ABSTRACT

Title of Document: CONTINUITY OF PLACE IN SRI LANKA: BAREFOOT GARDENS AYURVEDIC HEALTH AND RETREAT CENTER

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Tropical regions throughout the world, despite their tremendous cultural diversity, share certain continuities of place that reflect the climatic, geographical, and ecological similarities of the natural environment of the equatorial zone. This thesis examines those continuities that exist in Sri Lankan culture, looking at the evolution of architectural traditions in Sri Lanka and their relationships to the natural environment. This is achieved through a study of the cultural significance of elements and experiences in the natural world, such as water and procession, which provide a cultural point of reference amidst Sri Lanka’s complex history.

These ideas are applied and tested in the creation of an Ayurvedic Health and Retreat Center, which seeks to revitalize and perpetuate this holistic system of medicine in the hilltop city of Kandy. Barefoot Gardens establishes continuity of place by allowing the rhythms of nature to directly inform the rituals of daily life and human activity.
CONTINUITY OF PLACE IN SRI LANKA:

BAREFOOT GARDENS
AYURVEDIC HEALTH AND RETREAT CENTER

By
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PREFACE

“Sri Lanka is blessed with a rich culture that embraces the multi-layered influences of its Buddhist, Hindu, Muslim and Christian inhabitants.” – Bunbury (?)

The contemporary world is experiencing a compression of time and space as a byproduct of globalization. This has profound social, cultural, economic and environmental impacts especially in relation to the built environment. Sri Lanka’s geographic location has placed it at the cross roads of cultural influence for centuries. The island provides an example of a place that has absorbed and transformed external influences throughout its entire history while still maintaining an architectural identity that is uniquely Sri Lankan. The tremendous cultural diversity of Sri Lanka provides a lens through which to examine how ‘continuity of place’ can be perpetuated in the contemporary world.

This thesis examines the complex history that has shaped the identity of Sri Lanka, from the ancient influences of Vedic architecture to the contemporary work of Geoffrey Bawa. Today the country is home to every major world religion and has the wounds of a long civil war still on the surface. My exploration of ‘continuity of place in Sri Lanka’ seeks to discover whether these divisions have been overcome in
ancient and contemporary architecture through its response to the natural environment. This project focuses on the cultural significance of elements and experiences, such as water and procession, which have prevailed throughout Sri Lanka’s history and have contributed to a unified and distinct sense of place in Sri Lanka.

These ideas are applied and tested in the creation of Barefoot Gardens Ayurvedic Health and Retreat Center, which seeks to revitalize and perpetuate this indigenous system of medicine in the hilltop city of Kandy. Kandy was home to the last Sinhalese Kingdom of Sri Lanka and remains a strong religious and cultural center due to the Temple of the Tooth of the Buddha, which is located there. The Ministry of Indigenous Medicine has established a plan for revitalizing the knowledge of Ayurvedic medicine, with focus on the Central Province of Sri Lanka in which Kandy is located (*Ministry of Indigenous Medicine*).

Kandy is known as the cultural capital of Sri Lanka and as such has a long-standing tradition of promoting the principles of Ayurveda, or the knowledge of health and longevity, through the cultivation of medicinal spice gardens. Barefoot Gardens functions as an educational node within the city, providing a holistic experience of Ayurveda that addresses environmental, cultural and economic goals. Barefoot Gardens perpetuates continuity of place in Sri Lanka by allowing the rhythms of nature, which define ‘the resplendent land,’ to continue to govern the rituals of daily life and human activity.
DEDICATION

“Traveling abroad you arrive in a place and you’re immediately thrown off balance, you become disoriented, and it’s that disorientation that actually sharpens your perception of place.” –William Bechhoefer

To the people of Sri Lanka for allowing me to sharpen my perception of place.
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## TABLE OF CONTENTS

PREFACE........................................................................................................... ii
DEDICATION....................................................................................................... iv
ACKNOWLEDGEMENTS..................................................................................... v
TABLE OF CONTENTS........................................................................................ vi
LIST OF FIGURES............................................................................................... vii

### I. INTRODUCTION: a brief history of Sri Lanka

GLOBAL CONTEXT............................................................................................. 2
CULTURAL DIVERSITY........................................................................................ 3

### II. CLIMATE + CULTURE: the rhythms of nature

CLIMATE ANALYSIS............................................................................................ 5
TIME, LIFE, PLACE.............................................................................................. 8

### III. SITE SELECTION: the hilltop city of Kandy


### IV. AYURVEDA: a holistic system of medicine


### V. BAREFOOT GARDENS: the rituals of daily life

PROCEDURE...................................................................................................... 21
THE GARDENS.................................................................................................. 23
PROGRAM......................................................................................................... 27
CLIMATE RESPONSE...................................................................................... 37

### VI. PRECEDENTS: the natural world manifest in architecture

ANCIENT CITIES............................................................................................... 43
CONTEMPORARY DWELLINGS....................................................................... 45

### VII. CONCLUSION: establishing continuity

BIBLIOGRAPHY................................................................................................. 54
LIST OF FIGURES

FIGURE 1. *Image of the Buddha*
FIGURE 2. *Location of Sri Lanka in global context*
FIGURE 3. *Scale comparison: West Virginia and Sri Lanka*
FIGURE 4. *Map of Sri Lanka’s migration patterns*
FIGURE 5. *Physical Map of Central Province in Sri Lanka*
FIGURE 6. *Map of Average Annual Temperatures in Sri Lanka*
FIGURE 7. *Map of Agricultural Production in Sri Lanka*
FIGURE 9. *Mihintale view towards Anuradhapura*
FIGURE 10. *Water: photo collage*
FIGURE 11. *Procession: photo collage*
FIGURE 12. *TIME: rhythms of nature*
FIGURE 13. *LIFE: rituals of daily life*
FIGURE 14. *PLACE: holistic experience*
FIGURE 15. *City of Kandy located adjacent to the Mahaweli Ganga*
FIGURE 16. *Physical Map of Central Province in Sri Lanka*
FIGURE 17. *View of Central Kandy*
FIGURE 18. *Dalada Maligawa, Temple of the Tooth*
FIGURE 19. *Perahera Processional Ceremony*
FIGURE 20. *Dalada Maligawa, Temple of the Tooth*
FIGURE 21. *VATA: movement*
FIGURE 22. *PITTA: transformation*
FIGURE 23. *KAPHA: structure*
FIGURE 24.  *Barefoot Gardens, Urban Context Plan*
FIGURE 25.  *Barefoot Gardens, Spice Forest*
FIGURE 26.  *Barefoot Gardens, Herb and Shrub Garden*
FIGURE 27.  *Barefoot Gardens, Water Garden*
FIGURE 28.  *View from garden level guest room*
FIGURE 29.  *View to gallery and community pavilion*
FIGURE 30.  *View to herb and spice garden*
FIGURE 31.  *Barefoot Gardens, Roof Plan*
FIGURE 32.  *Barefoot Gardens, Site Plan*
FIGURE 33.  *Barefoot Gardens, Site Section*
FIGURE 34.  *Section at Restaurant and Gardens*
FIGURE 35.  *Barefoot Gardens, Enlarged Guest Unit Plans*
FIGURE 36.  *Section at Guest Units*
FIGURE 37.  *Street view of lower entrance*
FIGURE 38.  *View across lake from restaurant*
FIGURE 39.  *Restaurant view of garden and gallery*
FIGURE 40.  *View of herb and spice garden*
FIGURE 41.  *View of garden court at upper entry*
FIGURE 42.  *View from garden level guest unit*
FIGURE 43.  *Sun Path Diagram*
FIGURE 44.  *Sun Angle Diagram*
FIGURE 45.  *Roof*
FIGURE 46.  *Solar Orientation*
FIGURE 47.  *Openings*
FIGURE 48.  *Intermediate Zone*
FIGURE 49.  *Walls*
FIGURE 50.  *Floor*
FIGURE 51.  *Ancient Sri Lanka*
FIGURE 52.  *Anuradhapura*
FIGURE 53.  *Dambulla Caves*
FIGURE 54.  *Sigiriya*
FIGURE 55.  *Contemporary Sri Lanka*

FIGURE 56.  *Lunuganga*

FIGURE 57.  *photo collages: Sri Lankan precedents*

FIGURE 58.  *Precedent Analysis: Lunuganga Estate*

FIGURE 59.  *Precedent Analysis: Integrative Agriculture Institute*

FIGURE 60.  *Precedent Analysis: Kandalama Hotel*

FIGURE 61.  *Precedent Analysis: Club Villa Hotel*

FIGURE 62.  *Precedent Analysis: Banyan Tree House*

FIGURE 63.  *Precedent Analysis: Wickramasuriya House*

FIGURE 64.  *Precedent Analysis: Illuketia*

FIGURE 65.  *Precedent Analysis: Amrita Shergil House*

FIGURE 66.  *Precedent Analysis: Jetwing Hotel*

FIGURE 67.  *Precedent Analysis: Brief Garden*

FIGURE 68.  *Precedent Analysis: Kahandakanda Guesthouse*

FIGURE 69.  *Precedent Analysis: Saffron and Blue Hotel*
I. INTRODUCTION:  

a brief history of Sri Lanka

Sri Lanka is a place of many names. Translated ‘resplendent land,’ Sri Lanka became the official name in 1972 after the country gained independence from British colonial rule. During the time of colonial occupation the island was know as ‘Ceylon,’ to the Romans it was ‘Taprobane,’ and to Muslim traders ‘Serendib,’ the origin of the word ‘serendipity’ (Peebles 8). Its nicknames include the ‘Tear-drop of India,’ the ‘Island of Jewels’ and the ‘Pearl of the Indian Ocean.’ Together these names represent the diverse history and natural beauty for which the island nation is known.

FIGURE 1. Image of the Buddha  
[SOURCE: Bunbury, 11]
GLOBAL CONTEXT

Sri Lanka is situated 6-10 degrees north of the equator off the southern tip of India, between the Arabian Sea and the Bay of Bengal, (FIG. 2). This geographic location has put Sri Lanka at the crossroads of cultural influence for centuries and led the island to be known as the ‘spice road of the sea’ (Perera 38).

To provide a sense of scale Sri Lanka is a small island, approximately 25,000 square-miles, or roughly the same land mass as Ireland or the state of West Virginia (FIG. 3). The island measures 273 miles along the north-south axis and is approximately 137 miles from east to west coast at its widest point (Sri Lanka Tourism). Despite the countries relatively small size the island contains an abundance of natural diversity.
CULTURAL DIVERSITY

Sri Lanka represents the influence of almost every major world religion including Buddhism, Hinduism, Islam, and Christianity. The islands earliest inhabitants, known as the Veddahs, can be traced back to 16,000 BC, with Sinhalese migration from northern India occurring during the 5th and 6th c. BC, the arrival of Buddhism during the 3rd c. BC and early Tamil migration dating to the 2nd c. BC. During the 7th c. AD trade with the Arab world brought the faith of Islam to Sri Lanka, followed by the arrival of Christianity between the 16th and 20th century through the sequential influence of Dutch, Portuguese, and British colonial powers (FIG. 4).

Buddhism became the official religion of Sri Lanka in 1948 and today the country exists as one of the major world centers for the Theraváda Buddhist teachings, which emphasize an adherence to the early textual traditions. Central to the Buddha’s teachings, and to the life of the 70% majority of Sri Lankans who are Sinhalese, are the Four Noble Truths: (1) Pain and suffering are inevitable parts of life; (2) They are caused by human desires and attachments; (3) People can overcome the desires and attachments that cause pain and suffering; and (4) The means to overcome these is a code of conduct known as the Eightfold path, which stresses moderation, contemplation and serenity (Peebles 22-24).

The islands more recent history has been dominated by the Sinhalese and Tamil conflict that placed the country in a twenty-plus year civil war until peace was declared in 2006. The war was a major contributing factor in how slowly the country has grown economically in comparison to other Southeast Asian countries. In 1948, when Sri Lanka gained independence prospects for reducing poverty were high,
but little was done to restructure the colonial economy that revolved primarily on the export of tea, rubber and coconut by foreign investors (Peebles 93-138).

The perpetual influx of people and ideas throughout Sri Lanka’s history has formed the basis for the cultural diversity and richness that constitutes Sri Lanka today. Throughout Sri Lanka’s complex history the ability to absorb and transform external influences has been central to Sri Lankan culture. From traditional Sinhalese architecture, to the British colonial bungalow, the ability to adapt and integrate new ideas has helped to establish a ‘continuity of place’ amongst the many architectural manifestations that exist in Sri Lanka. Beginning with the work of Sri Lankan architect Geoffrey Bawa we see this ‘continuity of place’ perpetuated in contemporary architecture through the creation of a new architectural identity, which draws together the many strands of Sri Lanka’s history.

FIGURE 4. Map of Sri Lanka’s migration patterns
[SOURCE: Robson, “Complete Works” 28]
II. CLIMATE + CULTURE: the rhythms of nature

CLIMATE ANALYSIS

There are two monsoon seasons that occur in Sri Lanka annually. The south-west monsoon, which brings rainfall to the southern and western areas of the island from April to June, and the northeast monsoon which affects the entire island from October to February. The monsoons rains divide the island into a Wet Zone that receives +146 inches of rain per year and a Dry Zone that receives 60 inches of rain per year (FIG. 5). Unlike the ancient kingdoms of Sri Lanka, which created elaborate irrigation systems to take advantage of the seasonal abundance of water, agricultural production today is concentrated to the south-west of Kandy, in the Wet Zone and is predominantly rain-fed (Peebles 2).

The annual temperature range (FIG. 6) for Kandy remains fairly constant as indicated by the following max./min. temperatures.

- Jan.-April: 88°F/63°F (31°C/17°C)
- May-Aug: 84°F/70°F (29°C/21°C)
- Sept.-Dec: 82°F/64°F (28°C/18°C)

These temperatures are slightly lower than along the coast, but the relative humidity remains high, averaging 70% during the day and 90% at night. The degrees days for Sri Lanka include: 87 HDD and 2943 CDD (Sri Lanka, IRI). The tropical
heat and high humidity levels that prevail in Sri Lanka, make climate consideration a fundamental design priority. Natural ventilation is crucial in order to provide fresh air for evaporative cooling and also to prevent mold and fungus formation within a structure (Daniels 26).

The identification of natural disaster zones, particularly those which are vulnerable to tsunami and flood damage, has become a high priority in Sri Lanka since the devastating tsunami of 2004. This disaster displaced about 1 million people and although world-wide emergency relief was provided, the long-term reconstruction of homes is a slow and ongoing effort (Sri Lanka: IRI).

Traditionally Sri Lankan life was centered around the gamma, or village and agriculture was the mainstay. During the colonial era plantations were established for the cultivation of crops such as rice, tea, rubber, coconut, and coffee, as well as spices such as cardamom and cinnamon (FIG. 7). Today agriculture,
primarily that of tea exports, represents only a portion of Sri Lanka’s economy which is also driven by tourism and textile manufacturing (Peebles 55-60).

Sri Lanka’s population of approximately 20 million, utilizes an energy supply consisting of 57% non-commercial fuel wood, 31% fossil fuels, and 11% electricity, which is primarily generated through Hydro and Thermal power. The 207 mile long Mahaweli river, which passes to the north of Kandy is responsible for generating half of Sri Lanka’s electricity requirements through hydropower. Renewable energy technologies such as wind and solar currently comprise only 10% of electricity production (Fernando 1; Sri Lanka: IRI).
TIME, LIFE, PLACE

In Sri Lanka, an experience of continuity of place exists due to the intimate relationship between the built and natural environment. One cannot live in separation from nature in Sri Lanka – it is strong and all pervasive, influencing every aspect of the built environment due to the heavy monsoon rains, intense sunlight and abundant vegetation that exist. Continuity of place is established through the rhythms of nature, which directly impact the rhythms of daily life and human activity. This manifests in the cultural significance of elements and experiences in the natural world, such as water and procession, which are a central part of daily life.

Water is a life-giving element that exists in many forms, such as the rain, river and sea (FIG. 10). Water, valued as a source of health and solace, has always been an inherent part of life in Sri Lanka. It has maintained cultural significance throughout history, reflecting ‘centuries of shared experience’ based on the rhythm of the monsoon seasons and the irrigation of rice paddies. The gift of rain extends beyond its agricultural application, having a strong religious value as a means of purification through the ritual act of bathing. In traditional Sri Lankan architecture the significance of water manifests in the incorporation of water in naturally occurring pools and streams and as formally planned water features. In contemporary towns and cities.
rain is an integral part of daily sensory experiences, “rock ponds bubble amid cobble-rimmed courtyards, rainwater trickles down metal drainage chains . . .” (Bunbury 8-9; Robson, “Complete Works” 34).

Procession is “an integral part of the life of a Sri Lankan village . . . it not only organize the life of the village but give meaning to the places in it” (Bechoefer, “Procession” 42). Procession plays an important role in Sri Lanka in both public and private life. This can be seen in the creation of processional spaces within the larger urban context of cities, which are utilized frequently for celebrations such as the Buddhist Perahera. This is also seen in the establishment of axes of procession within architectural space, both indoor and outdoor, which serves to guide or direct one’s experience of the ‘natural world’ (FIG. 11).

FIGURE 10. Water: photo collage

FIGURE 11. Procession: photo collage
An examination of how the natural world informs one’s perception of place reveals that in Sri Lanka the journey of how you approach and move through a place is what’s most important. The dominant experience is less about buildings themselves and more about the relationship or ambiguity that exist between the built and natural environment as one moves through a site.

The integral role of nature in Sri Lankan culture is illustrated in the triad relationship that exist between time, life, and place (FIG. 12-14). In contrast to our western sensibility of time, which exists as a linear progression, in Sri Lanka we see the cyclical nature of time as defined by the rhythms of nature. Rhythms such as the phases of the moon, the monsoon seasons, and the daily movement of the sun, all directly inform one’s experience of place. This manifests in the second component, life, which includes the rituals of daily life and human activity. Rituals such as the irrigation of the rice paddies, the cultivation of the land, and procession through the natural landscape, together inform one’s experience of place. This is seen in the third component, place, where we experience the manifestation of nature in ancient and contemporary architecture.
FIGURE 12.  *TIME: rhythms of nature*  

FIGURE 13.  *LIFE: rituals of daily life*  

FIGURE 14.  *PLACE: holistic experience*  
III. SITE SELECTION: the hilltop city of Kandy

This project takes us to the some of the highest mountains in Sri Lanka, to the city of Kandy (FIG. 16). The highland region, receives the densest rainfall and marks the source of Sri Lanka’s sacred rivers including the Mahaweli Ganga, the Kumbukkan Oya, the Kelani and the Manik Ganga (Bunbury, 9). The Mahaweli Ganga is the largest of the three rivers and it is here, nestled in one of the major bends in the river that the city of Kandy is located (FIG. 15).

FIGURE 15.
City of Kandy located adjacent to the Mahaweli Ganga
[SOURCE: google earth]
FIGURE 16.
Physical Map of Central Province in Sri Lanka
[SOURCE: Peebles 4]
The Kandyan region is home to the verdant spice gardens of Sri Lanka. The city of Matale, located just north of Kandy, is known for the cultivation of medicinal plants that are used for cooking and also for the creation of Ayurvedic drugs. For this reason the Central Province has a strong tradition of Ayurvedic medicine, making this area an appropriate region in which to establish Barefoot Gardens Ayurvedic Health and Retreat Center.

The city of Kandy is located at 7° north latitude, 80° east longitude, in the Central Province of Sri Lanka at an elevation of 1700ft. Home to the last Sinhalese Kingdom, it is recognized today as the Sinhalese cultural and spiritual center of Sri Lanka. The city is 70 miles from the commercial capital of Colombo, and is home to a population of 112,000. This represents a small portion of Sri Lanka’s total population of approximately 20 million, 90% of which reside in rural areas (Sri Lanka: IRI).

Kandy is home to the most significant Buddhist pilgrimage site in Sri Lanka. The Dalada Maligawa, or Temple of the Tooth (FIG. 18), which houses a relic of Lord Buddha that is revered by Buddhists worldwide. Every year, during the full moon in August, the city of Kandy receives a huge influx of visitor’s for the annual Perahera celebration. During this ten day festival the tooth relic is paraded through the streets in a processional ceremony that draws crowds of tourists and spiritual pilgrims (FIG. 19). The consistent influx of visitors to Kandy makes the city an ideal place to establish a vibrant cultural node in which to showcase and promote the tradition of Ayurveda and the knowledge of medicinal plants in Sri Lanka.
FIGURE 17.  View of Central Kandy

FIGURE 18.  Dalada Maligawa, Temple of the Tooth
FIGURE 19.  *Perahera Processional Ceremony*

FIGURE 20.  *Dalada Maligawa, Temple of the Tooth*
IV. AYURVEDA: a holistic system of medicine

Ayurveda is a traditional system of medicine that was brought to Sri Lanka from Northern India between the 6th and 7th centuries BC. Today the term ‘Ayurveda’ also includes the Siddha system of medicine from South India, the Unani system from Greece which arrived through Arab trade, and Desheeya Chikitsa, which is considered indigenous to Sri Lanka (Department of Ayurveda).

Ayurveda translates literally as ‘the knowledge or science of longevity.’ Central to the practice of Ayurvedic medicine is the idea that nothing functions in isolation and where there is imbalance, the result is illness and disorder. This holistic approach seeks to address health through the balance of the three doshas and the five great elements. The five elements of earth, water, fire, air, and ether constitute the three doshas that are central to the practice of Ayurveda and represent the composition of the human body. These are known as:

- [Vata] movement (air + space)
- [Pitta] transformation (fire and water)
- [Kapha] structure (water + earth)
FIGURE 21. **VATA: movement**
[SOURCE: Godagama]

FIGURE 22. **PITTA: transformation**
[SOURCE: Godagama]

FIGURE 23. **KAPHA: structure**
[SOURCE: Godagama]
Every individual is subject to the influence of the three doshas which affect all mechanism of the body. It is thought that most individuals have a predominant dosha that determines their body type and temperament. Today, due to the influence of science and technology, the elements are no longer interpreted literally, but instead as principles or metaphors that help to establish harmony and synchronicity within the human body by establishing a balance between the individual and the universe (Goda-gama 23-25).

Today there are several key institutes that oversee the practice of Ayurvedic Medicine in Sri Lanka. These include the Department of Ayurveda, the National Institute of Traditional Medicine, the Institute of Indigenous Medicine, the Bandaranaike Ayurvedic Research Institute, the Ayurveda Teaching Hospital at Borella, and the Sri Lanka Ayurvedic Drugs Corporation. In 1961, the Ayurveda Act No. 31, formally recognized the role of these institutions in upholding the education and practice of Ayurvedic medicine in Sri Lanka (Ministry of Indigenous Medicine).

Since that time strong efforts have been underway to protect and uphold the knowledge and practice of indigenous medicine in Sri Lanka. In 2010, the Minister of Indigenous Medicine, Hon. Piyasena Gamage, declared it the year of Ayurveda, “hoping to accelerate efforts to provide better, quality health service.” Some of the Ministries primary goals include:

- Provide Curative services through Ayurveda Medicine
- Research and Development on Diseases and Manufacturing Medicine
- Medicinal Plant Cultivation Program
- Developing a tourist destination through Ayurveda life style
- Conservation of traditional medicine and Knowledge
- Promote Community health program throughout the country
In addition to Ayurveda the current health system in Sri Lanka includes Allopathic and Western medical practices. The health care system includes both state and private sector institutions that offer a range of preventative, curative and rehabilitative health care. Since Sri Lanka’s independence, in 1948, relatively high standards of social and health development have been attained. These include the Human Development Index (HDI = 0.74), average life expectancy of 72.5 years, and a literacy rate of over 90% (Samarage 1).

Barefoot Gardens Ayurvedic Health and Retreat Center seeks to assist in the revitalization of this indigenous system of medicine. The center establishes a vibrant landmark within the city of Kandy in order to provide a holistic experience of Ayurveda and showcase the medicinal spice gardens that are prevalent in the Central Province of the country.
V. BAREFOOT GARDENS: the rituals of daily life

PROCESSION

The Barefoot Garden site is strategically located within walking distance of the city center of Kandy and on visual axis with the Temple of the Tooth (FIG. 24). This site establishes a landmark within the city in order to establish an oasis of nature in close proximity to the growing urban center. The site encompasses approximately one hundred feet in elevation change, something that allows for spectacular views of the lake and temple and access to the prevalent breezes for natural ventilation.

The site spans the distance between the main road that surrounds the lake and a smaller upper road that is primarily residential. This dual access allows for the establishment of two entrances to the site. The main entrance to Barefoot Gardens is located on the lower road and serves as the public face of the site, inviting those traveling by foot, tuk-tuk or car to stop. The upper entrance allows for private access to the site by guest and patients who are arriving at Barefoot Gardens in order to enjoy the garden sanctuary and partake in Ayurvedic treatments.

Directly west of the site is a small nature preserve and to the east there are a series of guest-houses that provide a place to stay for visitors to the Temple of the
Tooth and some of the smaller temples that surround the lake. These adjacencies allow for several connections to be made in order to share amenities and provide service access to the site. A pedestrian gateway is created to the east in order to encourage visitors who are staying at other guest houses to take advantage of the Ayurvedic program that is available at Barefoot Gardens and like-wise to provide access to the adjacent temple in order to fulfill the spiritual needs of some of the on-site guests.

FIGURE 24.

Barefoot Gardens, Urban Context Plan
THE GARDENS

Barefoot Gardens follows traditional land-use patterns in order to establish thresholds of privacy between various programmatic elements, which include health, education and visitor components. The result is three primary zones that organize the site and relate to the three doshas of Ayurveda, which are governed by the natural elements of air, fire, and water. These zones consist of a tall spice forest, herb and shrub garden, and water garden, which act as extensions of the larger natural landscape that is Sri Lanka. The gardens provide the connective tissue of the site and allow for an ambiguous relationship to exist between inside and outside. The experience of Barefoot Gardens is one that perpetuates continuity of place in Sri Lanka by allowing the rituals of daily life and human activity to continue to be intimately linked to the rhythms of nature.

The following diagrams identify the three individual gardens that encompass Barefoot Gardens and identify the medicinal spices that will be cultivated in each. Each garden provides a showcase of species in order to educate visitors on the wealth of natural abundance that exists in Sri Lanka and the valuable medical properties that each plant possesses.
• Clove (*karambunatti*)
• Cedar wood
• Fig tree
• King Coconut
• Cinnamon (*kurundu*)
• Nutmeg (*sadikka*)
• Sandalwood tree
• Ironwood (*naa tree*)
• Gamboge (*goraka*)

FIGURE 25.
*Barefoot Gardens, Spice Forest*
• Cumin (suduru)
• Saffron
• Vanilla Vines
• Anise
• Black Mustard
• Pepper Vines (*gam miris*)
• Lemon Grass (sera)
• Dry Chillies
• Curry Leaves (*karapincha*)
• Coriander (*kottamalli*)

FIGURE 26.
*Barefoot Gardens, Herb and Shrub Garden*
WATER GARDEN

- Ginger
- Cardamom (enasaf)
- Tumeric (kaha)
- Lotus blossom

FIGURE 27.

Water Garden
PROGRAM

This thesis undertakes the development of an Ayurvedic Health and Retreat Center in order to perpetuate knowledge of an indigenous system of medicine that stresses a holistic approach to health in an age specialization and fragmentation. The holistic structure of Ayurvedic medicine provides an appropriate platform from which to create a place that responds the rhythms of nature and the rituals of daily life associated with Ayurveda.

The following diagrams outline the programmatic components of the site that address the health, education, and visitor goals created in the establishment of Barefoot Gardens.

**FIGURE 28. View from garden level guest room**
**EDUCATION (social/cultural)**

Program

Programmatic Elements:

- MEDICINAL SPICE GARDENS
- AYURVEDIC COOKING
- GALLERY / EXHIBITION
- COMMUNITY PAVILION
- PERSONAL WELLNESS

**FIGURE 29. View to gallery and community pavilion**

**VISITORS (economic)**

Program

Programmatic Elements:

- AYURVEDIC RESTAURANT
- SPICE GARDEN WALK
- DAY CONSULTATIONS
- LONG TERM GUEST STAY
- VIBRANT CULTURAL NODE

**FIGURE 30. View to herb and spice garden**
DESIGN PRINCIPLES

• Adhere to a holistic design strategy
  Cultural, Environmental and Economic Sustainability
  Architecture should play to all the senses
  Coherent design ensemble
  Education, health, and visitor program agenda

• Provide shelter from monsoon rains and protection from sun
  Roof as the most important building element
  Shading devices to optimize interior daylighting
  Orientation of building along E/W axis
  Reduce exposure on E/W facades

• Increase natural ventilation and reduce thermal heat gain
  Eliminate thermal barriers
  Encourage natural ventilation
  Reduce thermal mass of structure
  Provide exterior shading

• Create architecture that exists as a unique response to the site situation
  Design should grow from the site
  Allow buildings and landscape to merge
  Materials selected for their appropriateness and availability
  Space between buildings as important as buildings
  Use of intermediate spaces (verandahs and open-to-the sky courtyards)
FIGURE 31.

Barefoot Gardens, Roof Plan

FIGURE 32.

Barefoot Gardens, Site Plan
FIGURE 33.

*Barefoot Gardens, Site Section*

FIGURE 34.

*Section at Restaurant and Gardens*
FIGURE 35.

Barefoot Gardens, Enlarged Guest Unit Plans
FIGURE 36.

Section at Guest Units
FIGURE 37.

Street view of lower entrance

FIGURE 38.

View across lake from restaurant
FIGURE 39.

Restaurant view of garden and gallery

FIGURE 40.

View of herb and spice garden
FIGURE 41.

View of garden court at upper entry

FIGURE 42.

View from garden level guest unit
CLIMATE RESPONSE

Response to climate is one of the most important elements of design in the hot humid climate of Sri Lanka. In order to create a place in which the built and natural environment begin to merge, with no perceived separation between indoors and outdoors it is necessary to be attentive of the implications of design decisions in relation to climate.

The orientation and proportion of buildings in Sri Lanka’s hot-humid climate is critical in order to promote natural ventilation and reduce thermal heat gain. Buildings with a minimum proportion of 1:2 E/W to N/S façade are the most effective in achieving this (FIG. 46). An analysis of the sun path in Sri Lanka illustrates the importance of shading in order to reduce heat gain within a structure and to create comfortable levels of interior daylight. This makes the roof the most important building element, it acts as a shield from the sun and protection from the torrential rains.

The following diagrams provide an outline of design guidelines that were established for various building components, including the roof, walls, floor, location of openings, and the creation of an intermediate zone in the form of a courtyard or verandah.


**FIGURE 43. Sun Path Diagram**
[SOURCES: Koch-Neilson; Klaus]

**FIGURE 44. Sun Angle Diagram**
[SOURCES: Koch-Neilson; Klaus]
ROOF

**climate response**

[shade + rain protection]

- most important element of building envelope due to the direct exposure that the roof receives throughout the day

**DESIGN GUIDELINES:**

1. reduce solar heat gain
2. encourage air movement across surface
3. provide shelter from heavy monsoon rains
4. provide shade by extending roof overhangs
5. orientation of roof toward prevailing breeze

**FIGURE 45.  Roof**

[SOURCES: Koch-Neilson; Klaus]

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SOLAR ORIENTATION

**climate response**

[reduce heat gain]

- east and west facades are exposed to direct solar radiation due to the sun angles in the early morning and afternoon

**DESIGN GUIDELINES:**

1. minimize solar exposure on east and west facades of building
2. building proportions reduce solar gain
3. encourage natural ventilation by adjusting building orientation to take advantage of prevailing breezes

**FIGURE 46.  Solar Orientation**

[SOURCES: Koch-Neilson; Klaus]
**OPENINGS**

*natural ventilation*

- opening in buildings are placed to encourage natural ventilation and increase air flow

**DESIGN GUIDELINES:**
1. align opening with prevailing breezes
2. stagger building placement to maximize ventilation exposure of all buildings
3. direct air flow across shaded surfaces to maximize cooling effect

**FIGURE 47.** *Openings*

[SOURCES: Koch-Neilson; Klaus]

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**INTERMEDIATE ZONE**

*extending nature*

- intermediate zones such as the verandah, loggia, porch, courtyard and balcony, establish an area that connects a building to its surroundings through its ambiguity in belonging neither to the interior or exterior

**DESIGN GUIDELINES:**
1. allow building and landscape to merge
2. create habitable zone along the perimeter or courtyard of a building
3. maximize air flow and minimize solar gain
4. extend roof eaves to protect space from heavy rains and intense sunlight

**FIGURE 48.** *Intermediate Zone*

[SOURCES: Koch-Neilson; Klaus]
WALLS

[privacy + screening]

- walls establish privacy and tools such as screen and louvers can be utilized to filter and diffuse the intense tropical sunlight

DESIGN GUIDELINES:
1. outer surface of walls should be a tight color to reduce solar heat gain
2. utilize lightweight materials in construction
3. walls should be protected under the shade of roof overhangs to minimize heat gain

FIGURE 49. Walls
[SOURCES: Koch-Neilson; Klaus]

FLOOR

[barefoot plane]

- connection established to the earth through the act of procession through the landscape

DESIGN GUIDELINES:
1. elevate floor plane to provide better exposure to prevalent breezes for the entire building
2. utilize vegetation as a way to reduce heat gain of floor plane
3. raise the floor plane to reduce the impact of heavy rain and protect building from rotting

FIGURE 50. Floor
[SOURCES: Koch-Neilson; Klaus]
VI. PRECEDENTS:

the natural world manifest in architecture

In order to understand the existence of continuity of place in Sri Lanka it was necessary to undertake extensive precedent research and analysis. Study began on site, through first-hand observations of ancient and contemporary architecture in Sri Lanka and the ways in which nature manifest in architecture.

The design principles set forth in this project take inspiration from some of the guidelines that architect Geoffrey Bawa stated as integral to his own work and the development of a contemporary vernacular in Sri Lanka. In addition there are principles that derive directly from my own knowledge and understanding of the climate and natural world of Sri Lanka based on the experiences that I had during my time there.
ANCIENT CITIES

The ancient Sinhalese kingdoms of Sri Lanka (FIG. 51), constitute what is known today as the ‘cultural triangle.’ This refers to the UNESCO world heritage sites located in the central mountain core of the island which include:

- Sacred city of Anuradhapura (4BC)
- Cave Temples of Dambulla (1BC)
- Sigiriya rock fortress (5AD)
- Capital of Polonnaruwa (10AD)
- Royal City of Kandy (17AD)

The ancient cities of Sri Lanka exhibit a strong reliance on and appreciation for the natural element of water. The site selection for the earliest urban settlement at Anuradhapura was along the river Aruvi Aru, also known as Malwatu Oya. The ancient cities developed elaborate irrigation systems that increased agricultural production in order to support a growing population. In the dry zone the central management of irrigation allowed for the production two annual rice crops in areas that would otherwise not receive enough water from the monsoon rains. The irrigation systems
included the construction of water canals, channels, and reservoirs that allowed the ancient kingdoms to counter the risk of drought (Peebles 17-25).

The ancient cities are based on axial design principles that reflect knowledge of the celestial geometries of India, as well an adherence to orthogonal planning. Among the best preserved of the ancient cities is the fortress of Sigiriya (FIG. 54). The city provides an example of orthogonal planning that is altered or includes deformations that respond to the rock formations and topography of the site (Wijeyeratne 72-75).
CONTEMPORARY DWELLINGS

The work of Geoffrey Bawa provides a contemporary example of architecture that is guided by the cultural significance of elements and experiences of the natural world. His work reflects an intuitive understanding of procession and the powerful impact that can be achieved as one moves through and experiences a place. Bawa believed that architecture must be experienced to be understood:

“…I have a very strong conviction that it is impossible to explain architecture in words … I have always enjoyed seeing buildings but seldom enjoyed reading explanations about them … architecture cannot be totally explained but must be experienced.”

– Geoffrey Bawa

(Robson, “Complete Works” 261)

In many of Bawa’s projects water acts as a primary design element, either through the strategic placement of a building adjacent to the sea or a river, or through the creation of pools of water within a structure. There are several projects in which Bawa’s use of water as a central design element is particularly striking, see the following precedent analyses.
FIGURE 57. *photo collages: Sri Lankan precedents*

**P[RE]CEDENT:**

**LUNUGANGA**

**PROJECT:** PRIVATE RESIDENCE

**LOCATION:** BENTOTA, SRI LANKA

**ARCHITECT:** GEOFFREY BAWA

**DESIGN STRATEGIES:** procession through nature

1. **SITE**
   - pervasive element of water; site is situated a few miles from the coast, surrounded by a natural lake
   - site developed slowly throughout Bawa’s life providing an intimate understanding of the rhythms of nature, the unique elements of that comprise place

2. **GUIDING PRINCIPLES**
   - Design should grow from the site
   - Eliminate barriers between inside and outside, allow building and landscape to merge
   - Space between buildings as important as buildings
   - Roof is the most important building element (protected from burning sun and torrential monsoon rain)
   - Use of intermediate spaces (loggias & courtyards)
   - Encourage natural ventilation
   - Materials selected for their appropriateness
   - Architecture should play to all the senses

**SOURCES:**

**FIGURE 58.**

**Precedent Analysis:**

Lunuganga Estate

**P[RE]CEDENT:**

**INTEGRATIVE AGRICULTURE INSTITUTE**

**PROJECT:** SCHOOL

**LOCATION:** PILYANDELA, SRI LANKA

**ARCHITECT:** GEOFFREY BAWA

**DESIGN STRATEGY:** campus as promenade

**PROJECT DETAILS:**

1. **SITE**
   - topography of site emphasizes procession through the natural landscape through the choreography of circulation and views between pavilions

2. **STRUCTURE + MATERIALITY**
   - simple, low cost construction primarily comprised of concrete, wood, stone and terracotta tile

3. **BUILDINGS**
   - layout and form of buildings were designed in response to the site, providing an ever-changing sequence of loggias, links and open spaces

**SOURCES:**

**FIGURE 59.**

**Precedent Analysis:**

Integrative Ag-Institute
**PROJECT: HOTEL**  
**LOCATION:** DAMBULLA, SRI LANKA  
**ARCHITECT:** GEOFFREY BAWA  
**DESIGN STRATEGY:** contemporary Sri Lankan cliff dwelling  

**PROJECT DETAILS:**

1. **SITE**
   - dramatic site situation along cliff edge
   - experience of mystery and suspense: “visitors trek through the jungle and arrive to a view of the ancient city of Sigiriya in the distance.”

2. **ARCHITECTURE**
   - simplicity of structure emphasizes concept that this is not a building to at, but to look from
   - use of concrete and stone conveys a sense of austerity that contrasts with the lushness of vegetation
   - concrete frame carries outer skin of timber sunbreakers, which support the vegetative ‘screen’

3. **ENVIRONMENT**
   - building is ‘screened’ by vegetation allowing the form to disappear amidst the landscape
   - low impact strategies: on-site water treatment

**SOURCES:**

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**PROJECT: HOTEL**  
**LOCATION:** BENTOTA, SRI LANKA  
**ARCHITECT:** GEOFFREY BAWA  
**DESIGN STRATEGY:** seaside villa  

**PROJECT DETAILS:**

1. **SITE**
   - division of property by the intersecting railroad is overcome by creating a unified landscape that achieves continuity through a series of interconnected spaces that are visually linked on axis
   - site is organized as a cluster of small villas within the boundary of the exterior wall of the property

2. **STRUCTURE + MATERIALITY**
   - concrete and timber structures with sloped clay tile roofs, referential of colonial and vernacular forms
   - intermediate spaces establish an ambiguous threshold that mediates interior + exterior
   - floor plans reestablish a relationship with the roof plane above through changes in materiality that relate to exposure to the elements

**SOURCES:**

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**FIGURE 60.**  
**Precedent Analysis:**  
Kandalama Hotel

**FIGURE 61.**  
**Precedent Analysis:**  
Club Villa Hotel
HOUSE AROUND THE BANYAN TREE

PROJECT: PRIVATE RESIDENCE
LOCATION: COLOMBO, SRI LANKA
ARCHITECT: ANJELANDRAN

DESIGN STRATEGY: sacred tree within the home

PROJECT DETAILS:

1. SITE
   • site is located on the outskirts of Colombo but succeeds in establishing an urban ambiguity that blurs the boundary between the built environment and untouched nature

2. MATERIALITY
   • simple materials such as polished concrete, wood, and stone create a quiet backdrop that allows the occupant to direct their focus to the garden and landscape that is the centerpiece of the home

FIGURE 62.
Precedent Analysis:
Banyan Tree House

WICKRAMASURIYA HOUSE

PROJECT: PRIVATE RESIDENCE
LOCATION: COLOMBO, SRI LANKA
ARCHITECT: ANJELANDRAN

DESIGN STRATEGY: sense of community with nature

PROJECT DETAILS:

1. SITE
   • urban site achieves privacy within the downtown Colombo site through integration of internalized garden courts within the home which bring light, fresh air and natural vegetation

2. COLOR + MATERIALITY
   • simple material palette and the selective use of painted wood and stucco, creates a vibrant contrast that animates the home with the changing patterns of light and shadow throughout the day

FIGURE 63.
Precedent Analysis:
Wickramasuriya House

SOURCES:
FIGURE 64.
Precedent Analysis:
Illuketia

FIGURE 65.
Precedent Analysis:
Amrita Shergil House
PRECEDENT: JETWING HOTEL

PROJECT: HOTEL
LOCATION: NEGOMBO, SRI LANKA
ARCHITECT: ANURA RATNAVIBUSHANA
DESIGN STRATEGY: ayurvedic sanctuary
PROJECT DETAILS:

1. PROGRAM
   • Provide alternative model for tourism development
   • Provide guests with knowledge of Ayurveda and indigenous medicine through treatments

2. REINTERPRETATION OF VERNACULAR
   • Urban sanctuary created amidst busy environment of Negombo
   • Regional vocabulary of pitched roofs with exposed roof timbers and clay roof tiles

3. STRUCTURE/MATERIALITY
   • Simplicity of structure through utilization of reinforced concrete and masonry
   • Color palette of earth and ochre tones
   • Clustered pavilions and garden courtyards establish continuity with the natural landscape

SOURCES:

FIGURE 66. Precedent Analysis: Jetwing Hotel

PRECEDENT: BRIEF GARDEN

PROJECT: PRIVATE RESIDENCE
LOCATION: BENTOTA, SRI LANKA
ARCHITECT: BEVIS BAWA
DESIGN STRATEGY: Sri Lankan pleasure garden
PROJECT DETAILS:

1. SITE
   • situated inland from the coast in the marshy wetlands near Bentota
   • linear axis established by entry sequence is referential of ancient Sinhalese pleasure gardens at Anuradhapura and Sigiriya

2. GARDEN
   • garden as a series of compositions
   • celebration of Sri Lanka’s tropical plentitude is evident in the treasury of exotic plants

3. PAINTING / SCULPTURE
   • Australian artist, Donald Friend, utilized ‘Brief’ as a garden of exploration; his eccentric touch is evident in the details of garden pathways and walls

SOURCES:

FIGURE 67. Precedent Analysis: Brief Garden
**PRECEDENT: KAHANDAKANDA**

**PROJECT:** LUXURY GUEST HOUSE  
**LOCATION:** GALLE, SRI LANKA  
**ARCHITECT:** BRUCE FELL-SMITH  
**DESIGN STRATEGY:** contemporary tea plantation  
**PROJECT DETAILS:**  
1. SITE  
   • 10 acre hillside site, set amidst dense low-elevation forest  
   • leave existing trees undisturbed  
2. COMMUNITY  
   • architecture modeled on Sri Lankan village  
   • fosters social interaction through clusters of pavilions situated amidst the garden and tea fields  
3. MATERIALITY  
   • local materials and technology reinterpreted to create sustainable, cost-effective, contemporary design  

**SOURCES:**  

**FIGURE 68.**  
Precedent Analysis: Kahandakanda Guesthouse

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**PRECEDENT: SAFFRON & BLUE**

**PROJECT:** HOTEL  
**LOCATION:** KOSGODA, SRI LANKA  
**ARCHITECT:** CHANA DASWATTE  
**DESIGN STRATEGY:** vernacular and colonial inspirations  
**PROJECT DETAILS:**  
1. SITE  
   • coastal site utilizes water as a central design element through the introduction of reflecting pools  
2. COLOR + MATERIALITY  
   • simple concrete and timber pavilions utilize the vibrant palette of Sri Lanka to highlight spaces  

**SOURCES:**  

**FIGURE 69.**  
Precedent Analysis: Saffron and Blue Hotel
VII. CONCLUSION:
establishing continuity

In an age of increasing globalization, Sri Lanka provides an example of a place that has absorbed and transformed external influences throughout its entire history while still maintaining an architectural identity that is uniquely Sri Lankan. This is due, in part, to the intimate relationship that exists between the built and natural environment. One cannot live in separation from nature in Sri Lanka – it is strong and all pervasive, influencing every aspect of the built environment due to the heavy monsoon rains, intense sunlight and abundant vegetation that exist. The experience of Barefoot Gardens is one that perpetuates continuity of place in Sri Lanka by allowing the rituals of daily life and human activity to continue to be intimately linked to the rhythms of nature.

Central to the development of this thesis is the intention to be conscious of the cultural values that are unique to Sri Lanka while at the same time acknowledging the global world that we live in. This presents an opportunity as a designer to create a project that perpetuates continuity of place in Sri Lanka by looking back to the traditions and values that constitute a rich cultural heritage, ahead to the opportunities and challenges of globalization and to the present creation of timeless places.
BIBLIOGRAPHY


