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Faculty of Landscape Planning, Horticulture and Agricultural Sciences
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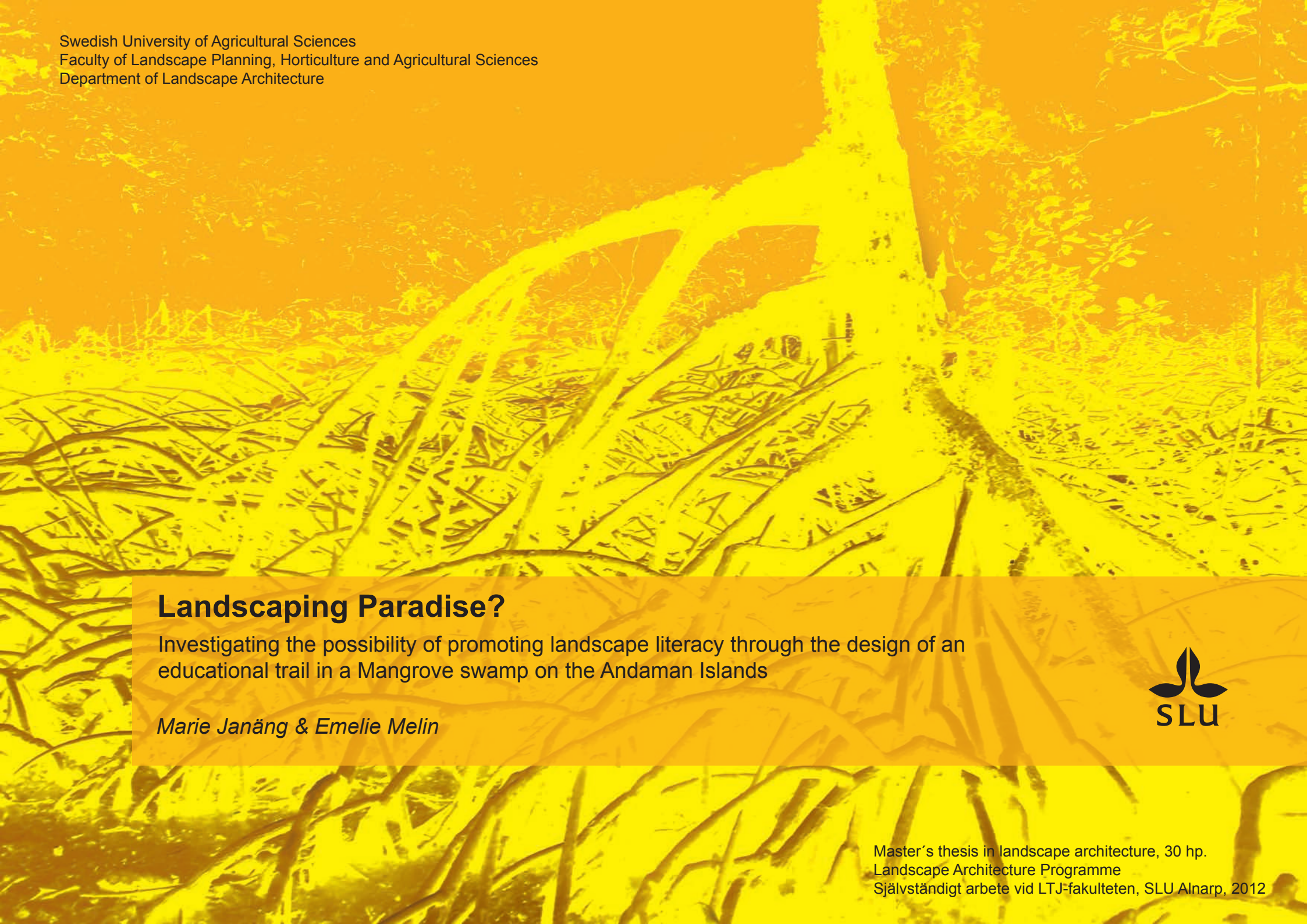

Landscaping Paradise?

Investigating the possibility of promoting landscape literacy through the design of an educational trail in a Mangrove swamp on the Andaman Islands

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SLU

Master´s thesis in landscape architecture, 30 hp.
Landscape Architecture Programme
Självständigt arbete vid LTJ-fakulteten, SLU Alnarp, 2012

Title in English: Landscaping Paradise? Investigating the possibility of promoting landscape literacy through the design of an educational trail in a mangrove swamp on the Andaman Islands
Title in Swedish: Landscaping Paradise? Ett undersökande av möjligheten att främja förmågan att läsa landskap genom utformningen av en pedagogisk slinga i ett mangroveträsk på Andamanerna
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Credits: 30 hp
Level: A2E
Course title: Master Project in Landscape Architecture, Course code: EX0545
Programme/education: Landscape Architecture Programme
Place of publication: Alnarp
Year of publication: September 2012
Series name: Självständigt arbete vid LTJ-fakulteten, SLU Online publication: http://stud.epsilon.slu.se
Key words: landscape literacy, mangroves, Andaman Islands, swamps, outdoor education, wilderness, representations, landscape, paradise, eco-tourism

SLU, Swedish University of Agricultural Sciences
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ACKNOWLEDGEMENTS

During the journey of this process, so many people have generously shared their knowledge and supported us to make this thesis possible. We would like to express our warmest thank you to our supervisors; Kenneth Olwig, for crucial insights considering landscape theory and the application of it on our empirical study, and Jitka Svensson, for supporting and challenging us all the way through the design process, and to both for all support during the work in field as well as at SLU in Alnarp.

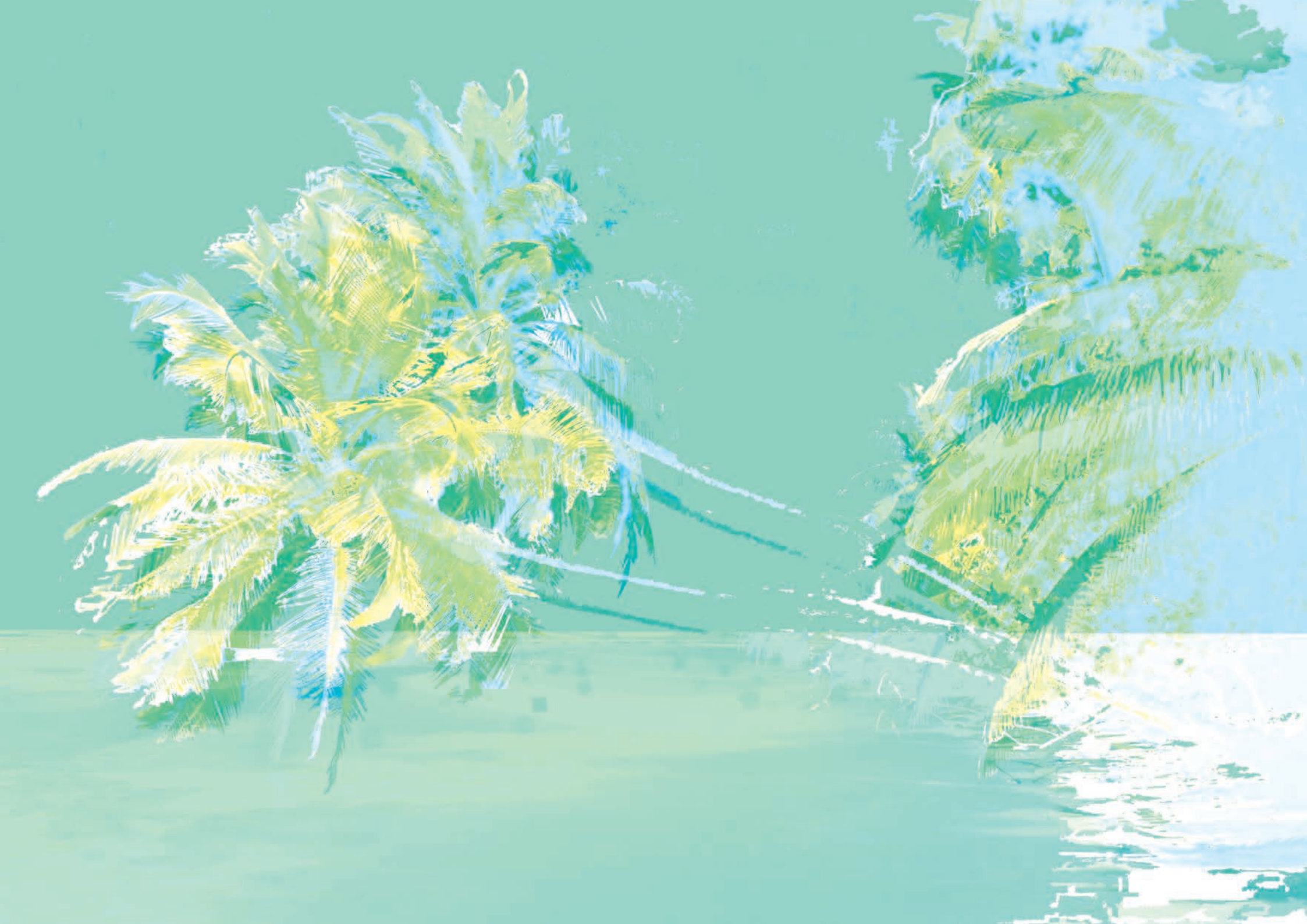
We also want to express our deepest gratitude to all the people at ANET for letting us stay with them and teaching us about the great work they do, introducing us to the project site, for permission to study at their library and guiding us through the mangroves, both physically and theoretically. Assistant Director Tasneem Khan has been our contact person in field and has both enlightened and inspired us in our investigations of the mangroves. Also Operations Manager Anita Prasad, and Umeed Mistry for helping us in our fieldwork and with practical arrangements.

Our work has also been deeply influenced by our talks and discussions with social anthropologists Philipp Zehmisch and Clarissa Leopold. To Philipp, a thousand thanks for sharing generously your contacts with authorities and other sources on the Islands, and for helping us finding our way through the cultural, political and geographical structures of the Andamans, and Clarissa, for helping us understand important aspects of conducting interviews and for your interest and support during the fieldwork.

Also, our warmest thanks to documentary film-maker Mukeshwar Lall in Port Blair for sharing films, litterature and photographs, Ranger Officer Ali Akbar from the Forest Department of Mahatma Gandhi Marine National Park for opening up the doors to the new Marine Interpretation Centre in Wandoor for us, and the employees of the Forest Department in Baratang, for the input on their work with mangrove preservation and Island ecology.

Many thanks also to the architects and planners at the Municipal Council Office in Port Blair who shared their thoughts on the aims and goals of development in the region of Port Blair and gave us a warm welcome during our visit. We also want to thank Daniel Gustafsson for discussions of ideas, his general support and assistance with photographing, and chaos pilot Henrik Johansson for introducing us to the Andaman Islands and ANET, as well as helping us with all the preparations before our visit.

Malmö, September 2012
Marie Janäng
Emelie Melin



ABSTRACT

This master thesis is based on fieldwork conducted on the Andaman Islands, part of the Andaman and Nicobar Union Territory of India, during the winter of 2011/2012.

The Andaman Islands have undergone vast changes during the last century and are now struggling to find sustainable strategies for development. As logging of timber was abolished a decade ago in order to preserve the unique environmental assets, Andaman Islands are now promoting eco-tourism as an important source of revenue. With a great influx of recent settlers, the Islands comprise a miscellaneous mix of inhabitants, of whom many lack knowledge of the local landscape and how to use its resources in a sustainable way.

Through our studies, we have identified the strategy of promoting landscape literacy as a key-component for achieving sustainable development on the Andaman Islands. To be literate in landscape means to be able to identify, analyze and add up the various components of the landscape to an interconnected whole, which results in an increased awareness and often also care for the local environment.

In order to promote landscape literacy, we have created an educational trail, Muddy Feet, which permits access to a mangrove swamp on South Andaman Island, and highlights the environment and variety of local species, as well as the cultural, historical and geological prerequisites of the site. We have chosen the mangroves as a point of departure since they are a crucial but often overlooked part of the overall local eco-system, facing threats due to urbanization, intensified land-use and lack of knowledge. Main benefits of mangroves are that they serve as a coastal buffer against tsunamis and tropical storms, binds soil and prevents shorelines from eroding. They also act as an important habitat for juvenile fish and a large variety of other species and constitute the livelihood of many local inhabitants. Mangroves thus hold the Andaman landscape together, both physically and metaphorically.

Our hope is that Muddy Feet will serve as a platform where dialogue and education about the complexity of the mangroves and their role as part of the overall eco-system can be held. Our main target groups for the proposal are local school children and visiting tourists; the children as they will shape the future of the Islands and are a link to the overall local population, and the tourists as they will have an increasing impact on the Islands in the years to come and as they have ability to spread the awareness gained globally.

Through this process we have made in-depth studies of the local prerequisites, which were then processed through applied theory, in order to understand the underlying views and representations which have influenced the Islands.

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INTRODUCTION

PREFACE

In December 2012, after an autumn of intense preparations, we finally got on the plane to India. A strong mutual interest in working internationally and with environmental and humanistic questions raised the idea of looking at possibilities of making our fieldwork there. We wanted to challenge both ourselves and the tools we had acquired throughout our education and try them out in a vastly different context.

Our destination was the Andaman Islands, where we had established contact with the local NGO, ANET, the Andaman and Nicobar Islands Environmental Team. We had arranged to stay with them on their research base in Wandoor on South Andaman Island to study mangrove ecosystems and how it is possible to preserve and promote education on their crucial importance through design, and as Landscape Architects.

ANET has conducted a great amount of research on the mangrove ecosystem and there is a mangrove wetland area adjacent to their base facilities. The purpose of our stay with them was to gather as much information as possible about mangroves, their ecosystem, characteristics and functions, to be able to assist ANET in designing a boardwalk system, which would make it easier for them to guide groups of visitors in the swamp for educational purposes. But we were also interested in the wider perspective of Island ecology, economy, culture and politics, and had prepared to travel around the Andamans to conduct interviews with local authorities, stakeholders, residents and visitors, to get an idea of the present thoughts and strategies for promoting sustainable development and eco-tourism.

The research we made at ANET, together with field notes from site-visits and interviews, makes up the empirical study that is the foundation for our, Marie Janäng and Emelie Melin's, joint master thesis in Landscape Architecture, written under the Faculty of Landscape Planning, Horticulture and Agricultural Sciences, at the Swedish University of Agricultural Sciences in Alnarp.

We spent altogether 45 days on the Islands, which is the maximum time allowed for foreign visitors. The design process started right there in the field, but has since we came back to Sweden undergone a whole series of changes. Most of them have been direct consequences of the input from the course *Landscape Theory in Architectural and Planning Practice*, held by our main supervisor Kenneth Olwig, which we attended after our return to Sweden. The course helped us to organize the material we had gathered and conceptualize the empirical study in a way that illuminated aspects, which we had not previously acknowledged to full extent.

The work presented in this master thesis is thus a synthesis of the empirical study and the applied theory, through which our proposal has emerged. The result is, Muddy Feet, which is our design of an educational trail that takes its physical appearance in the mangrove swamp. Our greater ambition is that Muddy Feet will serve as a platform for discussions and education about the Andaman landscape, where the mangrove ecosystem is an important part. We aim to promote local landscape literacy, which we believe is a key-component for achieving the overall goal of sustainable development on the Andaman Islands.

BASIC CONCEPTS AND TERMINOLOGY

Andaman Islands – the Andaman District of the Union Territory of Andaman and Nicobar Islands, thus not including the Nicobar District.

Andamanese – the indigenous inhabitants of the Andaman Islands, meaning both of the Great- and Little Andaman Group (Portman, 1899; Radcliffe-Brown, 1922). Dr. Venkateswar uses the term Andamanese in reference to the Great Andamanese Group only (Venkateswar, 2004, p.12).

Andamanese Indigenous Tribes – the Sentinelese, the Jarawa, the Great Andamanese and the Onge (UNESCO, 2010, pp.13-14).

the Department of Environment and Forests, Andaman and Nicobar Administration – the nodal agency regarding the A&NI environment and forests (Equations, 2008, p.77).

Endemic Species – "(...) a native species restricted to a particular geographic region owing to factors such as isolation or in response to soil or climatic conditions." (www: Convention on Biological Diversity)

Gram – village (Equations, 2008, p.v)

Gram Panchayat – "village level local self government institution" (Equations, 2008, p.v)

Gram Sabha – "the general body of the Gram Panchayat" (Equations, 2008, p.v)

the Great Andaman Group – all the indigenous inhabitants of the Great Andaman Islands (10 territorial and linguistic groups; Aka-Cari, Aka-Kora, Aka-Bo, Aka-Jeru, Aka-Kede, Aka-Kol, Oko-Juwoi, A-Pucikwar, Akar-Bale, Aka-Bea), except for the Jarawas (Radcliffe-Brown, 1922, pp.11-12; Venkateswar, 2004, p.12).

Landscape literacy – "To be literate is to recognize both the problems in a place and its resources, to understand how they came about, by what means they are sustained, and how they are related.**" (**Spirn, 2005, p.410)

the Little Andaman Group - the Onge of Little Andaman, the Jarawa of South (and at present also Middle) Andaman and the Sentinelese of North Sentinel Island (Radcliffe-Brown, 1922, p.11).

Negritos – the race of the indigenous people of the Andaman Islands (Portman, 1899).

Panchayat – "local self government institution, comprising of one or more than one village" (Equations, 2008, p.v)

Panchayat Samiti – "block level self government institution" (Equations, 2008, p.v)

Panchayati Raj Institutions – "units of local self-governance" (Equations, 2008, p.84)

Pradhan – Elected local representative, head of Gram Panchayat, serving to decentralize power to a grass-root level (Murthy, 2005, p.106).

Primary Forest – "(...) a forest that has never been logged and has developed following natural disturbances and under natural processes, regardless of its age." (www: Convention on Biological Diversity)

Secondary Forest – "(...) a forest that has been logged and has recovered naturally or artificially." (www: Convention on Biological Diversity)

Zilla Parishad – "district level self government institution" (Equations, 2008, p.v)

ABBREVIATIONS

ANET – the Andaman and Nicobar Islands Environmental Team, a Division of the Madras Crocodile Bank Trust
A&NI – Andaman and Nicobar Islands
ATR – the Great Andaman Trunk Road
Forest Department - The Department of Environment and Forests, Andaman and Nicobar Administration
MFF – Mangroves For the Future
MoEF – the Ministry of Environment and Forests
NGO – Non-Governmental Organization
PRI – Panchayati Raj Institutions
SLU – Swedish University of Agricultural Sciences
UT – Union Territory

PROBLEM BACKGROUND

The population mix

The Andaman Islands have a complex and quite dark history which is hard to grasp when you arrive as a visitor. The endless white beaches, vast forests and blue ocean appeals to our preconceived image of an untouched tropical paradise. But since the British Empire declared the Islands their colonial territory in the 19th century, the resources of the eco-system have gradually been tapped beyond the limits of their capacity. Prior to the colonization, the indigenous Andamanese population had lived undisturbed on the coasts and in the forests of the Islands. But as the conquerors appropriated the land and cleared the forests for commoditization into timber, the aboriginals were expelled from their territory and many assimilated into Western culture by force. (Portman, 1899; Venkateswar, 2004)

In the mangrove areas the so-called 'kitchen-middens', which are piles of shells and bones from old camp-sites, remind of the time when the Andamanese tribes led a semi-nomadic life as hunter/gatherers by the coast. Today, the small groups of remaining aboriginals live in secluded reserves, with small resources and in constant threat of exploitation.

The clearing of forests for commercial purposes and development of cleared land into agricultural areas, started when the British arrived and continued in rapid pace during most of the 20th century. When India gained independence in 1947, the Government fuelled the development further through their 'colonisation and rehabilitation schemes', where people from the mainland were moved to the Islands to develop and make profit of their resources. (Krishnakumar, 2005; Equations, 2008)

There is still an increasing influx of migrants to the Islands, and there are tensions between the locally born residents, the earlier settlers and the recent migrants, who have different perceptions of the landscape, as well as other traditions and life styles. The question of who really belongs to the Islands, and who does not is a salient issue for the Andaman inhabitants (Equations, 2008, pp. 20-21). This mix of different groups, with varying approaches to the local environment, calls for planning strategies which acknowledges both problems and opportunities posed by the diversity.

So, the perceived untouched nature of the Andamans is in fact a cultural landscape, and has been for thousands of years. But due to the transition from the low impact, 'broad-spectrum' economy applied by the indigenous tribes to the commercialisation and exploitation of resources by colonizing powers, and great influx of migrants, the ecosystem has gradually been thoroughly transformed.

Environmental problems

The ecological profile of the Islands include forests, marine ecosystems, coral reefs, mangroves and wetlands. Because of the uncontrolled clearing of rainforests and disturbance of marine habitats, the vast variety of species on the Islands, of which many are endemic, are on the decrease. Agriculture, which has been promoted by the Government programmes, has proven an un-sustainable venture on the Andamans, as the soil of the felled rainforest is highly inappropriate for cultivation, having poor ability to retain water and hold nutrients. (Krishnakumar, 2005)

According to *the State Forest Report*, 84.42 % of the land surface is presently under forest cover (Town Planning Unit Andaman Public Works Department, unpublished, Vol.I), while other sources claims it is around 70% (Krishnakumar, 2005, p.114). Much of this forest is secondary growth lacking the great diversity of species of the pristine vegetation (Venkateswar, 2004).

Our main focus in this thesis is the mangrove ecosystems, which have suffered a great deal of damage over time due to both natural and anthropogenic forces. Since the 1980's, 20% of the world's mangroves have been lost (www: MFF, 2009), and in India, 50% were destroyed between 1960-77 (Kathiresan, 2005). The greatest threats towards these types of ecosystems are urbanization and intensified land-use. As the population of the Andamans have more than seven fold between 1911-1991, the impact on the mangroves has been severe, because inland and coastal ecosystems are always linked on small islands. For example, inland activities such as deforestation, agriculture, building of roads and other forms of construction work increase the amounts of loose sediment and nitrogen, which then flows towards the coastal mangroves. (Debnath, 2004, pp.113-116) Other threats to mangroves today are tourism, tree felling, fishery, shrimp farming, grazing, cyclones, sea level rise as well as a lack of public participation and knowledge about their value (Planning Commission, 2007, pp.63-64). What is of great importance to acknowledge, is that many of the reasons for their destruction, originate outside mangrove ecosystems. Traditional settlers in mangrove areas normally do not cause destruction to the system (Ibid, p.59), but due to lack of planning and coordination and the complex demographic mix of present inhabitants who use the resources in an uncontrolled way, the local coastal environment is challenged.

As large-scale deforestation and clearing is no longer possible due to restrictions, another source of income has emerged as a replacer – tourism. Figures from 2006 show that 127,504 tourists, 7% foreign and 93% from the Indian mainland, visited the A&NI, and the numbers are steadily increasing. Although eco-tourism is promoted as a strategy for enabling sustainable tourism, it has not yet been implemented other than on a small scale, and according to an investigation made by the research, campaign and advocacy organization Equations in 2008, such an implementation is crucial for the preservation of the already highly pressured local ecosystems. (Equations, 2008)

Our conclusion from field visits, discussions and interviews, is that there is an urgent need of organizing strategies for sustainable development and that there are people interested in working for it. This is the point of departure for our investigations.

There are severe problems with handling the growing amount of garbage on the Islands and existing landfills are already filled up. The increasing amount of plastic bottles used, as a direct consequence of more tourists arriving, gets stuck in both mangroves and corals. Garbage is also floating in from surrounding countries and piles up on the beaches. (Field notes: interview with municipality worker)

Even if mangrove forests have been under threat for a long time, there are still huge mangrove forests at the Islands, especially in Baratang (image lower left) and there are on-going projects of mangrove regeneration. The picture (lower right) shows one such project in Mayabundar.

AIM, GOALS AND LIMITATIONS

Our aim is to elucidate the importance of being able to read the local landscape, of acquiring 'landscape literacy', through studying its prominent as well as hidden layers. We believe that landscape literacy can be a tool for achieving sustainable development on the Islands in the future.

Our goal for achieving this aim is to create a proposal for an educational trail that permits access to a mangrove area and highlights and communicates knowledge about the variety of local species and the cultural, historical and geological prerequisites of the site.

Our main target groups for the proposal are local school children and visiting tourists; the children as they will shape the future of the Islands and are a link to the overall local population, and the tourists as they will have an increasing impact on the Islands in the years to come and as they have ability to spread the awareness gained globally.

Another goal with this thesis concerns us as Landscape Architects, as we want to investigate and understand what our roles can be in working to promote these types of aims.

We have limited our study geographically to the Andaman Islands and leave out the Nicobar group in this study. We do so on account of that the Nicobars are protected by the *Protection of Aboriginal Tribes Act* from 1956, which prohibits non-Nicobarese people from residing on, accessing and also being tourists on the Nicobars without a special permit from the Deputy Commissioner (Equations, 2008, p.3). Because of this we could not conduct field studies there, and therefore we only provide some basic information on the Nicobars in the background, seen in relation to the Andamans. The fact that the Nicobars have other restrictions also makes their opportunities, challenges and needs considering planning, quite different from those of the Andamans and the two parts of the A&NI Union Territory cannot be investigated in this study on the same prerequisites.

A second limitation considers the design proposal, where we focus on the mangrove wetlands, even though the promotion of landscape literacy is beneficial to, and can be applied theoretically and practically to all types of eco-systems and environments on the Islands.

QUESTIONS AT ISSUE:

What characterises the site where we conduct our study?

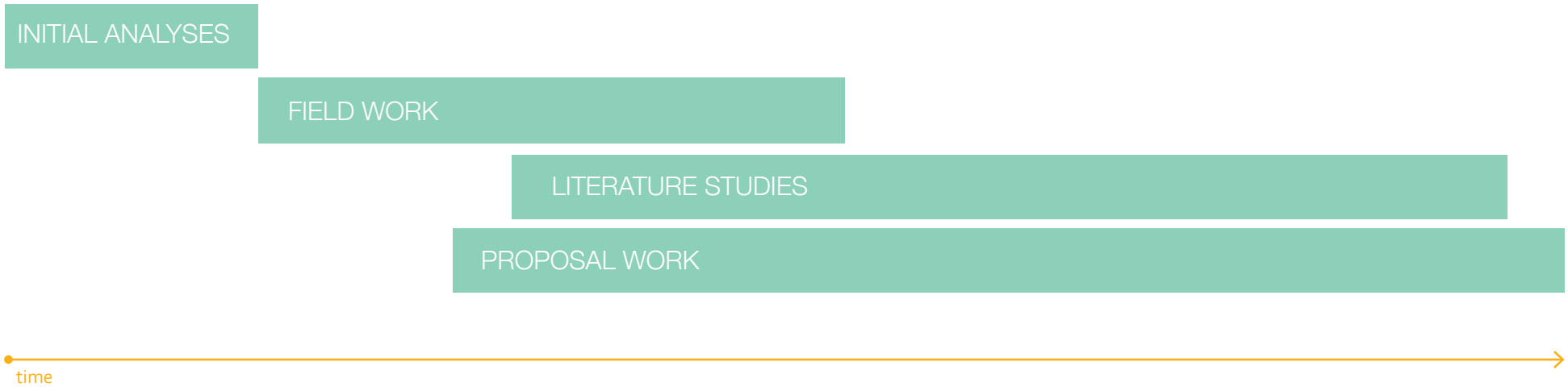
What is the history and background of the Andaman landscape in a wider context; what driving forces have influenced it?

How have swamps and wetlands been perceived through history and what values cling to the concept of them?

How can we promote landscape literacy through design in a mangrove area?

What can our roles as Landscape Architects be in enabling people to deepen their knowledge about the local landscape and acquiring landscape literacy?

METHODOLOGY & WORK PROCESS



METHODOLOGY

Initial analysis

Before we left Sweden, we prepared for the fieldwork through researching literature, watching documentaries and browsing web-based sources to understand the context and special prerequisites of the Islands. We mapped geographic, demographic and environmental information; studied mangrove wetlands and which NGO's and instances that were active in mangrove preservation projects in India and on the A&NI in particular. As the information gathered before leaving came from a lot of different sources, touched a wide range of topics and were in varied formats such as scientific articles, newspapers, blogs, travel-diaries and books, we got a broad overall understanding of the setting we were about to enter.

Field work

The fieldwork took place in a mangrove area, adjacent to the research base of ANET at Wandoor. The work consisted in part of following the researchers at ANET as they guided groups of visitors through the mangroves. These groups could be children, other visiting researchers or tourists. Once we were familiar with the area, we investigated the site on our own, through repeated walks where we tried to analyze the surroundings using all of our senses, and not just the visual; through touching, smelling and even tasting.

We also got to guide groups ourselves, which was very awarding. We tried to make sketches in the swamp for documentation and investigations, but this method proved very inconvenient, as it meant climbing and wading with sketchpads and pens, which limited the ability to move freely. The feeling was also that it distanced us from experiencing the place. Photographs and recording video-clips with small cameras were both easier and more effective as we could document a vast amount of visual information.

Investigating sketches and mental maps were made back at the research base, through which we could discuss and explain ideas, and which helped us understand each others perceptions of what we had experienced.

Here we are in the mangrove swamp, marking out the educational trail .

We marked out the trail for the walk and documented the coordinates of it with GPS. The path was then digitalized according to the coordinates, using Google Earth. Our contact person in field, Tasneem Khan, who is a resident researcher at ANET, has been our main link to Wandoor during the work process.

Field visits

We visited several interesting sites on the Islands, where projects involving raising awareness about mangroves and costal environments, or mangrove preservation/regeneration projects were active. The most rewarding ones were the mangrove areas around the village of Baratang, and the mangrove boardwalk in Mayabunder (for locations on map, see p.20).

This picture shows a boardwalk through mangroves in Mayabundar, one reference project we visited as part of our field work.

We also visited museums and education centres, of which the new Marine Interpretation Centre in the Mahatma Gandhi Marine National Park in Wandoor, managed by Department of Environment and Forests and the Anthropological Museum in Port Blair can be mentioned. During these field visits we made observations, conducted interviews and documented the sites and information through notes and photographs.

Interviews

During our stay on the Islands we wanted to gather different opinions and experiences concerning the issues of mangrove management, eco-tourism and sustainable development at the Islands, so we conducted qualitative interviews with people representing a wide variety of groups. It was local Municipal

Officials, employees at the Department of Environment and Forests, local inhabitants, entrepreneurs in tourism, tourists, NGO workers and documentary filmmakers who focused on cultural or environmental subjects. To get a nuanced picture of the problems and possibilities concerning mangrove issues and sustainable development on the Islands we wanted to listen to people with different perspectives and interests. So the NGO's points of view in comparison with the Goverment officals for example were important to us.

For our interviews we used an unstandardized interview technique (also referred to as informal or non-directive). This is a flexible way of conducting interviews where there is no detailed questions put down beforehand and no special order that has to be followed, but where some general questions are used as guidelines (Berg, 2004, pp.78-80). We developed different general questions appropriate to the varying situations and subjects. Depending on the answers given, additional questions are asked and the interview could take unexpected turns, which lead to new information.

As Berg (2004) writes this type of interviews are sometimes used as a complement to field studies and this was also how we used it, as it fitted well for our intentions of acquiring a wide scope of information about the prerequisites of the Islands. Being outsiders, we wanted to collect information which was not set within an exclusive direction, as important clues to alternative ideas and solutions could then be overseen.

During the interviews we divided the work, so that one person mainly asked the questions and the other one took notes. Afterwards we went through and rewrote everything directly, to reduce the risk of losing any information and to make sure that we had understood the answers in the same way.

All the persons interviewed are anonymous in this thesis if not other is mentioned. This is due to that we wanted the interviewees to feel that they could speak freely, without considerations as to whether the information would be published and tied to them. All our interviews were conducted in English, but we sometimes had trouble understanding due to different dialects and we are aware that misunderstandings could have occurred, even though we have made our uttermost to assure accuracy.

Literature studies

While still in field, we studied literature at ANET's library, mainly about mangroves and the coastal ecosystems of the Islands. Here we got hold of information written by locals and research conducted on the Islands. Much of this material, both books and information brochures, were sources we could not have found in Sweden or via Internet so this was really a great advantage.

As in our interviews we also wanted a variety in literature sources, to capture different perspectives. Mangroves For the Future (www: MFF, 2012) for example takes the perspective of the local communities on mangrove issues while for example The new Draft Report Master Plan For Port Blair Planning Area – 2028 (Town Planning Unit Andaman Public Works Department, unpublished, Vol.I-II) have been an important source, to get the 'upper' perspective of the development of the Islands. This Draft Report was in a notification state when we received a copy of it in January 2012 in Port Blair. The Master Plan For Port Blair Planning Area – 2028, was later approved by the Hon'ble Lt. Governor of A&NI and came into operation from the date of notification on the 1st of March 2012. (www: India Environment Portal)

Back in Sweden we put focus on a theoretical understanding of the forces which have affected and changed the Andaman landscapes, and had great input from the course *Landscape Theory in Architectural and Planning Practice* and the Reader for the mentioned. Through guidance from main supervisor Kenneth Olwig we then made further in-depth studies considering ways of seeing and perceiving landscape, the separation between the concepts of nature and culture and the theoretical context and history of swamps. We were also introduced to the article by A.W. Spirn, and got her permission to use the term 'promoting landscape literacy' in our work.

We have also used a lot of online sources, especially when dealing with specific Andaman questions since this has been difficult to find elsewhere. Authors are both researchers in various fields, but also activists, governmental and from different time spectra.

Proposal work

In the work on the proposal, we have applied a variety of methods; we have explored form and content through sketch-work, models (both in field and back in Sweden), storytelling, photographs and digital manipulation of images in Photoshop. Also our theoretical inquiries gave us ideas to the form and content of our proposal. Through the proposal work, we have been supported and guided by our assistant supervisor Jitka Svensson, who has provided crucial input.

As we had problems finding detailed maps over the area, all the maps in this thesis are reproduced from satellite images from Google Earth. As the land and coastal areas have changed a great deal since the 2004 tsunami, the maps may be inexact due to elevation and suppression of certain areas.

We also collected GPS coordinates in the swamp, but there was some ambiguity as data collected from the exact same point showed slightly different coordinates at the different days we measured. So we have had to make estimations based on images and recollection as well as studies of satellite photos.

There are reference rulers on the maps, but we want to point out that all measurements should be considered as close to reality, but not exact.

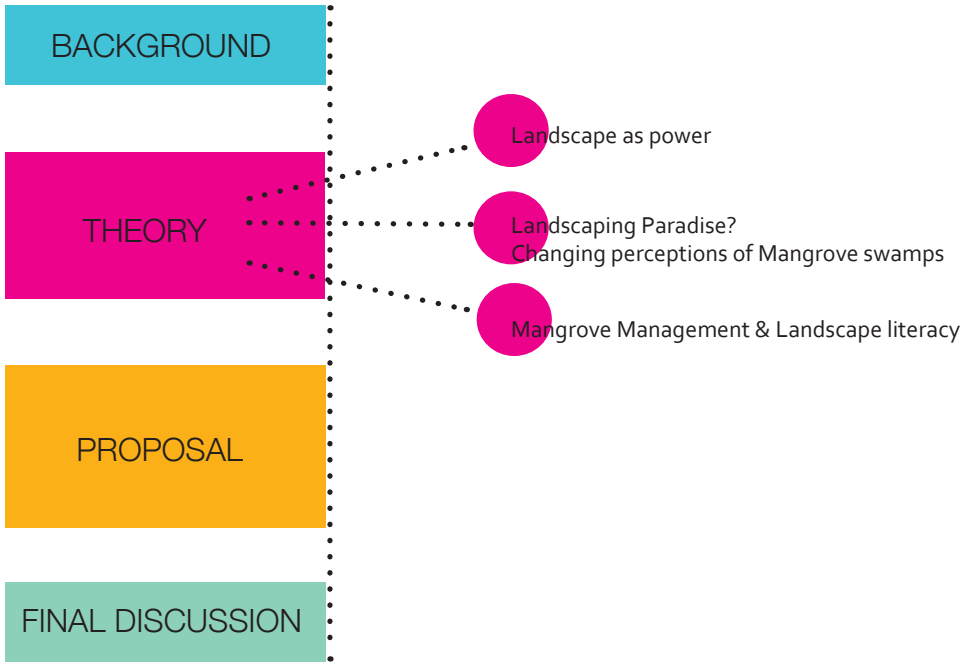
DISPOSITION

The thesis is composed of four main parts, this introduction excluded. The first part, **Background**, focuses on understanding the history and forces which have molded the Andaman landscape at large. We look at geographical, environmental, and cultural forces and prerequisites that mutually intertwined make up the foundation of our study.

In the second part, the **Theoretical Investigation**, we want to understand the relation between different ways of perceiving landscape and actual physical changes in it. We discuss various readings on landscape theory and then apply them to the context of the changing landscape of the Andaman Islands. We discuss both past, present and future landscapes, and we use literature from different scientific disciplines to get a holistic approach. The theoretical investigation is divided into three main chapters.

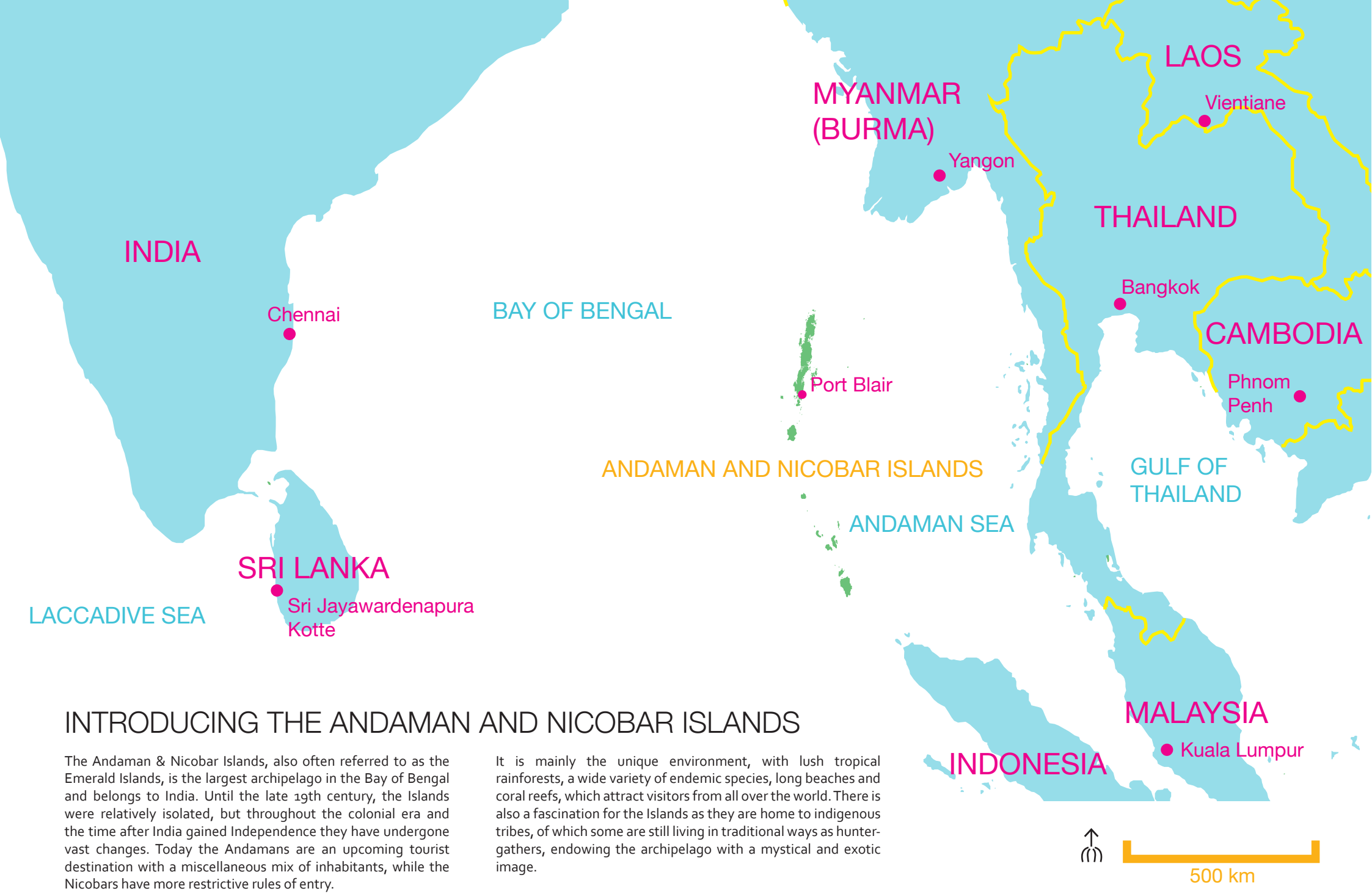
The third part is our **Proposal** MUDDY FEET, an educational trail in a mangrove swamp. Ten-year-old-boy Vishnu will invite you to take the walk with him, exploring the various species, remnants and layers of the site.

The last part is the **Final Discussion**, in which we discuss our work process and methods. We elaborate on our role as landscape architects in this context. We also look at how our work can be developed and make suggestions for further studies.



01. BACKGROUND

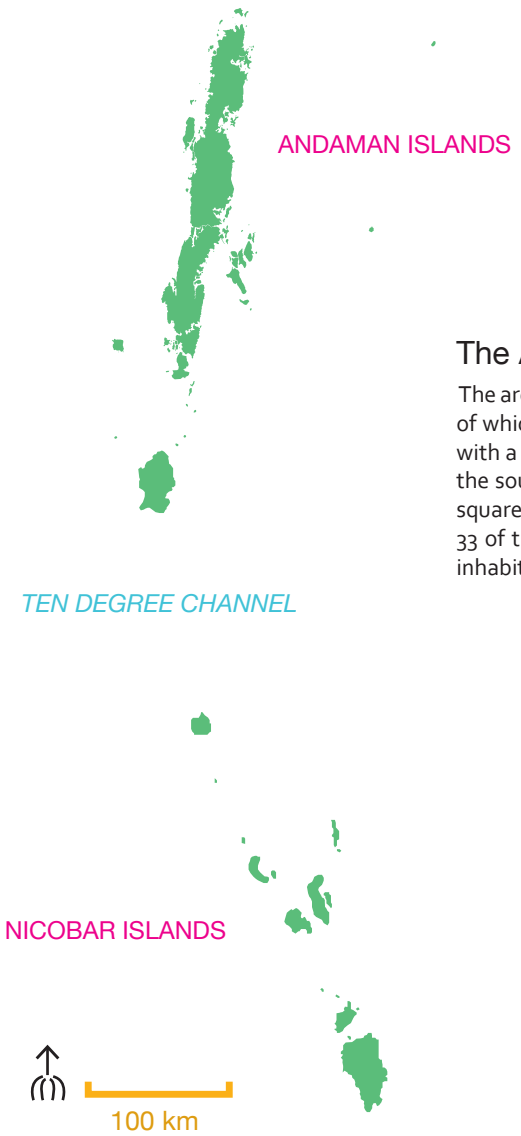
As we came to the Islands as outsiders, we felt quite lost in terms of how to approach the landscape. We had studied and mapped the general features of the A&NI back in Sweden, but considering the underlying structures, politics and cultural contexts, we found we knew very little once we arrived. In order to make a proposal and find the roles we could fill as landscape architects on the Andamans, we had to make further inquiries of the overall situation and prerequisites of the Islands, covering a wide scope of information and sources that we could subsequently layer and analyse as a whole. From the deeper understanding of the landscape that emerged through these investigations, we could then proceed to make theoretical investigations and finally – a finished proposal. So we invite you as a reader to follow us on this journey of exploring the Andaman landscape and begin by sharing the general context, background and history of the Islands on which we have based our further work.



INTRODUCING THE ANDAMAN AND NICOBAR ISLANDS

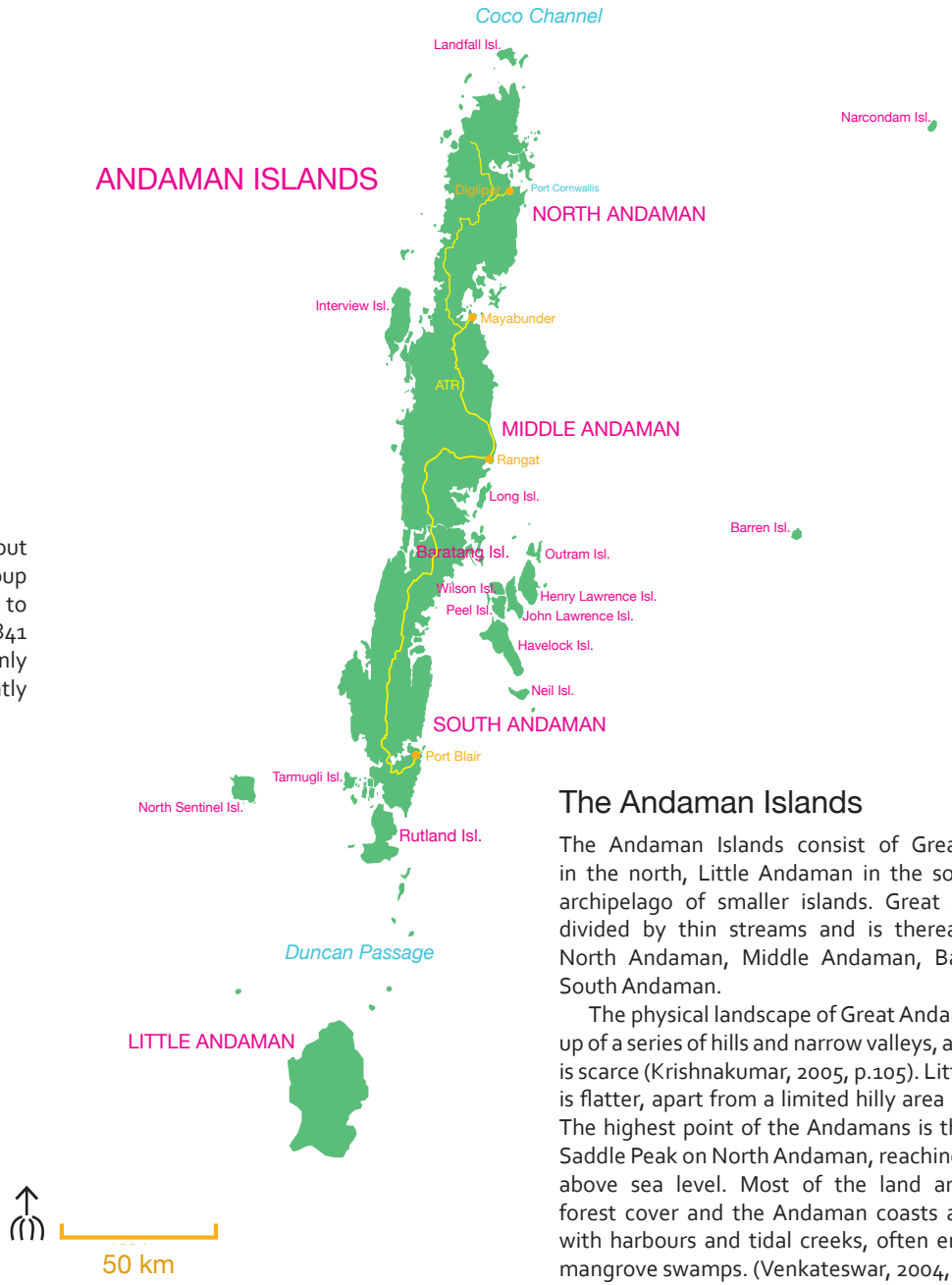
The Andaman & Nicobar Islands, also often referred to as the Emerald Islands, is the largest archipelago in the Bay of Bengal and belongs to India. Until the late 19th century, the Islands were relatively isolated, but throughout the colonial era and the time after India gained Independence they have undergone vast changes. Today the Andamans are an upcoming tourist destination with a miscellaneous mix of inhabitants, while the Nicobars have more restrictive rules of entry.

It is mainly the unique environment, with lush tropical rainforests, a wide variety of endemic species, long beaches and coral reefs, which attract visitors from all over the world. There is also a fascination for the Islands as they are home to indigenous tribes, of which some are still living in traditional ways as hunter-gathers, endowing the archipelago with a mystical and exotic image.



The A&NI

The archipelago comprises altogether 572 islands, out of which 550 belong to the northern Andaman group with a land area of 6,408 square kilometres and 22 to the southern Nicobar group with a land area of 1,841 square kilometres (Equations, 2008, pp.13-14). Only 33 of the Islands of the archipelago are permanently inhabited (Planning commission, 2007).



The Andaman Islands

The Andaman Islands consist of Great Andaman in the north, Little Andaman in the south, and an archipelago of smaller islands. Great Andaman is divided by thin streams and is thereafter named North Andaman, Middle Andaman, Baratang and South Andaman.

The physical landscape of Great Andaman is made up of a series of hills and narrow valleys, and level land is scarce (Krishnakumar, 2005, p.105). Little Andaman is flatter, apart from a limited hilly area in the north. The highest point of the Andamans is the mountain Saddle Peak on North Andaman, reaching 732 meters above sea level. Most of the land area is under forest cover and the Andaman coasts are indented with harbours and tidal creeks, often embedded by mangrove swamps. (Venkateswar, 2004, p.15)

Climate

The climate is warm, humid and tropical, as the Islands are located in the equatorial belt and affected by marine influences. The average annual temperature is 30°C, but it ranges between 18°C and 35°C throughout the year. The high humidity is approximately 77 to 80%, but during February slightly lower.
From April or May, the southwest monsoon controls the weather of the Islands, bringing strong winds and cyclones, followed by heavy rains from July until September. In October the northeast monsoon takes over dominance, but the rains usually continue into December. From December to January it gradually becomes calmer and between February and April it is dry with increasing temperatures until the southwest monsoon arrives again. (Equations, 2008, p.15)

Island ecology

The A&NI are widely acknowledged as a biologically diverse region of global significance with high species endemism. Due to these prerequisites, scientists have focused on the environment of the Islands for over a century. Until now, 3,552 species of flowering plants (out of which 223 are endemic species), 5,100 species of animals (503 endemic), 4,508 marine species (220 endemic), 52 species of mammals (33 endemic), 244 species of birds (96 endemic) and 111 species of amphibians and reptiles (66 endemic), have been discovered. (Equations, 2008, p.17)
The main eco-systems of the Islands are forests, marine ecosystems, coral reefs, mangroves and wetlands (Ibid, pp.16-17).

Upper left: Pandanus seeds on Neill Island; upper right: forest on Interview Island; bottom left: Barnacles attached to rock at Wandoor Beach; bottom right: mangroves of North Andaman.

Forests

The estimated total forest coverage of the A&NI varies according to different sources between 70% (Krishnakumar, 2005, p.114) and 92% (Equations, 2008, p.16). It consists of 12 forest-types; Giant evergreen forest, Andamans tropical evergreen forest, Southern hilltop tropical evergreen forest, Cane brakes, Wet bamboo brakes, Andamans semi-evergreen forest, Andamans moist deciduous forest, Andamans secondary moist deciduous forest, Littoral forest, Mangrove forest, Brackish water mixed forest and Submontane hill valley swamp forest (www: Majha Andaman Group). The original terrestrial forests of the Andamans mainly comprised a mix of evergreen trees entangled in climbers, and tracts of deciduous forest with glades of bamboo. On the mountain ridges, there were often small trees with creepers, and on the slopes, the primary forests stretched out. (Krishnakumar, 2009, p.105)

Due to opening up of the canopy cover through tree felling, parts of the evergreen forest has turned to semi-evergreen and then deciduous on the Islands. This change of ecosystems is especially obvious around settlements. (Ibid, p.113)

The marine ecosystem and coral reefs

The coastline of A&NI is 1,962 kilometres long and the marine eco-system and coral reefs surrounding the Islands are renown for their biodiversity. The reefs are stated to be the last pristine ones in the Indian Ocean. (Equations, 2008, p.16) In the areas where we snorkelled though, among others by the coast of the islands Jolly Buoy, Neill and Havelock, most reefs where grey and in a rather bad condition. When we acquired about this among local people and divers, they said that the death of the corals has happened during the last few years. Some claimed it was due to global warming and increasing water temperatures, others related it to the increased anthropogenic pressure on the Islands, but many also believed it to be the remaining impact of the damage caused by the 2004 tsunami. (Field notes: interviews with local inhabitants and divers) Even so, there is still an enormous diversity and richness of life in the marine ecosystems of the A&NI, especially further from the coast, and according to divers we spoke to, the reefs at deeper level where in a better condition. At some places where we snorkelled, we could also see tiny new corals growing on their dead predecessors: signs of regeneration.

Right: Secondary forest at Havelock Island; Below: Forested slopes by the coast of Neill Island; Bottom right: Grouper fish, anemones and feathered starfish in Andaman reefs (Photo on courtesy of Ackbahr).

Wetlands

Wetlands are transitional zones between land and water, meaning that the water level is near, or above the ground surface for most of the year. They serve as the 'kidneys' of the landscape, filtering surface water from sediments and nutrients. Direct benefits of wetlands are that they subserve fish, agriculture, recreation and water supply and are a source of fuel wood; while indirect benefits are for example flood control, ground water recharge and protection against storms. (Planning Commission, 2007, p.73) It is estimated that 50% of the world's wetlands have been lost during the last century and the main factors of degradation are increased sedimentation, eutrophication, pesticide pollution, changing salinity levels, pollution from heavy metals, infestation of weeds and low dissolved oxygen and pH (Ibid, p.76).

The wetlands of the Andamans have suffered damage due to agricultural development and vast swampy areas of the lowland evergreen forests have been destroyed. Little is still known about the wide range of species living in both forested and open swamps and their unique features, and there is urgent need of mapping and investigating their ecological profiles. (Jayaraj & Andrews, 2005)

Mudflat at low tide, Wandoor.

The more substantial tracts of wetland that remain are located on the Islands of Baratang and Little Andaman, and in the tribal reserve of the Jarawa people on the west coast of Middle and South Andaman. The wetland ecosystems of Little Andaman are unique on the A&NI and include freshwater streams, open saline marshes, peat bogs and extensive areas of freshwater grassy marshes. The freshwater wetland ecosystems of the Islands are crucial nesting habitats for saltwater Crocodiles, as well as feeding areas for various species of Bats. They also house at least two endemic, restricted range species of birds, the Andaman Teal and the Andaman Crake. Wandoor on South Andaman, where the site of our proposal is located, is targeted for having wetlands areas in need of protection. (Equations, 2008)

Mangroves

The mangrove forests are part of the wetland ecosystem and can most commonly be found fringing creeks, backwaters and muddy shores in tropical and sub-tropical inter-tidal regions of the world. It is a complex ecosystem with great biodiversity which is often described as the most productive one in the world. At present, 13 % of India's mangroves are found in the A&NI (Department of Environment and Forests, 2011) and they make up 12,7% of the total forest cover of the Islands (Equations, 2008, p.16). With a footprint of approximately 101,172 ha, the mangroves of the Andaman Islands are one of the world's most extensive mangrove ecosystems (Planning Commission, 2007, p.5).

The vegetation is highly salt tolerant and adapted to the conditions of water fluctuation. Mangroves are valuable for their function as hiding places for juvenile fish and as feeding, breeding and resting places for many species of birds and the as aquatic and terrestrial mammals. Studies of mangroves on A&NI show that as many as 8 species of mammals, 53 species of birds, 7 species of reptiles, 3 species of amphibians, 253 species of fish, 13 species of polychaetes, 410 species of arthropods and 53 species of meiofauna live in this environment. (Dagar et. al., 1991)

Mangroves capture and retain sediments from inland streams, and thus clean the water and helps building new land, while preventing coastal erosion and clogging of coral reefs (Ibid). Recently, they have also been highlighted for their ability to serve as buffer zones against hurricanes and tsunamis, diminishing their force as they strike against the land[1] (Olwig et.al., 2007).

Mangrove forests are also important for coastal communities, who depend on their resources. For a long time, humans have been using this environment for fishing, farming of sea-weed, organic cultivation of vegetables along the non-saline areas, for fuel, timber, medicine, textile production, construction of boats, thatching material, fodder for cattle, art and crafts, bow making etc. (Dagar et. al., 1991; www: MFF, 2009; Planning Commission, 2007)

In 1989, extraction of mangroves for commercial purposes was prohibited on the Islands and most of the damaged areas have since regenerated. There are areas on North, Middle and South Andaman which have encroachments though and extraction of fuel wood and poles has degraded some tracts of the forests. There has been demands of handing over mangrove areas for shrimp farming and fattening of mud crabs, which is alarming seen in the light of the environmental impact of such endeavours in South East Asia and South America. (Jayaraj & Andrews, 2005)

[1] Studies on the 2004 tsunami impact at the Cuddalore District in Tamil Nadu, India, have proven that coastal areas with a mangrove buffers suffered remarkably less severe damage to settlements and farmlands than areas with open beaches.

As we mentioned in the problem background, the mangroves face great challenges as they are threatened by both natural forces such as sea level rises and cyclones and anthropogenic forces like effects of urbanization and intensified land-use. The steadily increasing population of the Andamans is challenging the resilience of the otherwise quite resistant mangroves, as inland development activities are affecting the coastal areas indirectly. According to the governmental *Report of the Task Force on Islands, Coral Reefs, Mangroves & Wetlands in Environment & Forests for the Eleventh Five Year Plan 2007-2012*, by the Planning Commission (2007, pp.63-64), also tourism and fishery; two of the main resources that has been targeted for further development in the new *Draft Report for the Master Plan For Port Blair Planning Area – 2028* (Town Planning Unit Andaman Public Works Department, unpublished, Vol.I, p.68), poses threats to the ecosystem if their exploitation is not thoroughly planned and regulated. Lack of knowledge about the values of the mangroves as well as lack of public participation in planning and maintenance concerning them are also defined as threats (Planning Commission, 2007, pp.63-64) .

Top left : mangrove creek by the Lime Stone Caves in Baratang; top right: Rhizophora seeds; bottom left : mangrove seedlings on Neill Island; bottom right: mangroves on Neill Island.

Geology and the impact of the tsunami

There has been a slow rise of the sea level ever since the last ice age and the land area of the Islands is shrinking. The rise seems to have accelerated lately but since a process of geological upheaval counteracts the process to some degree, the Islands have not shrunk as much as could otherwise have been expected. (Weber, 2006a)

The A&NI sit on one of the world's more dangerous and active geological fault lines (Weber, 2006a). The epicentre of the undersea earthquake that took place on the 26th of December in 2004 and caused a huge tsunami was located very close to the A&NI. This was the most powerful earthquake in 40 years and together the earthquake and tsunami led to devastating loss of life, homes and destroyed ecosystems. As a consequence the Islands were also tilted and the northern land areas were uplifted by as much as 1-2 meters, while the land sunk in the south. In the Nicobars, a subsidence of around 4 metres was noticed. (Equations, 2008, p.23) This is also clearly visible today, as we saw a lot of dead corals above the ground on North Andaman, and former agricultural land and houses standing in water on South Andaman.

As a whole lot of agricultural land, plantation areas and forests have been damaged, this is affecting the livelihood of local farmers who have to deal with the new conditions and problems of soil salinity and sodicity (Chaudhuri et.al, 2012).

In the Port Blair Municipal Council, they are working with the issues of what to do with this transformed landscape. Suggestions to use some of the inundated areas as rainwater reserves have been put forward, but this is yet to be approved by the higher authorities. (Field note: interview with municipal official)

Trees overthrown by the force of the 2004 tsunami, Wandoor Beach

Dead corals on North Andaman Island

House in water, outside of Port Blair

Demography

There are four indigenous tribes, who have resided on the Andaman Islands for millennia (Portman, 1899); the Great Andamanese, the Onge, the Jarawa and the Sentinelese (Radcliffe-Brown, 1922). Up until they were declared extinct in the 1920's, there was also a fifth tribe, the Jangil. In 1901 the overall number of indigenous inhabitants was 1999 but throughout the 20th century they have been decimated to only 419 in 2001. (UNESCO, 2010, p. 17)

Until the end of the 16th century, the aboriginals lived in seclusion. In the 17th century the colonization of the Islands was initiated and by the late 18th century, the British founded a penal colony in Port Blair to which they brought political convicts from mainland India to serve lifetime sentences.[2] (Radcliffe-Brown, 1922, pp.9-10). From this period an influx of people began from mainland India, East Pakistan (Bangladesh) and Burma (Myanmar). After India gained Independence in 1947, refugees from East Bengal and South India also came to settle. (UNESCO, 2010, p.31) According to the Town Planning Unit Andaman Public Works Department (unpublished, Vol.I, p.7), the present population of the Andamans can be classified into; the Aboriginal population, the Refugees, the Early settlers and the New settlers.

Today the immigration continues, partly due to increase in the strength of Defence personnel (Murthy, 2005).

As opposed to mainland India, the A&NI has no tradition of caste systems.
Hindi is the main language spoken in the A&NI. (Murthy, 2005)

[2] For the convicts, this was the worst thinkable punishment, since travelling over the 'Black Waters', referred to as 'Kalapani' in Indian scriptures (Pearson, 2010), was a taboo which meant loosing all connection to ones previous life, including family, cast and property. (Field note:Interview with documentary filmmaker)

In 2001 the Andaman Islands had 314,239 inhabitants in total and the decadal population growth rate was +30.14%. The indigenous population showed a decline in numbers at -19.61% in decadal growth rate and their ratio compared to the non-tribal Andaman population was 1:751. (UNESCO, 2010. p.17; www: Census of India)

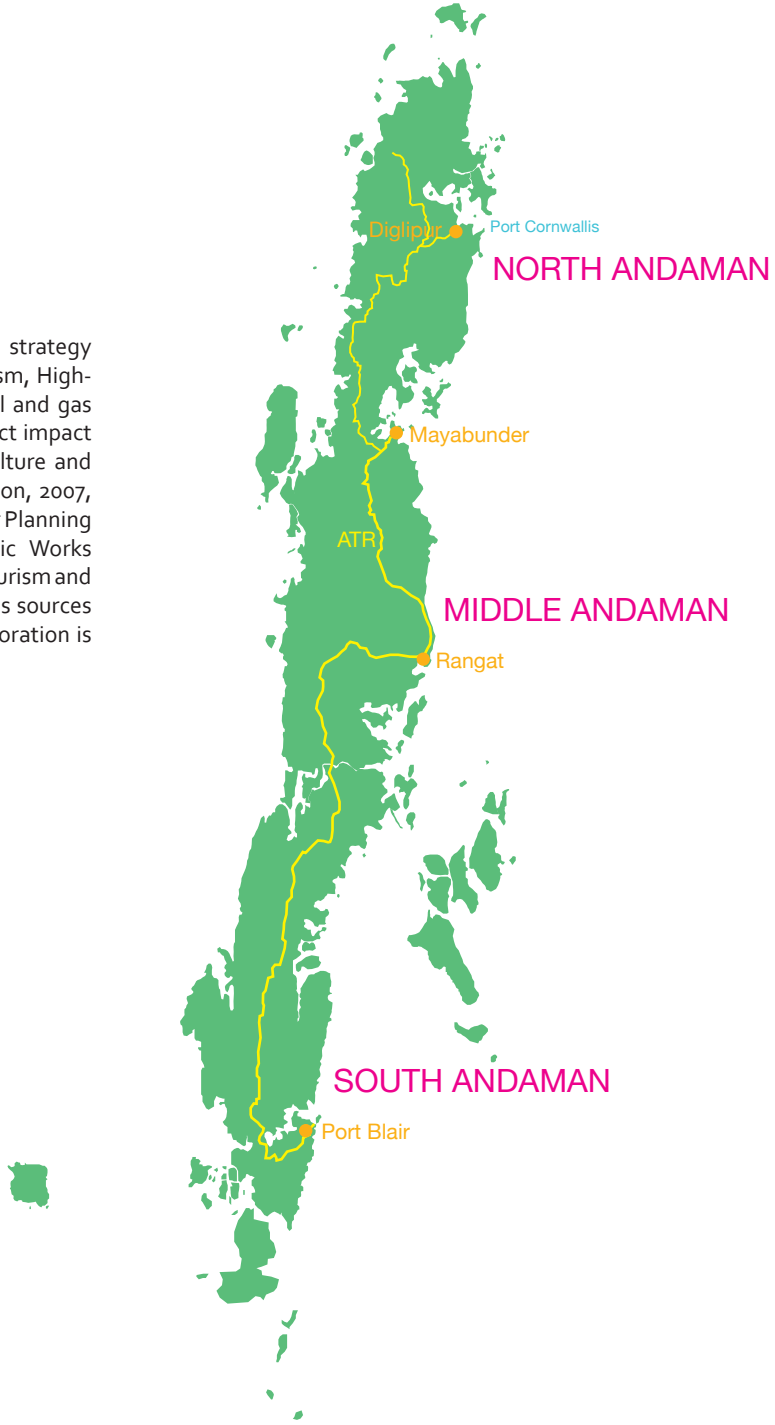
Port Blair

Land use

The Andaman land area consists of 90% reserves and protected areas of which 36% are tribal reserves, including the Jarawa-reserve on South and Middle Andaman; the Onge-reserve on Little Andaman; Strait Island which is inhabited by the Great Andamanese and North Sentinel Island, inhabited by the Sentinelese. There are four National Parks on the Andamans; Mahatma Gandhi Marine, Mount Harriet, Rani Jhansi Marine and Saddle Peak. Considering the Nicobars, the whole district is tribal reserve and includes four wildlife sanctuaries, two national parks and one biosphere reserve. (Planning Commission, 2007)
The reserves of the Jarawa and Onge tribes, notified in 1957, were vastly diminished in the 1960's and 70's, as there was demand of land for settlement and construction of the Andaman Trunk Road, ATR (Equations, 2008, p. 17).

The construction of the ATR started in 1973 and was fully completed in 1989. It stretches between Port Blair on South Andaman and Diglipur on North Andaman, in some parts cutting through the reserved land of the Jarawa. (Weber, 2005; UNESCO, 2010) The ATR (see map) is under intense debate since it has come forth that illegal guides takes tourists on 'human safaris' to see the Jarawa (www: The Guardian; Survival of tribal people, 2012b). In 2002 the Supreme Court of India demanded that the road should be closed down, but the decision has not been implemented (UNESCO, 2010, p. 85).

Since the 1950's, forestry and agriculture has been the thrusts of economic development on the Andamans. Common crops grown are rice, bananas, tropical fruits, rubber, oil palm and some varieties of spices. As the backbone of Island economy, the Forestry sector was one of the primary sources of employment, livelihood and revenue until the late 1990's. In May 2002, the development took a sudden turn as the Supreme Court of India ordered that commercial logging should stop and that the licence of wood-based industries and sawmills were to be revoked from March 2003, to preserve the ecology of the Islands. The Administration was then forced to identify new strategies for promoting jobs and economic growth and the Island Development Authority came up with a strategy including four new thrusts of development; Eco-tourism, High-value agriculture, Deep-sea fisheries and Deep-sea oil and gas exploration. The three thrusts that pose the most direct impact on Island ecology are Eco-tourism, High-value agriculture and Deep-sea oil and gas exploration. (Planning Commission, 2007, p. 13) In the new Draft Report Master Plan For Port Blair Planning Area – 2028 (Town Planning Unit Andaman Public Works Department, unpublished, Vol.I, pp. 53-54), fisheries, tourism and agriculture (high value and low volume) are targeted as sources of economic prospects, and deep-sea oil and gas exploration is not mentioned.



Political profile

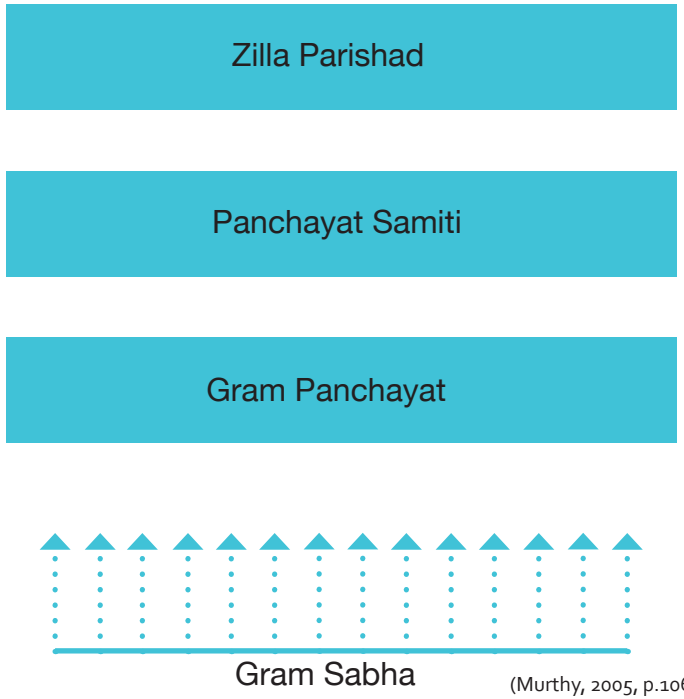
Since 1956, the A&NI are part of the Union Territory of India, which means that they haven't got an autonomous bureaucratic structure of their own like the states of India, but are ruled under the central Government in New Delhi, supervised by a Lieutenant Governor appointed by the President (Venkateswar, 2004, p.14). In 1974, the Andaman and Nicobar groups became separate administrative districts under the Union Territory. While some areas and Islands of the Andaman District are open for tourism, the Nicobar District has very restrictive rules of entry, due to the above mentioned Protection of Aboriginal Tribes Act (Equations, 2008, p.3). Each District has sub-divisions, which are then divided further into tehsils: equivalent to counties.

In the Andamans, there is a Municipal Council in Port Blair, which is the only urban area on the Islands, and the rural villages are served by 44 Panchayats, dispensing justice to the people (Town Planning Unit Andaman Public Works Department, unpublished, Vol.I, p.5). The Panchayati Raj Institutions, PRI, is a nation-wide concept serving to decentralize power and promote local self-government. Through the system, locally elected people contribute to tasks such as preparation of plans considering social justice and economic development, and implementation of schemes for these issues. The system has a three-tier function at village (Gram Sabha), intermediate (Panchayat Samities) and district (Zilla Parishad) level in the Andamans, and consists of publically elected representatives at village level, who chooses among themselves representatives for the district level. (Town Planning Unit Andaman Public Works Department, unpublished, Vol.I, p.5; Murthy, 2005)

One or several villages can be constituted into a Gram Sabha, where persons in electoral roles facilitate people's participation in decision-making. The Gram Sabha is the general body of the Gram Panchayat, which is the village level self-government institution. (Equations, 2008, p.5) The Pradhan is the elected head of the Gram Panchayat and works with the Gram Sabha, and he/she also takes part of policy formulation within the Union Territory. It is the overall responsibility of the President to ensure that the Panchayats are given sufficient power to function as institutions of self-government. (Murthy, 2005)

According to the statement of one of our interviewees, Pradhan of a Andaman Gram Panchayat office, the PRI system generally works well on the Islands with a high amount of voters, but there are problems considering inertia in the bureaucratic process, as it is very time-consuming to get approval for new ideas and solutions from higher authorities (Field note: interview with Pradhan of Andamanese Gram Panchayat).

Panchayati Raj Set-up on Andaman Islands:



(Murthy, 2005, p.106)

The MoEF and the Department of Environment and Forests

The Department of Environment and Forests - Andaman and Nicobar Administration, is the nodal agency regarding the A&NI environment and forests. As a department under the Administration of the A&NI it comes directly under the Ministry of Environment and Forests (MoEF), which has jurisdiction and is in charge of administration over the coast and protected areas of the A&NI. (Equations, 2008, p.77)

As a consequence of the 2002 Supreme Court Order, which led to abolishing the logging of forests on the Islands from 2003, the Forest Department was converted from a "commercial" to a "service" department. From focusing on regulating the timber trade which brought revenue to the A&NI Administration, their priorities have now changed to promoting conservation of the Islands ecology. (Planning Commission, 2007, p.13; Equations, 2008 , pp.77-78)

The reserved and protected forest areas of the Islands come directly under the jurisdiction of the Department and they are responsible for their conservation. Within the boundaries of these areas, any development activity requires their permission. According to their home page, their main tasks at present is to plan, formulate and implement policies and programmes for conservation, protection and management of forests and wildlife in the UT (www: Department of Environment and Forests, Andaman and Nicobar Islands).

The MoEF has in recent years entered into the tourism arena, promoting eco-tourism which has also been introduced on the Andamans. The Forest Department are not involved in tourism development and promotion directly, but sustains some eco-tourism activities of small scale in the protected areas. They define their role as facilitators of eco-tourism and other activities which are regulated and demands permission in protected areas on the Islands. (Equations, 2008, p.77-78)

HISTORY

Life on pre-colonial Andaman Islands

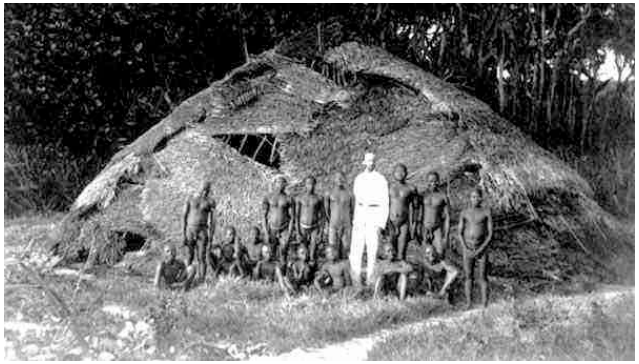
The early history of the indigenous people of the Islands is to a great extent unknown to scientists. Although situated on the trade routes of India, Burma and the Far East, there seem to have been little impact from either East or West on the inhabitants. The Andamanese is a collective description of the indigenous inhabitants of the Andaman Islands who were identified as of the Negrito race, by the renown British Naval Officer Maurice Vidal Portman (1860-1935), who was stationed on the Andamans as Officer in Charge of the native Andamanese inhabitants for 20 years in the late 19th century. (Portman, 1899, p.309) Based on traditional myths and findings of so called Kitchen-middens; piles of remains of for example oyster shells from former nomad settlements, it can be estimated that the Andamanese have dwelled on the Islands for thousands of years (Ibid, pp.18-19).

Social anthropologist Radcliffe-Brown, who conducted fieldwork on the Andaman Islands between 1906 and 1908 was the first in his field to categorize the Andamanese into; the Great Andaman Group, including all the indigenous inhabitants of Great Andaman Island except the Jarawa tribe, and the Little Andaman Group, including the Onge of Little Andaman, the Jarawa of South Andaman and the Sentinelese of North Sentinel Island (Radcliffe-Brown, 1922). Irrespective of these tribal divisions, the population was also categorised as either "Ar-yauto" (Coast-dwellers) or "Erem-taga" (Jungle-dwellers), but many tribes included members of both categories (Portman, 1899, p.25). The Coast-dwellers were described by Portman as residing mainly by the coast where they lived chiefly from food obtained from the sea. They had great skills in swimming, diving and shooting fish, and were generally considered to have superior knowledge of fish and marine life. The Jungle-dwellers were ascribed expert skills in tracking, orientating themselves in the jungle and hunting pigs. (Ibid, p.26)

The indigenous people of the Andamans thus lived as hunter-gatherers. According to Radcliffe-Brown, they were semi-nomadic within the territory of the local group, and moved between different established campsites according to the varying seasons, or due to specific events such as for example the death of a group member. (Radcliffe-Brown, 1922, pp. 29-30)

Ownership of land was common, and all members had equal rights of hunting and gathering in the territory. In order to hunt on the territory of another group, one had to ask for permission. Considering some specific matters there was a notion of private ownership though, for example, a man could find a tree in the forest suitable for building a canoe and thus claim it by describing its appearance and location to the other members of the group. To fell the tree claimed by another was taboo. (Radcliffe-Brown, 1922, p.41)

The population lived in close relation to nature. Their culture and social organisation were deeply rooted in their local territories and as hunter/gatherers and they were not acquainted with the tradition of agriculture. Krishnakumar refers to them applying a "broad spectrum economy", as they collected fruit, roots and tubers while engaged in hunting and fishing. This strategy minimizes the risk of exhausting any particular resource, and if one was temporarily not available, another could replace it. (Krishnakumar, 2005)



A Great Andamanese communal hut. The picture was taken in the 1880s and shows M.V. Portman with "his" Andamanese. (Weber 2006b)

The presence of the colonial power and the decline of the indigenous population

The British settled on the Andaman Islands for the first time in 1789, in order to establish a safe harbour on their trade routes, as well as to investigate the possibility of founding a penal colony for deportation of offenders from British India. The colonization was initiated by Lord Cornwallis, who sent Lieutenants Colebrooke and Blair to the Islands to conduct a survey for the mission. (Venkateswar, 2004) The first settlement was on Chatham Island on the south-eastern side of Great Andaman, (where later on the administrative centre of Port Blair was founded), but after three years it was moved to a bay on the north-eastern cost (named Port Cornwallis after the Lord), due to a better strategic location. (Ibid, p.90) In 1796, the colony was abandoned though, due to harsh conditions and diseases which claimed many lives. It was not until 1857-58, that the attempt of colonization was realized, and the city of Port Blair along with its penal colony was founded. (Radcliffe-Brown, 1922, pp.9-10)

The Andamanese indigenous tribes had lived in relatively protected isolation before the British colonizers came to the Islands in 1789. As they thus lacked immunity against the common diseases carried by the settlers, the encounter had a disastrous effect. (Venkateswar, 2004, pp.90-91) Apart from the introduction of decease, the clearing of forests in order to establish the first settlement on Chatham Island, is thought to have caused conflicts between the local groups of Andamanese inhabitants, as members of the Jarawa tribe was displaced and forced into the territory of the Aka-Bea-da of the Great Andamanese. Thus both decimated by decease and deprived of their local territory, the Jarawa population drastically diminished during this initial phase of colonization. (Portman 1899, pp.703-704; Venkateswar, 2004, pp.90-91)

The British officers were eager to establish a 'friendly' contact with the Andamanese people, and some Islanders were thus detained on ships in semi-captivity while the Officers tried to impress them. They were released after a period with gifts

such as tools, cloth, pots or beads, so they could tell the rest of their community about the good intentions of the British. (Portman, 1899, p. 217) This 'friendliness' of the Officers had hidden agendas, as they wished to reduce the violent resistance and 'hostility' of the Andamanese, and also to assimilate them into 'civilized' customs, as can be derived from the letter cited by Portman below. It is written by C. Beadon, Secretary to the Government of India and directed to Dr. F. J. Mouat and the 'Andaman Committee', who had been sent to the Andamans to locate the appropriate site for the establishment of the Penal Settlement. The letter is dated 15th of January, 1858:

> *The Governor General in Council entirely approves of your having brought to Calcutta the inhabitant of the Andamans, who after the unprovoked attack made by the savages on the boats of the expedition, fell alive into your hands. His Lordship in Council had hoped that this man would have become an useful medium of communication between the Officers of Government and his own county-men, and have given assistance in reclaiming them from the state of profound and primitive barbarism in which they now exist.*
> (Portman, 1899, p.216)

As the penal colony of Port Blair was built and established in 1857-58 on the location of the first settlement, the Islanders put up a tough resistance. Determined to stay in their territory, they made multiple raids against the settlers. (Radcliffe-Brown, 1922, p.10) In an attempt to improve the relations, the British founded an institution known as the 'Andamanese Homes'. They were set up to provide free rations, lodging and medical assistance, and through offering these benefits, the British hoped to assemble and pacify the indigenous population. As Radcliffe states, this attempt succeeded considering all the Andamanese tribes except for the Jarawas, who kept their hostile position. (Ibid, p.10)

The Andamanese Homes (Radcliffe, 1922), or Andaman Homes, as referred to by Portman (1899), were thus enclosed areas, where a part of the indigenous population were detained while being assimilated into British culture. According to Krishnakumar (2005) there was an acknowledged connection between the 'Homes' and the spread of infectious diseases, such as syphilis, and children born in these artificial dwellings often died in infant age. Another malevolent impact on the Islanders was the introduction of alcohol and tobacco, which caught many in addiction. Thus, as a consequence of the contact with 'civilization' through the 'Homes', the population of the Andamanese declined drastically. As Krishnakumar also critically observes, there is an obvious contradiction in the fact that the Andaman Homes functioned both as a site of acculturation and ethnographic observation. (Ibid)

Below and right: Remnants from the British colonial era on Ross Island outside Port Blair.

The changing economy and ecology of the Andamans

Under British rule

As concluded by the investigation of life on pre-colonial Andamans, the population then lived in close relation to nature. Their culture and social organisation was deeply rooted in their local territories where they applied a broad-spectrum economy as hunter/gatherers, and they were not engaged in any agricultural activity.

With the establishment of the penal colony, came another view of using the resources though. The British began the felling of trees in order to clear land for settlements and the indigenous were forced to move deeper into the forests, away from their local territories and ancient hunting grounds. It gradually became clear to the colonizers that the vast forests of the Andamans had potential to facilitate both forestry and settlement, and this led to the formation of the Forest Department in 1883. This department was to be responsible for exploitation and management of the forests and from the beginning the development of the forestry sector depended on market imperatives. (Krishnakumar, 2005) The political agenda of the colonial powers considering the Andaman landscape is made clear through the words of Lieutenant H.C. Beadon, Chief Commissioner of the Andamans in 1923:

> *(...) the aim of the forest department in Andamans should be commercial, that is to produce sawn timber and the normal forest operations of regeneration and the like should take back place.*
> (Quote derived from Krishnakumar, 2005, p.108)

Before the formation of the Forest Department, Teak from Burma had been imported to the Andamans to fill the need of timber for construction, but as the local assets was recognized, Andaman Paduak replaced it (www: Encyclopaedia Britannica). Through the Calcutta International Exhibition in 1883-84, and the Edinburgh International Forestry Exhibition in 1884, the Paduak also became known and appreciated by an overseas market, and the export of Andamanese timber began. In 1906, 1914, 1935, and 1936-39, efforts were made for scientific management of the forests through the implementation of 'working plans', but due to a range of socio-political reasons, they all failed to be realised. Vast areas of primary forests where thus cleared in order to make place for infrastructure, plantations and agricultural development, while the excess profit was absorbed into the economy of the mainland. (Krishnakumar, 2005; Venkateswar, 2004, p.16)

During the first half of the 20th century there was an exponentially increasing demand for timber, and the settlers on the Islands made an escalating impact on the landscape through the development of agriculture. Large forest areas, especially in the southern part of Great Andaman, were felled and people from the growing amount of villages held cattle which grazed on the outskirts of the settlements, causing further destruction on the surrounding forests. (Krishnakumar, 2005)

The demand for timber boomed during World War I and the previous selective felling strategy, was thus abandoned in favour for the 'clear-felling' method. This led to over-harvesting of the primary forests and caused irreversible damage. During World War II, extensive amounts of timber was extracted for the needs of the Allied forces, and when the Islands were occupied by the Japanese between 1942-45, thousands of tons of timber was felled and shipped to Burma and Penang. (Chengappa, 1950) For a period immediately after the Wars, a more scientifically managed extraction was practiced, as large areas of forests in the South Andamans had been destroyed due to bombings and over-felling. As there was a great need of timber for the reconstruction of areas such as settlements, the British implemented new forestry methods based on both natural and artificial regeneration. The initiative didn't last long though, as the partition of India led to a new demand of land for settlement, and thus, large tracts of forest needed to be cleared. (Krishnakumar, 2005)

Throughout the colonial era, the forests were an important resource for the colonizers. During the construction of the Indian rail network the Andaman forests were affected in multiple ways, as new forest laws tore apart the established methods of forest resource use and the Andamans became a wheel in the machinery of the world capitalist economy. The Forest Department of the colonial era further fuelled the exploitation of the Andamanese forests through leasing out Islands rich in timber to private agencies for felling. (Ibid)

Independence

After India gained its Independence in 1947, the country, scarce of forests but with an extensive need for timber due to the increasing industrialisation, decided to take advantage of the great resource of timber from the Andamans. The Islands subsequently came to serve mainland India with both wood for the domestic industries and through export as a way of earning income to the Government. The main task of the Forest Department in the first phase of Independence was to clear land to implement India's 'colonization schemes', as the Government identified the need for demographic growth both for the purpose of developing available land through agriculture, and to acquire labour to work in the forest industry. (Krishnakumar, 2005)

In 1952, a five-year plan for the development and colonization of the Andamans was approved, stating that land should be cleared for the purpose of settlement of 4000 agriculturist families. The following five-year plan included clearance for almost 3000 more. Many of these settlers were people who were displaced from what had now become East Pakistan. Between 1949 and 1961, 8000 hectares of forest was cleared for agriculture, and this development continued well into the 1980's. As environmental impact studies to assess the effect of the extensive deforestation of forests and mangrove swamps were rare, and not shown any particular interest when they were made, the development came to rely on economic opportunity solely. In defiance of the warnings from various experts in the fields of soil, meteorology, land and forest, extensive tree felling continued on the Islands until the late 1990's. (Ibid)

CONCLUSION BACKGROUND:

LANDSCAPE IN TRANSITION

As can be concluded from this mapping of the Andaman Islands today and investigation of what has taken place through history, we derive that both life and ecology of the Islands had developed slowly and mutually in tuned for millennia. But around 150 years ago, there was a clear break point, and what had built up through this gradual process was subjected to rapid change. The British colonization, as well as the implementation of the Governmental 'Development Schemes' post Independence, introduced clear-felling, agriculture and an unplanned development based on revenue. A vast amount of settles of different origins came to the Islands, and brought new ways of using the resources, not always adapted to the local prerequisites. These anthropological factors have all had a major impact on the Andamans and both eco-systems and the ways of life of the indigenous population have thus been threatened.

The rising sea levels and the position of the Islands on the active fault lines, are 'natural' factors that puts the Islands at risk of disasters such as the 2004 tsunami; causing devastation to both environment and the lives of the people affected.

Looking at the product of these natural and cultural forces, the picture that unfolds of the Andamans is one of a complex and fragile landscape, striving for balance and dealing with a past of which the consequences are far from resolved. It is a landscape where modern life-styles are encountering ancient ones and where economic development must be carefully calibrated against the resilience of the eco-systems.

Even though the Andamans are facing many problems today, there is also a whole range of positive indications; logging of forests have been restricted and the Forest Department now engage in preservation; all mangroves of the Islands are protected; eco-tourism has been targeted as a goal of the new Master Plan for Port Blair and there is an overall well-functioning system of self-governance, striving to increase public participation in planning from grass-root level. There is no tradition of caste systems on the Islands that prevails through discrimination and the vast cultural mix of the Islands can be a great asset if strategies for sustainable development and use of resources are agreed upon. There is also still an enormous diversity of species in the Andamans and many people working for the protection of it, such as the prominent NGO's, which we will introduce further, later on in this thesis.

We will now continue this study of the Andaman landscape through *Theoretical Investigations*, where we search for a deeper understanding of the forces which have molded it and the lingering unfavourable perceptions of swamps. We also look at strategies for preservation, education and spreading awareness about mangroves and directions of how to promote local landscape literacy.

02. THEORETICAL INVESTIGATIONS

INTRODUCTION

An important part for us in our work with this master thesis has been to dig deep into theory, as a way to gain a better understanding of the Andaman landscape and the Mangrove swamps. What we wanted to focus on in theory was the different representations of them, in order to understand how these representations have contributed to changes in the environment. Overall, it was the relation between nature and culture that became important to discuss in relation to our proposal: Muddy Feet.

Reading theory and discussing representations made us think in new directions and revealed stories of layers in the landscape which were hidden from us before. Theory was also found to be an important tool for us in enhancing our proposal of an educational trail in a mangrove area. The wider context gave us more arguments to its importance as well as it influenced our directions and intentions with the proposal.

Our theoretical investigation draw on literature from different scientific disciplines to obtain a transdisciplinary approach. We will discuss both past, present and future landscapes to get an idea of what needs to be done today and to understand that our proposal of today will involve all these landscapes at the same time; that they are interconnected. This theoretical investigation is divided into three different parts:

PART 1

Here we will discuss the concept of landscape and how it is related to power and representations. Our focus is on colonization, because this was an important breakpoint in the history of the Andaman Islands that led to vast changes in the landscape. We want to understand the perspectives of the colonial power, regarding how the colonizers perceived landscape and the right to conquer the land of another.

PART 2

In this part we take a closer look at the landscape of mangroves. To understand why mangroves have become under such threat as they are today, we investigate theoretically how mangrove swamps have been represented through time. We also study the image of mangroves today, in relation to the image of the Andaman Islands as Paradise. We discuss how mangroves symbolize wilderness and authenticity, and how this can be both valuable and problematic concerning its preservation.

PART 3

In this last part we will move on to what is important to do today in order to promote a sustainable development of the environment of the Andamans Islands, and the mangroves in particular. Here our focus is on mangrove management, eco-tourism and education. We look at a reference project by landscape architect Anne Whiston Spirn and discuss the importance of reading landscapes, including all their different layers. Through these investigations we examine methods, which are then processed and incorporated into our proposal for the mangrove area adjacent to ANET.

PART 1

LANDSCAPE AS POWER

To understand landscape changes on the Andaman Islands, how they came to happen and how we can lead way for preferred changes in the future, it is important to first discuss the concept of landscape itself.

According to cultural geographer Olwig (2004; 2007), the physical landscape is changing with time, and so are our perceptions of it. Landscapes are shaped all the time through different activities and customs, but also through our imagination, politics and laws. Our own experiences and knowledge, as well as cultural representations, values, ideals, meanings, religions and traditions all affect our perception of landscapes. Landscape therefore means both the physical land; soil, vegetation etc. and the different ways of perceiving it, both personally and collectively within a culture.

Cultural geographer Denis Cosgrove also writes that: "Landscape is not merely the world we see, it is a construction, a composition of that world. Landscape is a way of seeing the world" (Cosgrove 1984b, p.13). So, in Cosgrove's elaborations, the concept of landscape deals more exclusively with a way of seeing which has evolved in Western culture since the renaissance. One has to be aware of these differing definitions when discussing the concept of landscape, because a danger with treating the landscape as a perspective can be that the physical landscape is dematerialized.

To start this theoretical investigation, we will in PART 1 explore the writings by above mentioned Denis Cosgrove, and critical theorist in the arts and human sciences W.J.T. Mitchell, to gain insight considering the justification of the appropriation and exploitation of colonies by the British Empire during the height of its power. As a point of departure we look deeper into the concept of landscape, where Cosgrove's modernist interpretation of the landscape as a view and his thoughts on land as commodity, is complemented by Mitchell's post-modern approach through which the landscape is investigated as a medium and Olwig's elaborations on circulating reference and representations. We will discover a connection between the concept of landscape and power.

Cosgrove on the Landscape as view

According to cultural geographer Cosgrove (1984), we can trace the scenic use of the term 'landscape' back to the 15th and early 16th centuries. It was conceived as 'a way of seeing the world', a visual concept, deriving from the enquiries of Renaissance humanism and its ideas on organization of space. The roots of the concept are anchored in scientific theory and knowledge, which was also the case concerning the practical sciences of the Renaissance, for example map-making, navigating and mercantilism. The central invention that enabled the concept of landscape as a visual term to emerge was the development of the linear central perspective, according to Cosgrove. Perspective had been studied already in the 12th century, through the field of mathematical arts, but it was in 15th century Italy that a coherent linear perspective was conceived, theoretically and practically. The linear perspective completely altered the apprehensions of space in fields like geography, cosmology, architecture, painting and sculpture.

It was the Florentine humanist and architect Alberti, who in his Della Pittura from 1435 demonstrated a technique where through applied geometry; it was possible to reproduce the appearance of a gridded square placed on the ground, as perceived by the human eye from a horizontal angle. It was thus possible for a painter to identify the shape and measurement of this grid, and create an illusion of three-dimensional space to the (one-eyed) beholder. Alberti organized this model based on rays of vision, emanating from the eye, which diverged into a visual triangle. Through this construction, the observing eye became the 'centre of the visual world' and the artist empowered, as he (as it most definitely was a he during this time) alone determined the scope of reality revealed and the arrangement and prerequisites of this reality. This visual appropriation of space through linear perspective, thus makes the space that is framed the property of the detached observer, as it is his gaze that grants it existence.

The development of perspective was also important for the Renaissance merchants as its roots in mathematics and geometry allowed them to determine the volume and value of goods by mere visual assessment and calculation. It was also a key tool used by the mapmakers and navigators of the time and during the epoch, the cartographic knowledge flourished. Survey maps of the great cites were made which revealed the rational order of these geometrically defined areas and through the elevation into a birds-eye view, a distant and commanding ideology of space was conceived.

As linear perspective was sprung from geometry and had the capacity of organizing and controlling spatial coordinates it was thought of as "(...) the discovery of inherent properties of space itself" (Cosgrove, 1984a, p.51). Through theological and philosophical investigation it was also proposed that the presence of God was to be found in the higher order of this geometrical organisation. As the human being was made to the image of God, and these divine geometrical proportions could also been found replicated in the human body, the man-figure was, as God, to be found at the centre of Renaissance space, and serving as the temporary controller and creator of the world.

As the realist illusion of space evolves through the development of linear perspective in landscape art and cartography, it brings with it the notion of landscape being something which can be appropriated into real property. But even though we may be able to show dominion over an appropriated area through the view of it as landscape, we cannot, as the perspective tries to make us believe, enter into it 'truly' on those premises. Cosgrove states:

> *Landscape distances us from the world in critical ways, defining a particular relationship with nature and those who appear in nature, and offers us the illusion of a world in which we may participate subjectively by entering the picture frame along the perspectival axis. But this is an aesthetic entrance not an active engagement with a nature or space that has its own life.* (Cosgrove 1984a, p.55)

In the late 16th century, the term 'perspective' appears for the first time as a reference for the spatial image projected on a two-dimensional plane, in English language. The use of perspective proved to be a powerful tool for promoting the new image of England during the Elizabethan time, where the 'truth' of landscape representations and maps fuelled nationalist ideology. In the early 17th century, the saying 'getting something into perspective' appeared, and thus 'perspective' also came to entail "(...) the correct way of seeing the social, moral and political order of the world" (Cosgrove, 1984b, p.194).

By the mid 17th century the term 'prospect', referring to an outward look from the point where one stands, and gazing both out in space and forward in time, became interchangeable with the term 'landscape'. The prospect was commanding and implied control both politically, socially and spatially. These prospects inspired painting as well as landscaping and poetry throughout both 17th and 18th century England and they were representations of power, stretching over space and time.

Land as commodity

As a complement to understand the term landscape in western culture, Cosgrove means that we also need to look at the theoretical economic background of the development described above. By this he refers to the transition from feudalism to capitalism that took place between 1400 and 1900, which meant a radical alteration of the relation between human and land. Feudalism and capitalism are general terms, and it is only in theory that one can be the sole economic model of a society. According to Marxist theory they each stand for a mode of production in which people together "produce their individual and collective existence" (Cosgrove, 1984b, p. 39). In feudalism, production is for use rather than exchange and it is referred to by Marxists as a 'natural economy'. This means that:

> *(...) neither those who produce, not the tools with which they produce, nor the natural environment in and from which they produce, their means of existence and life, nor indeed the products of their labour, are regarded as commodities for purchase and sale in the market-place.* (Cosgrove, 1984b, p.41)

The feudalist model is fixed in location as the producer is united with the soil as a means of production and the serf is also bound theoretically to this soil where he works by law and custom.

In the theoretical capitalist model, the market is self-regulating, and the prices are thus determined by supply and demand. All that is produced, including the labour that produces and the earth itself, is open for exchange on the market. The purchase of commodity makes it the legal property of the buyer. The value of bought property is determined in the process of exchange, without being a reflection of its present or potential use. This makes the capitalist production model based on exchange rather than uses, and product, labour and land all become commodities. The capitalist model thus requires mobility of both labour and capital and is in this matter the total opposite of the location-bound feudal model.

Cosgrove elaborates on the theory that the key to understanding the development and idea of modern landscape lays within the struggle of redefining 'land' in terms of capitalist relations. He describes the dual relationship as follows:

> *In a natural economy the relationship between human beings and land is dominantly that of the insider, an unalienated relationship based on use values and interpreted analogically. In a capitalist economy it is a relationship between owner and commodity, an alienated relationship wherein man stands as outsider and interprets nature causally.* (Cosgrove, 1984b, p.64)

The alienation of capitalism is also achieved culturally through the composition of linear perspective in painting, which we have investigated above. In the idea of landscape, both types of relationship are held in an unstable unity, threatening to elapse in either direction, according to Cosgrove. The artistic expressions of the western landscape idea have originated partly to serve the purpose of promoting the acceptance of the property relationship, while upholding an image of the unalienated land as use. When the capitalistic model then gained what is still perceived as an unperturbed hegemony, the moral force of landscape painting was deemed irrelevant, and it "became a residual in cultural production" (Ibid, p.64).

Landscape as truth

Through Cosgrove's analysis of the rise of landscape painting, the central linear perspective is conceived out of the foundation of a divine, geometric structure, which brings with it a sense of 'truth'. As man is central in the Renaissance world as the image of God, and the proportions of our bodies coincide with the proportions of divine geometry, we perceive ourselves as granted with the permission to appropriate space as the agents of God. This concept of landscape was the property and tool of the higher classes though, and not of the workers or customary dwellers.

To conclude, landscape in this sense, has to do with power and control over land. The British Empire, being entitled to the divine right of structuring space and through capitalism to appropriate land found as commodity, was entitled to this expansion in a double sense.

So, according to Cosgrove, the concept of landscape is a cultural construction and a way of seeing, based on an anthropocentric perspective. This way of seeing the world and perceiving that which is represented as landscape as 'true' is legitimized because it is founded on perfect geometry and scientific measurements. It is also a powerful tool for appropriating property as the representation of landscape, and through it the actual land, is owned by the eye of the beholder.

Mitchell on the landscape as a medium

W.J.T. Mitchell is interested not just in what landscape is or means but what it does - how it acts as a medium. In comparison to Cosgrove and the modernist way of understanding landscape, Mitchell stands for a postmodern approach and means that landscapes do not only reflect cultures, politics, and identities but also acts as mediums of power in and by themselves. For Mitchell landscape is an instrument of cultural force, a medium in creating national and social identities. He refers to landscape not as "a specialized genre of painting", but as "a vast network of cultural codes", a medium of exchange, which, like money has no value in itself but can express a "potentially limitless reserve of value" (Mitchell, 1994, p.5).

According to Mitchell's article *Imperial Landscape* (1994) we ought also to investigate the possibility of the 'landscape'-medium as being something that evolves in relation to imperialism itself, and not solely the form in which it developed during the Western renaissance.

Imperialism and landscape

Mitchell discusses the relation between landscape and imperialism, where imperialism, being a multifaceted and heterogeneous phenomenon and hard to frame is summarized as:

> *(...) a complex system of cultural, political, and economic expansion and domination that varies with the specificity of places, peoples, and historical moments. It is not a 'one-way' phenomenon but a complicated process of exchange, mutual transformation, and ambivalence.* (Mitchell, 1994, p.9)

Considering landscape, Mitchell emphasizes that it is not solely conceived through imperialism, nor a mere tool for its designs, but more like a "dreamwork of imperialism" withholding "both utopian fantasies of the perfected imperial prospect and fractured images of unresolved ambivalence and unsuppressed resistance" (Ibid, p.10).

Mitchell argues further that the narrative of 'the rise and fall of an Empire' has an analogy in the Western idea of 'the rise and fall of landscape painting', where Mitchell describes the latter as "a threefold process of emancipation, naturalisation and unification" (Ibid, p.12). Thus landscape painting would be emancipated as it was released from the ties of serving only decorative and conventional purposes to embark on the quest of 'painting nature for its own sake'. The emancipating genre of landscape painting includes also the liberation of nature, in the sense that it frees it from convention and thus 'naturalizes' it. The goal of this transition from convention to nature, through the development of a vocabulary of rendering natural scenery accompanied by the acquired ability to see nature as scenery, is to unify nature in both perception and representation of landscape.

This development ascribes modern Western culture legitimacy to know 'nature', both in its 'real' form and through the 'natural' language of landscape painting, which enables the 'modern culture' to claim to be superior to those great cultures that preceded, like ancient China which knew landscape only through 'mystical reverence for the power of nature' and not for its own sake. Empires like ancient China have traditionally applied "sacred ancient languages" (Ibid, p.13) such as ideograms to comprehend a 'unified global community'. These signs where non-arbitrary and indicated 'pure' reality. Such signs are not part of the Western ideas, but their language could possibly be compared to the idea of emancipated landscape painting, Mitchell states, and he refers to this discourse as a pseudo-historical myth required by the logic and grammar of the landscape concept. On account of this 'sacred silent language', Mitchell thus poses the question if landscape has the same function in Western imperialism, as a "medium in which it 'emancipates', 'naturalizes' and 'unifies' the world for its own purposes" (Ibid, p.13).

If one sees landscape as a medium of cultural expression, multi-sensuous and inscribed with meanings and values, it is artifice in itself; it already represents something to the beholder at the first gaze, whether constructed by hand or by 'natural' forces. Landscape painting could thus been seen as a secondary representation of natures representation of itself. This can be compared to the writings by Olwig (2004) concerning the process of circulating reference.

Circulating reference

Olwig states that we as humans can never comprehend nature as it is in itself because of its complexity. We therefore create representations of it in order to structure, understand and give meaning to it. There is then an on-going interaction between what can be called the physical land, which in itself is a representation, and our further, deliberate representations of the same land through for example landscape painting (Ibid). This is a process of circulating reference, described by Olwig as follows:

> *The landscape is not simply a form of representation, but rather an expression of a circular, dialectical, interaction between differing modes of representation and processes of social and environmental change that transform both.*
> (Olwig 2004, p.53)

This means that different representations and worldviews through history have had big impacts on how landscapes have transformed. Furthermore it means that, due to the constant influence they have on each other, it can be very hard to distinguish between reality and representation. When it happens that representations become so taken for granted that we don't perceive them anymore, Olwig calls this process 'endarkening'. (1993) Olwig means that this endarkening has affected what we

think of as natural and through that, what we consider to be true nature, worthy of preserving.

Landscape as fetishized commodity and the dark side of landscape

Considering landscape as a medium for expressing value, it takes on a symbolical role, Mitchell states. It has no inherent use-value but can like money take part in the system of exchange-value. It can raise the prise of a property due to a grand view or be a commodity to be sold on the market in the form of a flight to a vacation destination where it is again commoditized through the purchase of souvenirs and taking of photos. Mitchell refers to landscape as fetishized commodity when it is subjected to for example being photographed from the exact same angle by an endless amount of tourists. Mitchell states: "At the same time that it commands a specific price, landscape represents itself as 'beyond price', a source of pure, inexhaustible spiritual value" (Mitchell, 1994, p. 15). Landscape in this sense represents itself as an 'ideal estate', in opposite to the 'real estate' of land.

In this ideal property, the economic considerations have no place; this is not a working country. It is poetical, as opposed to material and the labour and cultural forces which have moulded the land as part of the customary landscape are concealed. A similar process is described by John Barrell in his book *The Dark side of the Landscape* (1980), in reference to the representations of landscape in the tradition of Western painting. In these paintings the pastoral landscape is romanticized, and the suffering and unjust conditions of the peasants working on the fields are hidden. Mitchell refers to these representations as possessing a "moral, ideological and political darkness" (Ibid, p.6).

Encoding the land of 'the Other'

As a medium of exchange, imperial landscape is perceived as in a process of 'natural' progress, as it expands its culture and civilization into a 'natural' space. In the process of colonization, "a green and pleasant land" (referring to Blake, as quoted by Mitchell, 1994, p.17) can be turned into a landscape, and this landscape is a medium through which exploitation can be justified as 'natural'.

As the British established colonies on the South Pacific Islands and in Australia during the 18th and 19th century, the lack of a presence of military forces and urbanized imperial civilization of ancient times (like those of India, China and the Middle East), made the areas easy to conquer. In reference to Polynesia, its cultures were seen as the last resorts of precivilized people living in 'natural state'. Consequently, the British identified there a possibility of implementing the European conventions of landscape, as their 'naturalness' would be confirmed in this place of 'real nature', without the resistance of the natives. The Islands were then codified with identities based on what the colonizers wanted to see them as, and Tahiti thus became representative of an arcadian paradise while New Zealand was perceived and manifested as romantic wilderness. (Ibid, p. 18) Further, the conversion of the native Maori population of New Zealand to Christianity by early missionaries, indicated the possibility of the land becoming a 'pastoral paradise', where:

> *(...) the best elements of British society might grow into an ideal nation, bringing the savage inhabitants into a state of blessed harmony with this ideal nature.*
> (Mitchell, 1994, p.21)

With Australia, the process of encoding proved more difficult, as the British couldn't decide whether it would be "a fearsome, desolate prison for transported convicts, or an attractive pastoral prospect for colonial settlers" (Ibid, p.19). This ambivalence related to the 'European vision' was mediated by incorporation into the narrative of science, reason and naturalistic representation, and it thus constituted a part of the transition towards cutting the bonds to artifice and conventions. The imperial vision thus moves further toward the understanding of landscape as naturalistic representation of nature.

Mitchell also elaborates on the 'end' of landscape, which he describes as a mythical notion, just as the logic and development of it. Considering the art of classical and romantic landscape painting, he declares it exhausted. What remain of traditional landscape conventions today is kitsch; "endlessly reproduced in amateur painting, postcards, packaged tours, and prefabricated emotions." The need to experience scenic beauty has not declined though, the scenario is instead the opposite, as people are now separated from it, and landscape is perceived with nostalgia as "(...) an endangered species that has to be protected from and by civilization, kept safe in museums, parks and shrinking 'wilderness areas'" (Ibid, p.20).

CONCLUSION PART 1:

LANDSCAPE AS POWER

Mitchell contradicts Cosgrove's statement that we can trace either landscape or landscape painting to a certain time or a certain culture. Landscape exists in all cultures, in the form of a medium through which both meaning and value is transferred and reconfigured. As such a medium, landscape can be deceitful, as it allows us to naturalise our conventions so they appear to be a universal truth. Mitchell lifts the fact that landscape as a representation seem to have flourished during the height of many empires, so in this sense Britain is not unique. Landscape is not a product of imperialism, nor the design tool of it, Mitchell elaborates further, but its 'dreamwork', in which utopian fantasies and fractured images are conceived. Behind its ideal representation it hides a dark side. The semiotic features of landscape, Mitchell states, generate historical narratives which fits the discourse of imperialism perfectly.

These histories describe the expansion of civilization into the spaces of nature and the process of this swelling as 'natural'. He thus sees the problem of the dark side of landscape within the discourse of landscape itself. Through the construction of pseudohistory, often including origin, rise and fall, landscape painting engages in a quest where it emancipates itself from the subordination to convention, to realizing itself through 'naturalistic transcripts of nature' and finally unification of nature through ability to both perceive and represent landscape. This quest is one for 'truth' and 'purity' and through constructing this narrative where the language of landscape is mastered, the modern individual is put in a superior position to all those who proceeded us. As 'we' are then freed from convention and know 'true nature', through our 'sacred silent language' of landscape, we can engage in imperial expansion as a 'natural' activity. The appropriation of, and expansion into the 'nature' of the landscape of others, is thus legitimized, as 'we' come 'pure', knowing its true language.

So, is Cosgrove's elaboration on landscape as a view, derived from an absolute science, describing the mastering of the sacred silent language of the linear perspective, another narrative then, feeding into the self-realization of an imperial power?

Considering the encounter of the British colonial power with the Pacific Islands in the 18th and 19th century, Mitchell's reference to the 'difficulty of codifying' Australia, seems to be relevant to comparison to the Andaman Islands. In the case of Australia, the British were ambivalent as to whether it was appropriate for a fearsome prison or a pastoral prospect. In the Andamans, from what we know from history, the penal settlement and safe harbour was encoded, while the harsh conditions of the Islands, with humid air and tropical diseases might have put them of from seeing in it a paradise or a prospect to begin with. The Andamans were appropriated as safe harbour and penal colony, its flora and fauna was scientifically investigated and naturalistically documented, but it was the forest as commodity that put the Islands on the map of the British Empire. The strength of the capitalist force at the height of industrialization, and the consequent quest for exchange value, put the Andaman assets on sale, despite of the tough resistance of the indigenous population. Market economy thus replaced the broad-spectrum economy of the Islanders, and as a consequence, the resources of the Island were tapped close to exhaustion.

The Andaman Islands of today are faced with a wide variety of environmental threats as a consequence of the aggressive exploitation of resources. Although visible to those who know ecology and are familiar with reports and investigations, the signs of exhaustion are well concealed to the layman. Secondary growth has in many places replaced primary forests and as for the constitution of soil and disappearance of species, this is not something that draws the attention of the eye. What does though, is the lush green, the white beaches and the deep blue sea, and it is on these assets that the forces of capitalism now focus. This indicates a movement towards a new means of acquiring exchange-value, based on the commoditization of landscape through tourism. As described in reference to Mitchell's text above, landscape as commodity can possess a potentially inexhaustible value, as it can be sold and resold. But what Mitchell doesn't answer, is what happens if the wear and tear and traces of consumption caused by visits, affects the appearance, status and thus the exchange-value of the landscape?

As both a 'potent cultural symbol' and commodity, landscape is the object of fetish practice, according to Mitchell. As we will discuss further in the second section of part 2, the landscape of the Andaman Islands is now promoted as a tropical paradise, where the social relations and the history of the customary dwellers are concealed. This we will argue, is a landscape fetishized into commodity. Detached from the physical reality of the Islands, it can be a dangerous medium, projecting an image that prevents a sustainable and just development.

PART 2

LANDSCAPING PARADISE? CHANGING PERCEPTIONS OF MANGROVE SWAMPS

Our perception of nature is changing as a result of driving forces in society. Mangrove swamps have for a long time been represented as dark, mysterious, smelly and dangerous places. To "reclaim" these areas and fill them with new functions was therefore seen as a good way to get rid of the horror. Now, years later, when huge environmental problems can be connected directly to the reduction of mangrove swamps, an international focus lies in promoting the positive sides of the swamp. In this part we are focusing on the changing representations of swamps and how these images are connected to our behaviour towards them. It explores the problems with separating natural and cultural landscapes as well as the power of representations. We are especially looking at this issue in connection to a western idea of paradise. First we will explore perceptions of swamps in general, then mangroves at the Andaman Islands in particular.

In the Andaman Islands, as on many other tropical islands, tourism is a crucial source of income for the local population and the marketing of these Islands, with endless white beaches had the consequence that dense mangrove areas along the coast were eradicated, in order for the beaches to become appealing for tourists. This is changing now though because Andaman Islands want to promote themselves as an eco-tourist destination were an 'authentic' and exploring experience of nature is important for the visitor. Here the complex nature, where mangrove swamps plays an important part, is favoured. So, from being the opposite of paradise are Mangrove swamps now becoming a part of it and what consequences can this change of perception have upon mangroves of the Andaman Islands today?

Eden and Wilderness

First there will be an investigation on the representation of swamps from a western view between the 16th and 19th century. During this time the driving forces of society were demographic changes, introduction of new crops, intensification of land use due to new techniques in agriculture and changing economy by overseas trade (Antrop, 2005). Also Christianity played an important role in our perception and actions towards the landscape of mangroves, and swamps in general. So, to understand the process, we need to go back to where it all began in the Christian view – namely the Garden of Eden.

We have been in search for a paradise on Earth since the fall of Eden (Merchant, 1995). Eden was an initial state of harmony and perfection where we all lived together; humans and nature. Then, God gave humans the ability to master over nature and we were separated from it. After Eve took a bite of the forbidden apple, we fell out of Eden and into a wilderness that only could be mastered by labour. Man became transformers and through labour they would recreate the lost garden on earth. Progress was to recreate Eden and this was done with the help of religion, science and capitalism. (Merchant, 1995; Slater, 1995)

Wilderness in the story of Eden became the place where Adam and Eve were forced. It was connected to fear and didn't have any value in itself, except for that it could be reclaimed and developed into other types of landscapes, such as gardens or cities - the new symbols of Eden. (Cronon, 1995)

During this time, from the 16th to 18th century in the western world, the image of paradise was an enclosed garden and a pastoral landscape (Olwig, 1993). The Mangrove swamp didn't fit into this ideal, and was rather the opposite of paradise. The myth of swamps as hell goes a long way back. (Giblett, 1996, p.139)

Representation of swamps in a western patriarchal world

> *Wetlands are a place of the alien, reptilian 'other', even the home of monsters lurking in their murky depths.*
> (Giblett, 1996, p.3)

The official domain of the aesthetics was the solid earth and the mountains. The city, as enclosed Eden, was located on the slopes of the hills so it was above the: "(...) horrifying and threatening hell of the slimy wetlands with their bad airs and miasma rising from their black waters" (Giblett, 1996, p.106). Wetlands were actually thought to "breath out and reproduce malaria, disease and death" (Ibid, p.103) and the word malaria actually means 'bad air'. Also typhus was thought to be caused by the bad air rising from tropical swamps (Ibid, p.123). Swamps were definitely something to look down at.

Swamps as in-betweens

In-between beautiful and sublime

As Giblett (1996) argues, swamps didn't fit into the aesthetical ideals in the time of modernity.

> *As the wetlands does not conform to the dictates of form, shape and vista of the beautiful, the sublime and the picturesque, it has been beyond the pale of aesthetics on every count.* (Giblett, 1996, p.33)

The sublime landscape was different from the pastoral and picturesque, which were cultivated through landscape painting (Olwig, 1993). The sublime was where you had a greater chance of seeing God and the concept was closely connected to terror. It was something to have respect for and a bit of fear for, but not to be scared of, and typical examples in nature are mountains and waterfalls. Certain types of landscape elements were therefore, by being sacred, also made valuable. (Cronon, 1995)

> **Synonyms to sublime:** amazing, astonishing, astounding, awesome, awful, eye-opening, fabulous, miraculous, portentous, prodigious, staggering, stunning, stupendous, marvelous, surprising, wonderful, wondrous
> (www: Merriam-webster)

If not being beautiful, picturesque or sublime, Giblett (1996, pp.31-38) points out a fourth mode of aesthetics; Freud's uncanny, the unheimlich, which he means applies exactly to swamps. The uncanny means something that is uncomfortably familiar. It can be connected to both horror and fascination. Freud meant that the uncanny reminds us of earlier stages in life, primitive experiences that we have overcome and forgotten. The female womb was the ultimate symbol of the uncanny and it was something to free oneself from. Swamps and wombs were often connected metaphorically and in this time, and through the Freudian eyes, they were both quite uncomfortable and in need of control, by man.

> **Synonyms to uncanny:** *arcane, cryptic, deep, enigmatic (also enigmatical), impenetrable, inscrutable, mystic, occult, mysterious* (www: Merriam-webster)

There is also a difference between which senses are used to perceive the uncanny and the sublime. Uncanny is about horror and fascination which are feelings produced from smell, taste and touch, more than the distant senses of sight and hearing which are more closely connected to the sublime and these senses wasn't given priority at this time. (Giblett, 1996, p.13) Wetlands have been represented as the horrifically uncanny and not connected to fascination. Instead of horror, which leads to rejection and destruction, fascination may lead to valuing them and swamps may not be valuable until they are aesthetically pleasing.

Uncanny is not opposite of sublime but in-between sublime and beautiful (Ibid). So, the sublime and beautiful landscapes were sacred and also protected, while swamps as in-betweens, were not. As Olwig presents in *Views' on Nature* (1993), aesthetics is, and have been, of importance for preserving nature.

In-between liquid and solid

The swamp is also in-between water and land, which makes the mud on the ground like slime; in-between liquid and solid. This has been one of, or the most disturbing qualities ascribed to the wetlands in patriarchal western cultures (Giblett, 1996, p.37). Why this is so, lies in its problem with permanency. As Sartre describes it: "It does not permit the stasis of western 'man-made' structures" (Ibid, p. 41). For Sartre the solid defines power, and in modernity this was important, in order to conquer, control and leave one's mark. This was not possible in the slimy swamp. The only way to leave one's mark on it was when it was drained and solid.

Slime is also something in the state of becoming; changing from water to solid form. In the same way swamps were seen as something on its way of becoming something else – developing from swampy to agricultural land. In this sense they were not anything in themselves but their value lay in that they could be transformed to something more useful for humans in a capitalistic worldview. (Ibid, pp.39-47)

Because swamps are not water and not land there is also a problem in transportation, as travelling is not possible by either boat or road. Overall the problem with swamps was their 'in-betweenness'; they were "a dangerous realm where all distinctions blur" (Miller, 1989 in Giblett, 1996, p.39).

Because they didn't fit into the definitions, we think they also carried a sense of uncertainty; a swamp was something unknown, something 'other' and therefore also unpredictable. It couldn't be controlled until it was filled, or structured into regular grids of water canals; until it was redefined into known forms.

This western view upon wetlands is of importance to the Andamans because it has been a British colony, and the conquers brought their view of the landscape to the Islands. A lot of mangrove swamps were destroyed (Debnath, 2004) and the problem with its position as in-between land and water also led to destruction because tourists, and settlers wanted clean beaches and get vistas of the ocean. Today the position of in-between land and water has also been known as a resource, as the mangrove swamps give protection against rising water-levels and effects of climate changes, tsunamis and winds. (Olwig et. al., 2007)

Life and death in wetlands

The swamp is a place closely connected to death and decay (Giblett, 1996) and these metaphors may not be so strange if we look to the natural processes and settings in it. Living material is deposited there and decomposes. It is also often dense, dark and difficult to move through, which can be connected to feelings of horror and hell. In this sense the actual physical land, its functions and processes do contribute to this perception. But, there must be something more than the actual physical nature, because in the same way its functions and processes bring life. From the decomposition comes fertilizer, which then becomes food. In this sense the swamp is as much life as death, but why, in western culture, is life forgotten and death most often related to swamps?

As described earlier, part of the problem is its connection, or disconnection, with the image of paradise as pastoral. It became the opposite of the nature we were supposed to be born from, and it symbolized hell. It was also problematic to place swamps into known definitions. But, maybe part of this representation of swamps as hell also lies in the western patriarchal view of nature as female?

As described by Merchant (1995), nature in the Edenic recovery story, appears in three forms: Original Eve where nature is virgin, pure and light, and the land pristine or barren but has potential for development; Fallen Eve, where nature is in disorder, chaotic, wild, a wasteland, dark, witchlike; and Mother Eve, which was nature as the improved garden, nurturing earth and giving fruit. All these views of nature are of course constructed meanings and symbols, but they have

had affects on our minds and behaviour, and still do. As Giblett writes: "Metaphor is women's burden and Mother Earth's too" (1996, p.47). All these metaphors are about power and control, both over women and nature. "The slimy and the swampy in matriarchy had been the womb of life whereas in patriarchy they have become the anus of the earth where wastes are excreted or dumped" (Giblett, 1996, p.44).

For both Sartre and Freud the slimy and uncanny is female and this is disturbing and disputing a lack of being. Associating women's bodies with slime and holes and men's with the solid also creates a negative other. Sartre goes so far as to say that one of the most fundamental tendencies of human reality is to fill; a will to fill. We want to fill up empty places. The will of filling is characteristic for the history of wetlands. (Sartre in Giblett, 1996, p.45)

Swamps as part of a wild paradise

In the middle of the 18th century a counter-movement emerged, which meant that the ultimate value lies in wilderness instead of a pastoral landscape (Olwig, 1993).

Now wilderness came to represent the Garden of Eden; our origin. This view has been represented among others, by Thoreau, Muir and Leopold, who were also some of the people behind the American conservation movement, introducing the national parks. Thoreau meant that swamps were the wildest garden we have. In this way he moved paradise from the garden in the modern city, to the wilderness, which included swamps. The problem for Thoreau, and many environmentalists, was the city, which he referred to as a swamp; he thereby turned the representation of swamps to the city (dirty, disease etc.). (Giblett, 1996, pp.228-240)

This reversal of representation had a lot to do with a feeling of loss. The recreation of Eden as a Garden had failed and the city had become an unhealthy place. The feeling of loss and nostalgia towards an origin in wilderness fuelled the new Edenic narrative. This was a longing for another world. (Merchant, 1995) "After wading around in a swamp Thoreau felt like an explorer: I seemed to have reached a new world, so wild a place..." (Giblett, 1995, p. 235). Environmentalists adapted this view, and they looked at the time after the fall of Eden as a decline, not a progress as before. It was important to save nature as wilderness before it was going to be destroyed by development. (Merchant, 1995)

To conclude, this change in perception of swamps, from being represented as hell, to becoming part of paradise, was a result of driving forces in society, dominant ideas and environmental changes. As shown our views of nature are changing with time and they are also reflected in the physical landscape. They are thus mutually interconnected.

On the following pages, we will continue to discuss the concept of wilderness and how it is connected to mangroves on the Andaman Islands today.

The Andaman Islands as Paradise

We mean that this counter-tradition, celebrating wilderness, an exploring attitude and the expression of a longing for another world in pristine nature is very much alive today and frequently used in promoting the Andaman & Nicobar Islands. The following quote can be read on the Official Andaman and Nicobar Tourism Website.

The Andaman and Nicobar Islands were shrouded in mystery for centuries because of their inaccessibility. These are the paragon of beauty and present a landscape full with scenic and picturesque extravaganza. These islands shimmer like emeralds in the Bay of Bengal. The dense forest which cover these islands and the innumerable exotic flowers and birds create a highly poetic and romantic atmosphere. "Here the white beaches on the edge of a meandering coastline have palm trees that sway to the rhythm of the Sea. The beat of tribal drums haunt the stillness and technicolour fish steer their way through crystal clear water." This addition of strangeness to beauty which is responsible for creating the infinite romantic impact may be described in the following famous lines of Keats. "Charmed magic casement opening on the foam of perilous seas in fair lands forlorn." The scenic beauty of Andaman & Nicobar Islands, would create a sense of dissatisfaction and the human mind would rebel against "the whole mass of the motley facts of life". He would be guided by an irresistible desire to this paradise on earth, with invincible faith on the philosophy of Wordsworth: "Our cheerful faith, that all which we behold is full of blessing".
(www: Andaman & NicobarAdministration)

'The Emerald Islands' is a common name for the Andamans, referring to the lush tropical rainforests that stretches out over large areas of its hilly terrain. This image of a green exotic paradise is clearly a powerful tool of marketing used by the expanding tourism industry. Taken out of its historical context, the visual impact and branding of the Andamans can lure the visitor that this landscape consists of pristine nature; untouched by human hands. This was also what the Indian prime minister, Dr Manmohan Sing thought when he visited the Islands after the 2004 tsunami, in order to investigate the possibilities of coastal rehabilitation. His impression was that the Islands possessed great potential for implementing ideas of sustainable development, as they had not yet suffered damage from the impact of human culture. His vision included the promotion of the 'New Andamans', where the implementation of sustainable agriculture and fishery would serve as an example of great national, and possibly global importance (KrishnaKumar, 2005).

The M.S. Swaminathnan Research Foundation got the task to do research on the Islands in order to support Sing's vision. Their conclusion was that the Andaman Islands had prerequisites to be promoted as the 'Organic Islands of the World', due to the lack of "(...) severe anthropogenic pressures, and over exploitation of the forest and marine resources" (Krishnakumar, 2005). But according to M.V. Krishnakumar in his 2005 article *Development or Despoliation? The Andaman Islands under colonial and postcolonial regimes*, this statement was both highly optimistic and had a seriously questionable ground.

It is thus interesting how this image of the untouched nature is so appealing to us. Antrop (2005) points out that after a disaster, new options for landscape restoration are often considered and new solutions that wouldn't have been thought of before can take place. This is the driving force of calamities, which have had a big impact on the mangroves of the Andamans. After the tsunami in 2004, that had its epicentrum close to Andaman Islands, the government of India saw a chance of working for a sustainable redevelopment of the Islands where its nature became important in promoting themselves as a tourist destination (Town Planning Unit Andaman Public Works Department, unpublished, Vol.I).

Mangroves as wilderness

After the tsunami, a lot of organizations, such as Mangroves For the Future, started to restore mangrove areas. The loss of mangroves and the increasing natural disasters seem to have been a wake-up call to care for these environments and today they are presented with an increased value. Forces of globalization are also at work, which results in a loss of local identity, variation and 'wilderness'. This loss leads to a search for authentic experiences and nature as wilderness is often argued

to provide such authenticity. (Mowforth & Munt, 1998, pp.55-63)

> *It is a place of freedom in which we can recover the true selves we have lost to the corrupting influences of our artificial lives. (...) it is the place where we can see the world as it really is, and so know ourselves as we really are—or ought to be.* (Cronon, 1995)

Geographer Edward Relph calls this loss of authentic sense of place for placelessness in Place and Placelessness (1976). This happens when places start to look more and more the same, and also gives similar experiences. Placelessness thus also leads to a search for authenticity. Authenticity is a key-factor in the concept of wilderness.

Authenticity

As the concept of wilderness has changed over time, from representing a lifeless desert or wasteland to becoming a naturalist's heaven, the concept of authenticity has been widely discussed. There are different interpretations of the concept, and they also change with time.

Instead of meaning 'real objects' as in a museum (objectivism), we agree with the constructivist view on authenticity. They mean that it is a contextual and relative concept. Objects and people, and we want to add landscapes, are experienced as authentic, not because they are originals, but because they are perceived as the signs or symbols of authenticity (Culler, 1981, in Wang, 1999). As described in this thesis, the represented landscape of Eden has changed and do change all the time in relation to society. What is authentic thus be both personal, and influenced by dominant ideas.

Places that start as highly inauthentic and commercial such as the popular example of Disneyland can become authentic over time and this is called 'emergent authenticity' (Cohen in Wang, 1999). This shows that human's perceptions and meanings are changing with time.

Authenticity in travelling experiences is also about what we expect to receive when we arrive at a place and these expectations have been given to us through media, friends etc. We also recreate these representations through producing more pictures, photos and stories (Olwig, 2004).

Photos are often seen as more 'real' than landscape paintings because they are copies of reality, but what is then forgotten is the person taking the photo and that she chooses the perspective, object and setting etc. (Mels, 2002). This means that authenticity also is a projection of our own ideals on the host culture and with this follows stereotypes.

In post-modernity, an interest for existential authenticity is popular. Wang (1999) writes for example that nature tourism is of interest for people because it involves an existential authenticity rather than the authenticity of objects. This means that of experiencing ones 'real' self. It is a bodily experience connected to affection and immediacy.

Swamps have also been linked to individual psychological development, were they are used as a metaphor of our unconscious (Giblett, 2006, pp.36-37). This means in a sense a place of origin were humans can go back and find their true selves. So, instead of like before rejecting the primitive experiences connected to the uncanny, they are now appreciated because of a changed society?

At present, the best of all in terms of finding authenticity, or of finding the lost Eden, seems to be to look far away. Tuan (1974) means that places, which are remote in distance, also feel remote in time. This coincides with Cronon's (1995) thoughts about a growing concern of biological diversity, due to its loss, which "(...) has helped to produce a deep fascination for remote ecosystems, where it is easier to imagine that nature might somehow be 'left alone' to flourish by its own pristine devices" (Cronon, 1995).

So, time and distance seams to have importance for our perception of what authentic nature is. These are also important ingredients in the problems and critique towards wilderness, which will be explored next.

Problems with wilderness

There has been a lot of critical writing on the concept of wilderness as an origin of the world (e.g. Merchant, 1995; Cronon, 1995; Mels, 2002). Here the critique is divided into three different parts:

-Distancing humans from nature
-The forgotten dimension of time
-The lost local perspective

Distancing humans from nature

First and foremost is the separation of nature and culture that comes with the concept of wilderness. Nature is seen as good and civilization as unnatural and bad. This prevents us from seeing that nature is also cultural, that we are shaped together. So, with wilderness the cultural landscape becomes naturalized which also means that the history of the landscape and its people is forgotten. This can also be connected to what we wrote about regarding the dark side of the landscape in part 1 (see p. 38).

In the U.S. Wilderness Act, were wilderness is seen as a sacred origin of the country, wilderness is described as: "a place where man remains a visitor" (Slater, 1995). The wildlife reserves were therefore at the fringes of society where no labor, homes or traces of modern life would be found and people from cities could come and relax. Those who had lived in the landscape before were moved and their earlier use of the land became forbidden or considered non appropriate. (Mels, 2002)

An increased tourist development in coastal areas promoted as pristine nature can lead to prohibiting cultural activities if they are seen as disturbing the image of wilderness. This shows that there is a lot of power connected to the concept. For the tourist

industry it is a selling image, but with it comes consequences for local people.

The search for wilderness and authenticity also means a romanticizing of the past and its ways of living, which can lead to an 'othering'. In this way the search for authenticity can be compared to colonialism; striving to maintain a cultured domination. (Mowforth & Munt, 1998, p.78)

Mels (2002) writes about the indigenous Saami people in Sweden that became a part of wilderness, they were 'naturalized', which is an effect of nostalgia for an old way of living. To make them part of nature meant that they didn't get the same rights as other citizens, to participate in planning practice for example. On the other hand, their practice of land was also seen as disturbing the pure nature of wilderness. There is thus a problem both in being natural and cultural for indigenous people in relation to the concept of wilderness.

Separation of nature and culture, also leads to environmental problems. Cronon (2005) means that wilderness as a concept gives us the illusion of a nature free from human impact we can escape to and forget about our own responsibilities towards it.

This seperation of nature and humanity, which the representation of nature as wilderness leads to is something the social anthropologist Tim Ingold (2000) is very critical to. He argues for an understanding of landscape on the basis of our engagement in it. He means that landscape is not outside of us, but very much a part of us, and it is 'felt'. Through activities in the landscape, it becomes part of our bodily experience. Ingold terms it 'the dwelling perspective', were landscape is heterogeneous, qualitative, temporary and known to those living in it. It is the experience of the landscape, which gives knowledge about it, and brings memory to it. Human and land becomes the same.

The lost dimension of time

In the concept of wilderness is also a forgotten dimension of time. The swamp has been represented as a place of timelessness, eternity, endlessness and changelessness (Giblett, 2006). An image that fit into the representation of mangroves as both hell and paradise, but in reality this is not true at all, as it is changing all the time.

To place nature as Eden, or as wilderness, thus gives it a static approach, instead of a temporary, constantly changing reality with more layers and uses (Slater, 2005).

The lost local perspective – Mangrove as 'Place'

If there are no mangroves, the sea will have no meaning. It is like having a tree without roots, for the mangroves are the roots of the sea.
Words of a Thai fisher from the Andaman Coast (www: MAP)

Representations of nature are often a way of seeing applied by authorities, which is not always consistent with the perceptions of those actually living there (Germundsson, 2005). As stated before, landscape is both personal and cultural. It is embedded with meaning and value through the people living there.

Relph (1976) uses the term existential space to describe an inner structure of space as experienced by members of a cultural group in an intersubjective sense. This is deeply connected to direct aspects of life such as family, tradition and community. In this existential, or lived space, events such as birth, death, tragedy and celebration intertwine time and physical setting, and unselfconscious patterns are inscribed on earth. Existential space for aborigines, is often charged with significance only known by, and important to, the members of a specific community (Relph, 1976, p.15).

This existential space can include a vast number of places, filled with the intentions of the people dwelling there, places of ritual, myth and ceremony. As people often form strong bonds with places, we tend to feel rooted within them. This need for rootedness is a deep and profound human need, according to Relph, and rootedness in place provides us with a sense of security, a point from which we can look out on the world and grasp our own position within it. Relph (1976) means that attachment is strongest to those places we have lived at a long time, as home, and where we have had multiple experiences. This attachment over time leads to knowledge about the place and makes us more engaged in the landscape. The intensity with which we care for these places, makes us want to protect and take responsibility for them.

Tuan (1977) terms these places, which humans have given meaning to and embedded with value after a prolonged experience, 'fields of care'. He differs this type of place from other type of places, which he calls 'public symbols'. Public symbols are monuments and statues, squares or spectacular parts of nature which have high imageability and attention. These gives significance, local and national pride and organize centres of meaning. Both types of places are important for creating identity, but 'fields of care' are more difficult to see from an outside perspective and are therefore often forgotten when landscape changes are planned.

To get to know these local values it is important with public participation when landscape changes are planned. This is of crucial importance on the Andamans today, as tourism is expanding and new ways of using the land is demanded. There is also a lot of practical knowledge among the indigenous inhabitants and early settlers about how to use the resources of the landscape, such as the mangroves, in a sustainable way (Kathiresan, 2005, p.95). This local knowledge about the environment can be useful in future management and planning, even though it has to be related to the changing demands of society.

The importance of place attachment is also connected to future preservations of mangroves since to care for a place evokes feelings of responsibility. To increase place attachment through education and access can thus be an important tool to promote future involvement and sustainable management.

A threat towards mangroves today is namely the lack of knowledge about them. A lot of recent settlers on the Andamans are from the mainland cities or countryside. As they have never encountered these environments before and have no previous relation to them, it is harder to understand and appreciate their value. Recent studies by ANET have revealed a worrying lack of understanding or appreciation for the Islands 'natural' ecosystems. "Some even consider that the presence of wilderness indicates a lack of progressive development" (Planning Commission, 2007, p.14).

Mangroves as fascinating uncanny

As pointed out before, it is easier to value a landscape if it is perceived as beautiful and scenic and not only useful. Swamps have had the problem of being regarded as lacking both. (Giblett, 1996, p.238) So, what about the aesthetics of mangroves today?

If we go back to Freud's uncanny, he meant that the uncanny can appear in nature as places which is both familiar in one way and at the same time evoke feelings of uneasiness, discomfort and fear. Giblett (1996) did point out the division in the concept of uncanny where it can produce feelings of horror, or feelings of fascination. If mangroves where mostly represented as horrific-uncanny, we think that today they are actually promoted as fascinating-uncanny. Especially the roots of the Mangrove specie Rhizophora, seem to be a symbol of this fascinating-uncanny mangroves.

> *Roots represent the dominating feature of these impressive coastal trees. They look like something out of a fairy tale. (...) The mangrove creates a true Garden of Eden around itself, filled with strange beauty, filled with secrets.*
> (www: The Ambler, 2011)

Maybe this strangeness has become popular and fascinating because our search for something different from what we are used to, our loss of diversity? The parallel of uncanny with feelings that reminds us of earlier psychological stages, or primitive experiences of the human being can also be a value today when we want authentic experiences and search our true selves. Also, the more intimate bodily feelings of touch and smell seems to rise in value due to a demand of more exploring experiences in nature.

A more positive image of mangroves can also be seen in the change of name, where it before was referred to as a swamp, it is now presented as mangrove forests, or 'tidal forests', 'coastal woodlands' and 'oceanic rainforests' (Kathiresan, 2005).

CONCLUSION PART 2:

LANDSCAPING PARADISE?

In this part of our theoretical investigation we have explored how swamps, such as mangroves, have been represented through time and what consequences these representations, or images, have had on the landscape. It strikes us how entangled the physical nature and our projected human ideas are. First a Christian worldview, patriarchal society, capitalism and a population growth influenced the representation of swamps as hell. That swamps didn't fit into the ideal of what was considered as beautiful nature, such as the pastoral landscape, enclosed garden or the sublime and fascinating mountains, also contributed to this image of them as hell or wasteland. To drain swamps and construct solid ground was a way to conduct power and to use the land in other, more 'valuable' and effective ways. In this image of swamps as hell/wasteland, humans were seen as masters.

In this investigation, we also discovered another type of image were swamps are seen as wilderness or paradise. This image has evolved as a consequence to that the world starts to look more the same and we as humans feel nostalgia and are longing for another world, something more real and 'authentic'. Also the loss of biodiversity, increased environmental problems, and natural disasters have been a wake up call that have helped to produce a deep fascination for remote ecosystems, where it is easier to imagine that nature might somehow be 'left alone'. The paradise is no longer in the garden or the city, but wild, remote and islanded.

The danger with the concept of wilderness is that human activities are seen as a disturbing element, they are seen as destructors to nature. This can be dangerous as the image of pure untouched wilderness, which is beneficial for the image of Paradise marketed by the tourism-sector, can lead to that local people can be prohibited from traditional cultural activities in these areas. Also the time perspective is forgotten here as nature is seen as static and non-changeable.

So, as this part of the thesis has shown, the swamp has been represented as either a place of death, decay, disease and horror, or as an environment filled with life, biodiversity and delightful wilderness. In both these views, humans are separated from nature and seen as either masters, who through development can bring order to nature, or as destructors that only causes harm to it. Both ways are problematic and leads to environmental problems and both ways of seeing are occurring on the Andaman Islands today and has a problematic impact on mangroves.

As research by ANET shows, many recent settlers from the mainland do not appreciate or understand the value of wilderness and see it as a lack of development. There is also a view upon mangroves as wastelands and a lot of garbage is dumped in the swamps. This is because: "no-one ever goes there anyway" and "the garbage is not visible there." (Field notes: interview with a local inhabitant)

On the other hand there exists a belief in pristine, rich nature, untouched by humans and this is a representation coming from above. There has been a long history of engagement between humans and mangrove areas on the Andamans and in this part we have discussed how people have created places embedded with meaning, and used its resources for their every-day living. The cultural landscape should be considered, which can be problematic if the nature is represented as untouched. The organization Equations (2010), which is a research, advocacy, and campaigning organization, working on the impacts of tourism, particularly in terms of rights and benefits to local communities, means that it is not often recognized that coastal ecosystems, such as mangrove areas, have had communities living in relation with them for a long time.

Solutions for future preservations and engagement with mangrove forests seem to be in education and a rise in awareness that we as humans are highly involved in nature and change along with it. The realization of this relation can hopefully promote a sense of responsibility for its future development.

SWAMPS AS HELL/ WASTELAND - filled with death, disease and horror. **HUMANS AS MASTERS**
= no value in themselves - fill them with new functions and bring order to the landscape

SWAMPS AS PARADISE/ WILDERNESS - filled with life, biodiversity and fascination. **HUMANS AS DESTRUCTORS**
= prohibiting cultural activities in 'nature', forgetting the local people and the time perspective

Both images= A seperation of nature and culture - prevents us from seeing the interconnection between them and that they are changing together all the time. Can conceal environmental problems and prevent sustainable development.

PART 3

MANGROVE MANAGEMENT AND LANDSCAPE LITERACY

From our theoretical investigations we have now understood the power of representations. We have discussed the image of the Andaman Islands as Paradise, and the danger with perceiving nature as untouched wilderness. As concluded, nature and culture is intertwined in a complex relationship, and to be aware of this is important because we can then work for future changes in a desired direction.

In this last part, PART 3, we will search for important tools and directions regarding how to work with the Andaman landscape. Which is the best way to go concerning preservation and management of mangroves on the Andamans? How can we as Landscape Architects contribute to create a new story? To try to answer these questions we will look at mangrove management in general, and from this identify important directions which we bring with us to our proposal. We will also look at a specific reference project by landscape architect Anne Whiston Spirn regarding the importance of landscape literacy as a strategy for promoting participate planning and a just and sustainable development.

Mangrove management

In the early 1980's a total change in the relation to mangroves occurred in India; from an intense exploitation of them to full protection. Management of mangroves after that focused on restoration, mainly through replanting. Unfortunately the results didn't turn out well and still today there are problems with restoring mangrove areas. (www: MFF, 2011, p.8)

Mangroves For the Future, MFF, is an organisation working towards sustainable development of coastal communities. Their flagship is mangroves, to highlight its important role and "the severe effect on coastal livelihoods caused by the loss and degradation of mangroves" (www: MFF, 2012). However they do point out that they work with all biotopes in the coastal ecosystems such as coral reefs, estuaries, lagoons, wetlands, beaches and sea grass beds. MFF's management approach is integrated, which means that they see mangroves as part of a wider system. "Coastal ecosystems, and the well-being of their inhabitants, are influenced not just by activities carried out in the coastal zone, but also by those happening further inland" (www: MFF, 2012). To be able to see mangrove restoration problems in a wider context is essential to succeed.

MFF means that the problems with restoring mangroves are due to three main reasons: First, replanting only focus on the forest component and not on other important aspects such as hydrology and sedimentation processes. Second, there has not been sufficient focus on the community livelihood issues and third, there is a lack of technical, social and economic capacity in the planning institutions to sustain mangrove restoration efforts. (www: MFF, 2011, p.8)

This shows that there has been, and still is, a gap between our landscapes and us. We have forgotten, or never been taught how to 'read' the landscape and without knowledge of how landscapes are interconnected with cultural and natural forces we cannot manage a sustainable future. We think that this problem in managing mangroves can be related to a perception of nature as wilderness. As discussed in previous chapter, the problems connected to this concept are many; it distances humans from nature, time is forgotten and through that the fact that the landscape is constantly changing, the local perspective is also lost and so the people dwelling in it are forgotten.

To better understand management issues in relation to mangrove ecosystems we have read evaluations on mangrove management projects made by MFF (2011), and the book *Mangrove management and conservation* (Vanucci, 2004). From these readings we have drawn some conclusions on what is of importance in future management strategies. We will not go deep into this issue because it is very complex and would include enough material for a thesis in it-self, but we have identified three main directions of importance, which have strong relevance to the Andaman Islands and our proposal MUDDY FEET. These directions are**: Create awareness, Community participation and Eco-tourism.**

Create awareness

This is often pointed out as the most important part in managing mangrove areas. There is often a lack of site-specific knowledge on mangrove ecosystems whereas it is important to educate locals, and especially children for the future. Mangrove issues can be part of the formal educational process in school. (Vanucci, 2004). So, change is important to come from underneath, through education of locals, which also MFF do emphasize in their projects (www: MFF, 2011).

As we see it as outsiders and from reading the draft for a first masterplan of the Andaman Islands, we interpret that there is a clear understanding of the importance of conserving and maintaining the Andaman Islands fragile nature, including mangroves. They also recognize the importance of educating children in these subjects.

> *Considering the fragile nature of environment in the islands, school education policy may have to sensitize students on Environmental Education and Sustainable Development. Similarly, sensitization of the community and younger generation of students towards Forest education, focusing on conservation, preservation and forest resources.* (Town Planning Unit Andaman Public Works Department, unpublished, Vol.I, p.18)

Community Participation

> *Community participation has been recognized as the basic and indispensable requirement for dealing meaningfully and efficiently with coastal management, particular in tropical mangrove ecosystems.* (Vanucci, 2004, p.6)

There is a lack of community participation in many places where mangrove restoration is taking place. In most cases, communities have not taken ownership of their mangroves because it is

perceived locally as projects of the Forest Department and not a continuous process involving communities. However, it is shown through several projects that wherever a strong partnership links communities, Forest Department and NGO's, the results are much better and more sustainable, in terms of both increases in mangrove cover and community empowerment. (www: MFF, 2011)

This local aspect, and empowerment of the communities, seems forgotten when reading the Draft Report for the new Master Plan of Port Blair. There are no strategies including them, when discussing tourism or mangrove management. (Town Planning Unit Andaman Public Works Department, unpublished, Vol.I)

Eco-tourism

Eco-tourism can be a tool for promoting sustainable management of mangroves and generating improvement of the livelihood of communities dependent on mangroves (www: MFF, 2011; Vanucci, 2004). The increasing tourism on the Andaman Islands can thus be taken advantage of in a positive way for the local people. In an example from a MFF project in Zanzibar, the money raised from mangrove eco-tourism is invested in building Community Project Schools, which has encouraged the local village to manage and protect their mangrove areas more actively (www: MFF, 2011).

The draft for a masterplan also adds a strong emphasis on eco-tourism as this is seen as a valuable resource for economic development on the Islands. Here nature does get a high value. "The main strength of the islands in promoting tourism is its environment" (Town Planning Unit Andaman Public Works Department, unpublished, Vol.I). They also write that they want to promote the Islands as an eco-tourist destination and invest in more activities for tourists in the forest and other biotopes of the Andamans to offer a close experience of nature. However, they do not clarify what eco-tourism exactly means and we think that this can be problematic, because it is such an over-used concept. It is not just about tourism in nature.

What is eco-tourism?

Journalist Martha Honey writes in her book *Ecotourism and Sustainable Development. Who owns paradise?* (2008) about the concept of eco-tourism, how it has evolved through time and which results its implementation have had in reality. As she explains, eco-tourism is often promoted as something that is beneficial for everyone; tourists, the local host country, its inhabitants, the environment, as well as the tourist industry, but this is most often far from reality. She means that the concept often is used as greenwashing.

The most common definition of eco-tourism is from The International Ecotourism Society (TIES) in 1990: "Responsible travel to natural areas that conserves the environment and improves the well-being of local people" (Honey, 2008, p.6). Honey expand this definition into, what she means, is a more holistic one:

> *Ecotourism is travel to fragile, pristine, and usually protected areas that strives to be low impact and (often) small scale. It helps educate the traveler, provides funds for conservation, directly benefits the economic development and political empowerment of local communities, and fosters respect for different cultures and human rights.* (Honey, 2008, pp.32-33)

Honey writes that eco-tourism is often important in Third World nation's economic development strategies and conservation efforts: "Nearly every developing country is now promoting some brand of eco-tourism" (Ibid, p.8). Often the concept is wrongly defined though or only some aspects of it are considered. One way to change this, the author states, is to build a more informed traveller public.

Honey writes that education is often connected to eco-tourism and that it should work to promote environmental awareness on many levels (Ibid, p.7). She means that this is one very important ingredient of the concept, which can't be left out. "Ecotourism means education, for both tourists and residents of nearby communities" (Ibid, p.30).

Based on these studies on mangrove management for the future and their connection to eco-tourism, we have concluded that the proposal we develop should involve empowerment of the local community through increased awareness and education. The spreading of knowledge generated by the proposal should preferably work both on a local and global level. As we have become aware of this, the next step is to establish what our role as landscape architects can be in this process?

To answer this question, we have looked at the work of American Landscape Architect Anne Whiston Spirn and her project of restoring Mill Creek. Even though this project is set in an urban American environment, vastly different from the mangrove area with which we work, the problems we are facing are surprisingly similar.

Landscape literacy

The information about Mill Creek is derived from Anne Whiston Spirn's article Restoring Mill Creek: *Landscape Literacy, Environmental Justice, and City Planning and Design* (2005).

The neighbourhood Mill Creek in West Philadelphia, Pennsylvania, was in need of redevelopment due to its poor structure and social problems. Studying the historical landscape of Mill Creek, one finds one of the main reasons behind the unstable (physically and theoretically) character of the neighbourhood. The Mill Creek, a natural river that originally meandered through the landscape, was buried in a sewer in the 1880's. The floodplain was filled up and built upon, but the ground there has been unstable ever since, also because the

sewer is forced to carry increasing amounts of water, since every new development upstream of old Mill Creek ads its storm-water to the flow. This has been the source of numerous disasters such as houses and streets caving in, causing casualties and devastation.

There has been vast problems considering how planners have worked with this area, according to Spirn. She means that generally, when planners analyse an area like Mill Creek, their focus is too narrow to perceive the whole dynamic system of the landscape. Like looking at a snapshot, they aim at solving one problem, while ignoring its connections to other facts. This became strikingly evident during the peak of the modernist era, but also remains a problem in planning today. Treating the symptoms without making enquiries about the cause of the problem shows a lack of ability to 'read the landscape', or of landscape literacy as Spirn terms it. We need to look at the prerequisites of the natural conditions that have shaped the land beneath our neatly structured blocks and streets, but also the labour of the human hands that have moulded the landscape. In addition to this one needs also to assess the impact of time, political forces and the prevailing mental images of a neighbourhood. Spirn also emphasizes that there is often to great a focus on detecting and solving the problems of a landscape, and a failure of recognizing what in fact works very well there at present.

Spirn has worked with the landscape of Mill Creek since 1987, and have together with her students from Penn (University of Pennsylvania, US) made numerous analyses of both hidden physical features of the landscape and demographic data. The info collected has been made accessible through a database and based on the analysis, Spirn worked hard to convince the City Planning Commission and the Philadelphia Water Department to use the area above the sewer to retain storm-water through a system of parks. In spite of this, in their 1994 Plan for West Philadelphia, the above mentioned authorities decided to construct subsidized housing for low-income residents on the sewer area instead.

From this failure to communicate on the terms of the language of landscape, the author was strengthened in her belief that there is a poor literacy of landscape among planners and politicians as well as local residents, and she thus organized her teaching and research to explore the topic further.

From 1996-2001, Spirn together with her students from Penn, went into a collaboration with the Sulzberger Middle School of Mill Creek. The children were trained in reading landscape both through their own experience and through studying historical maps and documents of the area. The Sulzberger students where encouraged to focus on how the knowledge they gathered could be used to improve Mill Creek for the future. The project proved to be a great success as the interdisciplinary studies raised the overall achievement of the students in other subject as well, and the children stated that they had become proud of their neighbourhood as a consequence of their inquiries.

Like circles on water this grass-root effort led to further advancement of the previously quite challenged Sulzberger school, including for example the forming of a computer-club as a response to the increased knowledge gained on the subject by students and teachers, and 'learning communities' where teachers and students investigated for example the theme of regional watershed and local community.

The success of the project reached both to local planning and higher political levels, and has got a lot of attention in media. On the project Website, information about the findings of the various layers of Mill Creek are published and on-going work in the community can be uploaded. The Website also serves as an online community open for all people who have been, and is involved in working with issues concerning Mill Creek (www: WPLP).

To conclude, Spirn emphasizes the many similarities between reading landscape and the reading of words. In both cases, the learning benefits from being based on local cultural prerequisites, where people can start up by learning about the context in which they dwell and then through the literacy acquired, achieve tools to change issues which are un-just or unsustainable. To be literate in landscape, Spirn states, one has to *"recognize both the problems in a place and its resources, to understand how they came about, by what means they are sustained, and how they are related"* (Spirn, 2005, p.410).

Through this project Spirn has also shown that increased knowledge about ones place, can lead to an enhanced attachment and care for it. This is also what Relph (1976) and Tuan (1977) has stated the importance of, as described at page 45. Spirn further elucidates how change is a characteristic feature of landscape and that we need to accept this and work with it. This means that in our profession as landscape architects it is not only important to understand the historical processes that influence the landscape but also to focus on processes, which will continue to develop the environment sustainably through time.

Through Spirn we have been inspired to focus on promotion of landscape literacy as a strategy to achieve sustainable management and development on the Andamans. To be literate in the language of landscape is of crucial importance, as it presents possibilities of finding ways of living on the Islands, which do not exhaust the fragile ecology or sustain unjust cultural relations, through grass-root efforts. We see promotion of landscape literacy as a key-tool in the work for a sustainable future for the Islands.

CONCLUSION PART 3:
MANGROVE MANAGEMENT AND LANDSCAPE LITERACY

WHAT WE BRING FROM PART 3:

We need to;
- direct our proposal to work at a grass root level
- promote local awareness
- raise curiosity and interest in exploring the layers of the landscape
- focus on children and tourists

To have tourists as a target group can also be positive as it can generate an economic income which in turn can be put into the local school projects.

FROM THEORY TO PROPOSAL

When making our first inquiries about the Andamans on the Internet, we were bombarded with images representing the Islands as an exotic paradise. The photographs showed clear blue water, white beaches, indigenous people in traditional clothes and dense mangrove forests, together with selling texts which described the archipelago as a pristine, romantic and mystical place. For us this image was connected to a feeling of unease though, as we knew the Islands had a history of colonialism, and when establishing our traveller blog, we consciously named it Landscaping Paradise?

Through our combination of field-studies and theoretical readings on the subject a process of understanding the Andaman landscape began. By looking into the insidious character of representations and unfolding the image of an untouched paradise, a whole range of unjust and problematic relations appeared, which have consequences for both humans and nature. As culture and nature are inevitably intertwined on the Islands, and has been so through millennia, solving the problems can not be achieved through focusing on either one separately, but must be a process where both are recognized as one system of interrelated functions and outcomes.

This theoretical investigation has stretched all the way from the Garden of Eden, via the Colonial Era, through management of mangroves and into the complexity of reading one's own landscape and finding a sense of place. We have moved through layers of time and changing influences and encountered different pieces of a intricate puzzle which we have added up to an analyze of the forces which have molded the Islands. Through this process we have also come closer to an overall understanding of the complex concept which is central to our profession - the landscape.

03. PROPOSAL

MUDDY FEET

From our field-studies, background research and theoretical investigations we have identified that there is an urgent need for finding strategies to achieve a sustainable course of development on the Islands, based on a holistic understanding of the landscape, where representations are recognized and unveiled. The reference projects have strengthened our belief that it is through the people living in the landscape that actual change can be implemented and that promoting literacy of landscape among the vastly mixed population of the Islands can be a key-tool leading to; an increased understanding of the local prerequisites and the resilience of the environment; a deeper care for and relation to ones place, and an interest of getting involved in finding sustainable strategies for future development.

The product of these conclusions is our proposal: the Muddy Feet Walk.

Muddy Feet is a designed educational trail through a mangrove area where various layers of the landscape; environmental, cultural, geological and historical, are highlighted, introduced and discussed. The site of the walk is located adjacent to the facilities of local NGO ANET, which is actively involved in promoting education about the ecosystems of the Islands. The Muddy Feet will serve as an extension and additional tool for their work, as well as a new platform and forum where the landscape layers can be uncovered, added up and investigated as a whole.

As Spirn, we also identify the local school children as the group with the best prerequisites of getting the landscape literacy process started. Through tying nearby schools to the Muddy Feet with the specific aim of deepening and developing the knowledge introduced through the walk as well as adding to it their own research, they can acquire landscape literacy and spread increased awareness on to family and village. Considering the development of tourism on the Islands, we also conclude there is a need for their visitors to be introduced to what lies beyond the preconceived images of the tropical paradise, and gain awareness of the complexity of the landscape. We therefore also target them as a primary group of focus for our proposal, but for them the walk constitutes only an initial introduction to the local landscape and various layers of the mangrove wetlands.

To have tourists as a target group can also be positive as it can generate an economic income which in turn can be put into the local school projects.

Mangroves are the focus of this proposal as they constitute a key-component of the overall local ecosystem, connecting and sustaining its functions. They also bind the soil of the coast and thus hold the Islands together both physically and symbolically. As they were the homes of many indigenous tribes they also serve as a link to raising discussions on the cultural aspects of the Islands and to uncovering the history of what took place during colonialism, when the Andamanese were expelled from their local territories, as well as their situation today. So, the mangroves and the particular site of the proposal, together make up a node of intersecting topics which are all crucial to consider for future sustainable and just development on the Islands.

This said, the concept of Muddy Feet can also be applied in other environments where prominent features and layers of the landscape are gathered but the design must be made in relation to the specific place.

ANET

VISION

The development of effective conservation strategies for the Andaman Islands depends on a sound understanding of the diversity of the islands flora & fauna, its abundance and distribution, and its connection to the needs of indigenous tribes and settlers inhabiting this land.
The aim of ANET is to advance such an understanding of the islands' terrestrial, coastal and marine habitats and to actively contribute towards their conservation through education and development of sustainable resource utilization programs.
ANET promotes an interdisciplinary understanding within the islands by involving organizations with similar visions and goals - thereby creating a centre for the mutual exchange of information, and a base station accessible to visiting scientists and students from institutions around the world.

(www: ANET)

ANET is the primary environmental NGO on the A&NI and has a well equipped research and education base located adjacent to the Lohhabarrack Crocodile Sanctuary in Wandoor on South Andaman, which has been active for twenty years. They work in close collaboration with the Forest Department where they assist in producing ecologically sound management plans for Protected Areas and they have a good relation to local communities and various governmental bodies. The experienced staff and co-working volunteers work to encourage and facilitate contributions to conservation efforts within the archipelago. (www: ANET)

ANET has three ongoing educational programs directed to both schools and universities which include;

Island Ecology & Bio-Geography; based on guided walks through nearby biotopes, snorkelling excursions and slideshows and interactive sessions, which focus on the interdependence between the local ecosystems.

Marine Biology; with diving and snorkelling excursions in the near by Mahatma Gandhi Marine National Park and talks about the local flora and fauna; introducing the littoral, coral reef and shallow sea habitats.

Design in nature; where design students are invited to explore the genius of natures own design process.

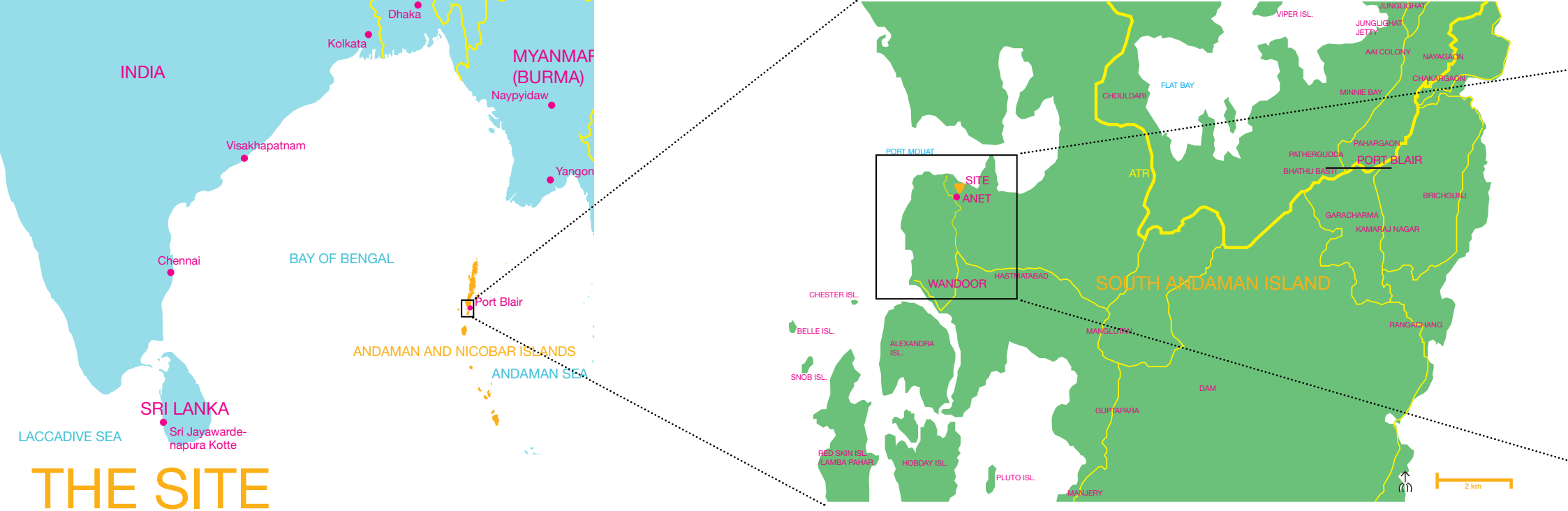
In addition, they offer to tailor special programmes according to the curriculum and learning objectives of individual schools and have conducted courses with several schools in the vicinity of Mahatma Gandhi Marine National Park on South Andaman. In collaboration with Kalpaalsovriksh Pune and the Centre for Environmental Education they have produced a teacher-training manual in English and Hindi; 'Treasured Islands'.

ANET also organize workshops which aim to strengthen community involvement considering conservation, and enhancing the capacities of local people. Two examples of such workshops are;

Teacher's Training (Environmental Education) Workshops; aiming to train local community members to be facilitators for environmental education workshops with schools and other groups.

Environmental Awareness Workshops; introducing students to the basic principles and systems of ecology and promotes an understanding of the processes of nature and the interactive relationships between them and the participants own existence on the Islands. (www: ANET)

To design wisely is to read ongoing dialogues in a place, to distinguish enduring stories from ephemeral ones, and to imagine how to join the conversation. (Spirn, 2005, p.410)



THE SITE

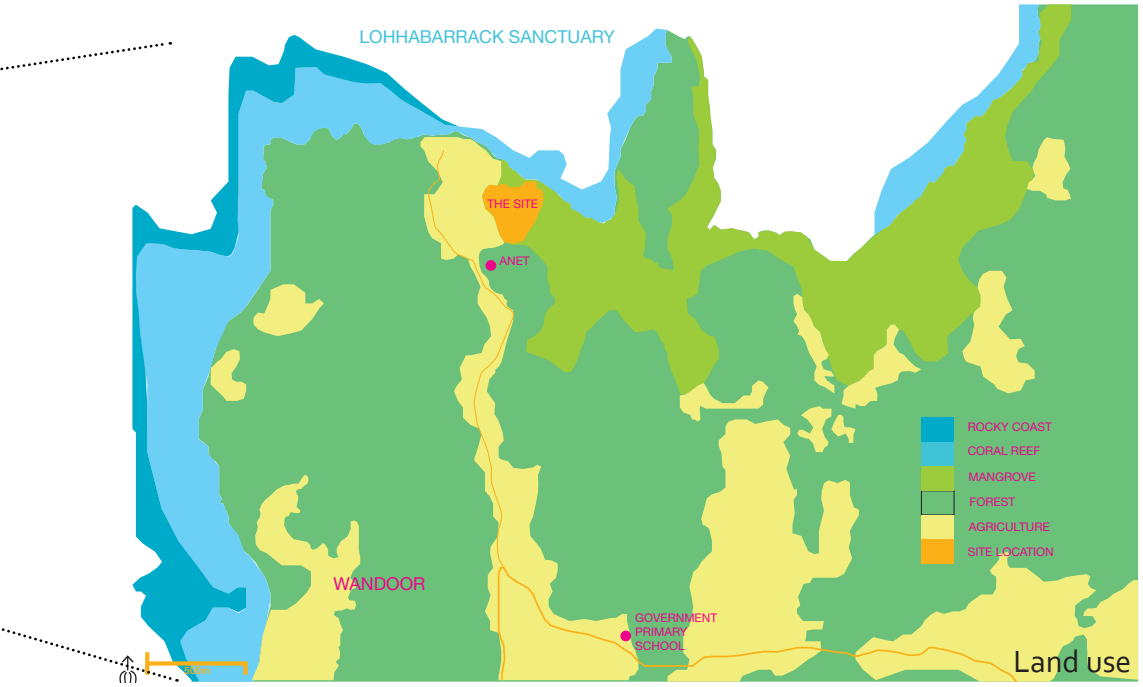
- its surroundings

The site of our proposal is located on the western side of South Andaman Island. The main administrative city, Port Blair, is situated 26 km to its east, and lies approximately 45 min away by car or bus. The area around Port Blair is more developed, with roads, housing, official buildings & institutions, offices, commerce and an airport, while the western side has very few roads and consists mainly of protected nature areas and small villages with agricultural land and plantations.

During the 2004 tsunami, many land-areas around the site where permanently pressed down and inundated by salt-water, which had devastating effects on the agricultural land. Still today, many of these areas are flooded by the tide.

In the Draft Report for the Master Plan which was under development during our stay in the Islands, there are plans for development on the eastern side around Port Blair, while the plans for the western side are more focused on eco-tourism and developing wild-life resources (Town Planning Unit Andaman Public Works Department, unpublished, Vol.I).

ANET and the site for our proposal is located in this quiet, rural setting, surrounded by forests. A primary school lies within walking distance, as the map on the next page shows. Even though the site is off the main tourist routes, it is not far from Wandoor which is a place were many tourists go to enjoy the beautiful beach and the Mahatma Gandhi Marine National Park.



A small fishing hamlet is set at the entrance of the park and from the Jetty, boats take tourists out for site-seeing and snorkelling. During our stay, a new Marine Interpretation Centre was just finished for opening there; a museum with models of sea-living animals and mangrove eco-systems. The centre is a hub for learning about marine and coastal wildlife in the region, such as the protected saltwater crocodile and leatherback turtle.

CONCLUSION:
From studying the site surroundings we can conclude that it is a perfect site for developing eco-friendly tourism. It is located in a part of the Andamans where focus from the Government lies on wildlife and tourism. It is connected to Port Blair by road, which permits easy access for tourists. It is also located close to Wandoor and the Marine National Park, so other sites can be visited during one day. The site is also close to a Primary school with which possible future collaborations can be made.

THE SITE
- up close

In connection to ANET is a mangrove swamp which contains different mangrove species and a wide range of other flora and fauna. Broadly, the site consists of old mangrove forest and a mudflat where new mangrove saplings are starting to establish. The mudflat area used to be a coconut plantation, but in 2004, when the tsunami hit the Islands, it was pressed down by 1,5 meters, and the palms died.

On ANET there is research work going on concerning regeneration of mangrove forests and they use the method of comparing the old and new mangrove in terms of flora and fauna. They have discovered that there are different animal species at work in the different successions, which suggests that small animals are working as 'eco engineers' when the new ecosystem is established. So, instead of only planting seedlings as they do in many other mangrove establishment projects across India, ANET studies the process of natural establishment of a tidal-swamp. The problem of simply planting mangrove shoots is that they rarely survive; it appears that they need the help of the small animals that are preparing the mud.

ANET is also using this site for education as they take groups, especially school children, out into the swamps and explain about the ecosystem and its species. They want to take more groups out into the area, but because parts of it are extremely inaccessible and it is a fragile ecosystem where too much trampling can be a problem, they are in need of an educational trail and boardwalk system, which controls the walk and makes the different biotopes more accessible.

Kitchen-middens

Looking at the history of Andaman mangrove areas, it is not just a form of nature, or an untouched wilderness that unravels. The coastal mangroves have been part of the local territories of the indigenous inhabitants for thousands of years. Remnants of their camp-sites can be seen in the 'Kitchen-middens', which are found on this particular site. They consist of piles of shells and bones, layered successively from all the times the camp was used by the Great Andamanese coastal dwellers. (Weber, 2006a)

The Kitchen-midden was located next to a village or camp site, distanced from the living area. The pile of rubbish thrown here grew larger, generation after generation and roughly it can be estimated that they grew by 20 cm per century. The mean height of them are 1,5 m and 63% of the ones documented today are within, or just behind, mangrove swamps. They all occur within a radius of 1 km from fresh water streams or springs. The size of the Kitchen-midden also reflected the hunting and gathering skills of the group and as such were a source of local pride. It was also a marker towards other groups. (Ibid)

Great Andamanese group preparing to set up or repair a hut (picture from Mrs. Talbot Clifton, ca. 1910, possibly taken by M.V. Portman, in Weber, 2006b)

As these remnants tell us a story about a past way of living in these areas it should be highlighted as a stop along our proposed educational trail. Questions can also be raised considering where the people of the Great Andamanese tribe live today, their history, culture and beliefs.

Zonation of mangrove forests

A mangrove forest can be divided into three different zones; the Proximal Zone, the Middle Zone and the Distal Zone. (Dagar et al., 1991, pp.93-94)

The Proximal Zone is the one facing the sea and due to the wind, waves and varying tide levels, tree species in this zone have developed special roots for stability and water fluctuation. The most common species in this zone are Rhizophora and Avicennia. In our proposal, we have divided this zone into two, and refer to them as the Rhizophora Zone and the Avicennia Zone, because they differ in appearance and are growing on different patches which are clearly delineated.

The Middle Zone is located behind the Proximal zone and the most common tree species here are Bruguiera, which often grow in blocks, and Ceriops. Both of these species have developed 'knee' roots. (see picture on p.60)

In **the Distal Zone,** the salinity is lower then in the other Zones because it is higher above sea level and facing hillsides where run off of fresh water comes in periods. The duration of tidal submersion is low compared to the Proximal and Middle Zones. A common specie here is Nypa fruticans, (Nipa palm). In the proposal, we refer to the Distal Zone as the Dry-Zone, as this was the name used by ANET.

FAUNA

A lot of different animals have mangrove areas as their habitat. Some of them live here permanently (resident fauna), or for parts of their lives (transitory fauna), while others use mangroves as temporary feeding, breeding and shelter places (adventitious, incidental fauna) (Dagar et.al. 1991).

Common animals found in mangrove areas, and at this particular site, are different crabs f.ex. Fiddler crab, Hermit crab and the terrestrial crab, Cardisoma carniflex. There are also wood-boring molluscs such as Teredinids (Shipworm), and Mud lobsters such as Thalassina, which is an animal that builds eye-catching "mud-castles". The Mudskipper is also a common specie at the site that catches your eye when it is jumping around in the mud and small puddles on the mudflat. Another prominent specie at work in the area, especially in the Dry zone, are weaver ants which make their nests from weaving leaves together using larval silk as 'glue'. There are also a wide variety of fishes, birds, snakes and larger animals such as saltwater crocodiles living in the mangroves. (Field notes: Tasneem Khan)

Red-whiskered Bulbul

Mudskipper

Fiddler crab

Hermit crab

Pattern from animals in the mudflat

Shipwork

A mud-castle

Weaver ants

FLORA

Our proposed educational trail will move through different vegetation zones as shown on the map on the opposite page, in order to show a variety of mangrove species. Here we will present the main species introduced on this walk.

RHIZOPHORA

This is a genus of mangrove trees which often symbolize the whole Mangrove biotope. It is the most dominant genus and eye-catching due to its special roots. Stilt and strut roots hold up the tree and prop roots are the ones growing out from its branches for extra support. These roots can be up to 10 meters above ground (Dagar et.al, 1991). The Rhizophora roots are not so deep, but many, which makes them the most solid and resilient mangrove trees. They grow close to the sea and are good protectors against shoreline erosion, storms and cyclones and work as nursery trees for small animals. The Rhizophora areas are always flooded at high tide. (Field notes: Tasneem Khan)

In the Andaman Islands we find Rhizophora mucronata and Rhizophora apiculata. Both are generally among the most common ones. (Dagar et.al, 1991)

AVICENNIA

Avicennia is another common genus of mangrove trees and at our site we find f.ex. Avicennia officinalis, with its yellowish grey bark and Avicennia marina, also known as 'white mangrove,' with white bark. Avicennia is recognized by its typical snorkel roots (pneumatophores) and they are often found on delimited patches along the seashores or mudflats. At high tide the roots get flooded. (Ibid)

BRUGUIERA

The third most common mangrove genus is Bruguiera.
In the Andaman Islands we find Bruguiera gymnorhiza, which generally is the most common type, and Bruguiera parviflora. Bruguiera are recognized by their special knee-roots. (Ibid)

OTHER SPECIES

There are of course a lot of other species at this site, but the above mentioned are the most dominant. Other species which can be found, for example in the Dry-zone are: Christmas Mangrove, a bush with red flowers at Christmas time, Nipa Palm (see picture to the left) and Hoya, a common climber with fatty, waxy leaves that prevents evaporation of water. There are also orchids to be found in the dense canopies of the Rhizophora. (Ibid)

VIVIPAROUS SEEDS

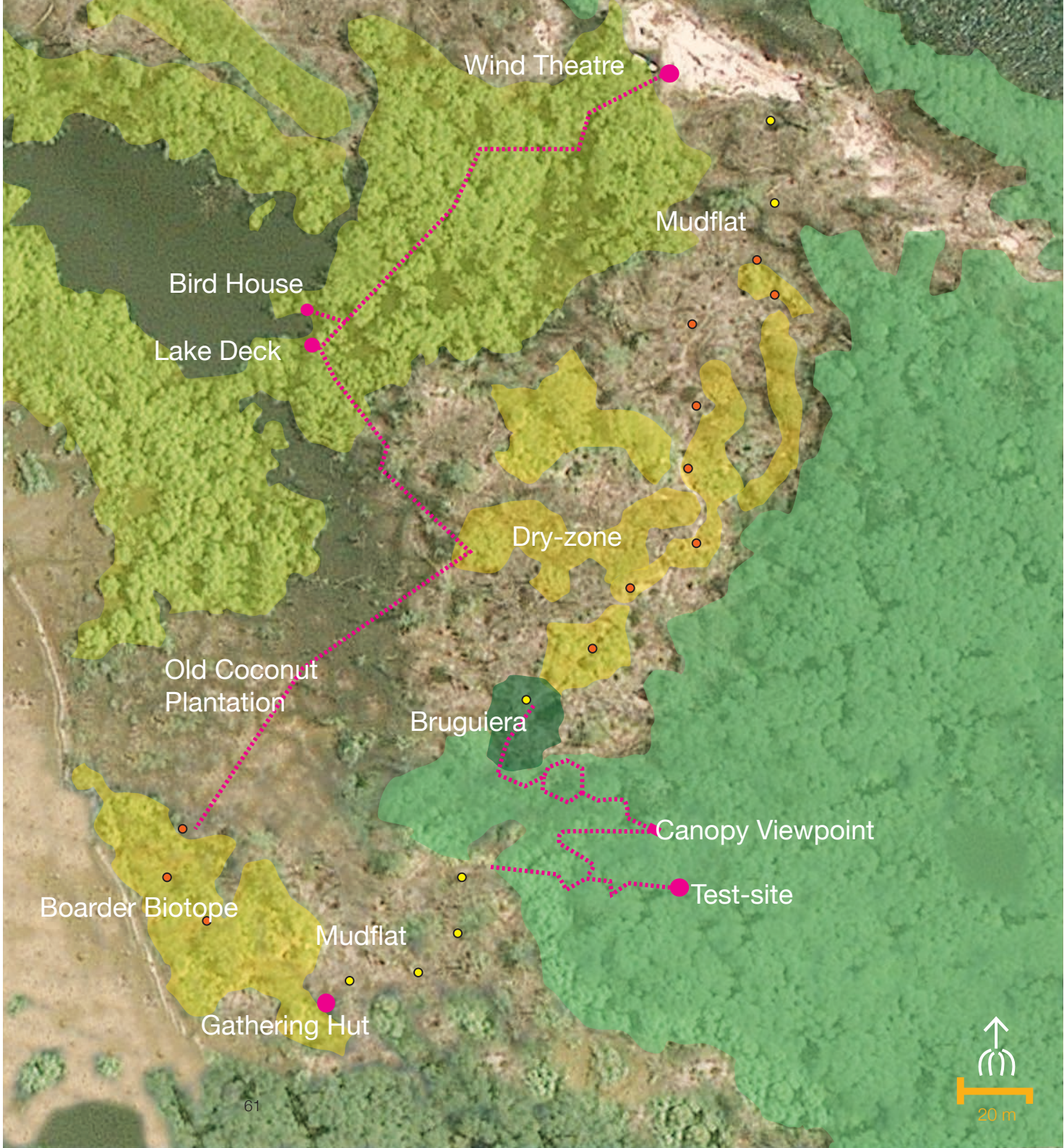
The picture to the left shows a Rhizophora seed, (the upper one) and a Bruguiera seed (below). These are viviparous seeds, called propagules, which many mangrove species develop. Viviparous means a characteristic in which the propagules develop early and germinate while still on the parent tree. By doing this, the propagule receives nourishment from the parent tree, which it can live on for a long time after it has fallen. When fallen, it can float until it finds a good place to grow and once there, it quickly develop roots and use the stored food to grow.

(www: Brown, 2012)

MUDDY FEET WALK

The trail begins close to the boarder of ANET's base camp and follows a circular route. It is approximately 1 km long. Some parts consist of an elevated boardwalk and on other parts you walk on the ground, guided by sculptures of plastic seeds.

Variation is important and different sensory impressions will be highlighted along the way. The trail is both educational and adventurous and takes you through a great variety of different sites and biotopes; the Mudflats, the Rhizophora forest, the Bruguiera area, the Dry-zones, the Kitchen-middens, the Avicennia forest and Lake, and an inundated former Coconut plantation turning into a swamp.



RHIZOPHORA

AVICENNIA

DRY-ZONE

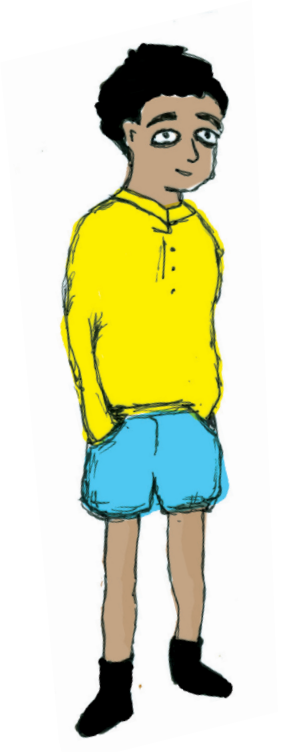
BRUGUIERA

BOARDWALK

PLATFORMS

PLASTIC SEEDS - standing

PLASTIC SEEDS - floating



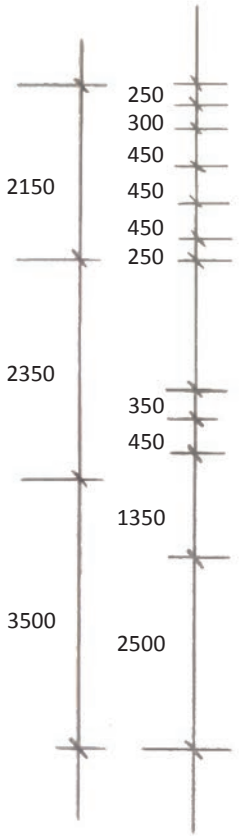
Hello!
I'm Vishnu and I am 10 years old. Me and my school class are at ANET to learn about mangroves and how to read the Andaman landscape. We're just about to go on the Muddy Feet walk – come with me and take the tour!

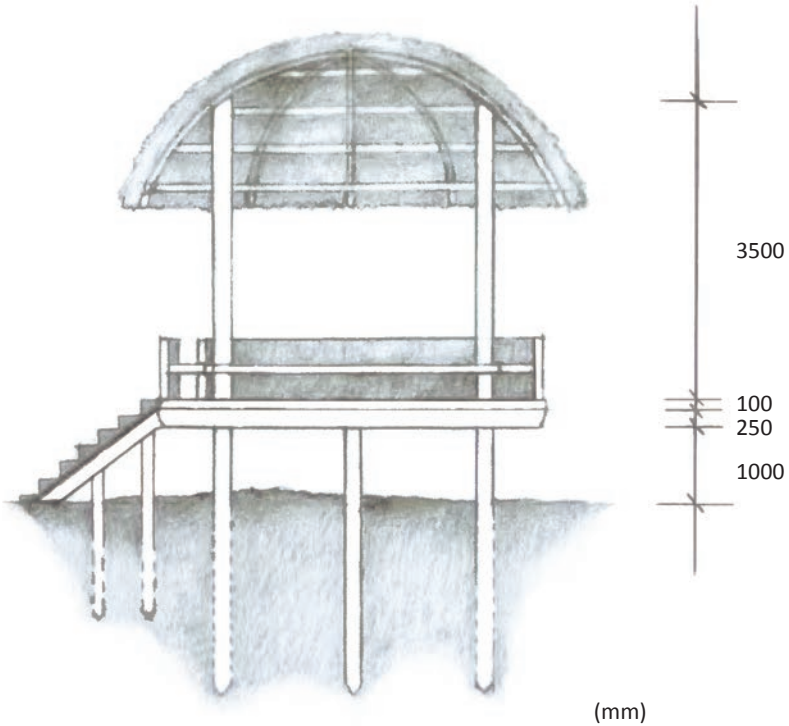
Gathering Hut

We all meet up in the Gathering Hut, where we get neoprene shoes so we can walk in the mud without hurting our feet. They are tight and feel like thick socks. Our guide, Chandra from ANET, tells us that there are hidden things in the landscape that we should look for especially; small animals that work in the mud so the Mangroves can grow and also a history of people who used to live here, and how we are going to see things left behind by them.

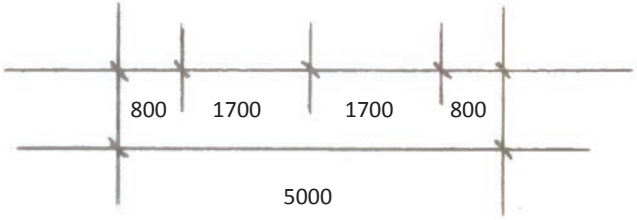
General remarks

All piles and foundations are made of Teak, due to its high resistance to termites and other vermins and its long durability in humid conditions. If other types of wood are recommended by local experts, that have similar characteristics and which are not threatened or protected, they may replace this material. If Teak is used it must be plantation grown and certified by FSC (www: FSC). The Bamboo used for the constructions should preferably be cultivated locally. These remarks considering materials apply to all constructions of Teak and Bamboo in the Design Proposal. In addition, for all piled constructions, the piles should be driven down to load bearing subsoil (Zimmermann, 2009, p.169). As we are not aware of the exact level of this layer, all measures below ground are estimated and should be revised on site.

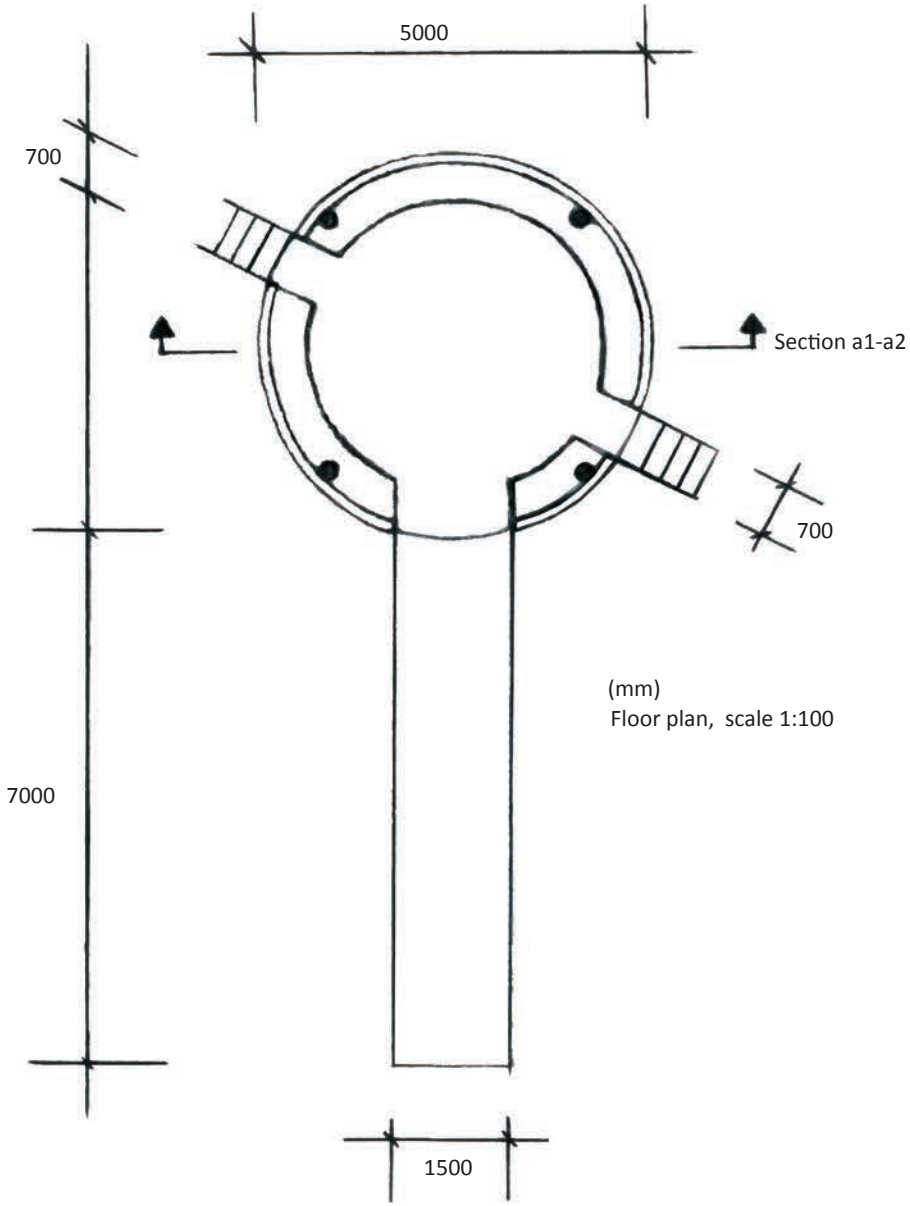




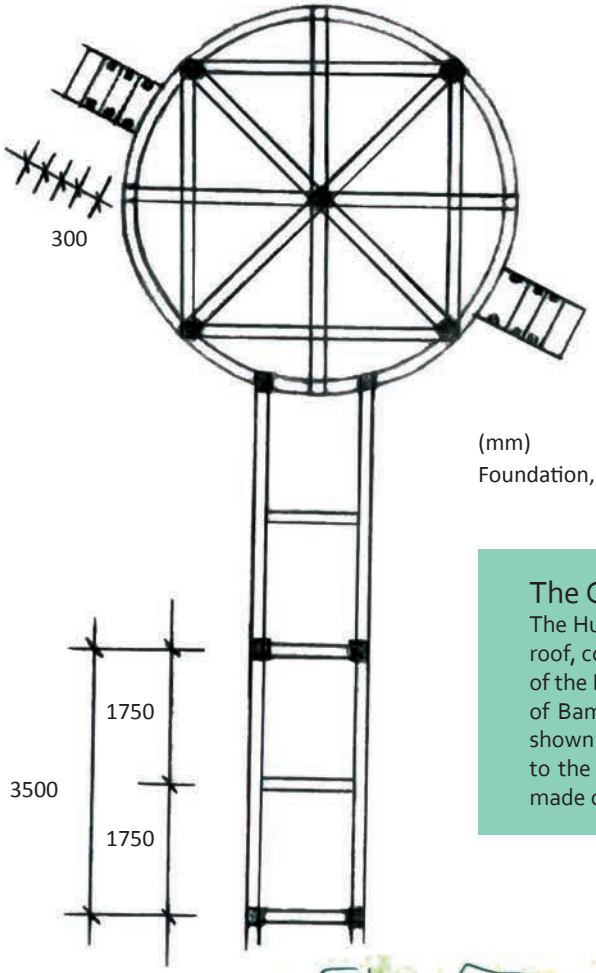
(mm)
Section a1-a2, scale 1:100



Gathering Hut



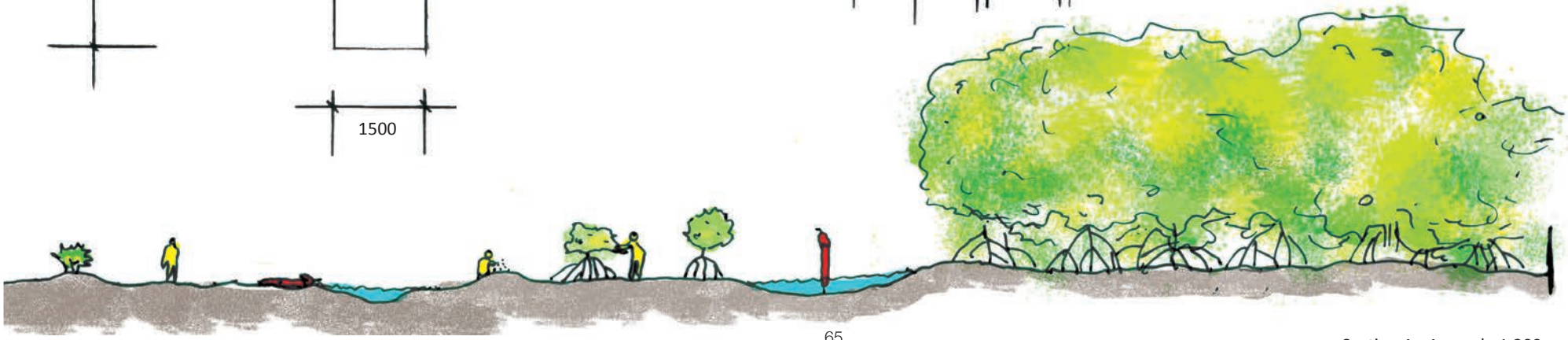
(mm)
Floor plan, scale 1:100



(mm)
Foundation, floor plan, scale 1:100

The Gathering Hut

The Hut rests on piles, which also carries the orbicular roof, consisting of a Bamboo frame thatched with leaf of the Nipa Palm. The floor has a top surface and walls of Bamboo. Two stairs lead down to ground level as shown in sections and plans, and a boardwalk connects to the Hut's entrance. Both stairs and boardwalk are made out of Teak.

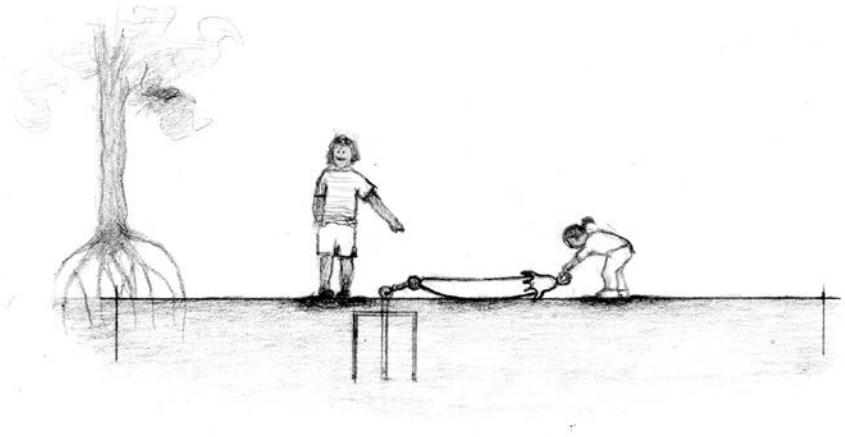


Section A1-A2, scale 1:200

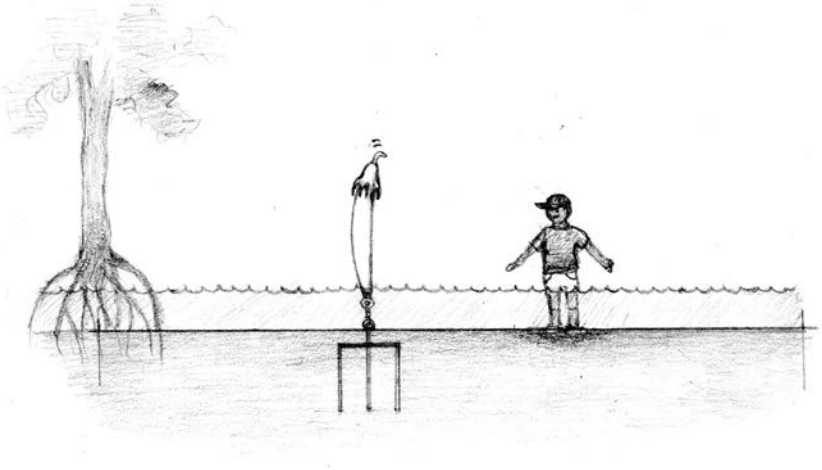
Mudflat

We walk down on the mudflat; it's slimy and a bit hard to lift your feet - but fun!! I feel someone is looking at me with big eyes. When I reach to touch it, it jumps away. That must be the mudskipper! There are big red seeds lying on the mudflat. Chandra explains they're made of recycled plastic bottles and when it's high tide, they rise like floats – just like the real mangrove seeds! We go looking for real seeds to see if Chandra is right. Wow, my friend Krishna has found a whole bunch! If we stick them into the mud, they will be new mangrove trees, Chandra says.

When the sun goes down, the Seeds glow in the dark because they have a special paint on that absorbs the daylight, Chandra tells us. If we come back in the evening, we can follow the lights and see animals that only come out at night!



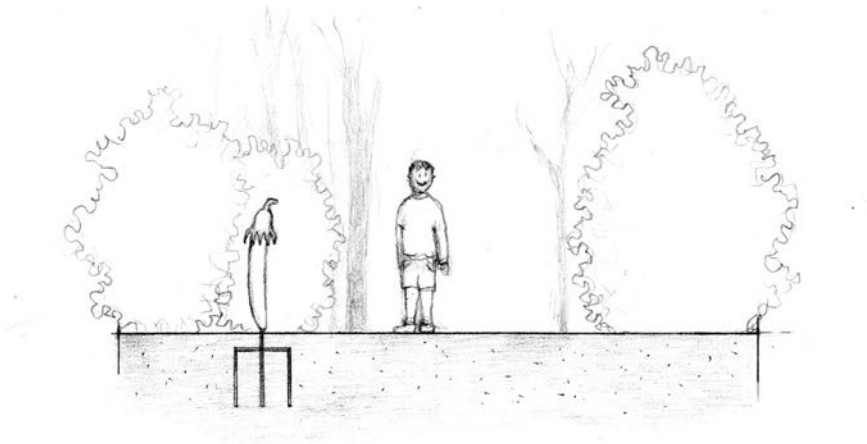
Floating Seed



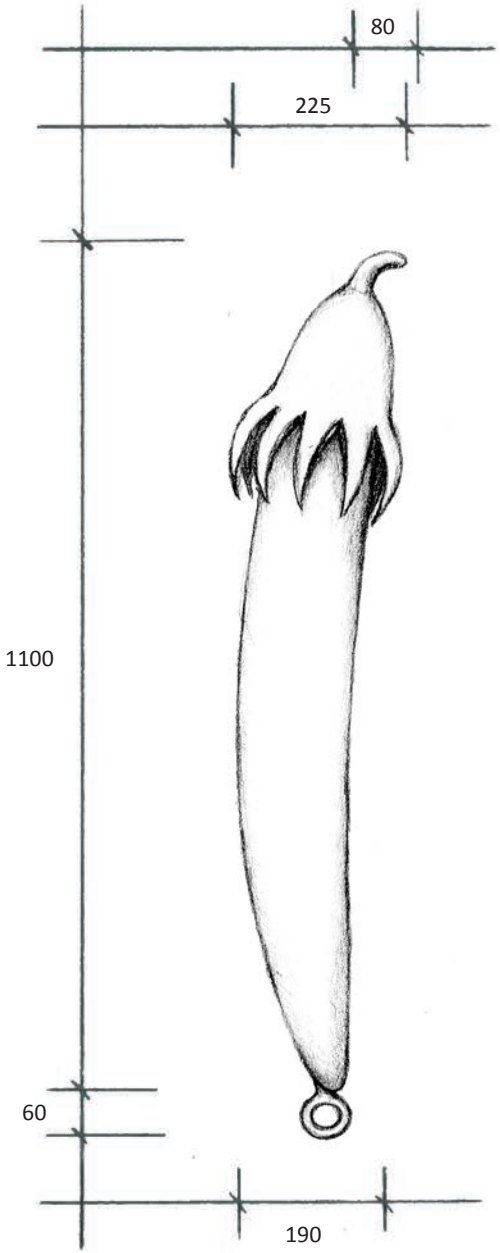
Mudflat & Plastic seeds

As the name tells, these parts of the mangroves are open grounds filled with mud. The mud is deposited here from tides or rivers. The mudflat is in the intertidal zone and therefore filled with water some times during the day and dry at other times. Small water puddles often occur on the mudflat after the water has withdrawn.

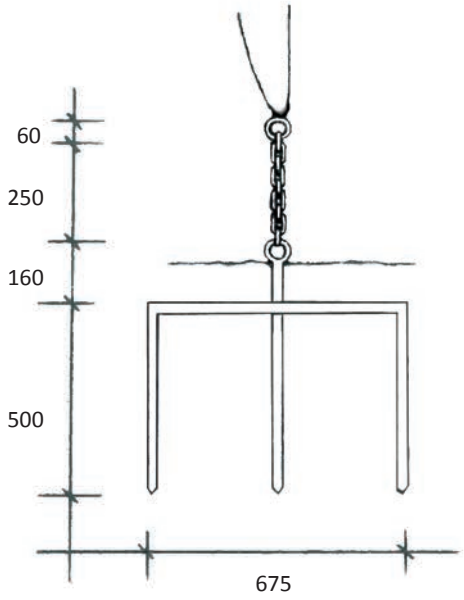
There are two types of constructions for the Seeds based on location. On the mudflat, the Seeds lie down at low tide and rise to standing position, like a float, at high tide. This Seed-type is attached to the ground through steady anchors of stainless steel. In the Dry-zones, the Seeds are in a constant upright position, reinforced by a stainless steel skeleton.



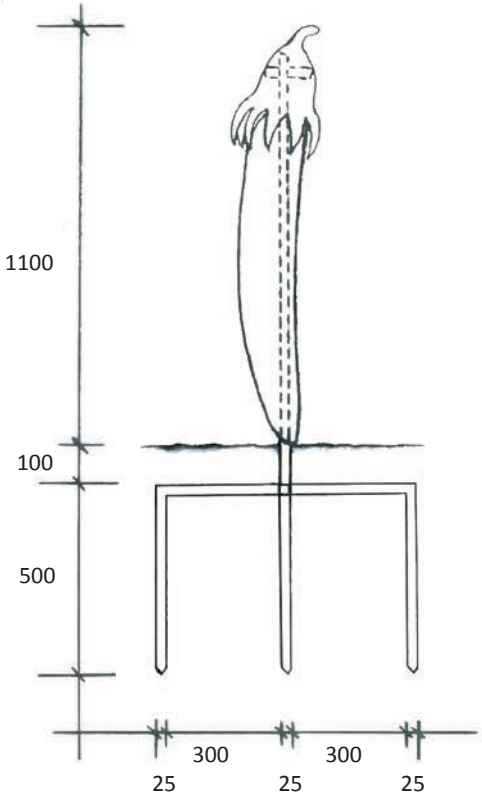
Standing Seed



(mm)
Floating Seed, elevation, scale 1:10



(mm)
Foundation of Floating Seed, elevation, scale 1:20

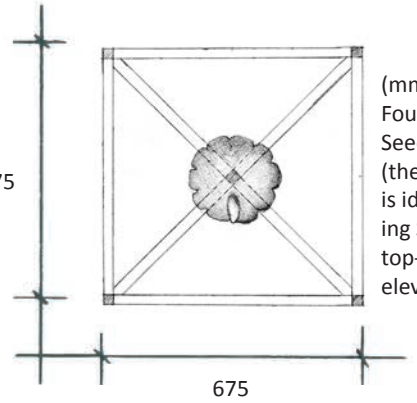


(mm)
Standing Seed, elevation, scale 1:20

Plastic Seeds

The Mangrove Seeds are made out of recycled plastic bottles, which are an abundant resource on the Islands. They are painted glossy red, and for this the environmentally friendly Impervex Latex High Gloss Enamel (www: Benjamin Moore) is suggested. On top of the enamel, the seeds are coated with transparent Glow-in-the-Dark Paint, from the eco-friendly Starglow series (www: Glowtec).

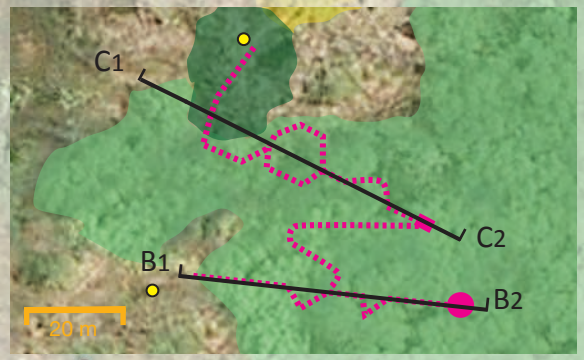
Floating Seeds: 7, Standing Seeds: 11



(mm)
Foundation of Standing Seed, plan, scale 1:20
(the structure of the anchor is identical for the Floating Seed, except for the top-attachment seen in the elevation.)

Rhizophora forest

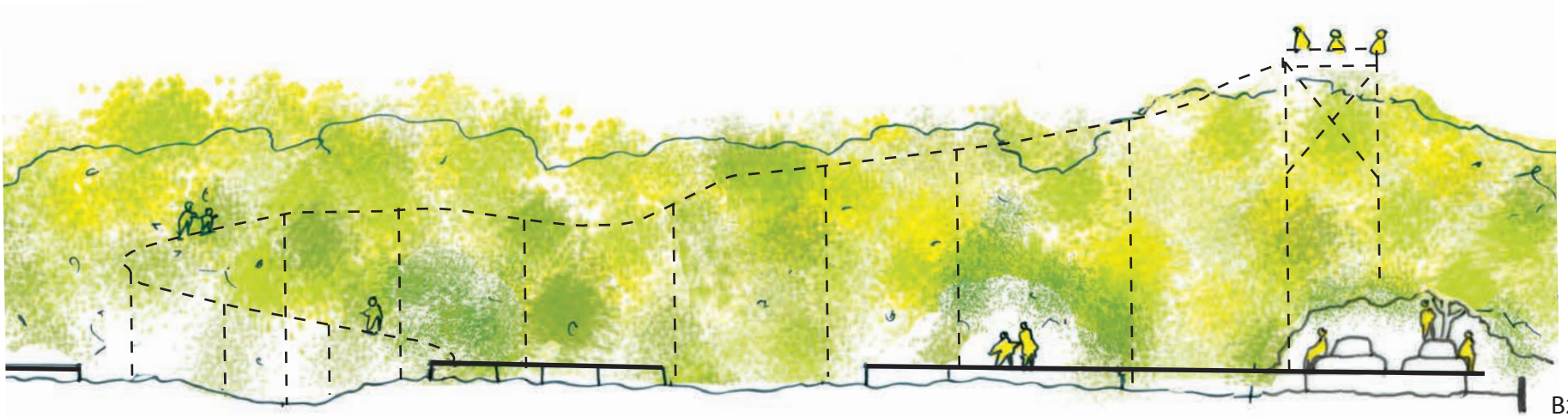
”Wetlands are a place of the alien, reptilian ’other’,
even the home of monsters lurking in their murky depths.”
(Giblett 1996, p.3)



THE WALK

ENTRANCE TUNNEL

BRUGUIERA



Section B1-B2, scale 1:200

CANOPY WALK

CANOPY VIEWPOINT

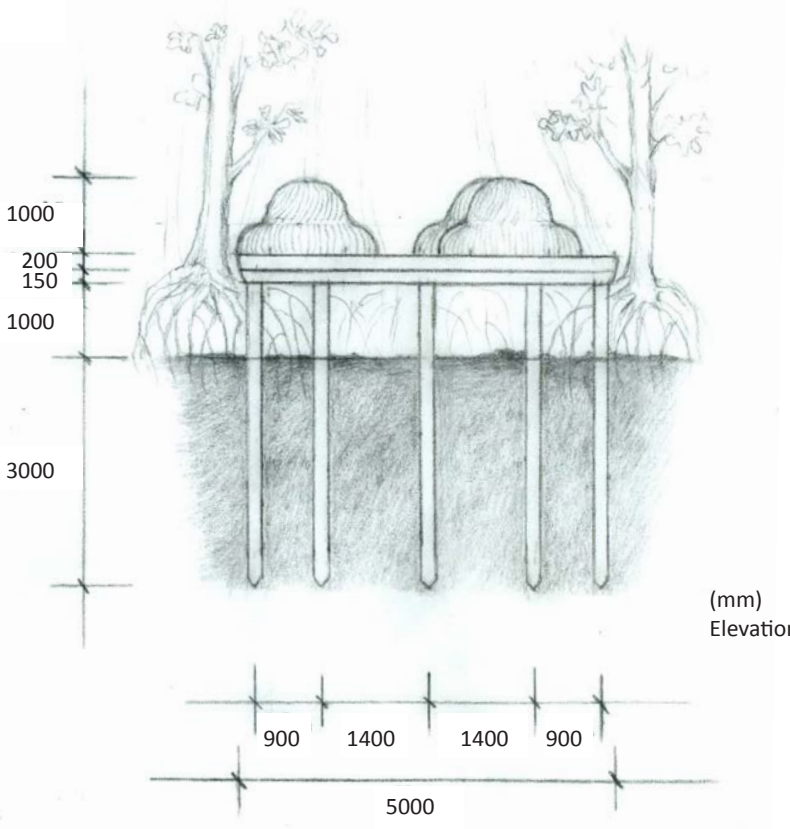
TEST SITE

CURTAIN TREE

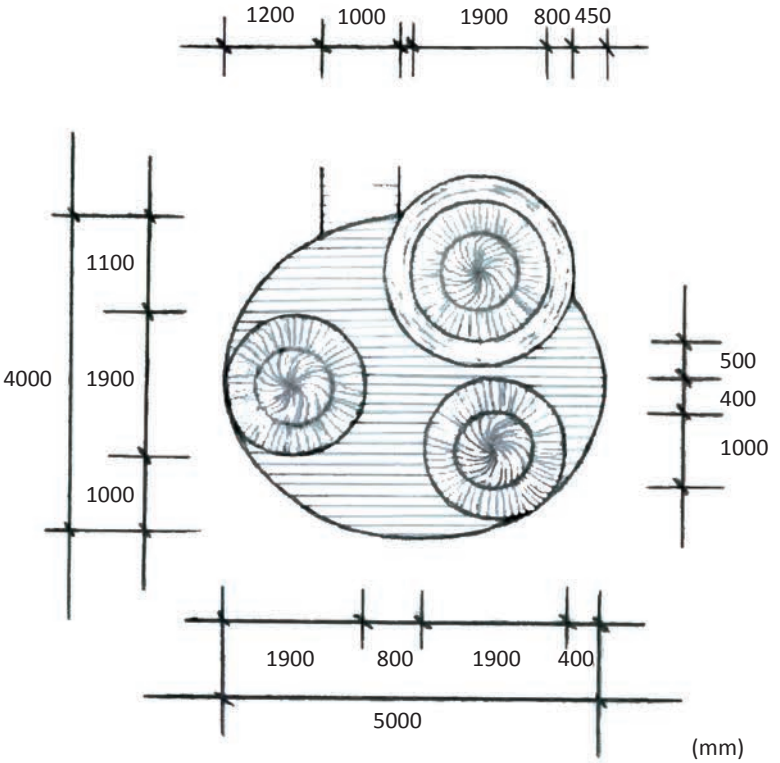
Section C1-C2, scale 1:200

Test-site

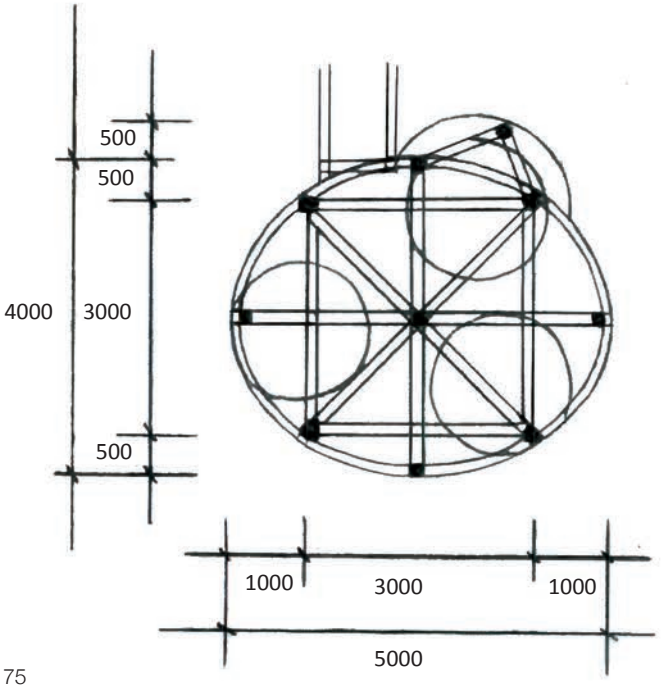

We have come to a very important place now: the Test-site. ANET does research here, and there is a deck where we can sit down while Chandra shows us how they do. I get to try to take a sample of the mud and put it in a little plastic tube – we will analyze this in our natural science class later and help ANET with their work.



(mm)
Elevation, scale 1:100



(mm)
Plan, scale, 1:100



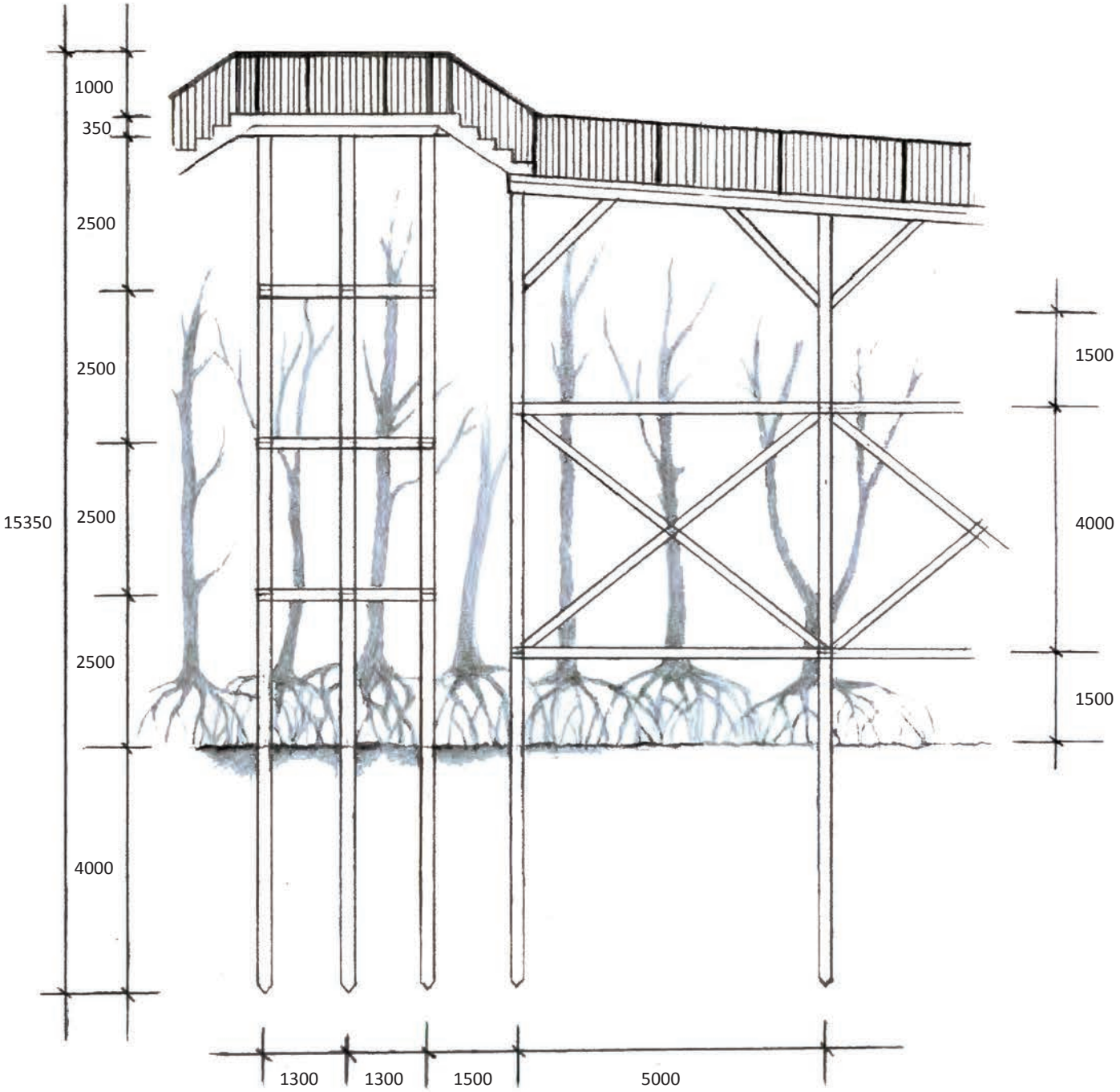
(mm)
Foundation of research platform, plan, scale, 1:100

The Research Platform

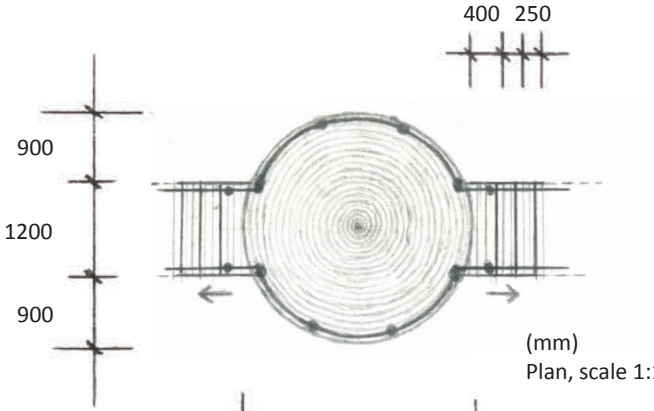
The deck of the Test-site has a Teak floor. On top, there are three seats made of molded Bamboo canes. A red and yellow carpet pattern is painted over two of the seats and the floor in between them and for this we recommend the low VOC Aura Exterior Paint (www: Benjamin Moore Paints).

Canopy Viewpoint

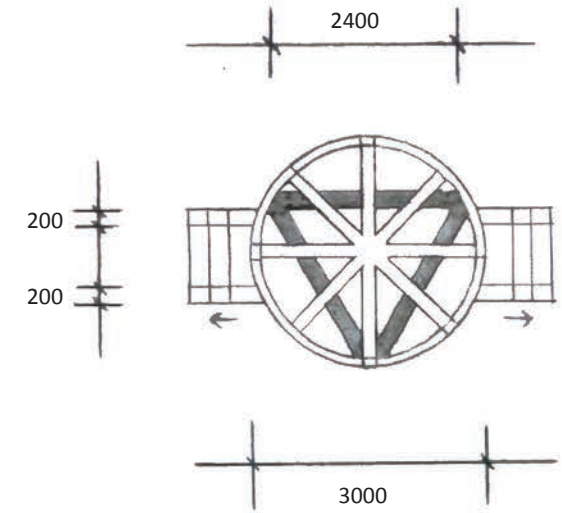
We are now walking on a boardwalk that goes up into the canopies. Here we look closely at the leaves and Chandra says that if we lick on them, we can taste the salt that the mangroves take up from the seawater and which is then pressed out through the leaves. Huge orchids are hanging from the trees and we climb higher and higher. On top there is a viewpoint – oh there's the ocean! Chandra has brought binoculars and I look out on the sea towards the Lohhabarrack Sanctuary to spy for Crocodiles, but they are hiding somewhere I guess.



(mm)
Elevation, scale 1:100



(mm)
Plan, scale 1:100



(mm)
Foundation, plan,
scale 1:100

The Canopy Viewpoint

The raised boardwalk has Teak-flooring, while the Canopy viewpoint has a top surface of molded Bamboo canes. Both the viewpoint and the raised boardwalk have stabile Bamboo safety fences.

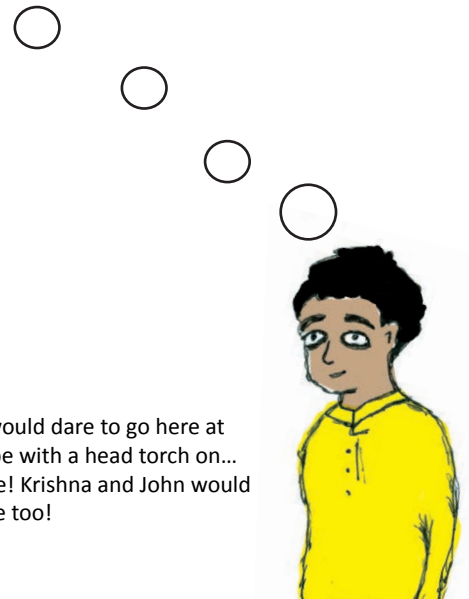
Curtain Tree

The Plastic Curtain

The Rhizophora tree can develop roots from its branches and before they reach the ground they hang in the air, almost like curtains. The curtain here is made of recycled plastic, and is a locally crafted product.

Bruguiera


It's a tree with strange roots; they look just like knees – or little monsters... This is the Bruguiera, another kind of mangrove tree, Chandra explains.


I wonder if would dare to go here at night... Maybe with a head torch on... But not alone! Krishna and John would have to come too!

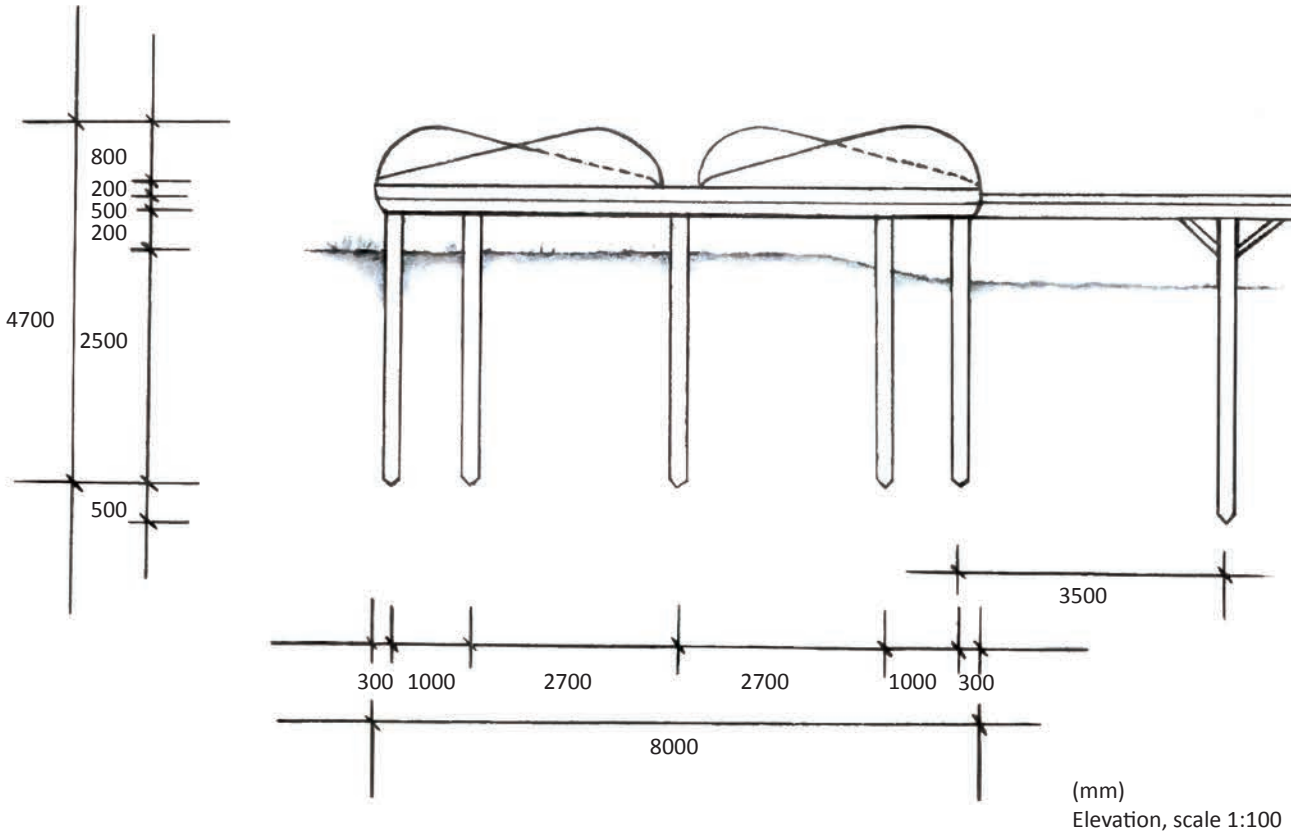
Dry-zone

The Boardwalk ends because we have come to the Dry-zone. The ground here is higher and the seawater doesn't flood it. Here there are completely different species, like the weaver ant. They build really cool nests by weaving leaves together. Ouch! They bite! Better move on!

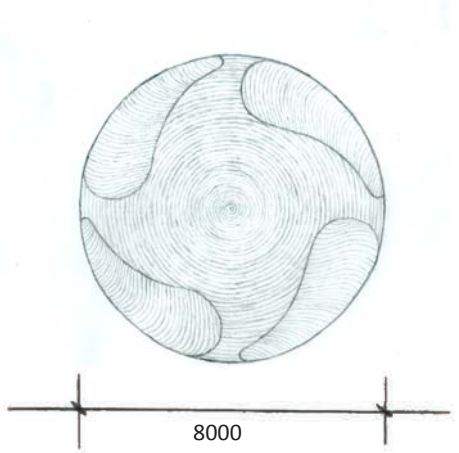

We follow the red seeds from the Dry-zone out to another mudflat, it's still low tide and some seeds are lying on the ground.

Wind Theatre

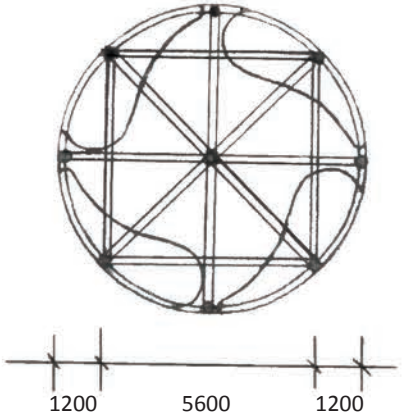
We have come to the ocean now! Near the beach there is a huge deck where we sit down for a rest and Chandra tells us about how there used to be camp-sites here, where the Great Andamanese coast-dwellers used to live. They have left behind piles of seashells and bones from their meals which we can see at some places along the walk. We learn that these piles are called Kitchen-middens. Krishna asks Chandra where the Great Andamanese camp now. Chandra says that some of their descendants live on Strait Island, but that they are not at all as many as they used to be. We want to know more about this, and Chandra tells us about many things from history that we didn't know, sad things – and unfair! When we come back to school, we will write essays about the history of the Andamans and get to know more about this.



(mm)
Elevation, scale 1:100



(mm)
Plan, scale 1:200



(mm)
Foundation plan, scale 1:200

The Wind Theatre

On top of the foundation, a spiral molded Bamboo floor with four sitting-sculptures is attached.


D1
D2
20 m

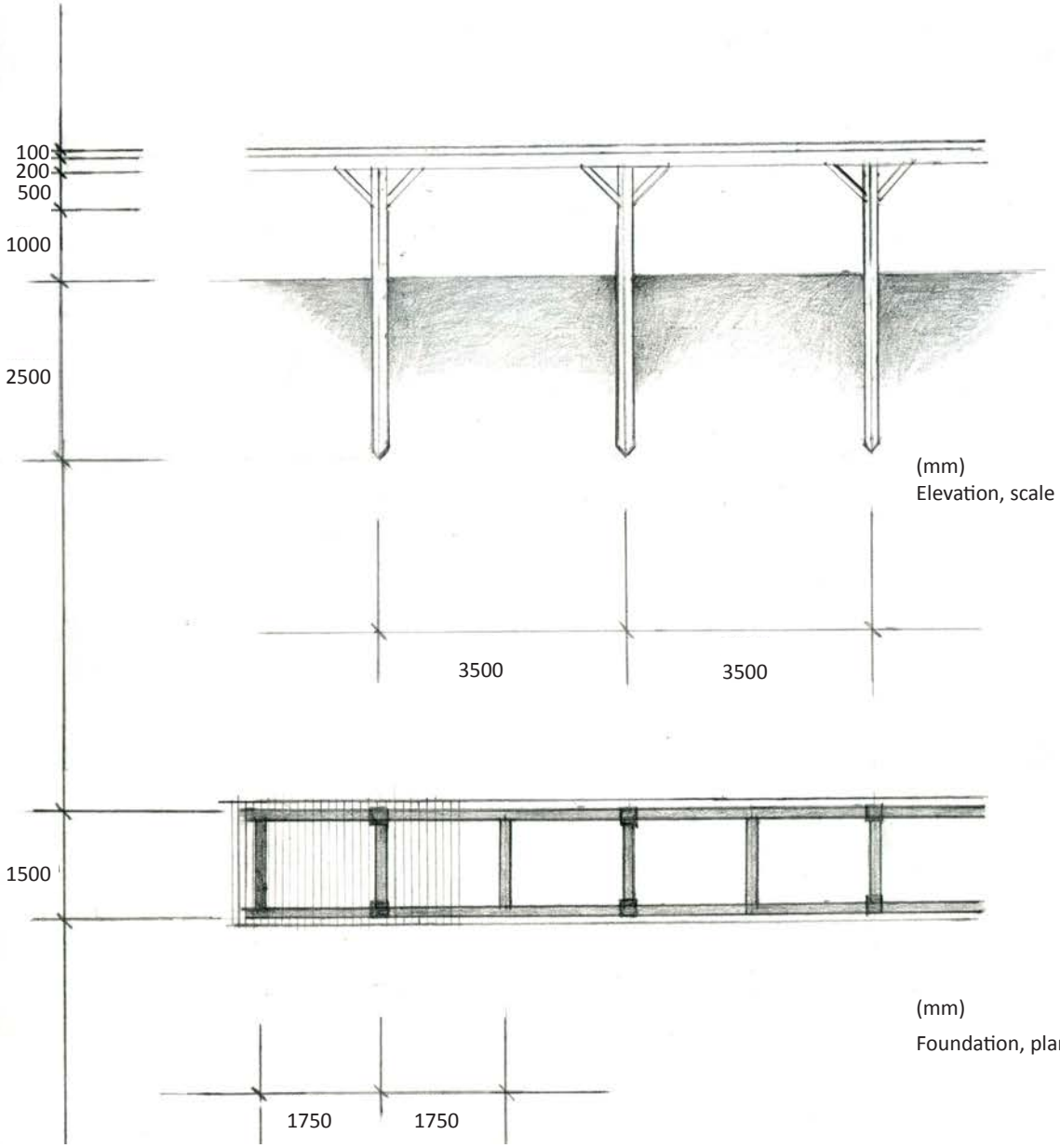

D1

According to the traditional beliefs of the Great Andamanese, there are two beings that control the weather and the seasons. In Aka-Bea language, they are called *Puluga ta* and *Deria*. *Puluga ta* lives in the north-east and is connected to the north-east monsoon, while *Deria* lives is in the south-west and is connected to the south-west monsoon. It is *Puluga ta* and *Deria* who send the winds; *Deria's* wind brings rain, thunder and lightning, while *Puluga ta's* winds can bring either fine weather or harsh storms. The storms, thunder and lightning are signs that the beings are angry. Considering *Puluga ta*, there are a number of actions that can upset her, for example burning or melting bees'-wax, killing a Cicada, or making noise when the Cicada sings in early morning or evening.
(Radcliffe-Brown, 1922, pp.147-152)

Section D1-D2, scale 1:200

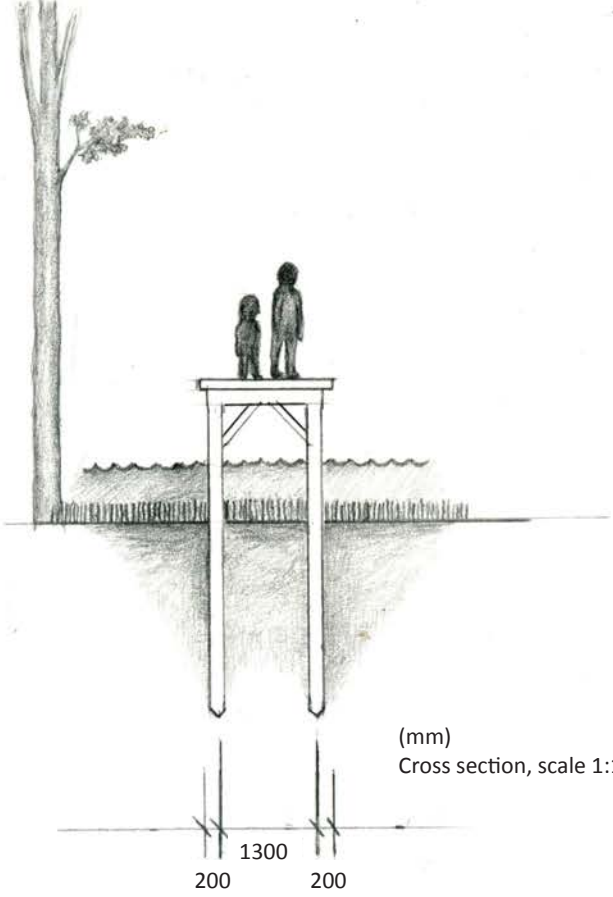
Avicennia

We go inside a forest which is just by the sea. There are thousands and thousands of little sticks coming up from the mud here. It is the roots of the Avicennia, another mangrove specie, Chandra says. When the tide gets high the tree breathes through them – just like us when we snorkel in the sea! We walk on a boardwalk here, so we don't step on the snorkels and choke the trees.
–Click –Click-click. What's that sound?
It's the Pistol Prawns!

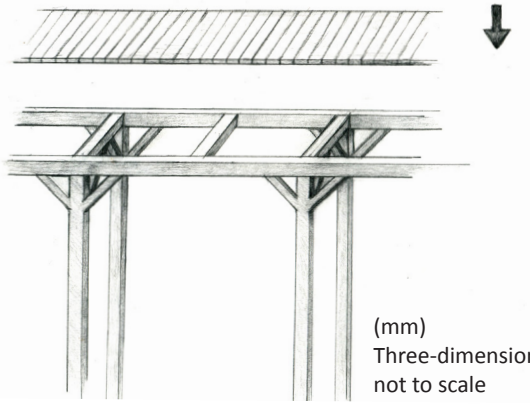


(mm)
Elevation, scale 1:100

(mm)
Foundation, plan, scale 1:100



(mm)
Cross section, scale 1:100



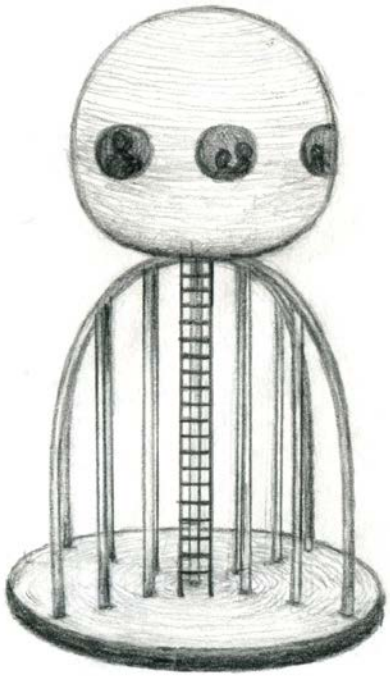
(mm)
Three-dimensional view,
not to scale

The Boardwalk

The floor of the boardwalk is made out of Teak.

Bird House & Lake Deck

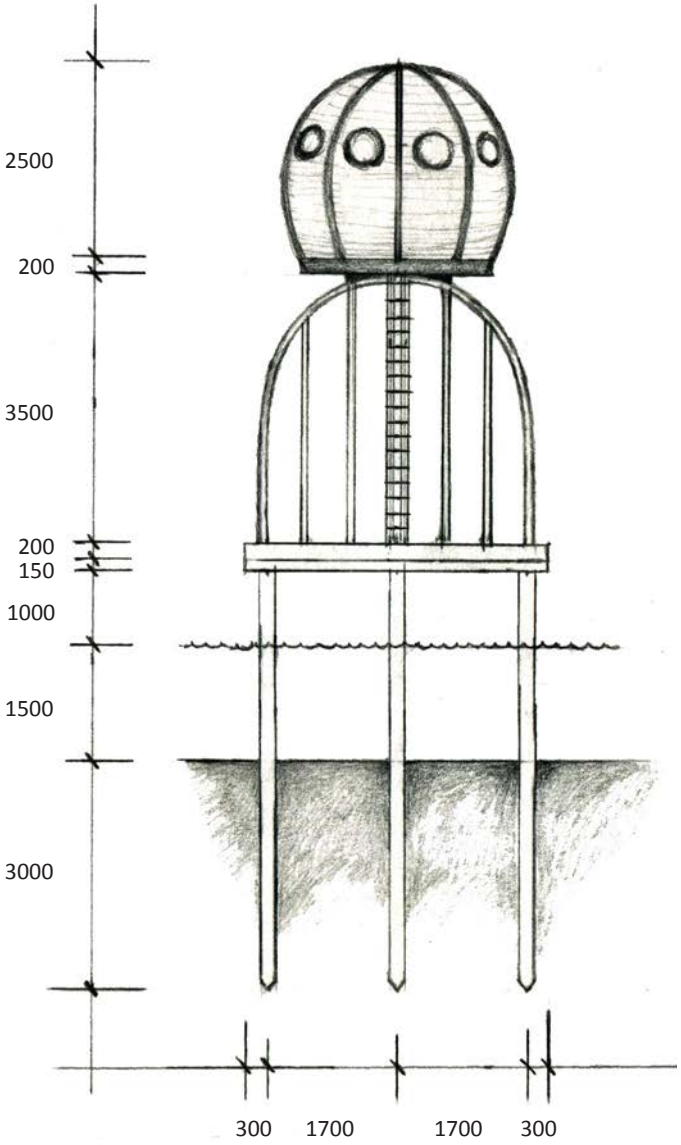
We have come to a lake inside the forest. Oh, what's that in the tree canopy? An egg? A UFO? It's a bird observatory, Chandra says, and if we sit really quietly inside it, we might see birds like King Fishers, Night Jars, White Bellied Sea Eagles, Serpent Eagles, Andaman Woodpeckers or Fulvous Bellied Woodpeckers. I borrow binoculars from Chandra and climb up. On the walls there are pictures of different birds and I sit down by the window and peek around. Suddenly, I see a huge bird with grey wings and a white head and belly making a loop over the lake! I look at the posters - it was the White Bellied Sea Eagle!



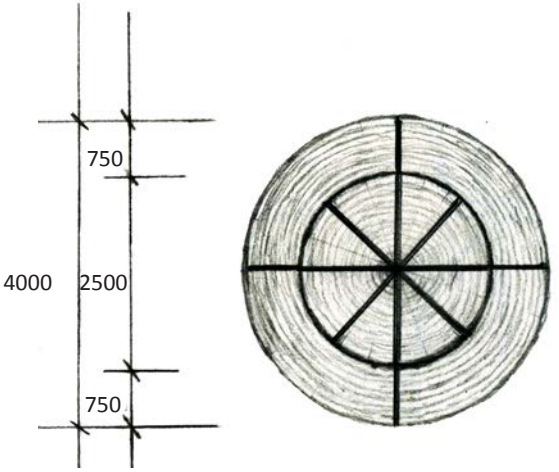
Three-dimensional view, not to scale

Bird House

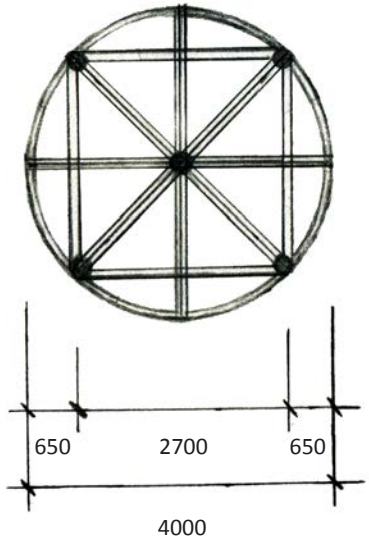
On top of the Teak foundation, the deck has a floor of spiral molded Bamboo. The construction that supports the house consist of two stabile Bamboo arches, anchored in the Teak foundation and attached at their intersecting centres so that they form a cross, seen in plan. The arches are supported by Bamboo poles and at the centre of the deck, a permanently attached ladder leads up to the entrance of the house; a circular opening with the diameter of o,8m. The house has a skeleton of vertical, arch-molded Bamboo canes, which are covered on the outside with horizontally placed canes, constituting the walls.



(mm)
Elevation, scale 1:100



(mm)
Plan, scale 1:100



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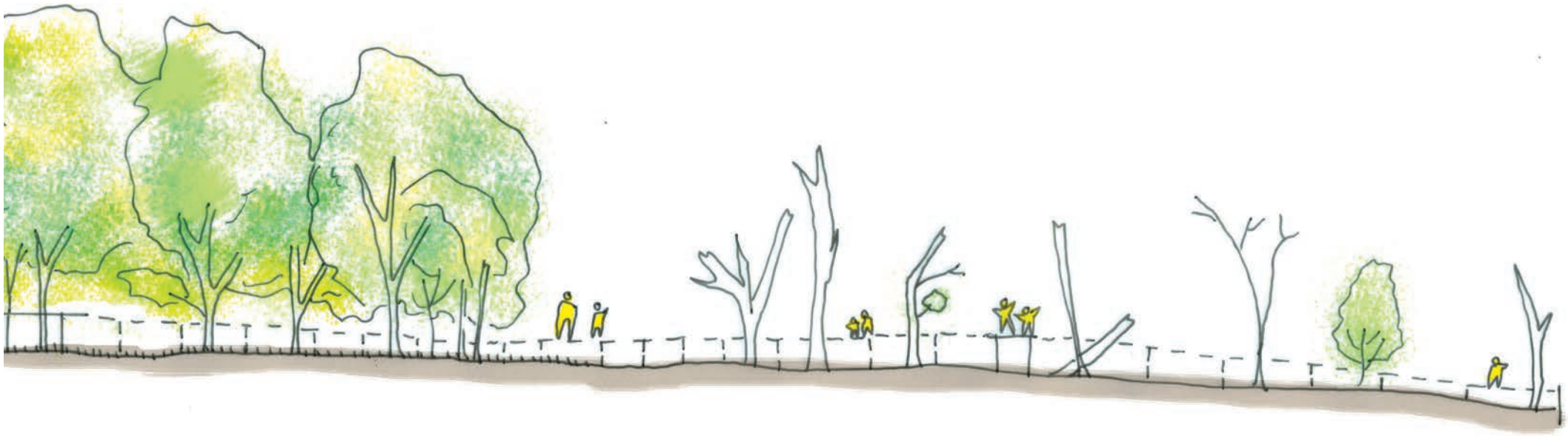
Foundation, plan, scale 1:100

THE WALK



Section E1-E2, scale 1:200

The Lake Deck

The floor and sitting-sculptures are made out of molded Bamboo canes, resting upon a piled Teak foundation. The boardwalk seen in the plan has the same basic construction as shown on page 87.

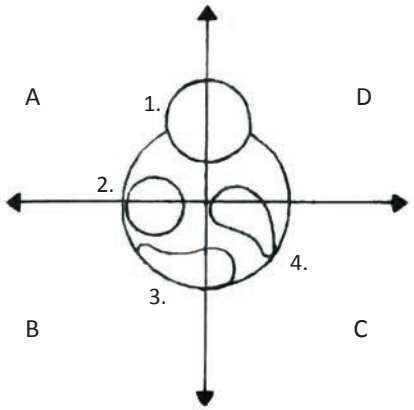
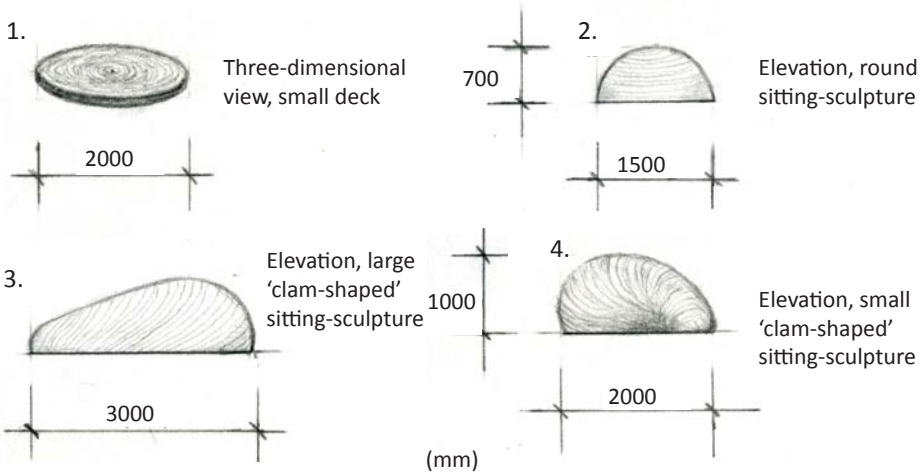
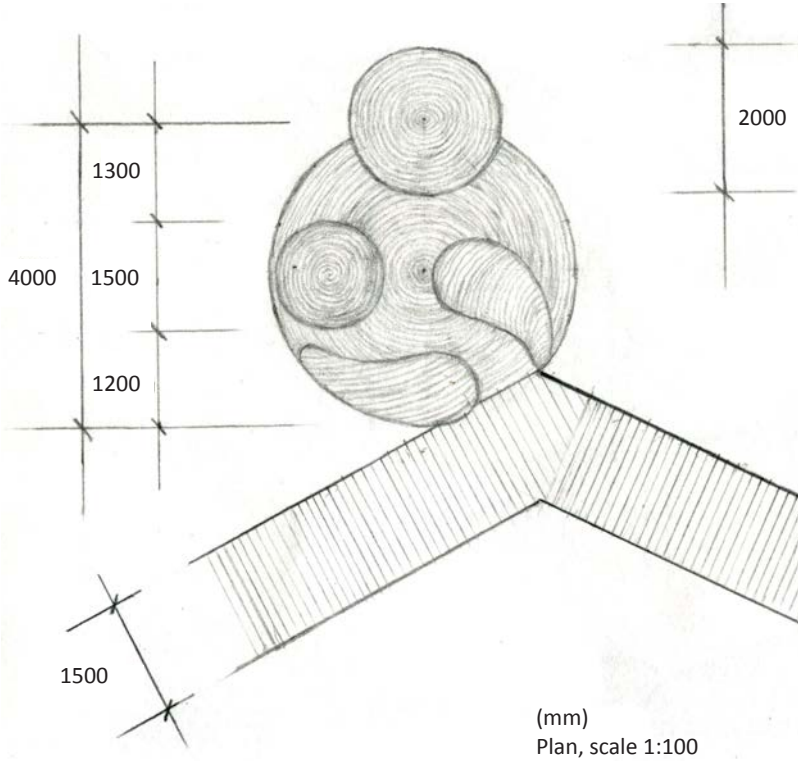


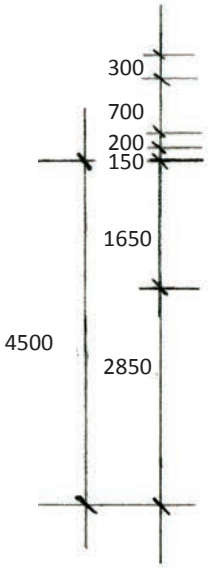
Diagram in plan,
A, B, C, D & detail 1, 2, 3, 4

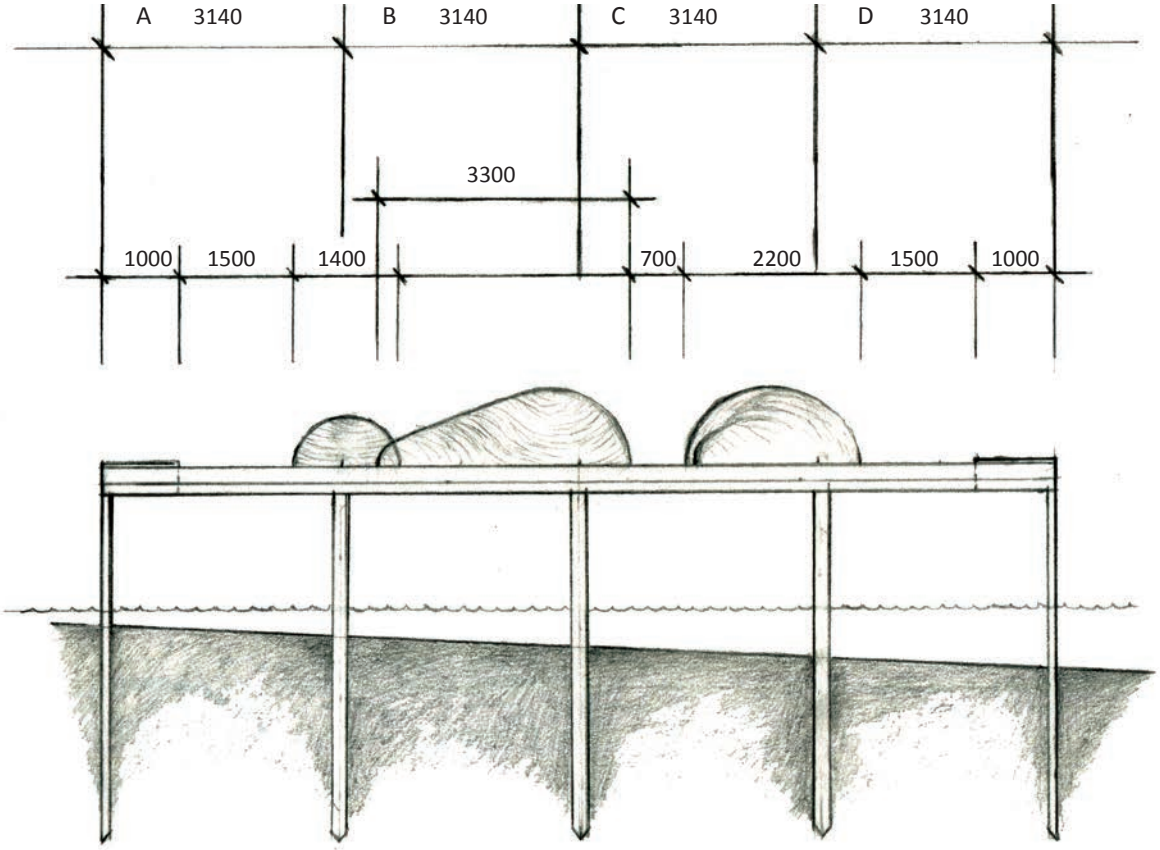


(mm)
All details in scale 1:100



(mm)
Plan, scale 1:100





(mm) Elevation A, B, C, D, scale 1:100

Old Coconut Plantation

We go out of the Avicennia area and follow the boardwalk to a big mudflat. There are mostly dead trees here and it looks almost scary... The dead trees are remains of a coconut palm plantation which grew here before the earthquake and tsunami in 2004, when the ground was pressed down by 1,5 meters and the area was inundated. But in time, Chandra says, there will be a new mangrove forest growing here. He also explains that the mangroves protect the land when tsunamis and hurricanes come from the ocean, so we have to take care of and protect them.

The Boardwalk

The boardwalk makes a zigzag pattern over the mudflat. The form is derived from the common snake pattern used in traditional Andamanese culture to decorate objects or adorn their bodies through scarified tattoos or body paintings (Radcliffe-Brown, 1922, pp.484-485). The zigzag layout also extends the walk, so that interesting features such as mud-castles and old tree trunks can be seen up-close. For details on the construction of the boardwalk, see the Avicennia boardwalk, p.87.

Boarder Biotope

Here the boardwalk ends because we have come to another Dry-zone. We follow the red mangrove seeds through small palm-trees and puddles where there are lots of tiny animals like mudskippers and fishes. I take some photos to show my sister Banu who is very interested in small fishes. The palm trees have strange fruits on them. Chandra says, it's Nipa palms, and when the fruits are small they can be put in food and the leaves are used to make roofs. The roof of the Gathering Hut is made from them.

The Boarder Biotope

For construction of seeds, see Standing Seeds on p.68.

Now we have come back to the Gathering Hut where we began and we get a task for school tomorrow. We are going to make a drawing of something we have seen or experienced today. What am I going to draw...? Oh – now I know!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04. FINAL DISCUSSION

FROM IDEA TO FIELD

Looking back at the journey we have made since last fall, when we decided to make this joint project and travel to the Andamans to conduct our field studies, it is interesting to see how the process has evolved and expanded, to then finally be narrowed down to this thesis and proposal.

A strong mutual interest in working internationally and with environmental and humanistic questions raised the idea of looking at possibilities of making our fieldwork in India in the first place. We wanted to challenge both ourselves and the tools we had acquired throughout our education and try them out in a vastly different context, so when we heard about the development of tourism on the Andamans through Chaos Pilot Henrik Johansson who had just visited the Islands, we were curious, as what we had heard about the archipelago before was only that it was the home of several indigenous tribes, renown for its spectacular environment and that the Islands were struck hard by the 2004 tsunami.

As we looked into the subject further on the Internet, we soon found that there were several aspects we could investigate in a thesis, for example; how the development of tourism was planned and implemented on the Islands considering the sensitive environment; if eco-tourism was a concept that was applied and if so, how the concept was implemented and used; and how the transformed landscape after the tsunami could be dealt with.

It was through these enquiries we came to look at the mangroves, as it had been recognized that they serve as buffers against tsunamis and hurricanes. Through further investigations we found that they are a key-ecosystem on the Islands, binding soil and preventing land-erosion, sustaining coral reefs and freshwater supplies and serving as a breeding ground for fish and as a source of local livelihood. It was also clear that it was an ecosystem under constant threat as mangrove swamps are often affected by development and intensified land use. We were fascinated and intrigued by the fact that the mangroves seemed to hold the whole landscape together, both physically and metaphorically.

The mangroves thus became our point of departure for investigating the Andaman landscape and we had targeted one of our main focuses of the thesis. The other, we identified as eco-tourism and an idea started to grow about investigating possible combinations of the two.

Through the Internet, we established contact with the Andaman and Nicobar Islands Environmental Team, ANET, to inquire if we could stay with them to make field studies as they conducted research on mangroves. They approved of this and we booked our flights and started doing further research on the background of the Islands and preparing our investigations about mangroves and their relation to the Andaman landscape.

As we arrived at ANET they asked if we were interested in making a proposal for a boardwalk system through the mangrove area adjacent to their facilities. This was just the kind of project we had hoped for. On the first day we were invited to join Anita, Operations Manager at ANET, and a group of visiting children from the mainland for a walk in the nearby swamp. So, we pulled on the borrowed neoprene shoes and squished out on the mudflat, feeling happy but quite confused over our exact part in this context. But as mentioned above, one of our main questions at issue was just this; to investigate our professional role and acquired tools from the education in a totally unfamiliar environment, and we had succeeded in putting ourselves in a situation of which we really knew very little.

IN FIELD

Throughout our stay at ANET, we made repeated walks through the mangrove swamp; at first always with someone from the crew, but after a few tours, we were allowed out on our own to explore and document our impressions and ideas. We joined in when ANET guided visitors, and soon also got to guide small groups ourselves.

The Walks as a method

During these walks we tried to analyze the surroundings using all of our senses, and not just the visual. In the swamp the environment also invited to these types of explorations, for example; recognizing the feeling of walking on a non-solid surface, climbing over large roots and feeling the texture of the trunk with the hands, smelling the swamp, tasting the salt on the leaves of the mangroves, stepping in a puddle and making mudskippers jump away, touching spiky leaves and intricate palm fruits, feeling the breeze when approaching the sea, wading through water at high tide, etc. We walked through different directions within the area, exploring its boarders, species and layers. We walked as the water was rising, at high tide, when it withdrew and at low tide, to get a sense of how the landscape changed with the sea.

These types of analyzes remind a lot of how a child perceives a landscape; in a physical and intimate way. As we found when going into the design phase, these types of analyzes where the ones that we could recall with most clarity, while the visual analysis we conducted seemed to fade faster from the memory. Recalling these feelings of the site proved to be a great inspiration to us, all through the work with the proposal. Having the time and opportunity to get to know the site in this way as part of the design process was a great benefit, which we consider ought to be prioritized more in our overall work as landscape architects.

OUR ROLE AS LANDSCAPE ARCHITECTS

Considering our role as landscape architects during this process, we have identified two distinct roles through which we have acted; as observing outsiders/researchers and designers. We have also elaborated on a possible future role; that of functioning as process leaders.

The observing outsider/researcher

When we arrived to the Islands, we were not clear on what it was that was our overall aims and goals of the thesis. We had framed two main themes that we were interested in investigating: mangroves and eco-tourism, and through ANET we had got the possibility to make a proposal for the mangrove swamp. But despite of our background research prior to departure, we felt that we knew way to little about the overall context of the Andamans to start up the design process straight away.

We made attempts, through models out of bamboo-cane and elaborations through sketches, but we felt as if we were only applying our general idea of an 'ideal mangrove boardwalk' which we had seen on reference images when researching on the Internet. It did not feel as what we produced corresponded with the site and its context at all.

We also experienced great challenges in defining our role as Landscape Architects, which probably was a contributing factor to this insecurity considering the design. We felt a bit overwhelmed; the researchers at ANET already knew so much about this landscape, and although this was supposed to be our area of expertise, we felt that we were laymen here, with different references, which could not be applied to this context without consideration. We were also aware of that the local people knew so much more about building techniques and materials suitable on the Andamans, and it was thus hard to define what it was that we could contribute with. The general feeling was also that we could not do justice to this site until we had engaged in a process of learning more about the mangroves as part of the greater context of the Andaman landscape.

The role we took in relation to ANET initially, was as observers and researchers, learning from their work, asking questions and gathering information through notes, sketches and photographs. We spent our days at ANET in field and in their library studying ecology and species.

After this phase, we continued our fieldwork by travelling around on the Islands in our role as researchers and observers, making field-visits and conducting interviews as part of investigating the greater context, problems and possibilities of the Islands. We put special emphasis on mangrove preservation, environmental issues and tourism development, and how these questions are related to the overall situation of the Islands. Through these investigations we assembled a body of knowledge which was the key to finding our approach to the site in the final proposal.

Our initial idea, had been to solve the general design of the boardwalk in field, and take advantage of the opportunity to discuss and learn about design solutions from local people through arranged workshops. The proposal would have benefitted a lot from this, as their input could have been incorporated into the suggested design directly. But the choice to focus on getting a sense of the overall context of the Andamans, we believe was right, as we, as mentioned above, felt we couldn't make informed decisions on the greater aim of the design without this knowledge.

The ideal scenario would have been to go back to ANET again for a longer period after our general field-studies, and arrange the workshops and meetings with the local inhabitants. We tried to organize our time-plan so that this would be possible, but at this point, ANET was fully booked, and we could only make a shorter final visit at the research base.

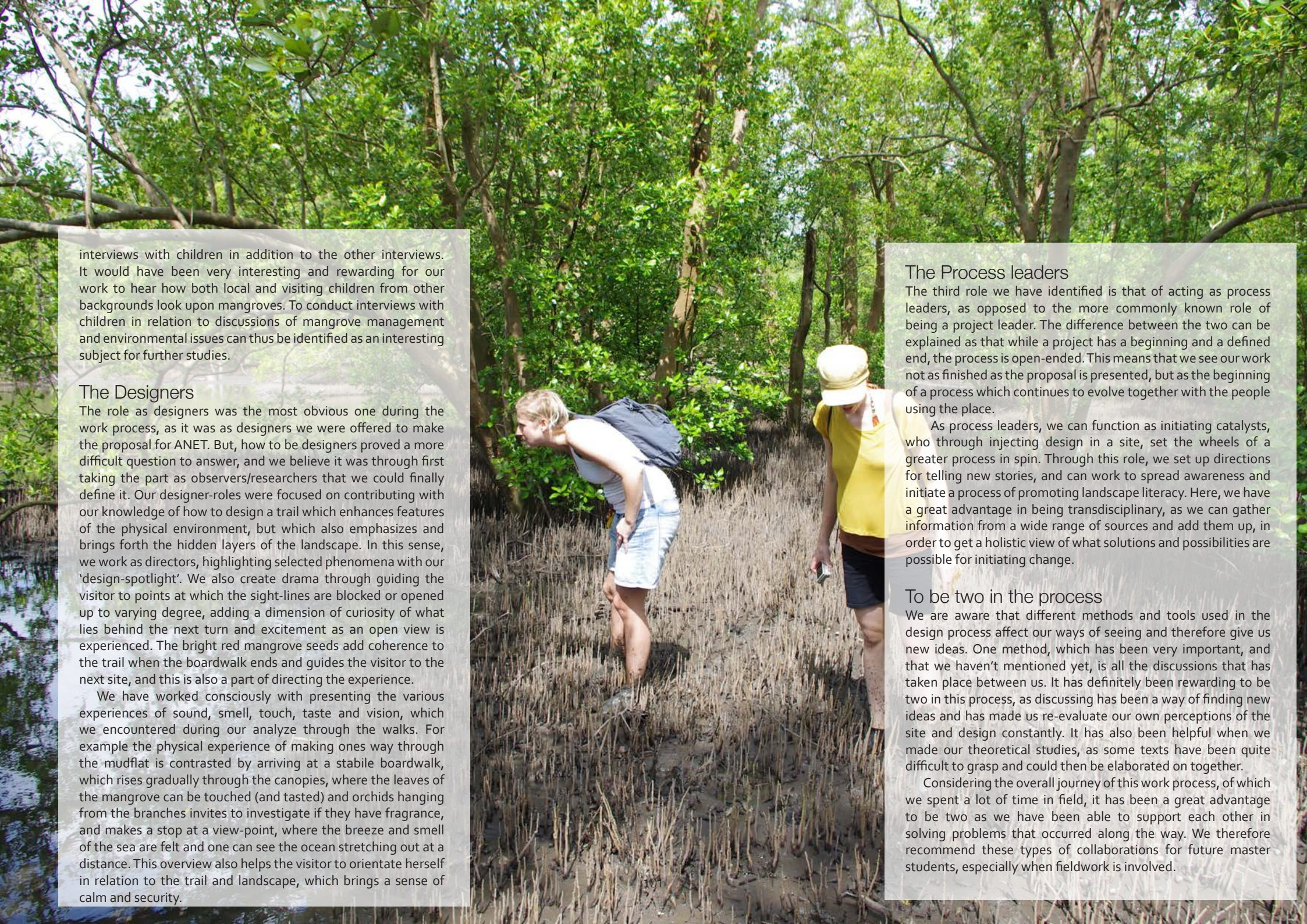
There are both benefits and problems with how we took on the task of the fieldwork. We could have chosen to set a more exact time plan and schedule from the beginning, but as we were searching for a process and a context in which we could work, we also wanted to leave openings for investigating issues that occurred along the way. It is difficult we found, to find a balance considering how much should be planned, and how much should be left open for possibility of exploring and incorporating the unexpected.

Interviews and cultural codes

The interviews and meetings that we arranged with local informants were difficult at first, since we did not know the cultural codes and etiquette which applies in such situations. Luckily, we received great help from social anthropologist Clarissa Leopold, who were present during an interview and came with advice, such as of general phrases of courtesy and feedback on how she interpreted the response of the interviewee. And with time, we improved, and learned about the cultural codes of the Andamans as a consequence. What we have derived from this is, that it is of great value to receive help from people engaged in other academic disciplines, and as we also had many interesting discussions about the situation of the Andamans with social anthropologists Clarissa Leopold and Philipp Zehmisch, we think that future collaborations between the fields of landscape architecture and social anthropology could be very fruitful considering the Andamans, but also from a general perspective.

We are aware of the fact that interviews with local children as well as children from the mainland visiting the Islands are lacking in this work. As we considered eco-tourism, mangroves and environmental issues to be our primary subject when we went to the Islands, the interviews were directed to people mainly targeted according to these subjects. It was not until we came back to Sweden, processed our experiences and added theory, additional reference projects and more in-depth studies that it became clear to us that we needed to focus on children as a primary target group for our proposal, along with the tourist-target group.

Seen in retrospect, we should thus have focused on making



interviews with children in addition to the other interviews. It would have been very interesting and rewarding for our work to hear how both local and visiting children from other backgrounds look upon mangroves. To conduct interviews with children in relation to discussions of mangrove management and environmental issues can thus be identified as an interesting subject for further studies.

The Designers

The role as designers was the most obvious one during the work process, as it was as designers we were offered to make the proposal for ANET. But, how to be designers proved a more difficult question to answer, and we believe it was through first taking the part as observers/researchers that we could finally define it. Our designer-roles were focused on contributing with our knowledge of how to design a trail which enhances features of the physical environment, but which also emphasizes and brings forth the hidden layers of the landscape. In this sense, we work as directors, highlighting selected phenomena with our 'design-spotlight'. We also create drama through guiding the visitor to points at which the sight-lines are blocked or opened up to varying degree, adding a dimension of curiosity of what lies behind the next turn and excitement as an open view is experienced. The bright red mangrove seeds add coherence to the trail when the boardwalk ends and guides the visitor to the next site, and this is also a part of directing the experience.

We have worked consciously with presenting the various experiences of sound, smell, touch, taste and vision, which we encountered during our analyze through the walks. For example the physical experience of making ones way through the mudflat is contrasted by arriving at a stabile boardwalk, which rises gradually through the canopies, where the leaves of the mangrove can be touched (and tasted) and orchids hanging from the branches invites to investigate if they have fragrance, and makes a stop at a view-point, where the breeze and smell of the sea are felt and one can see the ocean stretching out at a distance. This overview also helps the visitor to orientate herself in relation to the trail and landscape, which brings a sense of calm and security.

The Process leaders

The third role we have identified is that of acting as process leaders, as opposed to the more commonly known role of being a project leader. The difference between the two can be explained as that while a project has a beginning and a defined end, the process is open-ended. This means that we see our work not as finished as the proposal is presented, but as the beginning of a process which continues to evolve together with the people using the place.

As process leaders, we can function as initiating catalysts, who through injecting design in a site, set the wheels of a greater process in spin. Through this role, we set up directions for telling new stories, and can work to spread awareness and initiate a process of promoting landscape literacy. Here, we have a great advantage in being transdisciplinary, as we can gather information from a wide range of sources and add them up, in order to get a holistic view of what solutions and possibilities are possible for initiating change.

To be two in the process

We are aware that different methods and tools used in the design process affect our ways of seeing and therefore give us new ideas. One method, which has been very important, and that we haven't mentioned yet, is all the discussions that has taken place between us. It has definitely been rewarding to be two in this process, as discussing has been a way of finding new ideas and has made us re-evaluate our own perceptions of the site and design constantly. It has also been helpful when we made our theoretical studies, as some texts have been quite difficult to grasp and could then be elaborated on together.

Considering the overall journey of this work process, of which we spent a lot of time in field, it has been a great advantage to be two as we have been able to support each other in solving problems that occurred along the way. We therefore recommend these types of collaborations for future master students, especially when fieldwork is involved.

METHODS FOR PRESENTATION OF MUDDY FEET

We wanted the presentation of our proposal, MUDDY FEET, to be playful and easy-to-read so that not only ANET, but also their visiting children groups could engage in, and discuss it, as the children might find it difficult to interpret formal architectural presentations. This was also the main reason why we chose to work with storytelling, which can be a method to create a relation between the reader and the place and to present an idea of what could happen there. We wanted the character to be a local child as it is primarily for them we want to do this proposal.

We chose to make hand drawn sketches of the proposed constructions of two main reasons; firstly, because it is a way of giving an impression of them as changeable; possible to develop and adapt further, as opposed to construction drawings made in AUTO CAD. Secondly, we found this to be a great opportunity to try out, and develop our skills in hand drawing. In addition, we also think that this method adds up to the playfulness we wanted to achieve in our presentation.

The proposal and construction diagrams are not to be seen as final versions, since we want the people involved in its possible future realization to give their input to it first. We are aware that there are great local skills in construction and we therefore welcome alterations and improvements by the local experts. As the core of this project is to connect and discuss within a local forum, the design should be open for adaptation according to what traditional knowledge and techniques are available.

Also the locations of the various components have to be settled finally on site and in discussion with ANET, the Forest Department and the constructors. As for materials, we have made suggestions, but these are also flexible if better local, environmentally friendly and certified alternatives can be found.

Another method we could have used for the presentation is models. This could have been a good way to communicate, as models are easy to read and can get the viewer more involved as it is possible to look at them from different perspectives. But as this proposal is now to be sent to ANET, we realize that a model would be impossible to get to the Andamans in one piece. If the proposal will be realized in the future though, and we have the opportunity to return to ANET to be part of this process, models can be made directly on site as a tool of communication and presentation.

We generally think that our chosen techniques for the presentation are sufficient to reveal our intent with the proposal, as the variety of sketches, collages, sections, details and plans complement each other as a whole.

THE COMBINATION AND CONFLICT OF THEORY/DESIGN

As both of us are interested in landscape theory and design, and their mutual relation, we decided early on that we wanted to work in a process which combined them. As experienced in our education, we knew this could be a difficult task; to connect them while still keeping a read thread throughout the work. This was also something we struggled with in this thesis, but we think that we gained a lot from doing it, both in terms of our own learning process and for the outcome of the work.

What we found most rewarding, and which became very clear for us during this process was that theory could be an important tool for us as landscape architects when we argue for our proposals and suggestions for change. Theoretical research has also helped us put our proposal in a wider context; the understanding of the underlying processes, preceptions and representations provided us with ideas of what to enhance on the walk and which stories to bring forth. As for the actual shapes and forms of the design, the inspiration came from an overall combination of impressions from the site, history and theoretical understanding.

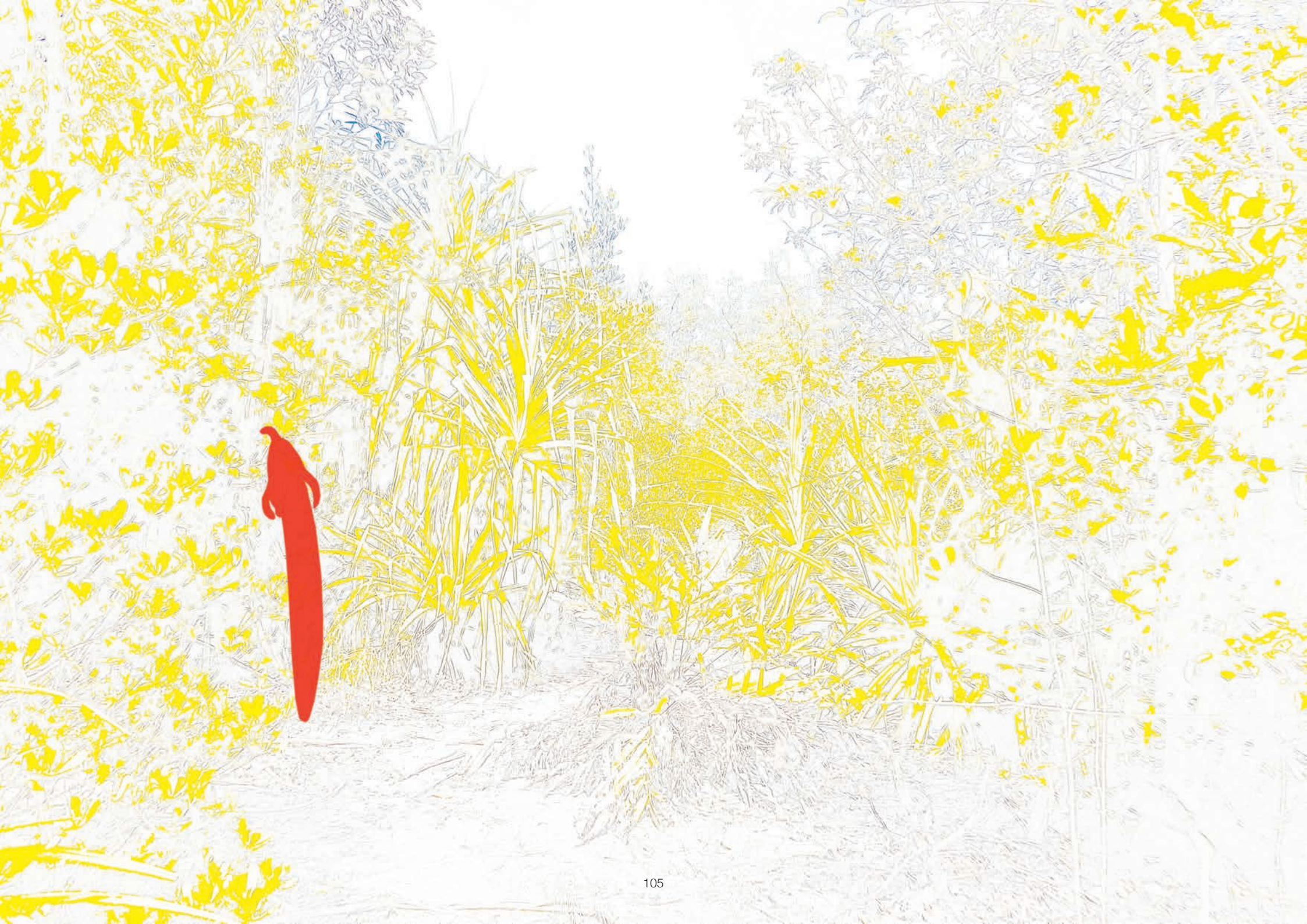
What also came out of the theoretical inquiries was inspiration from the reference projects, especially that of Mill Creek by A.W. Spirn. This project helped us target important aims of the design, such as to evoke the curiosity of the visitor for making further inquiries. What we see as a possible problem in this relationship is that it is easy to begin to over-analyze the design. In design processes, making is often thinking and it can sometimes be a great advantage to just 'not think' and follow intuition or experiment with materials or models to come up with new, unexpected, ideas. We did this also, but could in retrospect have spent more time on such 'intuitive' methods.

In this work we chose to spend a lot of time on reading literature and writing as this, for us, is an inspiring way to come up with new ideas and as we wanted to understand more about the complex relationship of nature and culture applied on the Andaman landscape and its mangroves. If we had focused more on the design part, our result would have been quite different. We could have made a more detailed proposal and also designed different alternatives for the appearence of the walk. This was also something we discussed, as it might have been more awarding for ANET to see many options of what their mangrove site could be used for and look like in terms of inspiration. But if we had not turned to theory, we on the other hand think that the outcome would not have been so related to the site itself, and could fall at the risk of being a representation, detached from the context.

We could also have spent more time on visualizing the design through a longer time perspective, and study how it would evolve together with its environment, when the mangroves grow, spread and the site changes. Another aspect which would have been interesting to investigate is how to make a more dynamic design, by using the mangrove species itself, and molding the trees by making them grow in different forms. This approach could then form a basis for discussion on the issue of management, participation, the relation between what is culture and nature, and to what extent one can be allowed to interact with the protected environment. The above mentioned methods can both be topics for further studies.

Another question for further studies can be - How can pedagogical methods benefit the preservation of the mangroves? Through this project we have realized the complexity of the problem with separation of nature and culture in landscape management, preservation and future planning. We believe that awareness needs to be raised in public regarding this and not just among experts.

It would be interesting to evaluate projects similar to the one we are proposing in this thesis. Does knowledge about an eco-system lead to better management and protection of that type of environment and is this possible to measure? It would also be interesting to see if educational projects targeted at tourists, actually do lead to long lasting changes in their behaviour?



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Maps

All maps in this thesis are reproduced from satellite images from Google Earth.
Available at: http://earth.google.com

Photographs

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All other photographs in this thesis are taken by ourselves or Daniel Gustafsson.

Field notes

Interviews with local inhabitants and divers (2011-12-22, 2012-01-03, 2012-01-10)
Interview with representant from a local Panchayat Raj Institution (2012-01-05)
Interview with municipality worker (2012-01-12)
Interview with documentary filmmaker (2012-01-10)
Interview with Pradhan of Andamanese Gram Panchayat (2012-01-05)
Interview with a local inhabitant (2012-01-11)