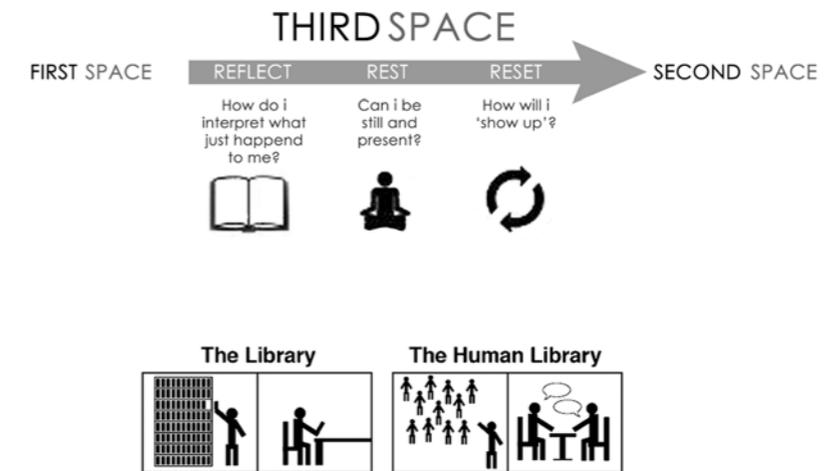
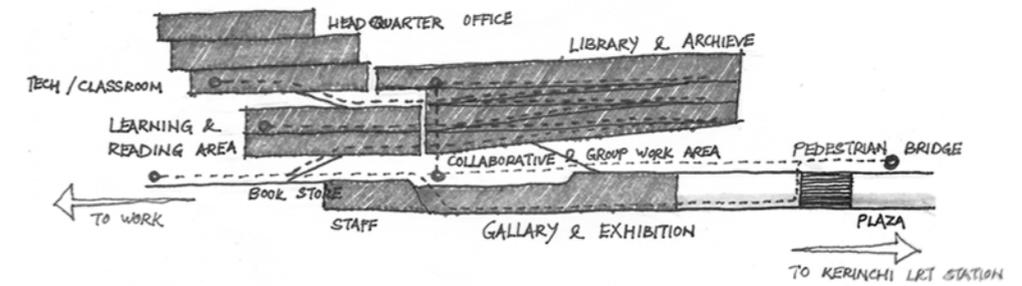


Figure 2. The Design Process

Figure 1. Design program

Meanwhile, the green building envelope, mono-crystalline glass PV system, automatic sun shading device and rainwater harvesting system are utilized for active users' participation. Rather than threatening the traditional concept of the archives, the integration of new information technology became the catalyst that transforms the less used archive into a more vital and critical intellectual centre. The archive primary role is to advance and enrich the users' educational experience; however, by cutting across all disciplines and functions, the archive also serves a significant social role. It is a place where people come together on levels and in ways that they might not other building typologies. Here the intention is for the users

becomes part of a larger community that endows one with a greater sense of self and higher purpose. They want to experience a sense of inspiration. While users are intensely engaged in using new technologies, they also want to enjoy the archive as a contemplative oasis (Figure 3)

The project is an impetus in reenergizing the existing RTM by re-placing the dull single function storage facility building typology and as a public participatory building that entice the users to explore and have a full appreciation of a broadcasting process within their time spent.

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Figure 3. Contemplative Oasis Form

URBAN GEORGETOWN HERITAGE ZONE
JIGSAW: SELF-CONTAINED SUB-CITIES
PLACEMAKING TOWARDS GENTRIFICATION
OF MODERN SOCIETY LIFESTYLE

MOHAMMAD YAZAH MAT RASCHID
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MEOR MOHAMMAD FARED
WAN SOFIA WAN ISHAK

A common and controversial topic in politics and in urban planning, “gentrification” is a process of renovation of deteriorated urban neighbourhoods by means of the influx of more affluent residents (Loretta et al. 2008). Conversations surrounding gentrification have evolved on spatial centralization of urban centres, mainly from the growth of the inner city as a base for headquarter and executive decision-making centres or evolving on the ideas of self-contained sub-cities. This concentration can be attributed to the need for rapid decisions and information flow, which makes it favourable to have executive centres in close proximity to each other. The expanding effect of suburbanization as well as agglomeration to city centres coexists in the process (Figure 1).



Figure 1: Urban Gentrification of Modern Society Lifestyle

These simultaneous processes can translate to gentrification activities when professionals have a high demand to live near their executive workplaces in order to reduce decision-making time (Neil and Williams, 1986). Meanwhile, Smith et al. (1998) emphasizes that demographic and life-style changes are more of an exhibition of the form of gentrification, rather than real factors behind gentrification. In the context of sub-cities, “gentrifiers” do not want to make the move to suburbia and therefore is not so much the result of a return to the inner city but is more of a positive action to remain there. The “urban renewal” of lower class neighbourhoods with condos attracts yuppie tenant are driving up rents and driving out long time, lower income residents changing the social character of the neighbourhood (Glass 1964)

Parallel to this notion, Georgetown Heritage Zone (GHZ) has also undergone certain degree of gentrification in effort to accommodate the current urban needs and lifestyles. GHZ is showing the

sign of aging or abandoned city where in several cases, the current residents became displaced by redundancy, proximity or cost of living lifestyles. The scenario poses a challenge to urban designers and architects to maintain continuity and relevancy of GHZ with constant economic growth. The project aimed to explore the potential of GHZ sub districts as mini self-contained sub-cities collectively, together serves as the urban solution to tap the potential growth of local social-cultural and economics characteristics. The project employed physical observation and morphological studies of the GHZ site. Data was analysed using SWOT and urban morphological analysis of 5 specific dedicated zones of GHZ. (Figure 2). The students were required to observe, understand and speculate the appropriate urban design proposals specifically for each zone which in return will revitalise the entire heritage core zone including the waterfront area. Each zone’s final proposals are regarded as the final piece of jigsaw in the urban development of GHZ. (Figure 3)

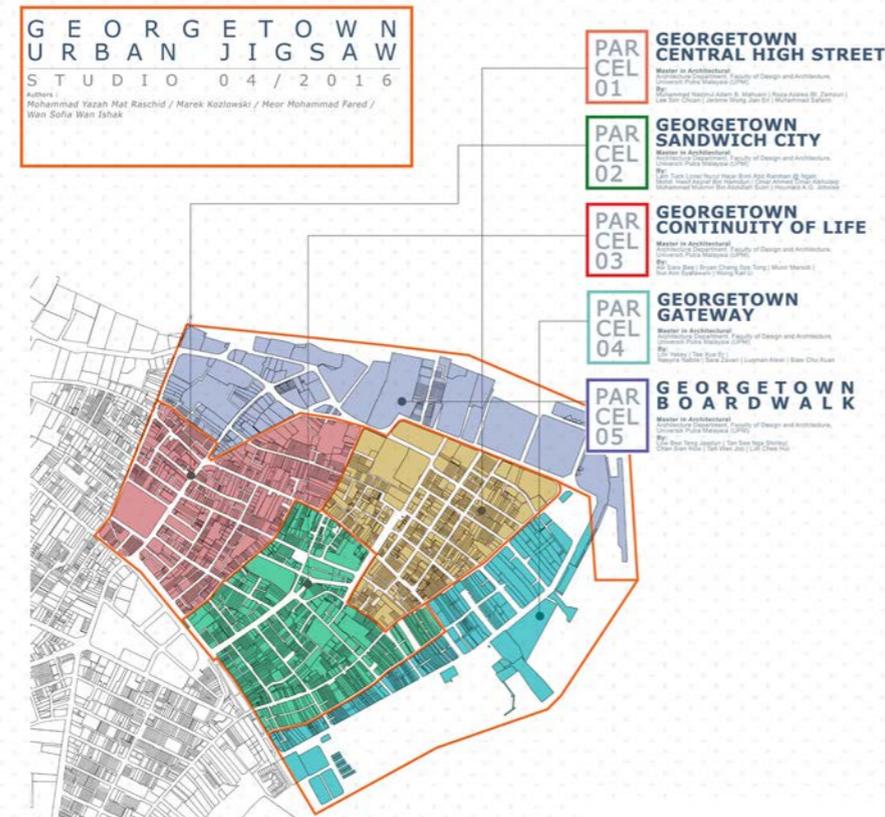


Figure 2: GHZ Dedicated Parcels



Project presentation



Figure 3: Parcels Identity

The morphological study and analysis redefine the building and urban pattern of GHZ. It can be concluded that GHZ Street remained charmed with different types of architecture contributing to the street's community character; safe and controlled traffic. The closeness of the houses (mainly traditional shop houses) generated a closely knit community who did not hesitate to rehabilitate it. However, the self-rising prices of properties and the arrival of many wealthy residents has resulted in GHZ tend to favour a "social mix"; that is, having both low and high-income residents in the same neighbourhoods.

Meanwhile, the interview with the communities demonstrates that they are deeply concerned that company which are uprooting a great number of families and gutting a number of heritage buildings in George Town. They outlined 3 main strategies in the rehabilitation process namely, to limit the change of use for heritage buildings; zone out certain activities, for example, high-end businesses which do not benefit the local community; and to make use of provisions of the Penang Heritage Enactment/ Penang Heritage Regulations 2016. The enactment provides for the position of an all-powerful state heritage commissioner, who can "declare any cultural heritage and natural heritage as state heritage". These strategies serves as the rules and guidelines in the urban jigsaw.

Thus, the final outcome in addressing this issue is a 5 self-contained sub-cities; Urban Agricultural district, Transit gateway, Esplanade revival, Heritage district

and urban Community entrepreneurship districts as catalysts in supporting the modern lifestyle and maintenance of the existing's. All the sub-cities do not only link the communities within one specific district but also interconnecting all the sub-cities thus creating an identity or placemaking of GHZ as a comprehensive urban living area to mitigate the impact of gentrification.

The project triggered the much awaited intellectual discourses on the urgent need for urban regeneration, revitalization, adaptation to overcome the negative impact from gentrification. It is through understanding the characteristics of a self-contained sub-city; physical, emotional, rational and visceral urban characteristics and incorporation a high performance sustainable planning and buildings that a stagnant urban development could both increase more public participations and reflect the vision of Penang as a progressive city.

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...the emotions and the mind and beyond the imagination and facts, lies the appearance of the narrow limits of this life's expression. Expression is a matter of means and methods. Previously, where the composer is not aware of the music and discovers its qualities and arouses his feelings, the music characteristics, along with other abstract and subjective elements, its presentation of space may be comparable in some respect to the way in which it is occupied, or unoccupied and empty. Space is physically the unlimited. By definition, Space in itself is non-entity. Space itself cannot be exemplified, contained, or controlled. The treatment of space and its effect will determine an emptiness, but an element itself, whereby the empty space exists with suggestion. However, music is interactive and shared publicly. Therefore, the suggestive Space in music must not imply a dependency, for that indicates despondency. We often make reference to spaces in music, or describing a space, as the ways composers has used spaces in their own compositions to suggest the existence or the expansion of a musical framework, also known as Form Space and Spacing in MusicSpace and its arrangement in music is a way to heighten feelings to ease and swell through a gestural curve of emotions while still managing continuous presence of musical impulses. Music representing Space is usually gracefully light, as rightfully so as space is always viewed as light. A subtle feeling of inactivity in music, which suggest space, is often denoted by music rests and pauses, which are the wide defining lines of theme and development. These musical suggestions may be as quiet as a whisper, but nevertheless significant. When elaborating the definition of Space in music, it becomes very easy to experience, but while listening to a musical composition, it becomes very easy to experience. Music is the most subjective art form in relative to literature or the visual arts. Music, and visual arts can reveal aesthetic values through their form. Music attracts the emotions and the mind and its effect is beyond the imagination and facts, lies the appearance of the narrow limits of this life's expression. The circumstances and conditions of the artist himself.



CREATIVE WRITING

SPACE AND SPACING
IN TORU TAKEMITSU'S
RAIN TREE SKETCH
AND MARZELAN SALLEH'S MELAYANG

CAMELLIA SITI MAYA MOHAMED RAZALI
MARZELAN SALLEH

Abstract

The subject of space and its profundity always find its way into issues relating to arts and other sciences (e.g. design, social sciences, and humanities). Such equivalences of space in related areas have been unavoidable. Space is defined as a free, unoccupied area of infinite emptiness, but also described as the scope of within which things exist. Space, which is empty is actually nothing, and cannot be represented or conveyed but only suggested. In the art of music, space is suggested by the interval of time, a duration that can be measured or an immeasurable breadth based upon a feeling of expanse. This paper discusses the spatial aspects of two piano works from Toru Takemitsu, a Japanese composer and Marzelan Salleh, a Malaysian composer, as they both explore their spaces and spacings in music composition.

*Thirty spokes meet in the hub,
though the space between them is the essence of
the wheel.*

*Pots are formed from clay,
though the space inside them is the essence of the
pot.*

*Walls with windows and doors form the house,
though the space within them is the essence of the
house.*

- Lao Tse, Taoist philosopher

Prologue

The concept of place and space and their phenomenology are important in the context of arts research. Without any distinct meaning described to it, space is abstract in nature while place is a physical location created by human experiences. Transforming a space with existential activity, objectives, purpose, and values, will give meaning to life and thus create a place where people have a sense of belonging and the sense of self.

The understanding of place substantially represents the relationship between humans and their spatial experiences. There has been a considerable amount of arguments concerning space in music, especially the ‘imaginative play’ between music and space is always concerning the emotive and experiential experiences of its listeners.

Subjectivity of Music

Music is the most subjective art form in relative to literature or the visual arts. While literature is a written expression of the imagination, and visual arts can reveal aesthetic values through illustrations and media, however, music is essentially an art of sound in time. Music attracts the emotions and the mind and its nostalgic and suggestive nature is an advantage to its appeal. In its right element, beyond the imagination and facts, lies the apparent indication of music’s vast depths of emotion and expressing things that are outside the narrow limits of this life’s expression.

Expression in composition and expression in interpretation, both are different in terms of circumstances and methods. Previously, where the composer expresses through his compositional techniques, the interpreter then fits himself into the music and discovers its qualities and arouses his own understandings with them.

Space

Space is one commonly used to describe music characteristics, along with other abstract and subjective imageries such as light, shade, colour, outline, and form. Music’s presentation of space may be comparable in some respect to that of painting, but it is in its nature something different.

Whether it is occupied, or unoccupied and empty, Space is physically the unlimited extension of Form, and Form is the boundary line of Space. By definition, Space in itself is non-entity. Space itself cannot be exemplified and therefore to suggest it, we must have it solidified, contained, or controlled.

The treatment of space and its effect will determine and convey that space is not merely a space of emptiness, but an element itself, whereby the empty space exists with suggestion. However, true to music’s nature and objective, music is interactive and shared publicly. Therefore, the suggestive Space in music must not imply insignificant bareness or simplify isolation, for that indicates despondency.

We often make reference to spaces in music, or describing a spacious musical work, and discuss the ways composers has used spaces in their own compositions to suggest the existence or the expanse of space within a structural musical framework, also known as Form.

Space and Spacing in Music

Space and its arrangement in music is necessary to allow the heightened feelings to ease and swell through a gestural curve of emotions while still managing continuous presence of the dramatic impulses. Music representing Space is usually gracefully light, as rightfully so as space is always viewed as lightweight. The subsiding feeling of inactivity in music, which suggest space, is often denoted by music rests and pauses, the sustained note, or by the wide defining lines of theme and development. These musical suggestions may be as quiet as the spaces between the hours of night and dawn, and nevertheless significant.

When elaborating the definition of Space in music, it becomes the most difficult to explain but while listening to a musical composition, it becomes very easy to experience and comprehend the meaning of space.

How humans understand (not just listen) to music

Beyond words and a far reaching experience, music possesses the ability of suggesting and signifying space and even articulating and conveying emotions felt when encountering space and spacings in

music. Music rests and pauses, and long durational notes written subtly in musical compositions have a significant amount of effect on the creation of the sense of space. But these won’t help without something more. For example, spatial experience amplifies an audience’s power of anticipation, particularly in their level of expectancy for something that lies in front of, or preceding the spatial encounter. Broad and wide spaces typically releases held back emotions and remarkable imaginations of its listeners through their own interpretation and, freedom of thought and action.

Integration of music and space and the fundamental relationship between music and space

There exists a beautiful and artistic relationship between experiencing space and music, where the sound glides from audible music developing from calm or quiet episodes of inactivity towards more active gestures, or the opposite way round where rapidness dissolves into nothingness. The merging of both musical environments into each other ascertains the tension in the silences and the spaces surrounding the sounds.

Toru Takemitsu

Born in Tokyo, Toru Takemitsu is a formidable figure as a composer of postwar Japanese music. Takemitsu’s music has often been described as serene and succinct. His evocative, elegant style of music, which mutually combines elements of traditional Japanese music and Western art music, emanates a lyrical poise.

The Japanese Concept of ‘Ma’

Takemitsu’s pitches, rhythms, note range, note durations and instrumental timbres effortlessly and gradually change with a purposeful and deliberate pacing of events. This measured change does not always produce a sense of movement but somehow seems to create a conscious awareness of the Japanese philosophical and artistic concept of ‘Ma’.

‘Ma’, which plainly means blankness or distance, is essentially proposing ‘the full possibilities of emptiness’. Therefore, the essence and possible interaction existing in a space between two separate entities is seen as the striking Japanese awareness

of ‘Ma’, which they carry in their daily lives, culture, and artful purposes. Found in a Japanese traditional beauty and wellness website is the elaboration of the Japanese concept of ‘Ma’,

‘Ma’ is in the purposeful pauses in speech, which make words stand out. It is in the quiet time we all need to make our busy lives meaningful, and in the silence between the notes, which make the music.

The Japanese perspective on space is more flexible and free. Instead of just a physical entity of space, ‘Ma’ is fundamentally a consciousness and an awareness of place, and most importantly an element that is to be experienced. Takemitsu’s Rain Tree Sketch, is of both a temporal and physical spatial experience. Temporal as it expands through a progressive expanse of time, and also physically through the audible sounds of the large intervallic spaces (large distance) between notes played by the piano, with contrasting simultaneous registers of the piano from the lowest to the highest, followed by long rests and pauses. Takemitsu understands the importance of anticipating tension in the silence and in the space that surrounds an object like an artist using space to create impact on the mood and tone of a finished work.

The aural and psychological interest of Rain Tree Sketch radiates not from left-right alternation but from auditory depth of field. It resides in the physical space, which is the interval (distance) separating two notes and the ways that they would or could potentially interact, sometimes alternating, sometimes blending, masking or projecting with respect to one another. The effect is gripping because the composer achieves a sonic calligraphy of varying melodic density and inflection – sometimes broad and sometimes narrow and precise, and also by the way he has prepared and spaced his musical events.

Rain Tree Sketch I and II

The Japanese has a dozen words for rain and rain are recurring images in the whole of Takemitsu’s music compositions, but never to better effect than in Rain Tree Sketch I and II (for solo piano). The rain tree has dense foliage, which stores up rain, then releases it in a gentle shower down through the tree long after the rain itself has stopped. These two scintillating, iridescent little pieces conjure up a truly magical evocation of water falling down through the tree in little cascades and rivulets. Nature is important for his

music and Rain Tree Sketch I and II have a great deal to do with water. Numerous currents are whirling in it, each with a tempo, a colour, with a temperature of its own. This phenomenon prompts the structure of music.

Rain Tree Sketch's fluid harmonies, rising melodies with echoes, and spatial sonorities undulate throughout the course of the work. A delicate and ethereal atmosphere is achieved by employing varied rhythms, tempos, and silences coupled with delicate yet somber and dissonant harmonies in chords and arpeggios.

In both Rain Tree Sketches, Takemitsu employs the full use of the scale and range of dynamic and colouristic potential available in the piano. Both pieces are beautiful and poignant additions to the solo piano repertory expressing Takemitsu's admiration and respect for nature in music.

Silence, Rests, Intervals of Time

In Takemitsu's Rain Tree Sketches, the phrases and sections are asymmetrical by irregular number of bars within a phrase. At the arrival of cadences where it normally happens near the close of a phrase, the music just pauses instead until a sensed interval of time has passed. The textures in both works are dense with precise vertical formed harmonies and low, calm and quiet notes, and moments of silence. As a result we hear no movements and experience a continuity that never ends drawn out by occasional rises and fallings into silence thus, suspending the passage of time, and promoting stillness. Even though both Rain Tree Sketches are reflective throughout, they are constructed with careful attention. Both are built upon a series of still points surrounded by swirling clusters of notes and little brief themes, like water swirling round rocks in a flowing stream.

In his musical oeuvre, Takemitsu have mostly chosen to insert references to metaphors, 'Japaneseness', time sense, space perception, aesthetic ideas, and references towards nature for example, garden, water, and ocean; to express his artistic concerns in music. As discussed earlier, space and silence are significant elements in Japanese art. Therefore, Takemitsu's interest in Japanese philosophies brings upon him a reason to include these elements into his compositions. A silence that follows an event can be just as potent as the event itself. According to the composer,

Music is either sound or silence. As long as I live I shall choose sound as something to confront silence.

Takemitsu's view of music's importance normally takes on an intuitive point of view. In his quest of essential sound, he believes in confronting silence and proving one's own existence, and expressing and understanding his deeper relationship with the natural universe. Each of his composition appears to fill its own acoustic space with different sounds, giving an impression of a spatial experience to its listeners. As a sculptor of his own sound, his appears to be free of identity and intense relationships. Single sounds develop into dense textures, and delicateness flow into rich and passionate sounds, then followed by stillness and silence. Takemitsu's careful consideration during composing music, oversees the connection, pacing and arrangement of timbre (sound colour), texture (musical layers indicating the overall quality of sound of the music), and silence into his musical works.

"RAIN TREE SKETCH" FOR PIANO

Most of the piece is played softly, except for those few places where the dynamics are specifically indicated.

There are three different types of accent: A, >, V. A indicates the use of a strong accent; > indicates that a moderate accent should be used and V is used to indicate the use of a soft accent.

Three different kinds of fermatas also appear: ∞, ∞, □. ∞ is very long; ∞ is medium and □ is short.

The # and ♭ signs apply to one note only.

R., L., and Sus. are guides for pedalling. R. stands for right pedal (damper), L. stands for left pedal (soft), and Sus. refers to the middle pedal (sostenuto).

Figure 1: A performance note to guide the pianist indicating the notations and ways to perform Rain Tree Sketch



Figure 2: The beginning of Rain Tree Sketch; rests in between irregular phrases expand the sense of space



Figure 3: Rain Tree Sketch I: Rests and long pauses at the end of phrases and large intervallic spaces between notes indicating spaces.

Marzelan Salleh

A Malaysian composer, Marzelan Salleh's contemporary compositions take on a role of reinterpreting the sounds of Malaysian cultural music through Western compositional techniques. His musical phrases and articulative gestures combine Malay nuances with contemporary classical writing style, producing a desired momentum in his compositions.

Melayang

Melayang is a contemplative composition of an inner world of human emotions, thus the title Melayang. It explores the deeper personal human expression. In this work, even the subtlest nuance achieves significance in the overall sonic gesture. Melayang showcases the different sides of the piano. A generally quiet, and contemplative work, it also erupts into a magical display of colours. The composer's choices in this work are sensitive and controlled in choosing the piano's wide palette of vivid sound colours, growing from the most delicate to a fiery texture. Marzelan's intensely organized underlying structure yet intuitive personal style created Melayang that is aggressive and dramatic, but at the same time ever so subtle.

A lovely melodic and colorful piece, Melayang consists of tiny melodic fragments, interlocking musical ideas, and wisps of shades of colour blending into each other. The lines of this work, along with ambiguous harmonic footings, give it a freely floating quality.

The main musical material of melodic fragments, musical embellishments and passing gestures hang in the spaces like a dream. The spaces here created by Marzelan refer to the texture of the music. His effortless spatial techniques create an intuitive, and transparent quality towards the atmospheric character of this work.

To achieve balance, coordination of colour, and rhythmic control, Marzelan uses a continuously flowing line, with no use of repeated ostinato (a continually repeated musical phrase or rhythm) patterns, and instead explores the beauty of sounds and textures in a flexible, floating rhythm.

The perception of space and time are actually in close relationship with timbre (sound colour). With the expert combination of highness and lowness, Melayang is at times ringing in the high right hand passages and paired with sustained sonorities in the lower left hand.

Melayang depends upon inflection, power of suggestion, and indirect association more than upon clear and obvious messages. This evocative ambiguity is the composer's attempt to arouse the potential listener's imaginative responses.



Figure 4: The beginning of Melayang display active gestural writing including a wide range of different low and high timbres (sound colours) from the piano followed by a pause creates space in between



Figure 5: Melayang: Ascending sweeping notes followed by falling gestures from opposing ranges of the piano suggests space.



Figure 6: Melayang: Space created during soft, quiet moments with rests and less rhythmic activity



Figure 7: Melayang: Space created during active rhythmic moments with the notes moving in opposite directions of the piano

Discussion

Toru Takemitsu and Marzalan Salleh are two different Asian composers from two different musical cultures who share similar interest in employing Western music compositional techniques into their compositions. Rain Tree Sketch I and II, and Melayang use evocations and analogies, philosophies and abstract expressions in combination with the role of the composer and listener to form experiential sensations of aural imagery.

In all their compositions discussed above, both composers emphasis the colouristic and spatial quality of sound, and explore the use of silence. Both composers borrow elements from other's culture, and mix it with their own while still managing successfully

to retain their own unique musical style. As a result, their compositions bring forth the aspects of musicality, intercultural, intellectual and poetic.

The more concern we have over musical issues on an intellectual, technical or technological basis separated from primary human instincts, the less it wins over our listeners interest into listening and understanding music. In listening to music, we are required to trust ourselves, to receive and respond, not naively, but by changing into sound itself and existing within it. Space is simplicity but equally conceptually intelligent. Eventhough Takemitsu and Marzalan has used slightly different methods to suggest space, which may be through note intervals (the distance between two notes), the piano range, and sound colours, nevertheless space and spacings in both composers' works heighten the awareness of the surrounding environment of the musical note(s), the sense of an integration of notes and spaces, and the self as part of the listening experience. Now, one does not necessarily have to stay outdoors to experience space because music creates a space for appreciation.

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