

ORANG SELETAR ADAPTATION TO URBANISATION THROUGH HOUSING  
IN RELATION TO SENSE OF PLACE

PEH PENG CHEONG

A dissertation submitted in fulfilment of the  
requirements for the award of the degree of  
Master of Architecture

Faculty of Built Environment  
Universiti Teknologi Malaysia

JUNE 2016

To God and my beloved mother.

## ACKNOWLEDGEMENT

I would like to thank God for His guidance and strength throughout my whole architecture education journey. It is through architecture that I have found Him. He always open new doors and pick me up whenever I fall.

In preparing this thesis, I was fortunate to receive countless valuable feedbacks from every process of my research in design thesis studio as well as dissertation. In particular, I wish to express my sincere appreciation to my main thesis supervisor, Dr.Tareef Hayat Khan for believing strongly on my abilities, always guiding me along with his expertise and make time for discussions from his busy schedule. I am also very thankful to my co-supervisor Assoc. Prof. Dr. Syed Ahmad Iskandar Syed Ariffin for his patience and guidance throughout the accomplishment of this dissertation. Special thanks to Ar. Hong Lim Foo and Dr.Khairul Anwar Mohamed Khaidzir for their critical feedbacks on my research, advices, and motivation. Without their continued support and interest, this thesis would not have been the same as presented here.

I am also indebted to my mother, Irene Tai for her constant love, patience, guidance, and support throughout my life. Lastly I would like to thank my younger brother Alvin for being by my side as a pillar for the family when I am unable to contribute much resources during my unemployment throughout my stay in Universiti Teknologi Malaysia (UTM). I am grateful to all events and people I met who shaped me to this success today. God bless.

## ABSTRACT

The resettlement of the Seletar People from coastal living to houses built on land through development policies of Iskandar Region Development Authority has shifted the landscape of the Orang Seletar community settlement which forced them to adapt within the bustle of the urbanized dwellings. As the development comes closer to their villages, the community must be prepared for changes in their lifestyle. Besides that, the current housing scheme allocated to them does not reflect the identity of their community. The current approach of their living dwellings creates an atmosphere that is not conducive for living, which deters vitality of the area. A housing unit should go beyond the unit level and contribute to the macro scale development and the environment. The scope of studies for this research will focus on the concept of adaptable and flexible space, principle and characteristic on the physical environment and relationship to the development of the Orang Seletar community at Kampung Bakar Batu, Perling, Johor Bahru. The research objectives are to identify the definition of home beyond the physical boundary of the community, to verify their community attachment in relation to increasing trend of urbanisation and to outline design strategies that can be implemented which aims to improve sense of place in an urbanised Orang Seletar housing and community. Findings suggested that the community requires an informal setting of living space. There is also a need to have a transitional space between private and public spaces to create a sense of intimacy, a quality which cannot be seen or felt in their existing houses. Furthermore, there is also a need to allow the unit designs to achieve a high degree in porosity which will blur the physical boundary between indoor and outdoor and at the same time should respond to the tropical climate.

## ABSTRAK

Penempatan semula daripada kehidupan maritim Orang Seletar kepada perumahan melalui dasar pembangunan ekonomi Iskandar Regional Development Authority mendorong penerimaan scenario urbanisasi dalam masyarakat kini. Pembangunan yang semakin pesat selain daripada skim perumahan yang tidak melambangkan identiti masyarakat orang Seletar juga mengundang komuniti Seletar untuk bersedia membuat perubahan dalam kehidupan mereka. Pendekatan terhadap isu perumahan komuniti Seletar kini yang tidak menyeluruh menyebabkan persekitaran yang tidak menggalakkan. Sebuah unit perumahan seharusnya melebihi batasan peringkat unit malah menyumbang dalam pembangunan makro dan alam sekitar. Skop penyelidikan ini akan memberi tumpuan kepada konsep penyesuaian diri dan ruang fleksibel, prinsip dan ciri-ciri persekitaran secara fizikal malahan hubungan terhadap pembangunan komuniti Orang Seletar di Kampung Bakar Batu, Perling, Johor Bahru. Objektif kajian ini adalah untuk mengenal pasti definisi 'rumah' orang Seletar yang melebihi maksud fizikal, mengesahkan penempatan semula komuniti Seletar seiring dengan trend urbanisasi dan juga mencatatkan strategi reka bentuk yang boleh dilaksanakan dengan tujuan peningkatan perasaan tempatan dalam urbanisasi perumahan komuniti Orang Seletar. Kajian ini mencadangkan bahawa komuniti Seletar memerlukan ruang yang tidak formal dalam perumahan mereka. Keperluan memiliki ruang penampakan antara ruang awam dengan ruang peribadi untuk mewujudkan rasa keintiman yang tidak dapat dilihat atau dirasa di rumah yang sedia ada. Tambahan pula, situasi yang memerlukan reka bentuk unit yang tidak tegar secara fizikal antara dalaman dan luaran sekali gus bertindak balas dengan iklim tropika.

## TABLE OF CONTENTS

<b>CHAPTER</b>	<b>TITLE</b>	<b>PAGE</b>
	<b>ACKNOWLEDGEMENT</b>	<b>vii</b>
	<b>ABSTRACT</b>	<b>viii</b>
	<b>ACKNOWLEDGEMENT</b>	<b>ix</b>
	<b>TABLE OF CONTENTS</b>	<b>x</b>
	<b>LIST OF TABLES</b>	<b>xiii</b>
	<b>LIST OF GLOSSARIES</b>	<b>xxii</b>
	<b>LIST OF APPENDIX</b>	<b>xxiii</b>
<b>CHAPTER 1</b>		<b>1</b>
	<b>INTRODUCTION</b>	<b>1</b>
	1.1 Introduction	1
	1.2 Problem Statement	2
	1.3 Research Aim and Questions	3
	1.4 Research Objectives	4
	1.5 Significance of Research	4
<b>CHAPTER 2</b>		<b>7</b>
	<b>LITERATURE REVIEW</b>	<b>7</b>
	2.1 Introduction	7
	2.2 The Seletar Community of Johor (Orang Laut)	7
	2.3 Housing	10
	2.3.1 Adaptable and Flexible Housing	11
	2.3.2 Sense of Place	13
	2.2.3 Community Attachment	17
	2.3 The Housing Trend in Urban Context	19
	2.4 Social Spaces in Housing - Perspectives of Seletar Community versus High-Rise Community	20
	2.5 Summary	23

<b>CHAPTER 3</b>	<b>24</b>
<b>METHODOLOGY</b>	<b>24</b>
3.1 Introduction	24
3.2 Research Paradigm	25
3.3 Research Design	25
3.4 Research Strategy: Literature Based Research	28
3.5 Research Procedure	29
3.6 Summary	31
<b>CHAPTER 4</b>	<b>32</b>
<b>ANALYSIS, FINDINGS AND DISCUSSION</b>	<b>32</b>
4.1 Introduction	32
4.2 Data Collection and Analysis	33
4.2.1 Site Visit at Kampung Bakar Batu, Perling, Johor Bahru.	33
4.2.2 Studies on the Place Making at Kampung Bakar Batu	34
4.2.3 Establishment of Relationship Between the Attributes on Place Making of the Site in Relation to the Types of Bond	42
4.2.4 Sense of Place and Community Attachment of the Seletar Community	46
4.3 Case Studies	50
4.3.1 NA House, Japan by Sou Fujimoto	51
4.3.2 Cornwall Gardens, Singapore by Chang Architects	53
4.3.3 House before House, Japan by Sou Fujimoto	56
4.4 Findings	58
4.4.2 Orang Seletar Existing Housing Condition	62
4.4.3 Strategy 1: Hexaflexagon	64
4.4.3.1 Preliminary Experiment with Squares	67
4.4.3.2 Transition to hexagon from squares:	69
4.4.3.3 Outcome 1: Limited Freedom	71
4.4.3.4 Outcome 2: Shared Spaces	73
4.4.3.5 Outcome 3: Horizontal Verticality	75
4.4.3.6 Outcome 4: Split Level Spaces	78
4.4.3.7 Outcome 5: Co-Housing	81
4.4.3.8 Outcome 6: Vertical Expansion	83
4.4.3.9 Outcome 7: Porosity	85
4.4.3.10 Suggested Unit Design for Seletar Community Housing	88
4.4.4 Strategy Two: Zoning	93

4.4.4.1	Inviting Water	94
4.4.4.2	Major Zoning	95
4.4.4.3	Issues related to Co-Housing	96
4.4.4.4	Communal Spaces - Community Empowerment and Welfare	97
4.4.5	Strategy Three: Others	98
4.4.5.1	Environmental Studies of Housing	98
4.4.5.2	Block and Clustering Studies of Unit Designs	103
4.5	Summary	110
<b>CHAPTER 5</b>		<b>111</b>
<b>CONCLUSION AND RECOMMENDATIONS</b>		<b>111</b>
5.1	Introduction	111
5.3	Second Objective	112
5.4	Third Objective community.	113
5.5	Summary	115
5.6	Limitations	116
5.7	Recommendations	117
<b>LIST OF REFERENCES</b>		<b>118</b>
<b>APPENDIX</b>		<b>122</b>



## LIST OF TABLES

<b>TABLE NO.</b>	<b>TITLE</b>	<b>PAGE</b>
2.1	Categorisation of Relationships to Place	15
2.2	Mapping the elements of Sense of Place to Community Attachment	18
4.1	Establishment of Relationship Between the Attributes on Place Making of the Site in Relation to the Types Of Bond and Attachment	43
4.2	Establishment of Relationship Between the Attributes on Place Making of the Related Unit Typology to be Achieved in Relation to the Types Of Bond and Attachment	45
4.3	Establishment of Relationship Between the Attributes on Place Making of NA House in Relation to the Types Of Bond and Attachment	53
4.4	Establishment of Relationship Between the Attributes on Place Making of Cornwall Gardens in Relation to the Types Of Bond and Attachment	56
4.5	Establishment of Relationship Between the Attributes on Place Making of House before House in Relation to the Types Of Bond and Attachment	58
4.6	Establishment of Relationship Between the Attributes on Place Making of Orang Seletar Existing Houses in Relation to the Types Of Bond	64

4.7	Establishment of Relationship Between the Attributes on Place Making of the Hexaflexagon in Relation to the Types Of Bond	66
4.8	Establishment of Relationship Between the Attributes on Place Making of the Hexaflexagon in Relation to the Types Of Bond	69
4.9	Establishment of Relationship Between the Attributes on Place Making of the Hexagon Modules in Relation to the Types Of Bond	71
4.10	Establishment of Relationship Between the Attributes on Place Making of the Vertical Expandable Modules in Relation to the Types Of Bond	73
4.11	Establishment of Relationship Between the Attributes on Place Making of the Shared Common Spaces Modules in Relation to the Types Of Bond	75
4.12	Establishment of Relationship Between the Attributes on Place Making of the Horizontality Vertical Modules in Relation to the Types Of Bond	78
4.13	Establishment of Relationship Between the Attributes on Place Making of the Split Level Unit in Relation to the Types Of Bond	80
4.14	Establishment of Relationship Between the Attributes on Place Making of the Co-Housing Unit in Relation to the Types Of Bond	82
4.15	Establishment of Relationship Between the Attributes on Place Making of the Modular Vertical Units in Relation to the Types Of Bond	85
4.16	Establishment of Relationship Between the Attributes on Place Making with Porosity in Relation to the Types Of Bond and Attachment	86
4.16	Establishment of Design Principles Through Fulfilment of Selective Type of Attachment to Achieve a Rootedness Cohesive Sense of Place	110

## LIST OF FIGURES

<b>NO.</b>	<b>TITLE</b>	<b>PAGE</b>
2.1	Bronfenbrenner's analysis of the ecology of human development diagram	16
2.2	Radburn Design	22
3.1	Research Design Framework	26
3.2	Research areas	28
4.1	Existing Site of Seletar community at Kampung Bakar Batu, Perling, Johor Bahru, Johor	33
4.2	Existing communal space where Seletar people work, relax, and play	34
4.3	Scattered and unplanned allocation of communal facilities such as provision shop, open parking space and unmanned souvenir shop near the frontage of the site shows the state of uncommitted placelessness	36
4.4	Each household expresses their environment differently through colours and have different spatial needs. The bad state of waste management shows the uncommitted placelessness of the community as a whole	37
4.5	State of uncommitted placelessness at site	38
4.6	Existing communal facilities does not address their ideological and spiritual sense of community place	39
4.7	Existing houses allocated by JAKOA to the Seletar people since 2004. Extensions are allowed to facilitate different changes in functions as per household	39
4.8	Site synthesis depicting current scenario of the site	40

4.9	Future development will not assure the permanence for the Seletar people to settle once future high rise developments alienate the site, a further issue from their existing geographical difference	41
4.10	Past situation of the Orang Seletar community when they were in a nomadic state	47
4.11	Current situation of the Orang Seletar community when they are forced to adapt to urbanisation	48
4.12	Projected future situation of the Orang Seletar community when they have managed to adapt to urbanisation	49
4.13	Front View of NA House	51
4.14	Informal setting of spaces	51
4.15	Fujimoto's Concept: People perching on trees	52
4.16	Barely visible metal cables outside the bedroom windows allow plants to creep up and form a little screen	54
4.17	Natural and darker shades of finishes to reduce glare from harsh tropical sun	54
4.18	Fujimoto's Concept: People living outdoor and indoor	56
4.19	Vegetation on the roofs also managed to directly weave a multidimensional communication of horizontality and verticality	57
4.20	Type 1- before extension (left), after extension (right)	62
4.21	Type 2 Existing House Before Extension - No extended observed yet	62
4.22	Disorganized and Unhygienic - They spend time outdoor most of the time; observation shows their informalities towards spaces	63
4.23	Derivation of hexaflexagon inspired by continuity of spaces while offering different spatial experiences	65
4.24	Hexaflexagon attempts to interact with the site from different aspects in terms of user experiences, thus elevating the complexity of multiple responses of	66

	housing prototypes collectively. Each face will create a different experience at different clusters without having to propose different typologies	
4.25	Expandable modules were the first intention of allowing changes to accommodate different densities according to different family structures	67
4.26	Experimentation of the clustering with existing regiment	67
4.27	Experimentation of hexagon modules	69
4.28	Systemized expansion modules; but will cause too much poorly managed public space and disputes	71
4.29	Omission of expandable spaces by single modules, but provide options with balcony and shared verandas	73
4.30	Study of unit layouts which triggers the situation that occupants tend to take advantage to expand through balconies as highlighted by Khan, 2014	74
4.31	Expansion allowed because neighbouring units not facing each other	74
4.32	Understanding the limitations of the horizontal expansion invokes new typological exploration vertically	76
4.33	Challenging vertical limitation in dwellings by allowing end users to express their environment may allow some form of visual communication and identity as a community	77
4.34	Split level layout will create different visual impact to the spaces and thus walls may not be needed to separate spaces, hence the better flexibility and informal qualities to the interior spaces	79
4.35	Expression of the split level spaces can be executed through different strategies such as materials, colours, textures, etc.	80
4.36	The Co-Housing attempts to utilize the split level characteristics and the hexagonal geometry to cater to more individualistic living lifestyle	81

4.37	The implementation of split level bedrooms connecting to communal spaces at lower floor through a spiral network of stairs adjacent to the central air well for passive cooling and lighting	82
4.38	Exploration of modular units to be accommodated in a vertical scale	83
4.39	Exploration of modular units to be accommodated in a vertical scale	84
4.40	Stacked capsules creates modularity of units with freedom to express the interior spaces distinctively, but too regimented and geometrically restricted	85
4.41	Another attempt of split level spaces to accommodate higher densities on a smaller footprint; utilizing the co-housing layout concept as a morphological precedent	86
4.42	The concept of having the composition of spaces seeks to be permeable and porous to communicate with its surrounding architecturally and environmentally thus blurring the physical boundaries between indoor and outdoor	87
4.43	Exploded axonometric diagram showing a composition of split level spaces in a regular hexagon, which is concentric or spiral in nature	90
4.44	Floor plans showing a composition of split level spaces in a regular hexagon, which is concentric or spiral in nature	91
4.45	Proposed Type A unit design which features split level spaces with additional options for end users to customise their building facade within the building framework	91
4.46	Proposed unit layout for Type B	92
4.47	Proposed unit design Type B and Type B1 which exhibits the characteristics of allowing future expansion	93
4.48	Different approaches towards adjacent of units give end-users choices around their surroundings	95

4.49	Solar radiation analysis with Autodesk Ecotect 2011 will influence the decision in conceiving the design layout of the housing unit. Strategies such as self-shading by subtraction, strategic vegetation at critical orientations and minimizing solar heat gain through narrow exposure of the facade are identified	99
4.50	Wind flow simulation with Autodesk Flow Design showing soft turbulence created which will contribute positively if there is presence of pocket spaces. This will influence the implementation of the clustering process	100
4.51	Wind flow simulation with Autodesk Flow Design showing the efficient natural ventilation towards interior spaces. Diagrams show that the interior spaces are penetrated by wind effectively due to the porosity of the proposed unit designs	101
4.52	Wind flow simulation with Autodesk Flow Design showing adjacent blocks receive significant exposure to distributed wind due to its permeability at the façade	102
4.53	Adjacent blocks receive significant exposure to distributed wind due to its permeability at the façade	102
4.54	Preliminary sketches of multidimensional communication of different housing units to create an atmosphere of living indoor and outdoor simultaneously through blurring the boundaries of horizontality and verticality	104
4.55	Different cluster types at the micro will create different sense of place, thus affecting the community attachment of the place in the macro site	105
4.56	Multidimensional adjacency is identified as an important attribute to create a multidimensional sense of communication with neighbours in an intimate scale. Such intended gap can then create an indirect creation of vibrant pocket spaces	105

4.57	Natural surveillance is possible at various angles without compromising the privacy of the neighbour	106
4.58	Studies have shown that an appropriate scale is needed to conceive a 'human' scale of architecture to facilitate social interaction, appropriate scale of 1:2 to 1:3	106
4.59	An individual unit design can communicate with the adjacent units and the site by allowing implementation of creating a sense of enclosure of 1:3 or 1:2	107
4.60	Spatial relationship of spaces to find relevant cluster relationship with the adjacent building of the same type. Different orientation and level creates different dimensional plane of interactions with adjacent surroundings	107
4.61	Difference elevations create different sense of enclosure and increase permeability of communal spaces at lower floors	108
4.62	Different layers of transition spaces serve different purposes	108
4.63	Expansion allowed within a single unit and adjacent unit for Type B1 Unit Design, creating a connected cluster	109
4.64	A preliminary implementation of unit clustering to comprehend the diversity needed for each individual units to interact with the macro surrounding	109
5.1	The identified missing link of creating the 'community' which is missing in the ecology of the Seletar people	112
5.2	Identified micro design strategies	114
5.3	Identified macro design strategies at larger scale	115



**LIST OF ABBREVIATIONS**

IRDA	Iskandar Regional Development Authority
JAKOA	Jabatan Kemajuan Orang Asli/ Department of Orang Asli Development

## LIST OF GLOSSARIES

Sense of Place	A combination of characteristics that makes a place special and unique. Sense of place involves the human experience in a landscape, the local knowledge and folklore. Sense of place also grows from identifying oneself in relation to a particular place. It can be categorized into six types of relationship: biographical, spiritual, ideological, narrative, commodified, and dependent (Cross, 2001).
Community Attachment	Community attachment may be thought of as the extent to which residents of a place possess cognitive or affective ties to each other and to that place. It involves a higher degree of participation towards the sense of place (Cross, 2001) compared to at the individual and family level.

**LIST OF APPENDIX**

<b>APPENDIX</b>	<b>TITLE</b>	<b>PAGE</b>
	List of Compilation of Design Thesis & Presentation Materials	123-141

## CHAPTER 1

### INTRODUCTION

#### 1.1 Introduction

Looking at a housing scheme is not only about providing or relocating a family, individual or in a bigger scale; a community to living units confined within a shoe-box layout. It is beyond the walls and shelter. Somehow it should address beyond the micro-scale level. Nowadays housing schemes are addressed in a literal manner where it is only to address the rising urban needs of development without providing choices for the people to live in the type of home they would like. Designs must respect the culture of target group in addressing all the socio-environmental issues in responding to context. The quality of housing often fails to meet the ever-changing demands of users since too few suitable homes are available. The Orang Seletar are the only indigenous community in Peninsular Malaysia who lives by the sea (Ahmad et al., 2012). They used to live on boats and conduct their daily chores in the boats; unconfined by a location, thus leading a nomadic life in the mangrove swamps in the river banks (Ali, 2002). However nowadays they are resettled to the land provided by the government near to the sea or river, now threatened by rapid development to pave ways for a bigger economic model scheme. Hence the current housing scheme does not reflect the identity of their community. This research attempts to seek a comprehensive resolution to address the housing issues experienced by the Seletar community to help them adapt in the face of current urban development yet portraying characteristics of village living.

## 1.2 Problem Statement

Asian cities are developing rapidly, which includes Johor Bahru. As the economic corridor by IRDA is currently being implemented at the southern corridor of Johor Bahru the adjacent land use becomes financially attractive to foreign investors. Profits aside, the implementation of these policies should not overlook and marginalise the disadvantaged community. In this case the mentioned community are the Seletar People, known as Orang Laut. The resettlement of the Seletar People from coastal living to houses built on land through development policies of IRDA has shifted the landscape of the community settlement to be forced to adapt within the bustle of the urbanized dwellings. Consequently, the current housing scheme allocated to them does not reflect the identity of their community. Hence, three issues are identified and categorized into the following aspects; social, architecture and environment.

The existing neighbourhood is not taken into account as important criteria towards the social identity, which is a tangible gap that should be improved on. The existing outdoor environment does not create a vibrant atmosphere nor promotes social interaction. It does not provide them with an economic niche where their existing livelihoods are being compromised. The current approach of their living dwellings creates an atmosphere that is not conducive for living, which deters vitality of the area. A housing unit should go beyond the unit level and contribute to the macro scale development as well as the environment. Hence, a comfortable living experience can be achieved through the place-making.

Thus it is essential to investigate and study these according to layers of social levels based on the level of involvement; unit, block, cluster and neighbourhood. From these levels, a comprehensive level of understanding can be achieved in order to propose effective design strategies to weave with the social, architecture and environmental aspects.

.These three criteria will influence the design decision making at later stages. Therefore research on the socio-culture and physical environment qualities of the

village are conducted. It is essential to have background understanding on the community before designing housing to relocate them especially in this case, redesigning a disoriented neighbourhood scattered with general housing units allocated by the Johor State Government to a responsive and adaptive village meant for the Seletar People, as a permanent resolution. The study looks into the three mentioned criteria, in order to achieve a sustainable community through housing and public spaces which helps adapt them in the bustle or urban development with a strong village living identity.

### **1.3 Research Aim and Questions**

The main research aim is to study on the coexistence of community (macro) and individual interaction (micro) where the Seletar People can adapt and achieve a sense of belonging through a community living which embodies their culture and identity. The research will revolve around the identification of suitable design approach on various levels of involvement from micro to macro in order to promote the sense of community living to be incorporated in the current Design Thesis project. Based on the literature review research and studies, the research questions generated and produced are:-

- i) What is the definition of home for the Orang Seletar community in the face of urbanisation?
- ii) What are the factors that triggered the lack of community attachment of Orang Seletar in relation to increasing trend of urbanisation? How can these factors facilitate the study on housing layouts design for better understanding of home from the perspectives of Orang Seletar?
- iii) What are the aspects of social spaces in housing which can be compared between low-rise and high-rise housing community? What are the strategies that can be identified to be implemented specifically in Orang Seletar housing design?

## 1.4 Research Objectives

Basically, there are 3 main objectives that will be outlined and achieved:

- i) To establish the definition of home beyond the physical boundary in relation to the Orang Seletar community.
- ii) To verify the lack of community attachment of Orang Seletar community in relation to increasing trend of urbanisation.
- iii) To establish design principles that can be implemented which aims to improve sense of place in an urbanised Orang Seletar housing and community.

## 1.5 Significance of Research

The Orang Seletar community has long lived by the sea because their settlement to the coastal regions from living in boat houses was partly due to the geopolitical situation. Hence there will be a much significant difference when designing for the aborigines who are geographically close to the water bodies compared to other ethnics residing in jungles. Studies have also shown those who used to live on land have managed to respond positively to relocation schemes and adapting themselves to urban dwellings. However for the Seletar community the issue of relocation and settlement is much more sensitive and there is not much effective solutions to address them effectively because it is only addressed at a preliminary stage without an in-depth understanding of what their needs are. Hence, this research is needed to gain a new perspective of understanding from another angle.

Their current housing needs should create a positive social impact in the way that they will be empowered through a place making which truly reflects their attitude and character towards the nature, and consequently their identity reflected to us through response by nature. Natural environment in housing plays a significant role in their community in this urbanization. This chapter will outline the

understanding for research paradigm in order to generate research objective for further research purposes. The research studies will be useful for students and academic instructor adopting the same strategies in understanding the Seletar people through design. Furthermore the research can be used as a guideline in the aspect of design strategies whichever relates to potential projects to be implemented.

Besides that this study will serve as a reference on designing for a unique marginalised community in the urban dwellings. The research will also trigger a more in-depth approach towards design decision making where each components of a design strategy will correlate each other. Simply put, they may overlap each other but still acceptable in the sense that these strategies help support the whole scheme in the macro level. Hence through a comprehensive understanding of the patterns based on social, architecture, and environment the design process is emphasised to be multi-directional and multi-levelled. The adaptability and livelihood of the community coexists with the issues identified. Hence, for this case the housing needs are looked into differently as compared to a general understanding of housing as merely living cells and shelters. The definition of housing as depicted by Chokor (1993) and Podger (1982) have clarified that a housing is more than a protective shell for a family, it is a starting point in the micro level for social and economic activities which linked to other similar activities in other places of the macro scale. This shows the relation of various components to create a sustainable community. In fact, studies have shown and identified that there are three major aspects to look into when considering about the adaptability and flexibility of a housing; namely social, economy and environment (Nakib, 2010). Thus, the potential of how deep this research can go into as feasible and promising as it shows.

## **1.6 Research Scope**

The scope of studies for this research will focus on the concept of adaptable and flexible space, principle and characteristic on the physical environment and relationship to the development of the Seletar community at Kampung Bakar Batu, Perling, Johor Bahru. The study will seek for various design principles which will be established from various issues which will then be translated into an effective



medium to be implemented on the macro scale; the neighbourhood level where the main scenario of the community village living shall take place. Data collections are done through case studies, interviews and literature review, where it shall contribute in identifying problems and the design principles.

## **1.7 Structure of Dissertation**

There are five main chapters continued in this dissertation as a whole. Chapter 1 elaborates on the overview of this research. It outlines the research framework which includes the problem statement, research aim and questions, research objectives, significant of research and research scope. Chapter 2 provides one of the main support to this dissertation. It contains an overview of topics of discussions which covers topics such as housing, the Orang Seletar, sense of place, community attachment, housing trend in urban area and social spaces in housing from the perspectives of Orang Seletar against the urbanised high rise community. Chapter 3 elaborates on the methodology opted for this research with primary and secondary data. Chapter 4 presents the data that are collected as well as further discussions on the findings. Lastly, the dissertation concludes with Chapter 5 with a summary of the research findings in relation to the research objectives. Various limitations and suggestions regarding this research will be outlined as well.

## **1.8 Summary**

The research is the author's attempt to understand on the issues of housing of the Orang Seletar in a comprehensive manner as possible. The concern and limitation of the author will not limit nor suggest that the findings or research outcome is the only specific approach to address the issues of the Orang Seletar community in Kampung Bakar Batu, Perling, Johor Bahru. However, this dissertation will reveal another social perspective and contribute architecturally through fulfilment of the research objectives.

## **5.7 Recommendations**

A further research should be conducted to validate the proposed design strategies. A prototype should be constructed to allow the facilitation of the design strategies to be implemented at the community level. The direct physical participation into the design implementation phase will further enhance and validate the design strategies based on the proposed unit layout design. Besides that, allowing the target group end users to experience the spaces will further bridge the understanding of the necessity to broaden the scope of the understanding of 'home' and verification of the presence of community attachment. The design strategies implemented on the prototypes can then be evaluated through questionnaire surveys, observations by taking videos and photographs and interviews of the users. Finally, more input of primary data can be collected to bridge the gap which may be present due to the limited expertise of the author.

## LIST OF REFERENCES

Ahmad, N., Samah, A. A., Hamsan, H. H., & Redzuan, M. (2012). The Seletar Community (Orang Laut) of Johore and the Challenges.

Ali, M. (2002). *Tribal Communities in the Malay World: Historical, Cultural and Social Perspectives*. Singapore: Institute of Southeast Asian Studies, Singapore.

Archdaily. (30 April, 2012). *House NA / Sou Fujimoto Architects*. Retrieved 7 October, 2015, from Archdaily: <http://www.archdaily.com/230533/house-na-sou-fujimoto-architects>

Building:, T. F. (2011). Timeless Flexible Building: Matching Demand and Supply in Flexible Housing. *Architecture in the Fourth Dimension* (pp. 178-193). Boston, MA, USA: Delft University of Technology, The Netherlands.

Chang Architects. (4 November, 2015). *Cornwall Gardens*. Retrieved 3 March, 2016, from Archello: <http://www.archello.com/en/project/cornwall-gardens>

Chokor, B. (1993). *The Meaning and Use of Housing: International Perspectives, Approaches and their Applications*. Avebury, Aldershot.

Cresswell, J. W. (1994). *Research Design: Qualitative & Quantitative Approaches*. London: Sage Publications.

Cross, J. E. (2001). What is Sense of Place? *12th Headwaters Conference*. Colorado: Colorado State University.

Davis, H. (1999). *The culture of building*. New York: Oxford University.

Davis, M. P., Gazali, M., & Nordin, N. A. (2006). *Thermal Comfort Honeycomb Housing: The Affordable Alternative To Terrace Housing*. Selangor: Universiti Putra Malaysia.

Detail . (December, 2009). *House before House*. Retrieved 16 March, 2016, from Detail Inspiration: <http://www.detail-online.com/inspiration/house-before-house-in-utsunomiya-103440.html>

Freason, A. (8 May, 2012). *House NA by Sou Fujimoto Architects*. Retrieved 7 October, 2015, from Dezeen: <http://www.dezeen.com/2012/05/08/house-na-by-sou-fujimoto-architects/>

Fujimoto, S. (2015). *Sou Fujimoto Architecture Works 1995-2015*. Tokyo: TOTO.

Gijsbers, I. R. (2006). Towards adaptability in structures to extend the functional lifespan of buildings related to flexibility in future use of space.

Green, M., Moore, H., & O'Brien, J. (2006). *When People Care Enough to Act: Asset-based Community*. Toronto, Canada: Inclusion Press.

Habraken. (1998). *The Structure of the Ordinary, Form and Control in the Built Environment*. Cambridge: The MIT Press.

Huitt, W. (2012). *A Systems Approach to the Study of Human Behavior*. Retrieved 17 September, 2015, from Educational Psychology Interactive: <http://www.edpsycinteractive.org/materials/sysmdlo.html>

Hummon, D. (1992). *Community Attachment: Local Sentiment and Sense of Place*. New York: Plenum.

Ibrahim, I., Aziz, N. A., Hussain, F., Aminudin, N., & Young, M. A. (2012). Issues and Policies on the Aftermath of Squatters Resttlement: A Case Study on Kg. Desa Hormat Tambahan, Selangore. *Procedia - Social and Behavioral Sciences* (pp. 697 -706). Bandung: SciVerse ScinceDirect.

Indigenous Voices of Asia Network. (12 September, 2015). *Malaysia: Failed mediation leaves court to decide fate of Orang Seletar*. Retrieved 27 October, 2015, from Indigenous Voices of Asia : <http://iva.aippnet.org/malaysia-failed-mediation-leaves-court-to-decide-fate-of-orang-seletar/>

Jamin, S. (14 November, 2009). *Millions spent, but Sungai Skudai River Still a Dump*. Retrieved 25 October, 2015, from New Straits Times: <http://news.asiaone.com/News/AsiaOne%2BNews/Malaysia/Story/A1Story20091114-179862.html>

Johnston R., G. D. (2000). *The Dictionary of Human Geography*. Wiley-Blackwell.

Karim, H. A., & Hashim, A. H. (2010). The Effect of a Resettlement Scheme on the Social-Cultural. *ASEAN Conference on Environment-Behaviour Studies* , 362 – 373.

Khan, T. H. (2014a). *Houses in Transformation: Search for the Implicit Reasons*. Skudai: Springers.

Khan, T. H. (2014b). *Living with Transformation: Self-Built Housing in the City of Dhaka*. Skudai: Springers.

Kronenburg, R. (2007). *Flexible: Architecture that Responds to Change*. Great Britain: Laurence King Publishing Ltd.

Macozoma, D. S. (2002). *Understanding The Concept of Flexibility In Design For Deconstruction*. South Africa: CSIR Building and Construction Technology.

Malaysiakini. (27 December, 2011). *Orang Seletar of Johor to hand over memo to Johor MB* . Retrieved 28 October, 2015, from Citizen Journalists Malaysia: <http://cj.my/post/6827/orang-seletar-of-johor-to-hand-over-memo-to-johor-mb/>

Mawhinney, M. (2002). *Sustainable development: understanding the green debates*. Oxford, UK: Blackwell Science.

Mazlan, A. (31 May, 2016). *Rezeki awal pagi Orang Asli suku Seletar*. Retrieved 1 June, 2016, from KOSMO: [http://www.kosmo.com.my/kosmo/content.asp?y=2016&dt=0402&pub=Kosmo&sec=Varia&pg=va\\_01.htm](http://www.kosmo.com.my/kosmo/content.asp?y=2016&dt=0402&pub=Kosmo&sec=Varia&pg=va_01.htm)

McMillan, D. W. (1986). Sense of community: A definition and theory. *Journal of Community Psychology* .

Nakib, F. (2010). Toward an Adaptable Architecture Guidelines to integrate Adaptability in the Building. 276-286.

Podger, O. (1980). *Housing As A Basic Need*. Singapore: Regional Institute of Higher Education and Development.

Pragalath, K. (30 July, 2013). *'Our villages not mentioned in EIA report'*. Retrieved 25 October, 2015, from Free Malaysia Today: <http://www.freemalaysiatoday.com/category/nation/2013/07/30/our-villages-not-mentioned-in-eia-report/>

Rapoport, A. (1980). *Towards a Cross-Culturally Valid Definition of Housing*. Washington DC: EDRA.

Sow, L. (2015). *Social Sustainability of Urban High-Rise Community*. Skudai: Universiti Teknologi Malaysia.

Suma, A. (2006). 3D Adaptable Building Skin:. *International Conference On Adaptable Building Structures* (pp. 79 -84). The Netherlands: Eindhoven University of Technology.

The Authority of The Revision of Laws Act 1968. (2006). *Aboriginal Peoples Act 1954*. The Commissioner of Law Revision, Malaysia.

The New Paper. (15 December, 2014). *Caught in a Fishing Rut*. Retrieved 28 October, 2015, from AsiaOne: <http://news.asiaone.com/news/asia/caught-fishing-rut>

Thiru, S. (8 March, 2013). *Press Release: Customary Land Rights of the Orang Asli Seletar Must Be Respected*. Retrieved 28 October, 2015, from The Malaysian Bar: <http://www.malaysianbar.org.my>

Till, J., & Schneider, T. (2005). Flexible housing: the means to the end. 287-295.

Tipple, A. (2000). *Extending themselves: user-initiated transformations of government-built housing in developing countries*. Liverpool: Liverpool University Press.

United Nations. (2013). *World Population Prospect The 2012 Revision*. New York: United Nations.

United Nations. (2015). *World Population Prospect The 2015 Revision*. New York: United Nations.

Yuan, L. J. (1991). *The Traditional Malay house*. Penang: Consumers' Association of Penang.