

A photograph of a pond with many green lily pads floating on the water. A small purple flower is visible in the upper center. The water is dark and reflects the surrounding greenery.

# ANURADHAPURA: A PALIMPSEST LANDSCAPE

Shereen Amendra

M.Sc. (Architecture), M.Sc. (Landscape Design), F.I.A., F.I.L.A.

Chartered Architect /Chartered Landscape Architect

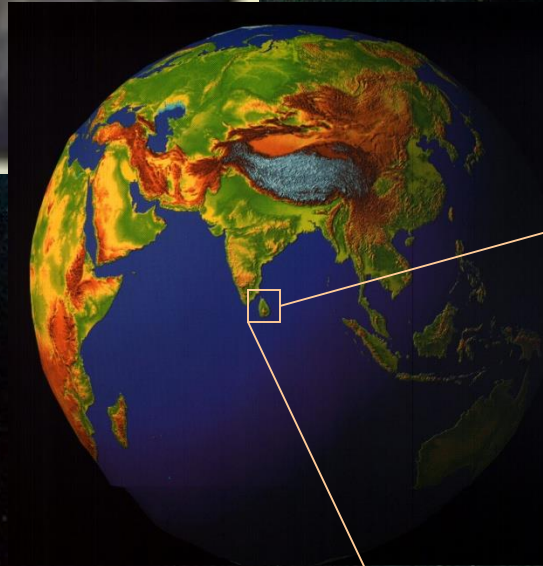
The Ceylon Society of Australia (“CSA”), Melbourne Chapter held its second event for the year on 26 May 2024. The topic was “Anuradhapura a Palimpsest of Landscape”, delivered by Shereen Amendra, (M.Sc. (Architecture), M.Sc. (Landscape Design), F.I.A., F.I.L.A. – Chartered Architect / Chartered Landscape Architect.

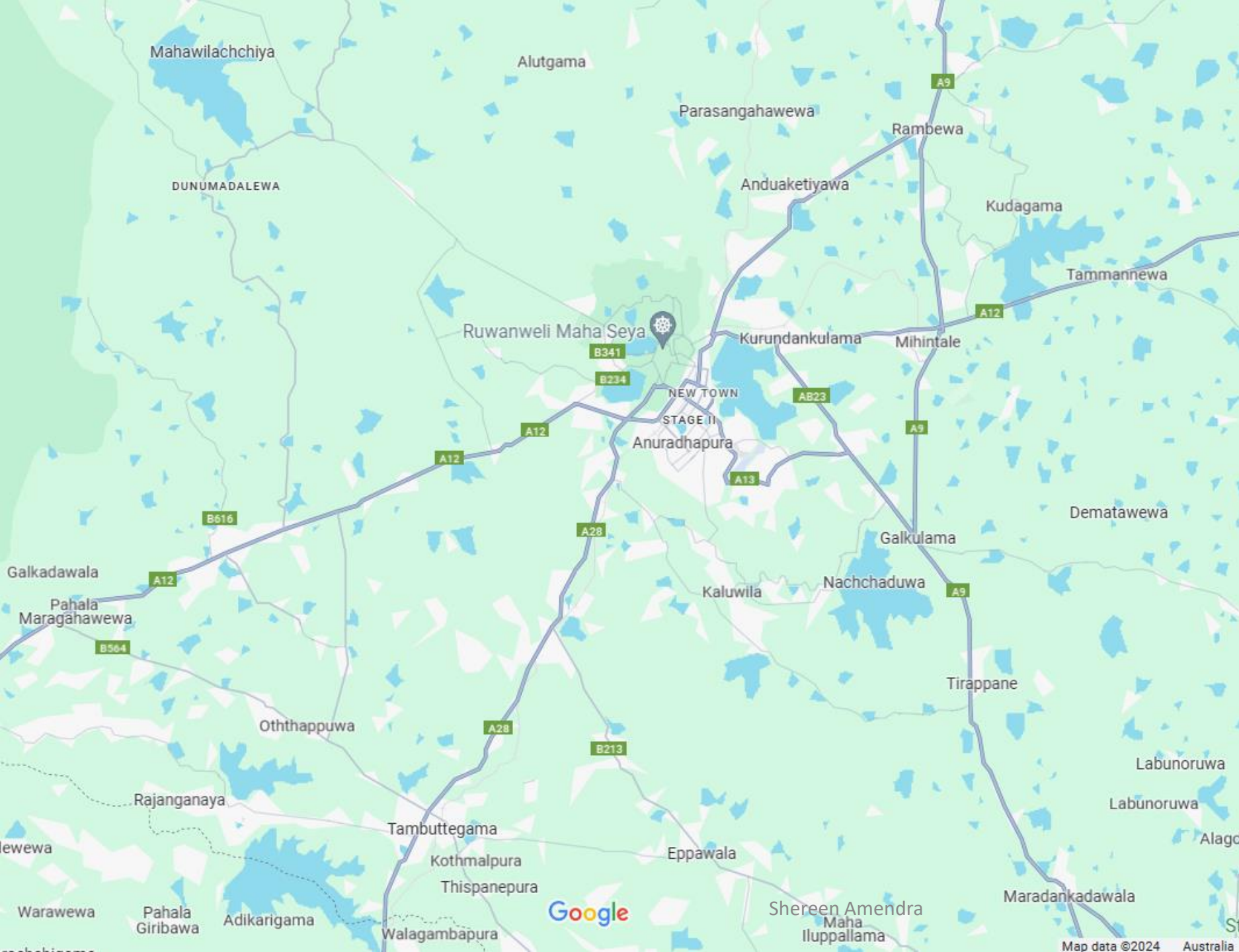
The event was one of the best attended in recent past, with over 75 interested attendees gathering to listen to the talk. Shereen’s talk was a fascinating insight into the landscape design and the historical relevance of many of the techniques adopted when constructing the City of Anuradhapura. Shereen delivered the oration in clear, and very accessible language and the audience was consumed in the interesting topic (inundating Shereen for opportunities to discuss the topic further, after she had concluded the presentation).

Thank you to all who attended and contributed to a successful event and in particular to Shereen Amendra and her family who not only were generous with their time, but also contributed food and refreshments. Additional thanks to those who attended and purchased raffle tickets and contributed food and assisted with the set up and pre-work, namely Logan, Hemal and Chandani.

# Palimpsest

- something reused or altered but still bearing visible traces of its earlier form (OED)
- something that has a new layer, aspect, or appearance that builds on its past and allows us to see or perceive parts of this past, (Dictionary.com)
- Note that modern GIS shows a series of layers spatially and a temporal timeline but a PALIMPSEST has a cultural / historical timeline through which early layers may be appreciated and pervade through time although erasure has occurred. It is this that I would present today.





The region was known as:

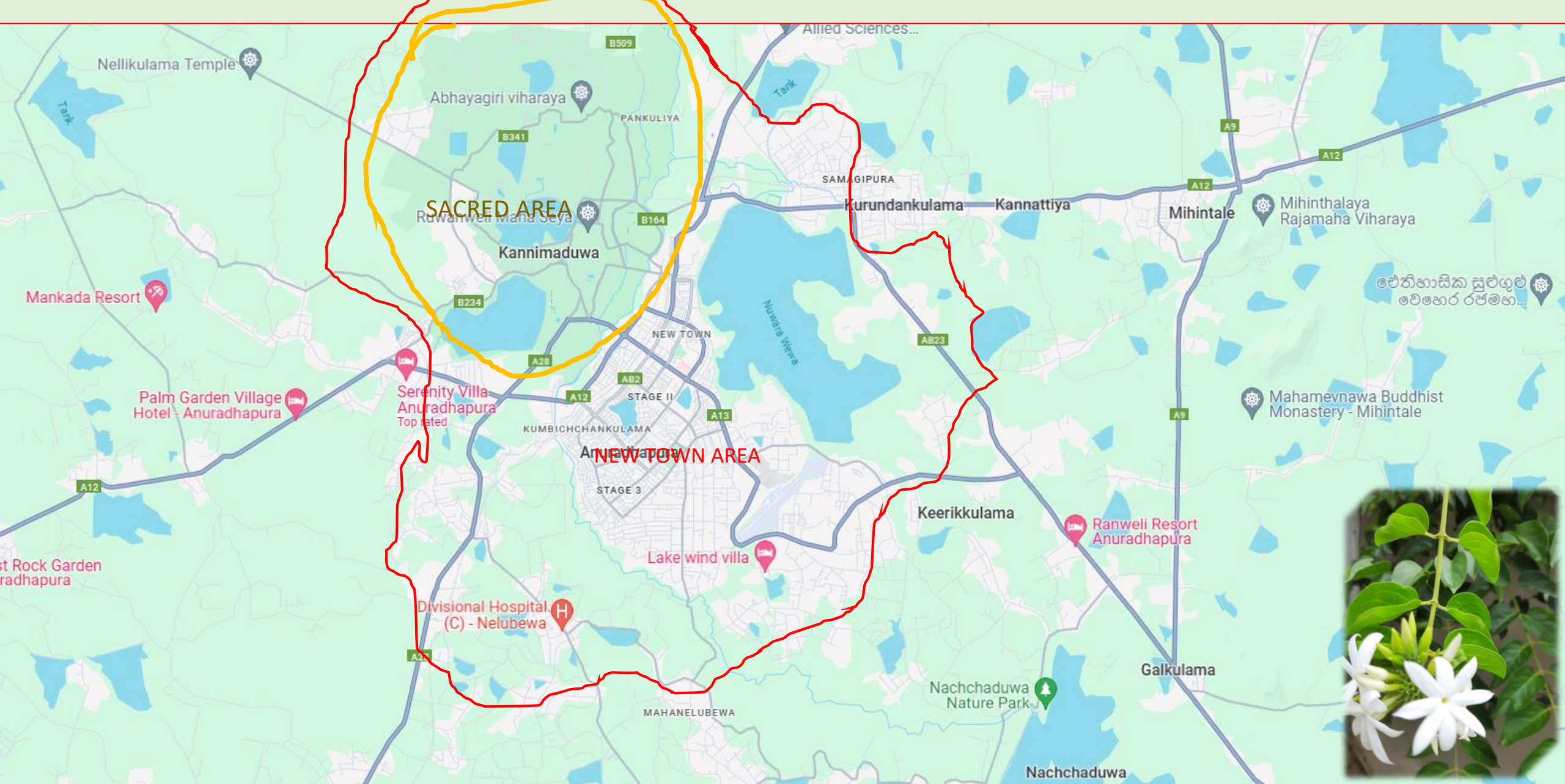
- Wev bandhi rajya (the region of *wevas* (lakes))
- *Nuwarakalaviya*
- A land of plentiful supply (*Subhiksha*)
- It moved from a '*vapi*' (pond) civilization to
- A '*vari*' (connected) civilization – irrigation networks
- North Central Province – 2 districts
- Anuradhapura district (7128 km<sup>2</sup>, 856,232 pop. 22 admin divisions)



Photo: Courtesy Shantha Amendra



Tisa – Weva (current usage)  
Tissa Vāpi (in ancient usage)  
“A Lake, which may be a mile over, not natural, but made by art ...to serve them to  
water their Corn Grounds” *Robert Knox 1681*



# ANURADHAPURA, SRI LANKA

Sheren Appendra

# Popular song lyrics by Makalandalage John de Silva (1857 – 1922) for the play ‘Siri Sangabo’

## DANNO BUDUN GE LYRICS

Danno budun ge... shri dharmaskanta  
Pewi rakithi sonda , sheele niban da...  
Danno budune ge... shri dharmaskanta  
Pewi rakithi sonda , sheele niban da...

Klesha nasna bhikshu.. aththeya bohose...  
Klesha nasna bhikshu.. aththeya bohose...

Rahathun niwasana... paaya praka se...  
Rahathun niwasana... paaya prakaase...

Bhulo mathehi.. dewlo pawa se...  
Pena mepura muni shaasana waa se...  
Irdiyen yannawu nek rahathunge...  
Irdiyen yannawu nek rahathunge...

Sewanelleni hiru.... rashmiya bhangе...  
Sewanel leni hiru.... rashmiya bhangе...

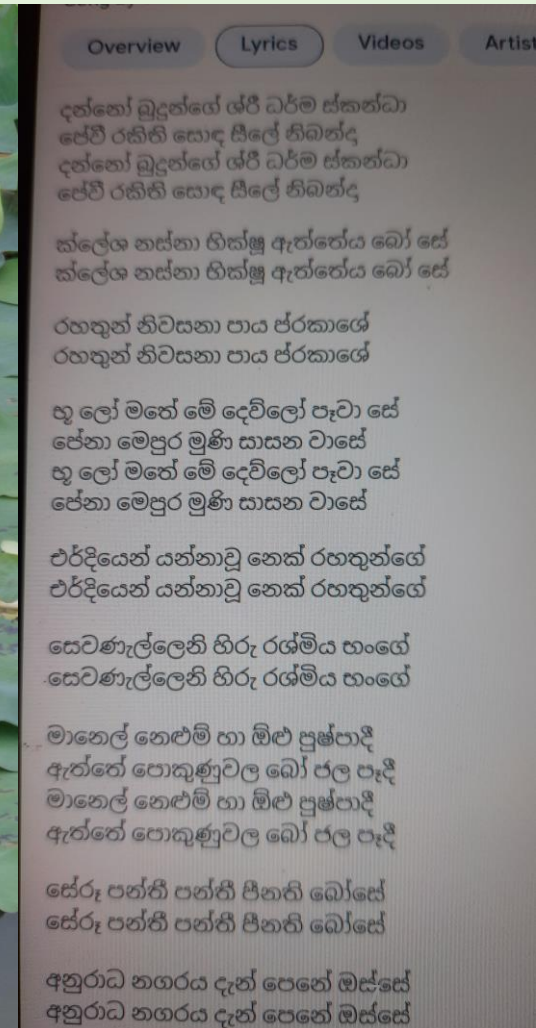
Maanel nelum ha... olu pooshpa dee...  
Aththe pokunuwala bo jala pea de...  
Seru panthi panthi.... peenathi bohose...  
Seru panthi panthi.... peenathi bohose...

Anuraadha naagaraya den pene na se...  
Anuraadha naagaraya den pene na se...

[Lyrics LK](#)

[Amaradeva](#)

Danno Budun Ge Lyrics





# Landscape embodied in song

The play [Siri Sangabo Charithaya] is based on the story found in the thirty-sixth chapter of the ***Mahāvamsa***. The thirty-sixth chapter is about a virtuous king named Siri Sāṅghabō who with his two friends Gōtābhaya, and Sangatissa, travel to the royal city of Anuradhapura to serve the Sinhalese king. The 3 Lambakannas reigned from 243CE to 262CE.

The following is an English translation. [colombomedgrads1962.blogspot.com](http://colombomedgrads1962.blogspot.com)

*Sāṅghatīssā: Behold in this mansion-like town  
Many monks adhering to the precepts  
Destroying their defilements  
And abiding by Buddha's dharma teachings*

*Sirisāṅghabō: Like heaven on earth!  
The shade of the many monks  
Who travel by air  
Destroy hot sun rays*

*Gōtābhaya: I see flocks of ducks wading  
In deep ponds, where stems of  
Lotus and lily flowers  
Rise to the top*



# Some stupas of Anuradhapura



The first and oldest stupa in Anuradhapura :

**Thuparama**

The 3 Great Stupas :

**Ruwanweliseya** of the Maha Vihara

**Abhayagiri** of the Uttara (Northern) vihara

**Jethawana** of the Jethawanaramaya

Other ancient stupas:

Lankaramaya

Mirisweti

Silacetiya (Kujjhatissa)

Dakkhina

# Maps and plans of Anuradhapura – Axis of the landscape and layout



## Ancient Parks and Gardens:

Nandavana (thickly shaded, cool & covered with verdure –MhXV 2)

Jotivana

Mahameghavana (water & shade MhXV 9)

Ranmasu Uyana

## Water bodies:

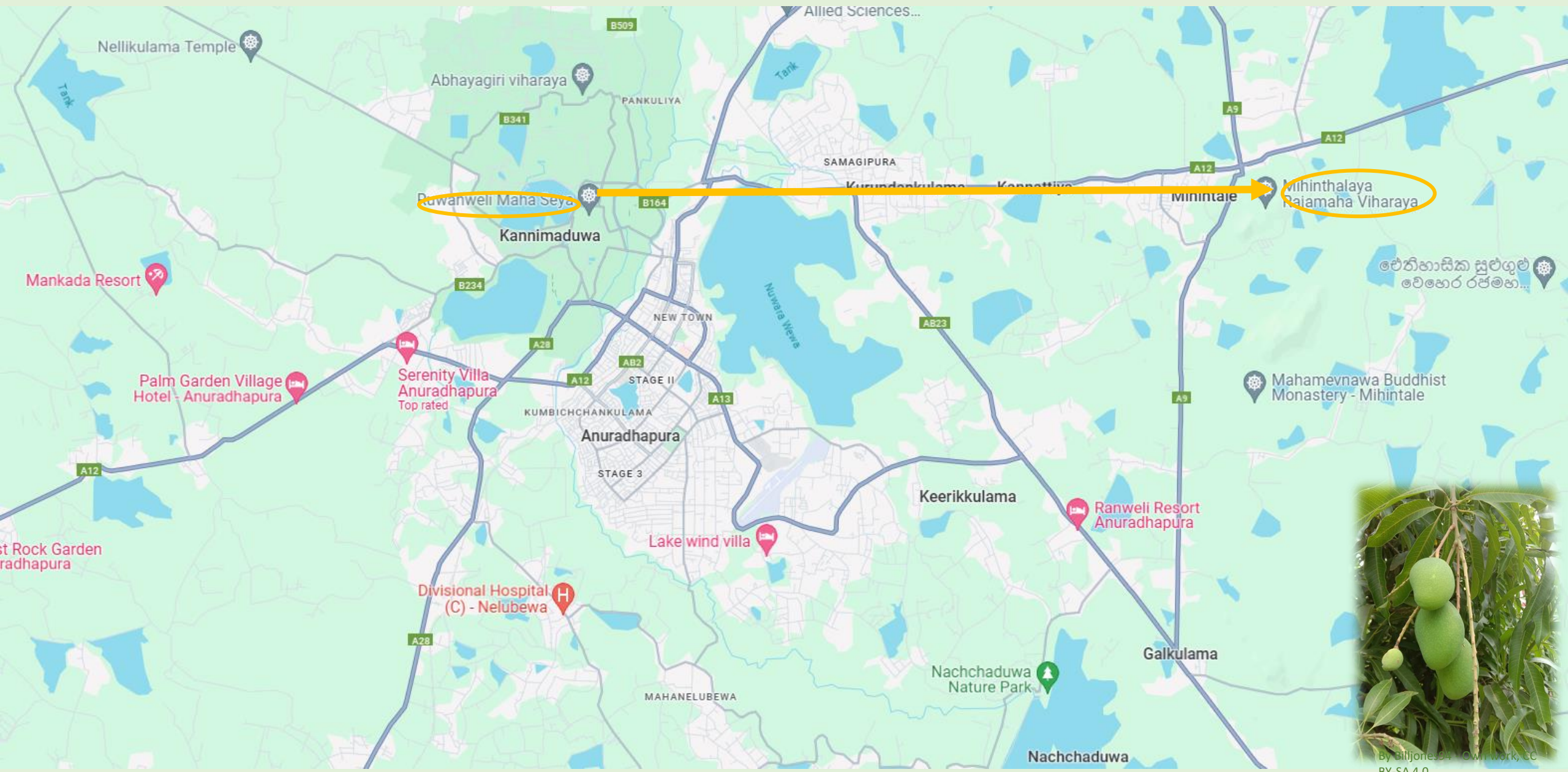
Tissa vāpi

Abhaya vāpi (Basawak kulam)

Gamani vāpi (Bulan kulam)

Nuwara wewa

Several others



by Billjones94 · Own work, CC BY-SA 4.0, <https://commons.wikimedia.org/wiki/File:Rangasapota.jpg#file>

**AXIS OF MAHAMEGHAVANNA, SITE OF MAHATHUPA, TO MIHINTALE WHERE ARAHANT MAHINDA MET DEVANAMPIYATISSA**

# The *Atamasthana* – Eight sites consecrated by Arahant Mahinda Mahavamsa (Ch.XV 26 – 57)

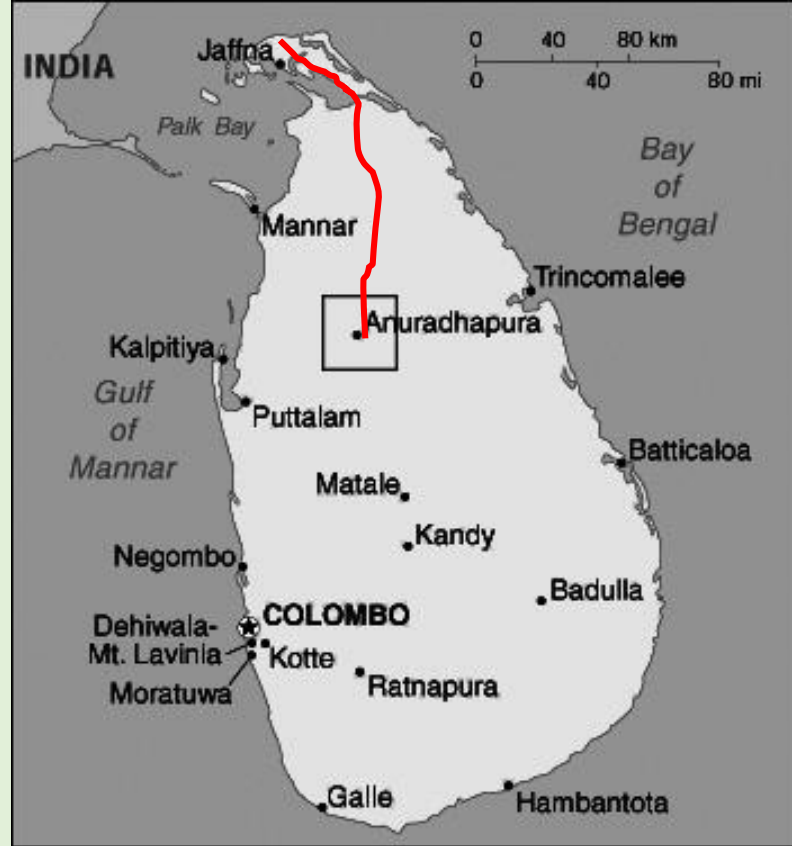
1. The **Maha-megha park** given to the brotherhood
2. A malaka for carrying out the duties of the brotherhood
3. The tank with the room for warm baths (jantaghara)
4. The place for planting of the south branch of the **Bodhi tree** of the Tathagata
5. The uposatha-hall of the brotherhood (at the Mahamucalamalaka)
6. The place where many gifts shall be distributed,.. to the brotherhood (at the Panhambamalaka)
7. The Catussala.... The refectory of the brotherhood
8. **The place worthy of a thupa** (which has been visited by four Buddhas)



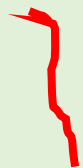
# JAYA SRI MAHA BODHI

Images by author





Map of Sri Lanka indicating  
location of Anuradhapura



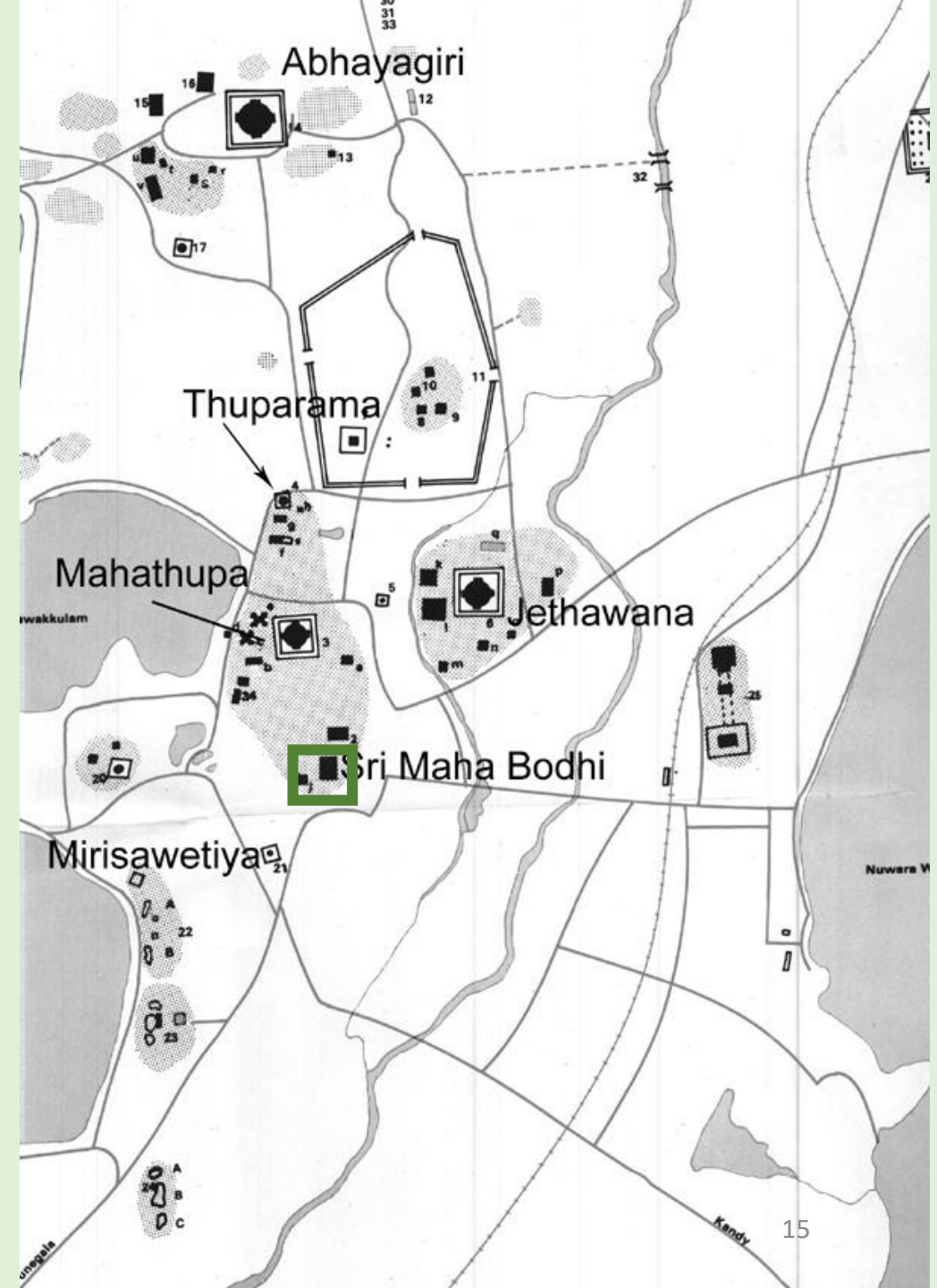
Route of Sri Maha Bodhi from  
Jambukolapatana to Anuradhapura



Jaya Sri Maha Bodhi

Anuradhapura Sacred Area

Shereen Amendra



## SACRED CITY OF ANURADHAPURA

4<sup>th</sup> century BCE – 10<sup>th</sup> Century CE

Founded by King Pandukabhaya (377 – 307 BCE)

Parks laid out by King Mutasiva (307 – 247 BCE)

Mahathupa built by King Dhuttagamani (101 – 77)

DECLARED A **UNESCO WORLD HERITAGE SITE** IN 1982

The United Nations Educational, Scientific and Cultural Organisation (UNESCO) World Heritage Sites (WHS) are sites designated to have significant cultural and natural heritage and are considered to be of outstanding value to humanity.

World Heritage Sites declared by UNESCO are sites with legal protection

ADMINISTRATION: Urban Development Authority, Municipal Council Anuradhapura, Central Cultural Fund, Anuradhapura Preservation Board, Atamasthana Committee

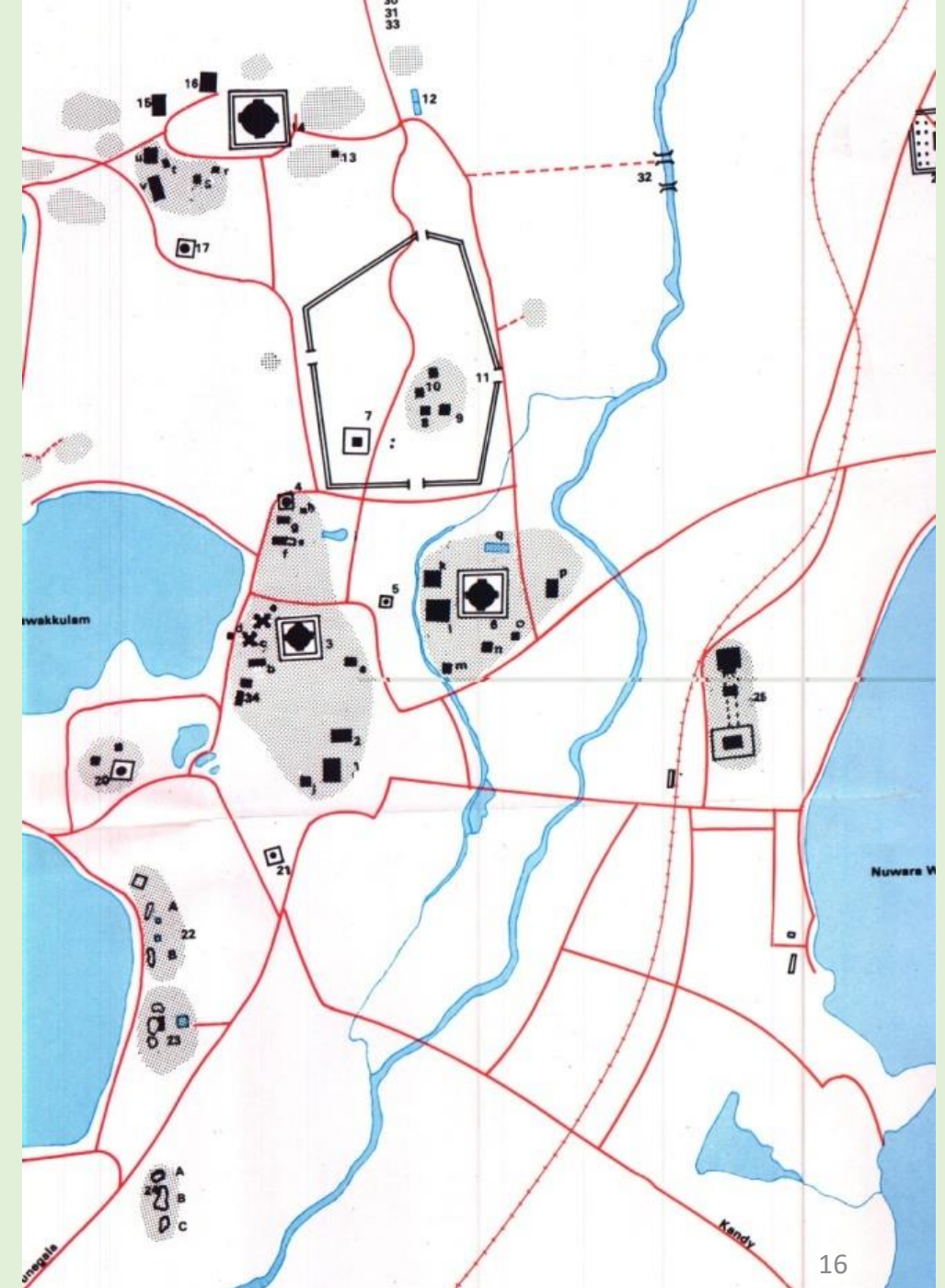
Notable events: Abandonment around 993 CE

Colonial administration, discovery and planning around 1870

Intervention by Brahmachari Walisinghe Harischandra

1949 – Anuradhapura Preservation Plan

Shereen Amendra



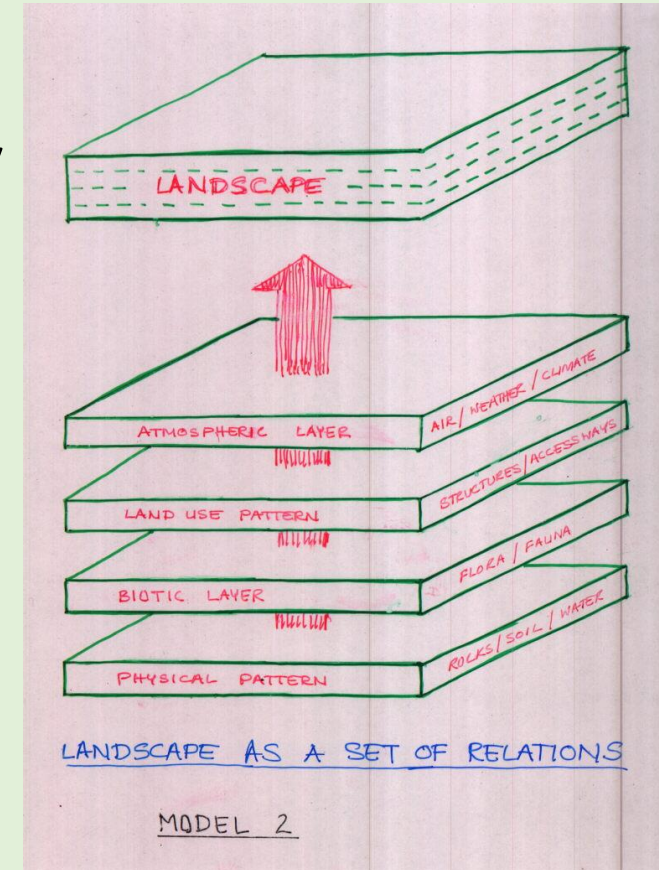
# What is a Landscape

- Landscape Character Assessment – NCP and region
- Landscape Character Units – Anuradhapura sacred city



Landscape as  
a coherent  
relationship  
of layers.

The physical  
(ground)  
layer



SAM-ECO  
FRAMEWORK<sup>17</sup>

...impacted by the aspects of the atmospheric layer.....



.....creates conditions for the growth of plants (the flora).....

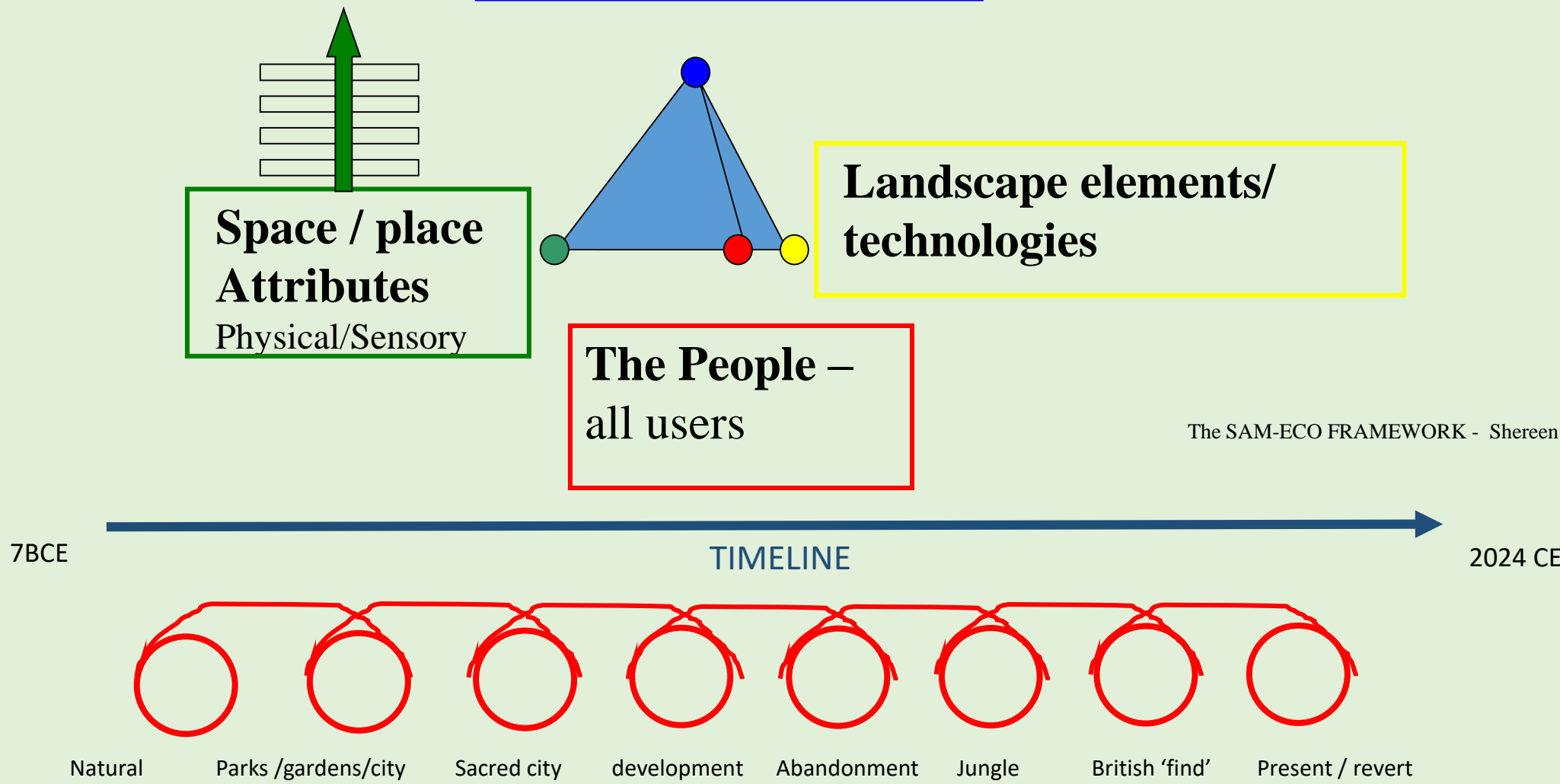




...and a habitat for fauna within which interstices human settlement occurs.

**SYNERGISTIC DESIGN** - Working together to achieve a common goal for the well-being of users

**Landscape principles**



The SAM-ECO FRAMEWORK - Shereen Amendra ©

**PALIMPSEST**

Shereen Amendra

# The Mahavamsa & other texts

- Written based on earlier texts
- in 5th or 6th century A.D
- written perhaps by Mahanama
- Commentaries – Tika (Wansaththapakasini by Buddhaghosa)
- translated by many - principally Geiger, Wijesinha
- studied and commented - Fleet, Turnour, Rhys-Davis et al. Particularly The Tika
- Known as the Great Chronicle of Ceylon

# More texts

- Thupavamsa – Parakrama panditha 11<sup>th</sup> -13<sup>th</sup> A.D.
- The silpa sastras – general treatises on the design and manner of building, later than the building of the Mahathupa
- The Manasara – 5<sup>th</sup> – 8<sup>th</sup> A.D.
- Mayamata – 9<sup>th</sup> – 11<sup>th</sup> A.D.
- Kasyapasilpasastra – 10 -12<sup>th</sup> A.D.
- Manjusri's vasthusasthra 11<sup>th</sup> – 12<sup>th</sup> A.D.
- **Many recent texts** (e.g. B.W. Harischandra, 'Sacred City of Anuradhapura'; J.G. Smither, 'Architectural Remains of Anuradhapura, Ceylon'; ParNAVithana 'The Stupa in Ceylon'; Lama Govinda 'Symbolism of the Stupa' etc.etc.)

GRATEFUL THANKS TO:

Sri Lanka Institute of Architects, →

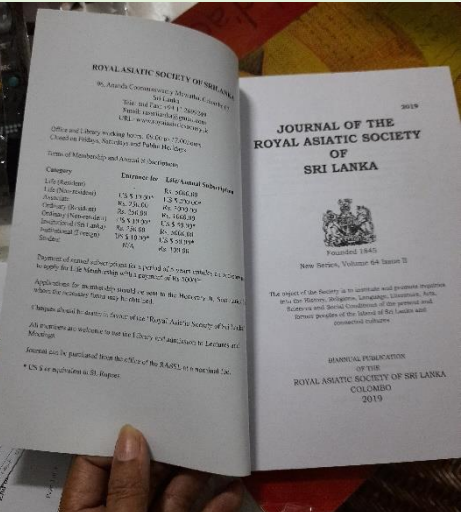
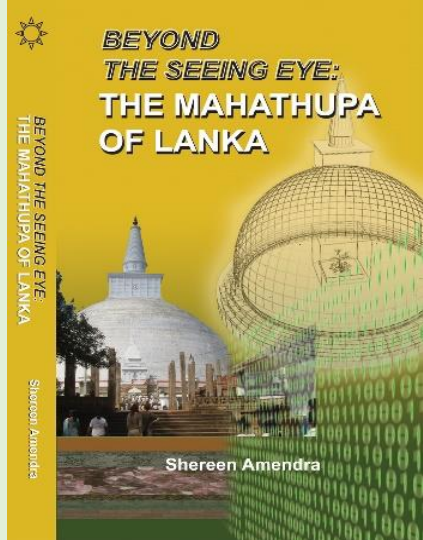
The Goethe German Cultural Institute,

Sri Lanka Pugwash Group

Sri Lanka Association of the Advancement of Science with the Institute of Engineers Sri Lanka,

Royal Asiatic Society of Sri Lanka,

Association of Sri Lankan Architects in Australia



CONTENTS	
Shereen Amendra	The Design of the Stūpa Pinnacle and Origin of Plaster 'Bo' Leaves on Stūpas
T. G. Kulatunge	Janthāghara within Ancient Buddhist Monasteries
Reverend Wadinagala Pannaloka	'Sacrifice' in Theravada Buddhist Ethics and Consequentialism
S. S. A. Seneviratne and S. M. Kariyakarawane	Intervention of Early Leftist Movement in the Culture in Sri Lanka: A Reading on 'Red Poets'

OTHER PRESENTATIONS	INVITED BY:	
The Mahathupa at Anuradhapura – An Architect’s Insight	Goethe Institut on the occasion of an exhibition on Architecture & Religion	German connections
The Curious Parallel Between the Base layers of the Ruwanweliseya and the Modern Day Silicon Chip	General Research Committee, SLAAS	Atom structure of Silicon, semi-conductors, microchips
The Mahathupa of Lanka – Unique Wonder of Peace and Equanimity	Pugwash Group – Invited address [‘Oppenheimer’ –recent film – Sir Joseph Rotblat	Role of Arahant monks & spirituality
The Design & Construction of the Ruwanweliseya –according to the chronicles	Institute of Engineers, Sri Lanka n collaboration with Sri Lanka Association for the Advancement of Science	The workforce and project management
The Marvellous Mahatupa	Royal Asiatic Society of Sri Lanka (RASSL) Public Lecture Series	The Grand Design
The Marvellous Mahatupa	Association of Sri Lankan Architects in Australia	The Pinnacle of Power



## Form follows function - The Mahathupa and 'Modern' Technology

A presentation at the  
Sri Lanka Institute of Architects  
National Forum 2006  
by Archt. Shereen Amendra F.I.A.  
M.Sc. (Architecture), M.Sc. (Landscape Design)

## PREVIOUS PRESENTATIONS ON DIFFERENT FACETS & THE PRESENT ONE

The Curious parallel between the  
modern day silicon chip and the  
base layers of the  
Ruwanweliseya  
by  
Archt. Shereen Amendra

A presentation to  
the General Research Committee of the  
Sri Lanka Association for the Advancement of  
Science (SLAAS) for scientific discussion

Shereen Amendra (2006): The Mahathupa of  
Lanka

## THE MAHATHUPA AT ANURADHAPURA

- An Architect's Insight  
by

Archt. Shereen Amendra F.I.A.  
M.Sc. (Architecture), M.Sc. (Landscape Design)

A Presentation on the occasion of the Exhibition on  
**ARCHITECTURE & RELIGION**  
by the Goethe Institut in collaboration with  
the Sri Lanka Institute of Architects

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Lanka



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## THE MARVELLOUS MAHATŪPA

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Chartered Architect / Chartered Landscape Architect

Public lecture Series

Royal Asiatic Society of Sri Lanka

Based on: Shereen Amendra (2006): The Mahathupa of Lanka

## The Mahathupa of Lanka – Unique wonder of peace and equanimity

Presentation at  
the Pugwash Workshop, Sri Lanka.  
November 2007

## THE DESIGN & CONSTRUCTION OF THE RUWANWELISEYA according to the chronicles Shereen Amendra

M.Sc. (Architecture), M.Sc. (Landscape Design), F.I.A., F.I.L.A.

Chartered Architect / Chartered Landscape  
Architect

SLAAS Section C/CESC-IESL  
Public Lecture

## THE MARVELLOUS MAHATŪPA

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Chartered Architect / Chartered Landscape Architect

A lecture for the Association of  
Sri Lanka Architects in Australia (SLAIA)

Based on: Shereen Amendra (2006): Beyond the seeing eye: The Mahathupa of Lanka

# Ancient types of landscape

The landscape originally selected may have been one of the four 'excellent types' of ground for stupas

- *Anūpa*
- *Jāngala*
- *Dhūmraka*
- *Sādharaṇa*



## *Anūpa* landscape:

‘abounding in *moca* and *pūga* (arecanut) trees and deer and bees, having a fine sandy soil and which is moist and full of *kaseru* grass and water lilies’.



← *Anūpa* landscape ?



*Jāngala* landscape ?

‘ground characterised by hardness and lightness, which is covered with tiny pebbles and abounds in trees and creepers’



Sherleen Amendra



## *Dhūmraka* landscape:

landscape that has  
many trees on it





*Sädharana* landscape: an open area  
surrounded by trees ?



*Photo: Courtesy Niloo Amendra*

Change in the  
landscape –

to agriculture,  
early  
organisation  
and urbanism



The Mahathupa,  
Ruwanweliseya  
stupa,  
Swarnamali  
chaitya

Set in a park  
landscape, the  
Mahameghavanna  
uyana, the  
monumental stupa,  
its pinnacle rising  
into the sky vault  
and clouds.



Photo: Courtesy Niloo Amendra

**The Abhayagiri stupa of the Uttaravihara**

Shereen Amendra



Photo: Courtesy Waruni Anuruddhika

**Lankarama of the Uttaravihara**

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# Currently observed as *Atamasthana* – ‘Eight places’

The Atamasthana as later declared were of a more practical nature. They comprised the chief stupas which were in charge (the authority) of the Committee. (Guruge 1967). Presently they are –

- Udumaluwa (Sri Maha Bodhiya)
- Ruwanweliseya
- Jethawanarama
- Lankarama
- Abhayagiri
- Thuparama
- Mirisawetiya
- Lowamahaprasadaya

These are the places that Buddhists today visit and pay homage. Including the Sela-chaitya (Guruge)

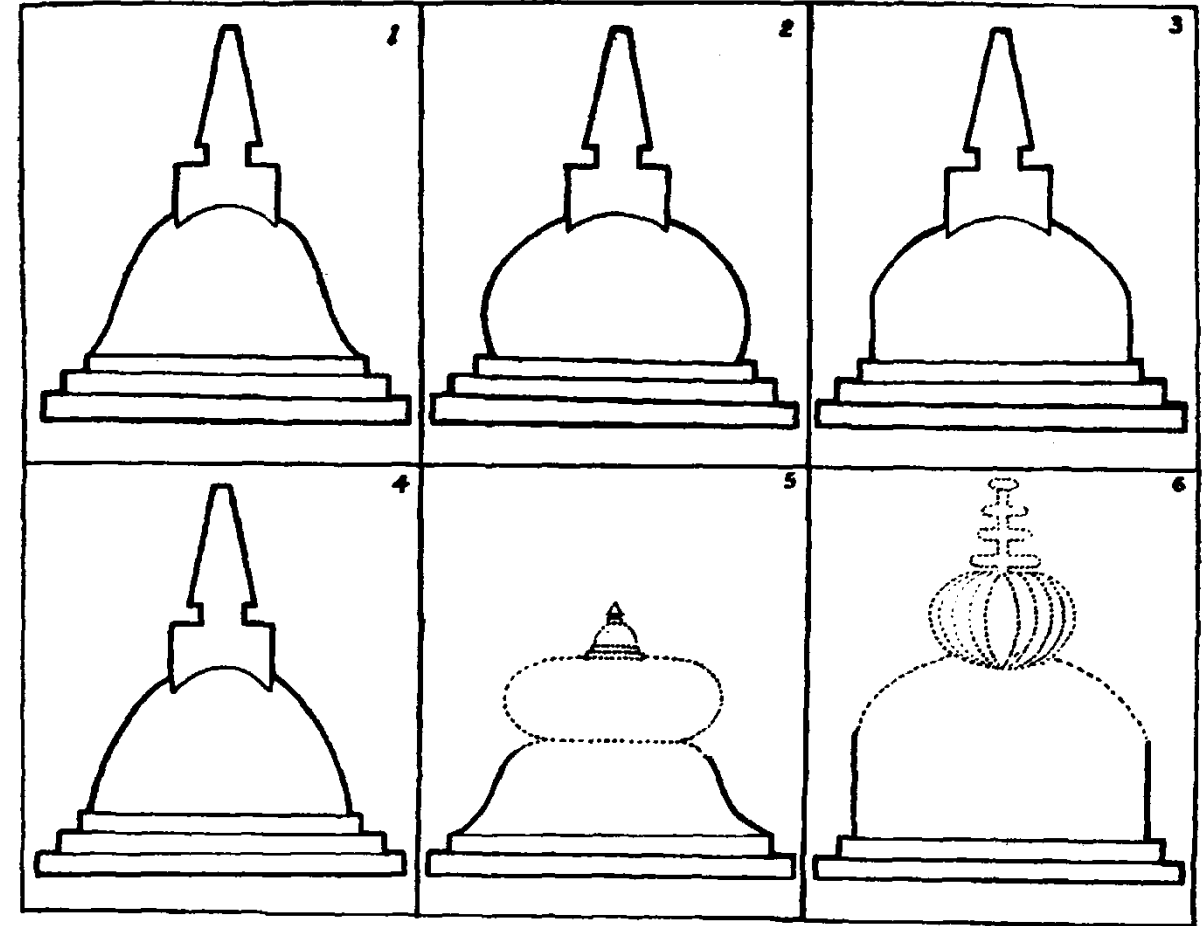


Photo: Courtesy Shantha Amendra

**The Jetavana Stupa**



## SHAPE & FORM



1-6. Diagrammatic Conjectural Shapes of Sinhalese Dagobas.

1. *Ghanṭhākāra*

2. *Ghaṭākāra*

3. *Bubbulākāra*

4. *Dhānyākāra*

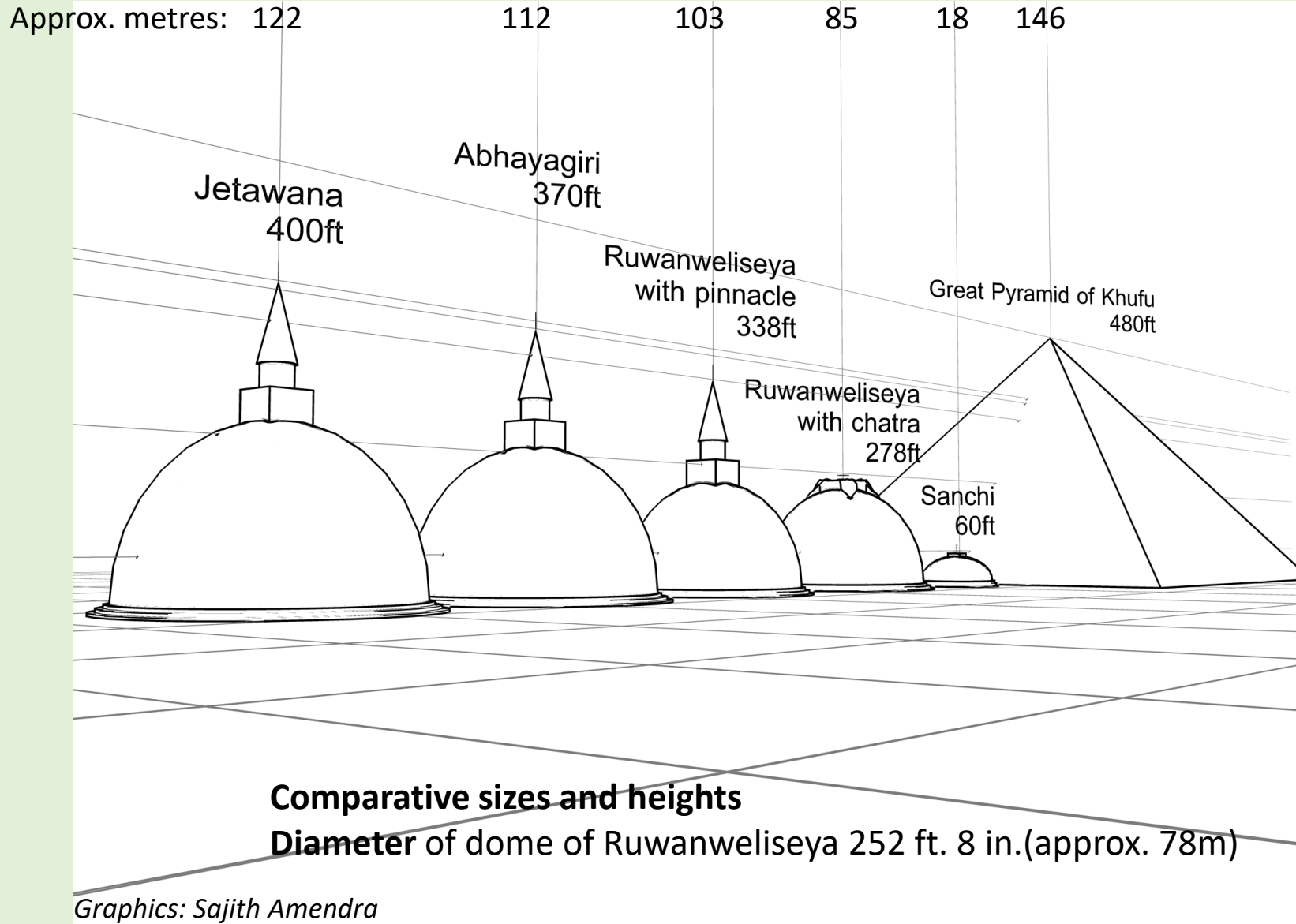
5. *Padmākāra*

6. *Āmalaka*

The MAHATHUPA was of hemispherical (*bubbulākāra*) form

Re-drawn after C.E. Godakumbura  
(1976)

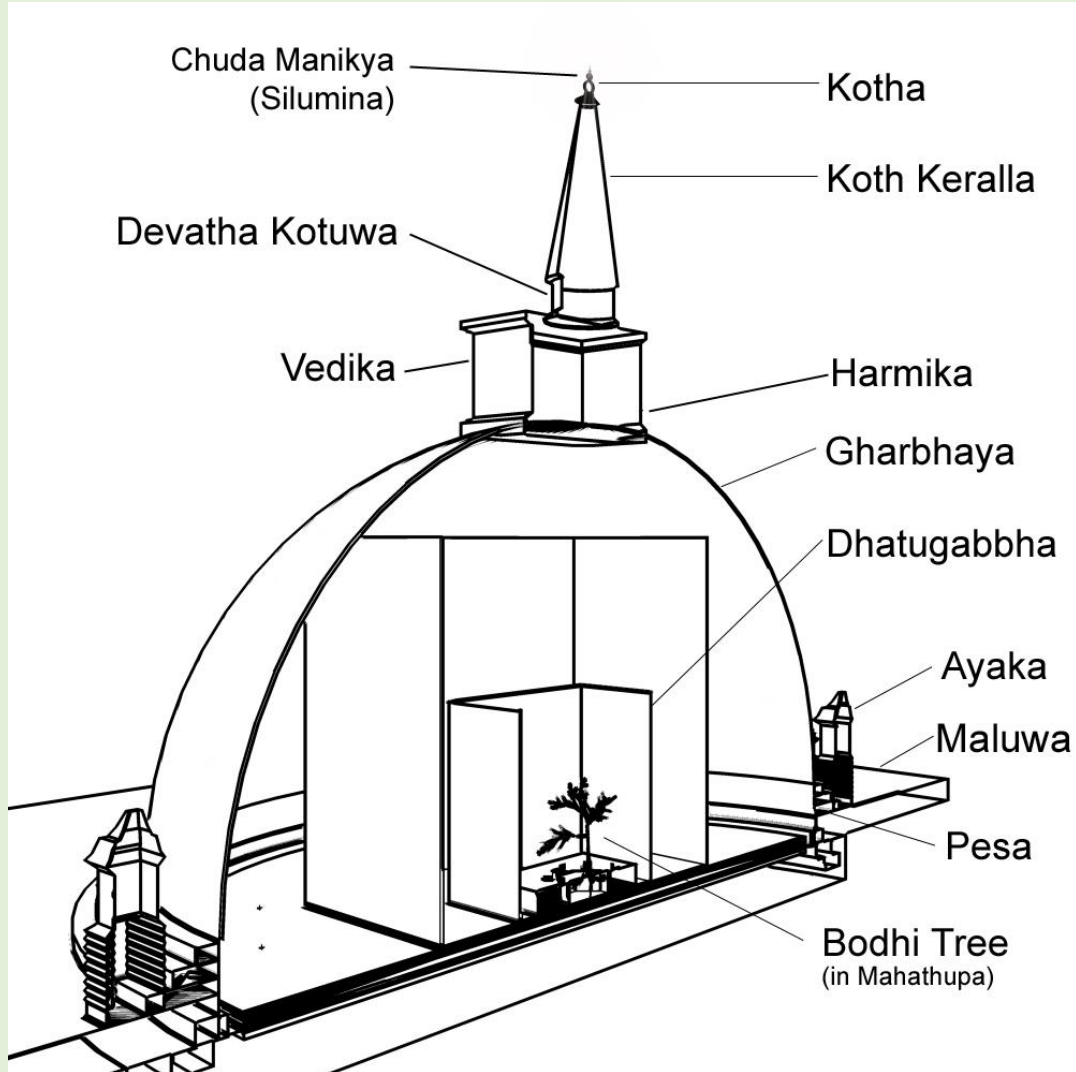
# SIZE & FORM



All shown are;

- Monumental
- Monolithic
- Axially symmetrical on multiple cardinal **horizontal** axes
- Axially symmetrical on cardinal **vertical** axes
- Square turret gives direction seen from afar

# Parts of a stupa – cut-away view



*Top to base in English:*

Crystal gem  
Finial  
Pinnacle  
supporting shaft of gods  
Railing of  
Square turret  
Dome (womb)  
Relic chamber (precious)  
Altar (4 symmetrical axes)  
Terrace  
Ring foundation  
Bodhi tree (silver)

## LANGUAGE & TERMINOLOGY

STUPA – Sanskrit

THUPA – Pali

DAGABHA – Sinhala

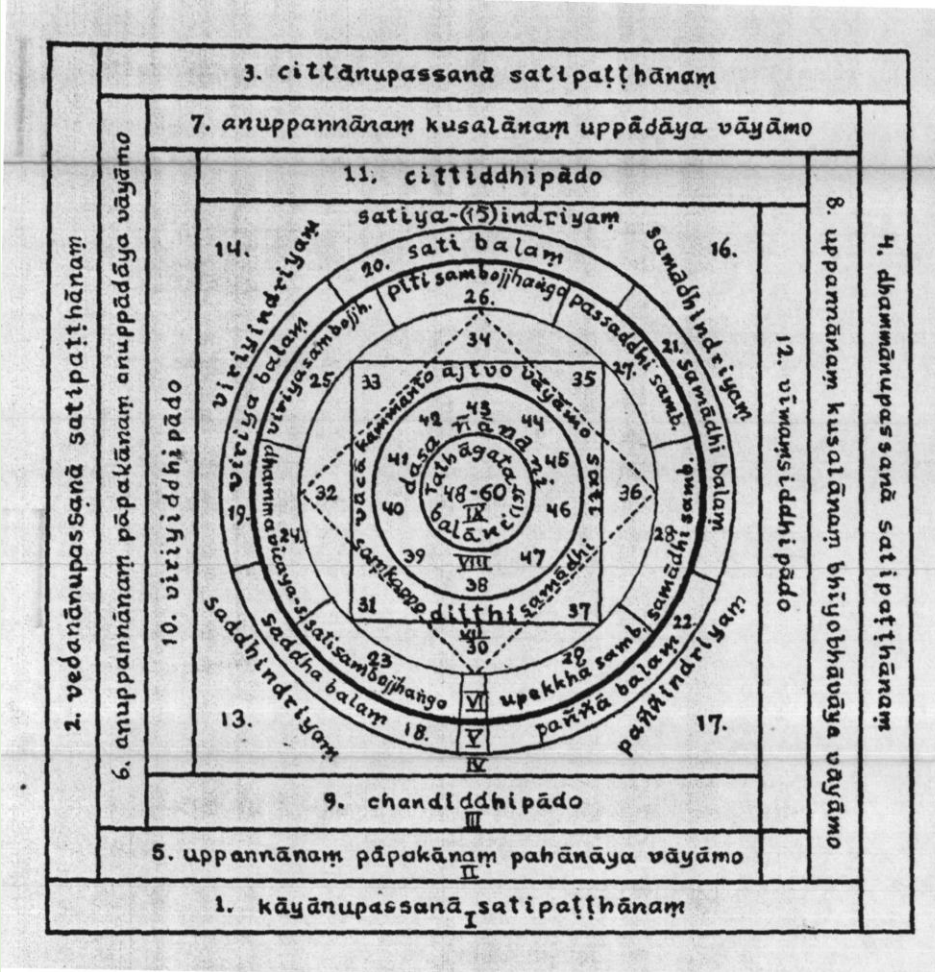
DAGABVAHANSE – reverential  
term in Sinhala

DAGODA – English derivative

CETIYA - Pali

CHAITYA - Sinhala

PAGODA – English term for a  
structure evolved from  
stupa (different form)



## The Symbolism of the Stupa

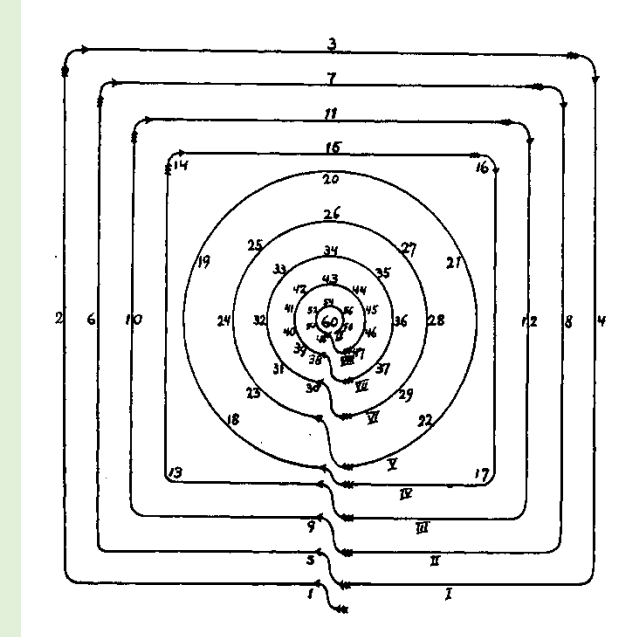
The Stages of meditation according to the Pali Scriptures.

## The Proportions of the Stupa

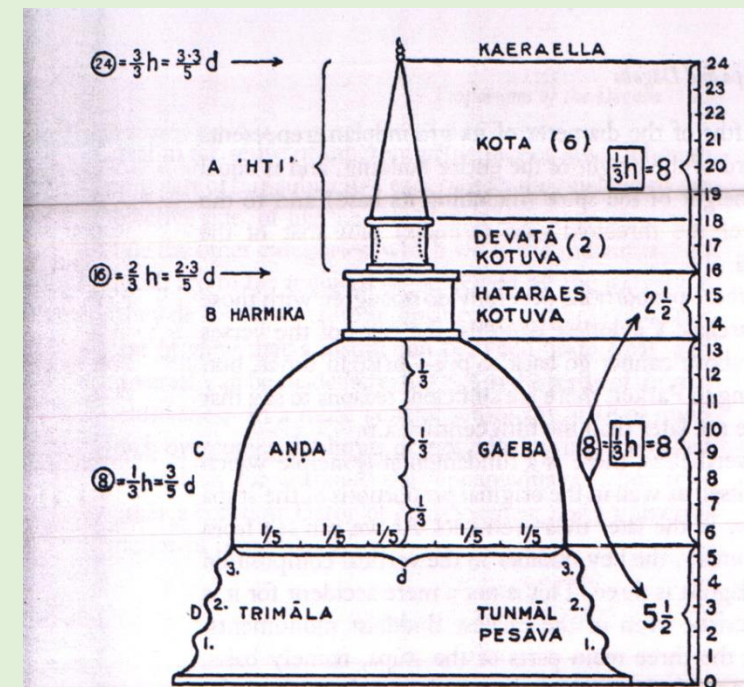
After: Lama Anagarika Govinda, 1976

Also refer Snodgrass (1985)

Shereen Amendra



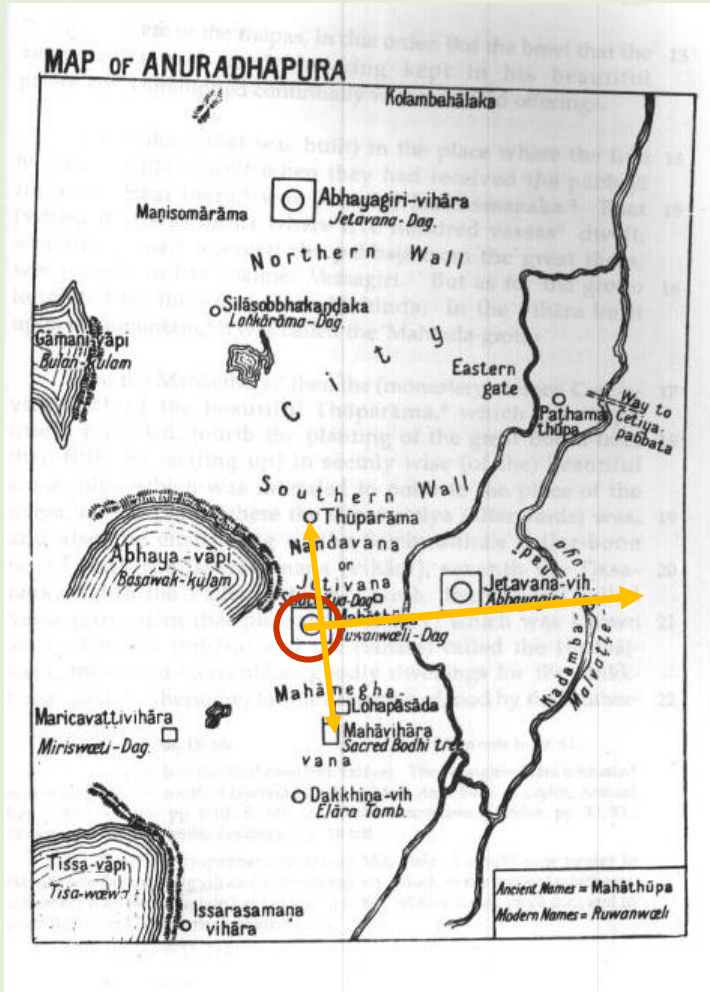
## The Path of the Meditator



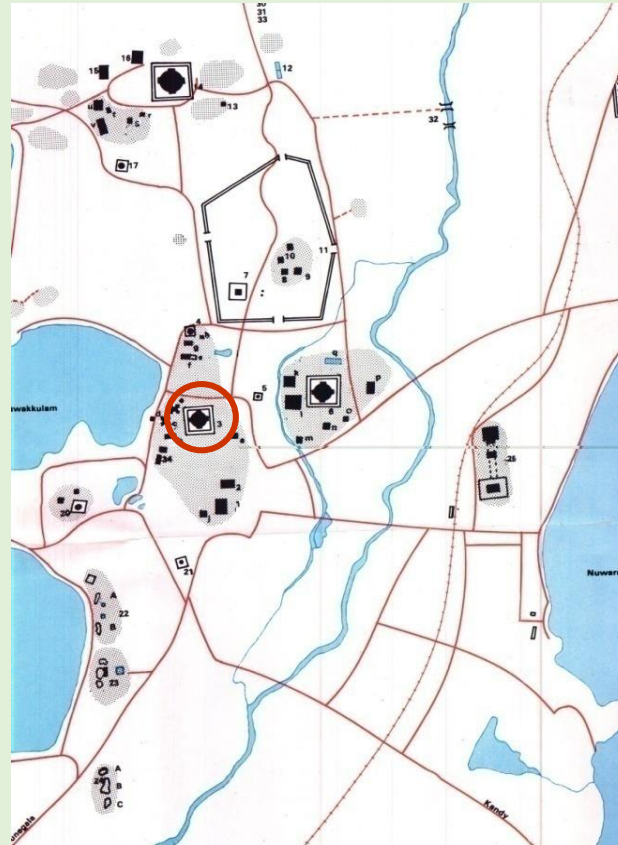
# Position of site of the Mahathupa in the Landscape during the aeons of time

Name of the island	Buddha	Park or Garden	City	Location of City	Tree of enlightenment
Ojadipa	Kakusandha	Mahatitthaka-grove	Abhaya	East	Sirisa Acacia sirissa
Varadipa	Konagama	Mahanoma garden	Vaddhamana	South	Udumbara Ficus glomerata
Mandadipa	Kassapa	Mahasagara-garden	Visala	West	Nigrodah Ficus indica
Lankadipa	Gothama	Mahameghavan na	Anuradha	North	Asetu (Bo) Ficus religiosa
	Maitreya				
Sri Lanka	Siddartha Gauthama	Mahamewvana	Anuradhapura	South-East	Sri Maha Bodhi Ficus religiosa

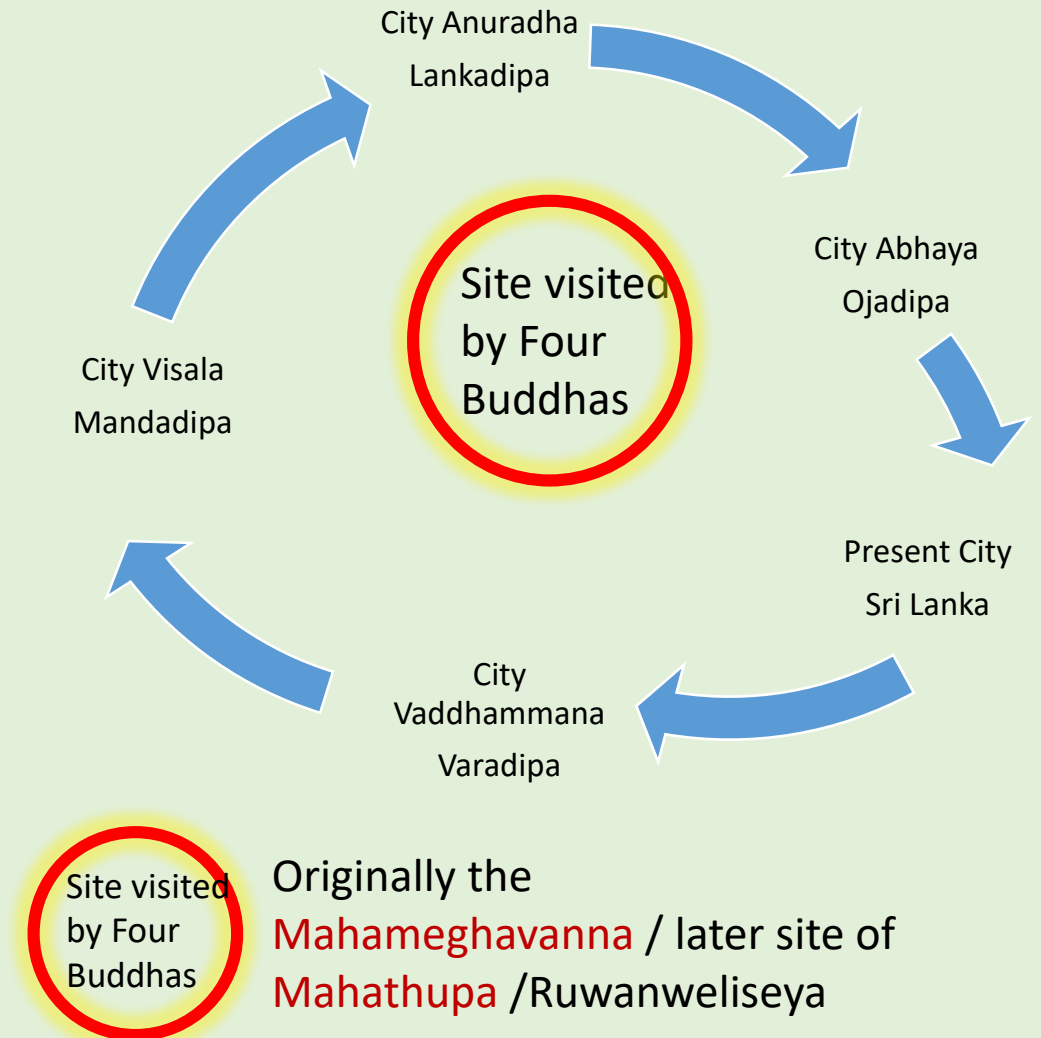
# Anuradhapura Sacred Area ancient and present



○ - Shows position of the Mahathupa



## THE IMPORTANCE OF LOCATION IN THE LANDSCAPE



# The initial stages

Ordained to be built -      Maha parinibbana (Mahavamsa Ch XXXI, 17-19)

- “Lying on his deathbed the Master of the world, that with his relics he might bring to pass salvation for the world, spoke thus to (Sakka) the king of the gods: O king of the gods, of the eight donas of my bodily relics one dona adored (first) by the Koliyas in Ramagama, shall be borne thence into the kingdom of the nagas and whence it will be adored even there by the nagas it (at the last) shall come to be enshrined in the Great Thupa on the island of Lanka”
- Site visited by Buddhas (Mahavamsa XIX 41)
- Visited by Buddha Gotama (Mahavamsa I 83)

# The Site for the Mahathupa

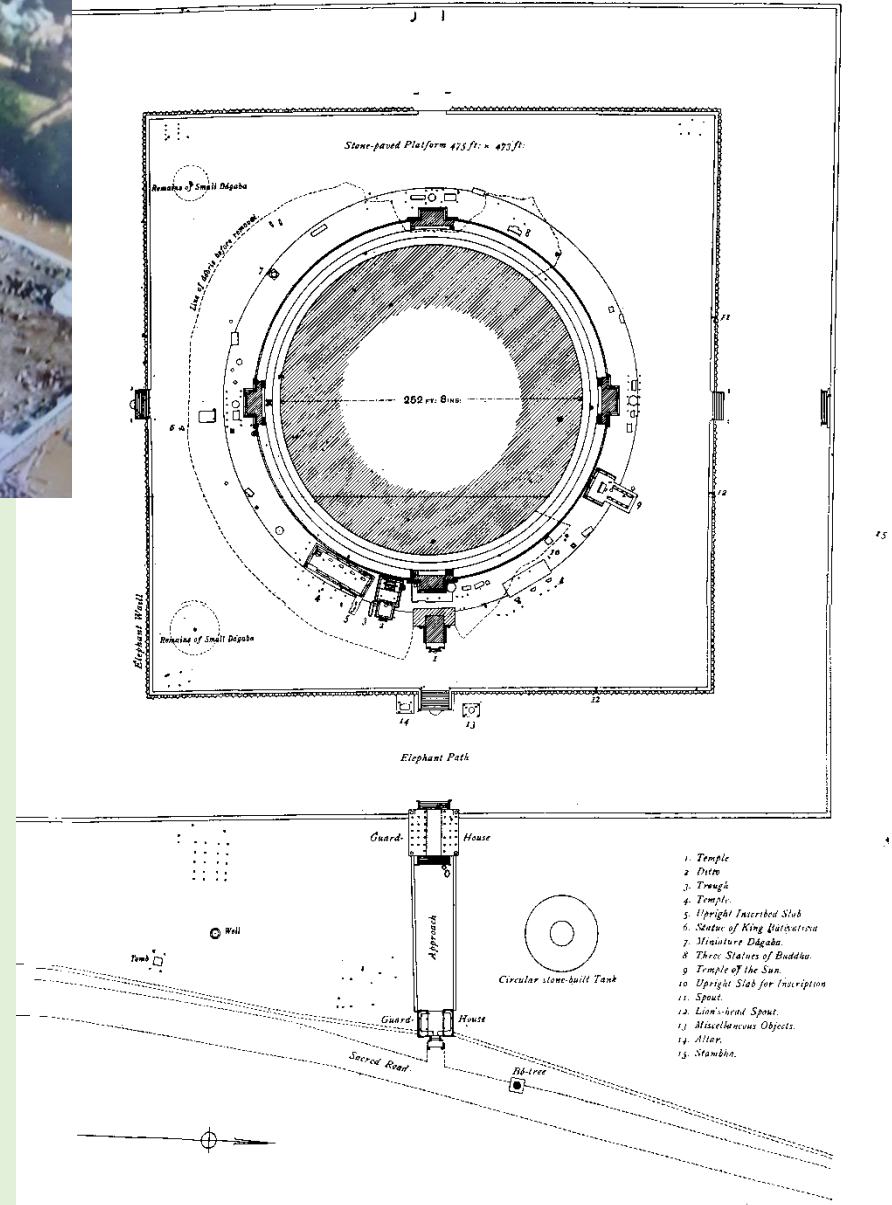
- Consecrated by Arahant Mahinda
- Within the Mahameghavana Park
- On the edge of the Kakudha *vapi*
- On one of the four 'excellent types' of ground for stupas (*Vastuvidyashastra*)
- Most likely the *anupa* type of landscape: 'abounding in *moca* and *puga* trees and deer and bees, having a fine sandy soil and which is moist and full of *kaseru* grass and water lilies'
- Central on the axis between Sri MahaBodhi tree and Thuparama





THE RUWANWELI DĀGABA.  
Plan.

PLATE XXII.



Swarnamali chaitya /  
Mahathupa / Ruwanweliseya

Plan from J.G. Smither's  
'Architectural Remains of Anuradhapura,  
Ceylon' (1894)

The Mahathupa  
was also known as...

Hemamali –  
at site selection stage  
**Swarnamali chaitya** –  
according to legend  
Mahathupa –  
during time of kings  
Mahaseya –  
a reverential term  
**Ruwanweliseya** –  
the present name  
Ruwanmeliseya  
a term also in use

# Tumulus of Ruwanweliseya



Photo credit: Mr. Lawton

The landscape at the time of the British and their 'discovery' of the tumulus of the Mahathupa. A Major Skinner found the ancient city clothed in jungle. Around 1868, Colonel Fyers cleared the area of thick jungle.

From: Smither, J.G., Architectural Remains, Anuradhapura  
Shereen Amendra



East view  
Photo - Shantha Amendra



Cumulonimbus clouds develop a charge separation as follows: **Collisions between rising moisture particles knock off electrons**, creating a charge separation. **The lower portion of the cloud becomes negatively charged**, while the top becomes positively charged.

**Updrafts and downdrafts further separate positive and negative charges** within the cloud.

**Lightning is caused by this charge separation in clouds**

From above –  
flying over  
Indonesia



**ATMOSPHERIC  
CONDITIONS of a  
LANDSCAPE**

**CUMULONIMBUS  
CLOUDS**

From below

RUVANWELISEYA with developing Cumulonimbus clouds



# Power - Source



A complex of ionised channels

Humans have always marvelled at natural phenomena. Perhaps the Arahant priests who directed the building of the stupas were well aware of the electrical potential

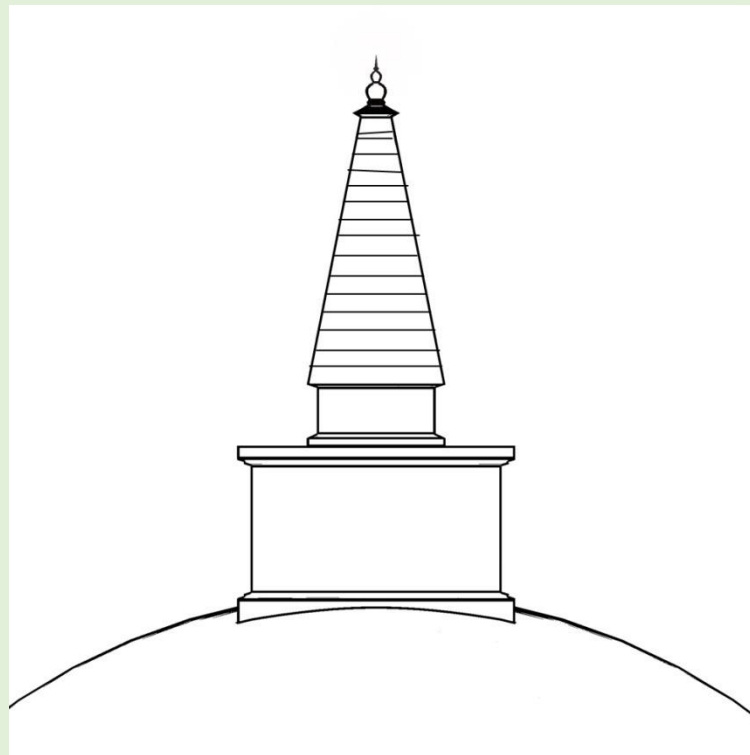
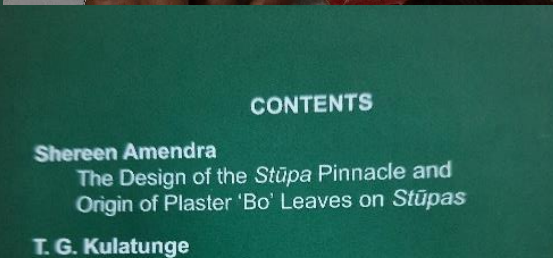
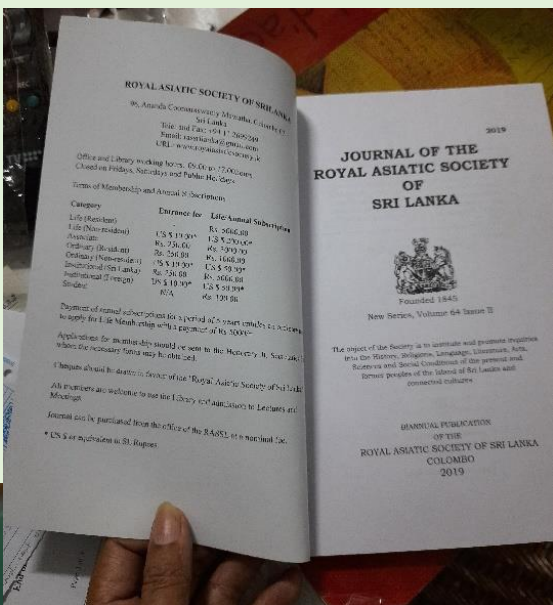
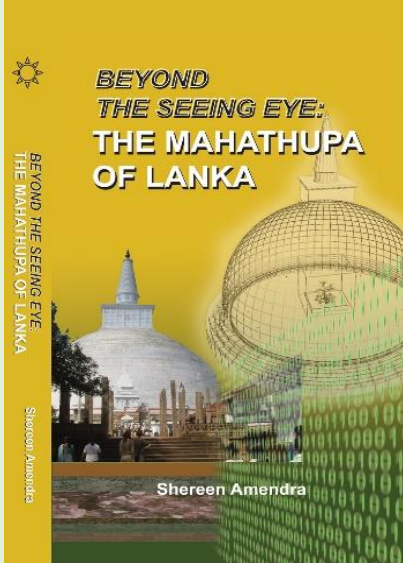
The charge differential and temperature gradient in a thunderhead cloud could occur as a stepped leader towards the earth which on bridging a ground based early streamer discharges and seen as lightning. It occurs in micro seconds dissipating a current in the order of kilo-amperes.

Lucas (2001)

An unreliable source of continuous power

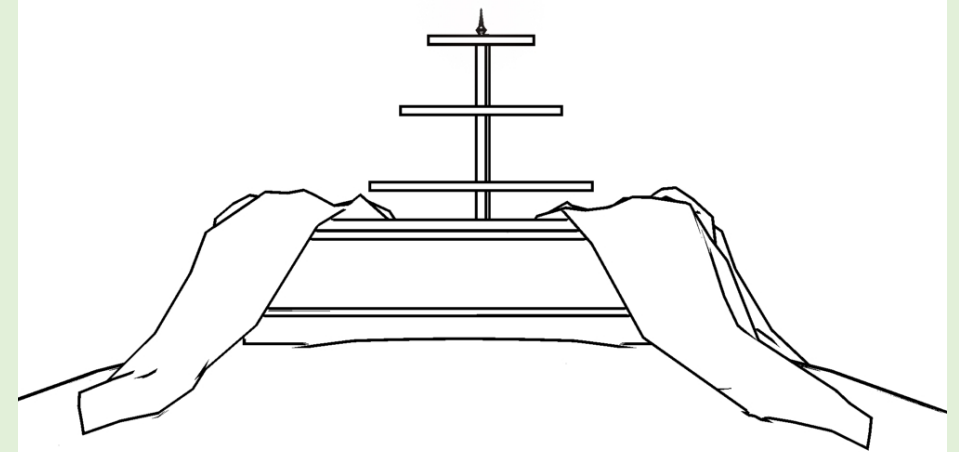
# The Pinnacle – Present form



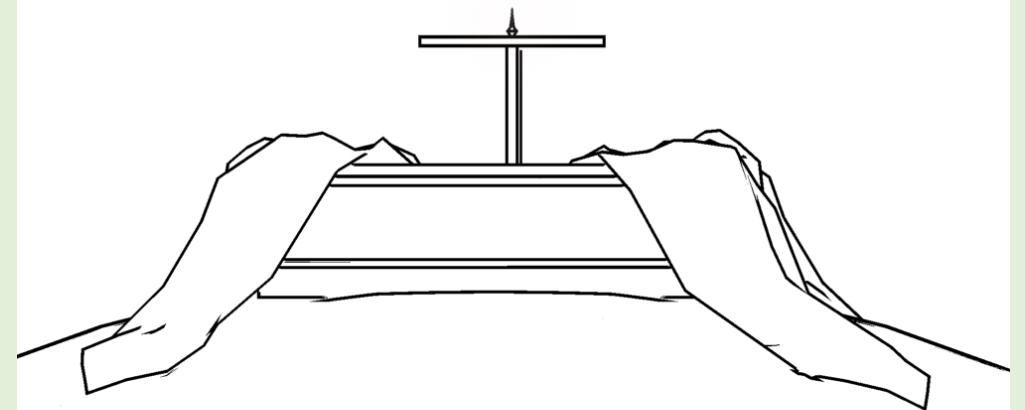


Koth kaerella - present

Shereen Amendra



Chatravali



Chatra - earliest design

# The Great Stupa at Sanchi, India

Built by king Ashoka in 3<sup>rd</sup> century BCE





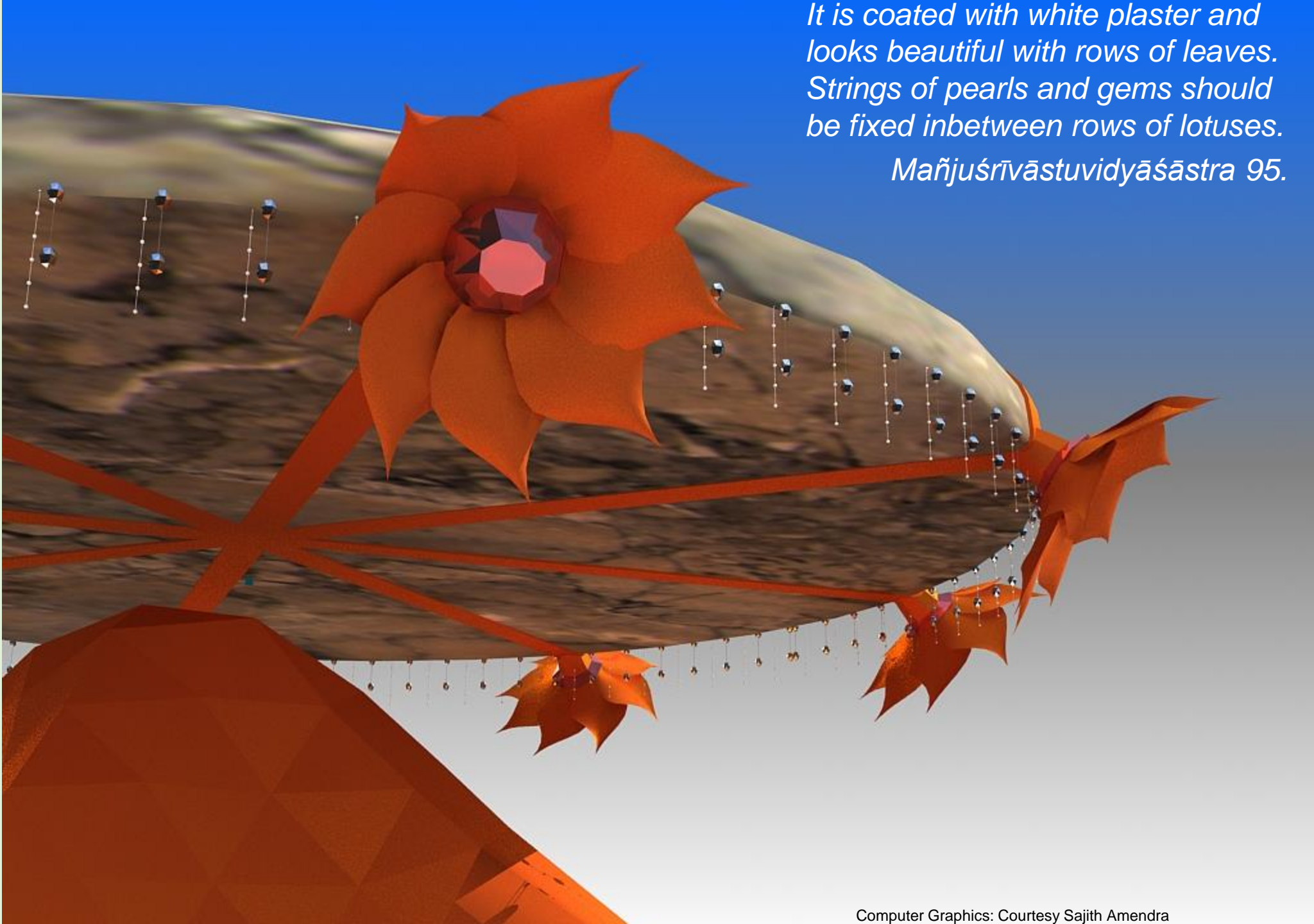
Photo: Courtesy Sirina Ariyachandra

## ***THE HONORIFIC UMBRELLA***

*Symbol of  
sovereignty  
& protection*

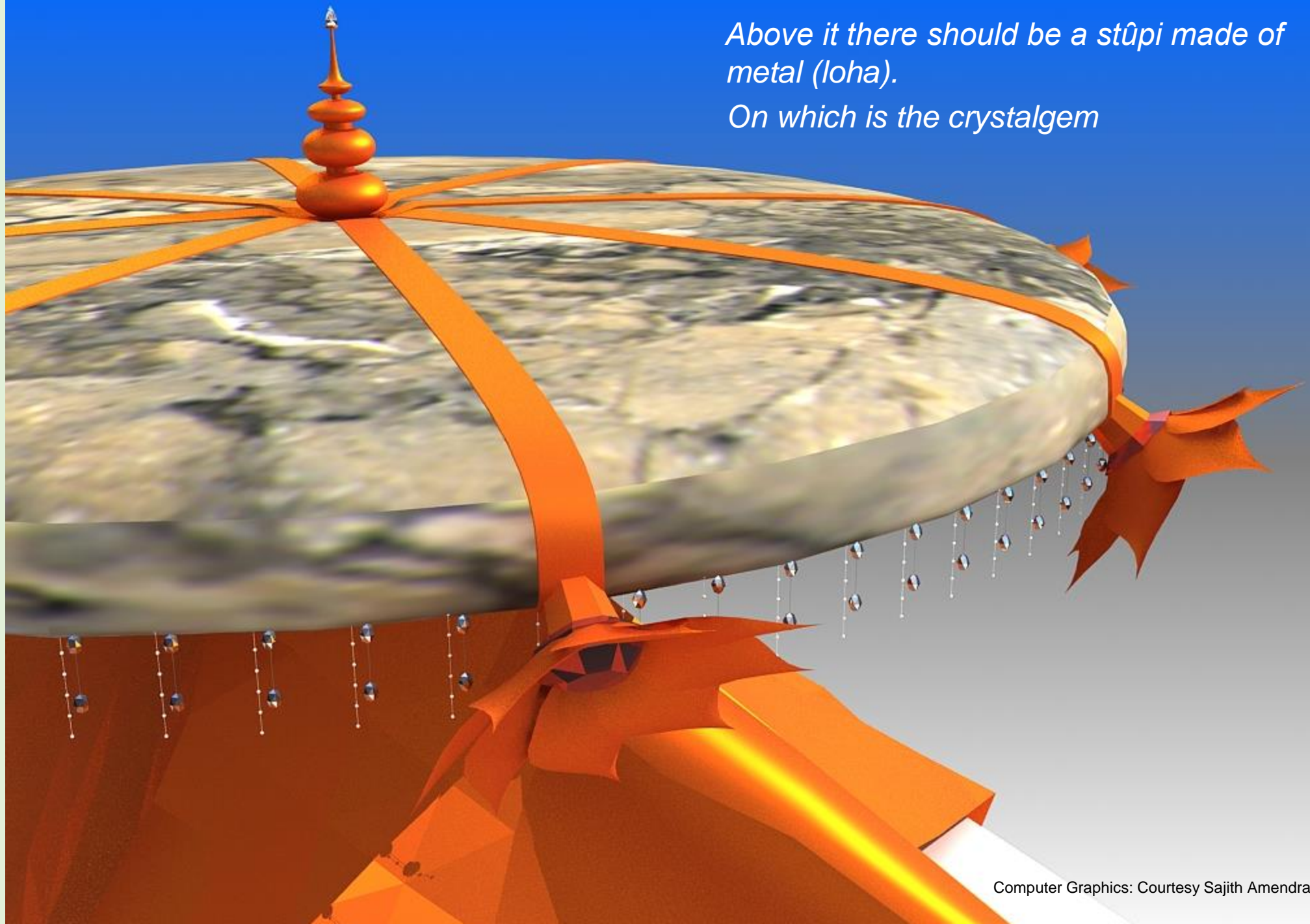
*It is coated with white plaster and  
looks beautiful with rows of leaves.  
Strings of pearls and gems should  
be fixed inbetween rows of lotuses.*

*Mañjuśrīvāstuvīdyāśāstra 95.*



*Above it there should be a stûpi made of  
metal (loha).*

*On which is the crystalgem*

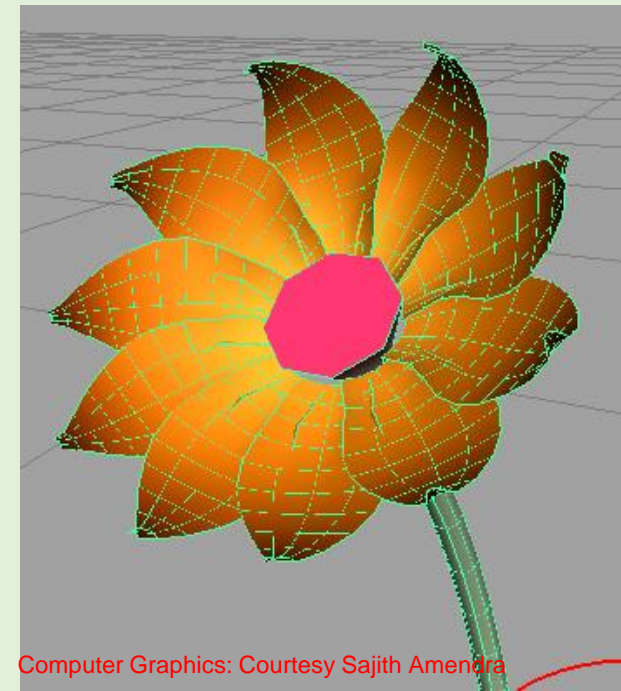


# The parasol (Chatthra)

- Extract from page 70 [Amendra (2006)]
- The parasol was to be “coated with white plaster and look beautiful with rows of leaves. Strings of pearls and gems should be fixed in between rows of lotuses”. These are the recommendations of the *Vastuvidyasastra*.
- The Mahathupa, as recorded in the Mahavamsa mentions the chatra adorned in addition to the basics with lotuses and strings of pearls, which is similar to that recommended in the treatise on architecture for caityas, the *Vasthuvidyashastra*. Commenting on Chapter 3 of this treatise, one of the authors of the English book, Prof. Leelananda Prematilleke, mentions

“...The shaft is plastered and beautified with strings of pearls and rows of lotuses and leaves (Ch. 3, vv. 68-96). This reference would indicate the building of the superstructure of the stupa with the age-old practice of chatravali. The literary and archaeological evidence in India as well as in Sri Lanka provides data of this practice from a few centuries B.C. to at least the second century A D. (Paranavitana 1946, Silva 1988).”

Corona discharge usually forms at highly curved regions on electrodes, such as sharp corners, projecting points, edges of metal surfaces



Computer Graphics: Courtesy Sajith Amendra



Kyoto National Museum

<https://www.kyohaku.go.jp/eng/dictio/kinkou/mikkyo.html>

A **Vajra** - the instrument held in the hand of **Indra**, the deity to whom thunder and lightning is ascribed.

**Mara** is considered as the embodiment of lightning and thunder

The Mara of the Buddhist scriptures is said to be the same as the Maraka. He is supposed to have an iron rod in his hand, to move very swiftly and to make a deafening noise.

A **vajra** is used as a ritual object to symbolize both the properties of a **diamond** (indestructibility) and a **thunderbolt** (irresistible force)



Art Gallery of New South Wales –  
photo by Shereen Amendra

# Corona discharge on a Wartenberg wheel

*A Wartenberg wheel is similar to a dress-makers pattern making wheel. It is used in the medical field to test neurological responses on the skin*

*To be noted is that sharp points exposed to a high voltage current displays a **corona ring**.*



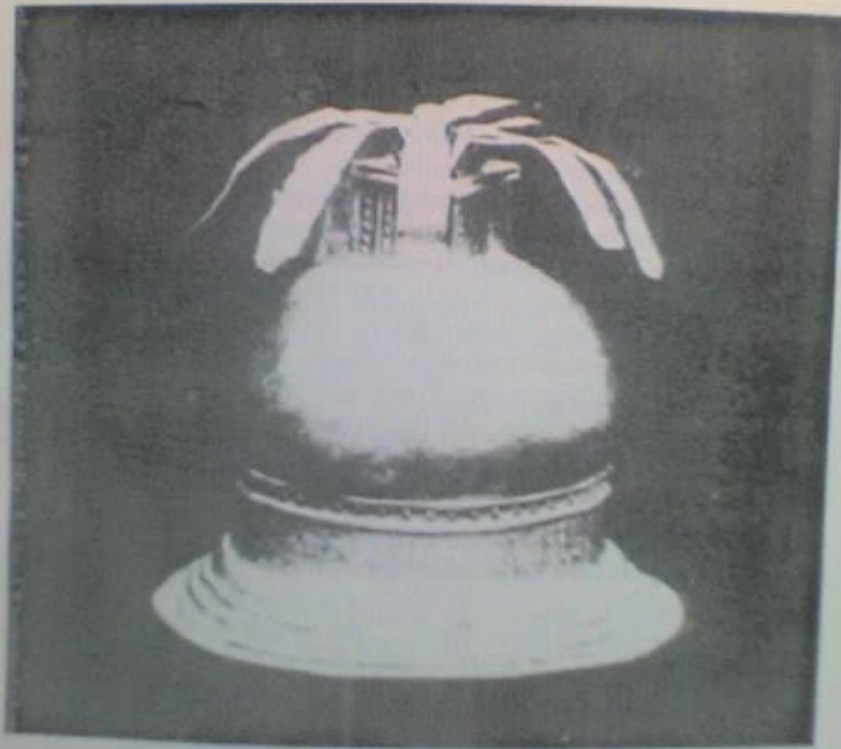
*It is shown that the diamond hoop or **vajra cumbata**, the chattra ‘made beautiful **with lotuses**, leaves and pearls’ displayed the characteristics of a corona ring **for corona discharge** when excessively high voltages occur.*

*Thus protection is possible **averting** a direct lightning strike.*

Credit for graphic:

By G1MFG at English Wikipedia, CC BY-SA 3.0,

<https://commons.wikimedia.org/w/index.php?curid=21179540>



A Gold Reliquary Dagaba c. 2nd Century A.D. (34)

## The records of Manjusri

information on *Vasthuvīdyasāstra*.

(Jayasuriya, Prematilleke, Silva 1995)

An example extracted (in relation to the fixing of the *gajasthamba* into the *yupī*) is as follows:

“.... 93. The parasol-shaft (*chatradanda*) should be thirty two (*angulas*?) It should be fixed to the *gajapadaka*. .... (increasing) successively by two *angulas*.

94. One should make the *danda* gradually smaller towards the top and conical in shape. Provided with an *upakila* of copper leaf it is driven into the hole sealing it completely. ....”

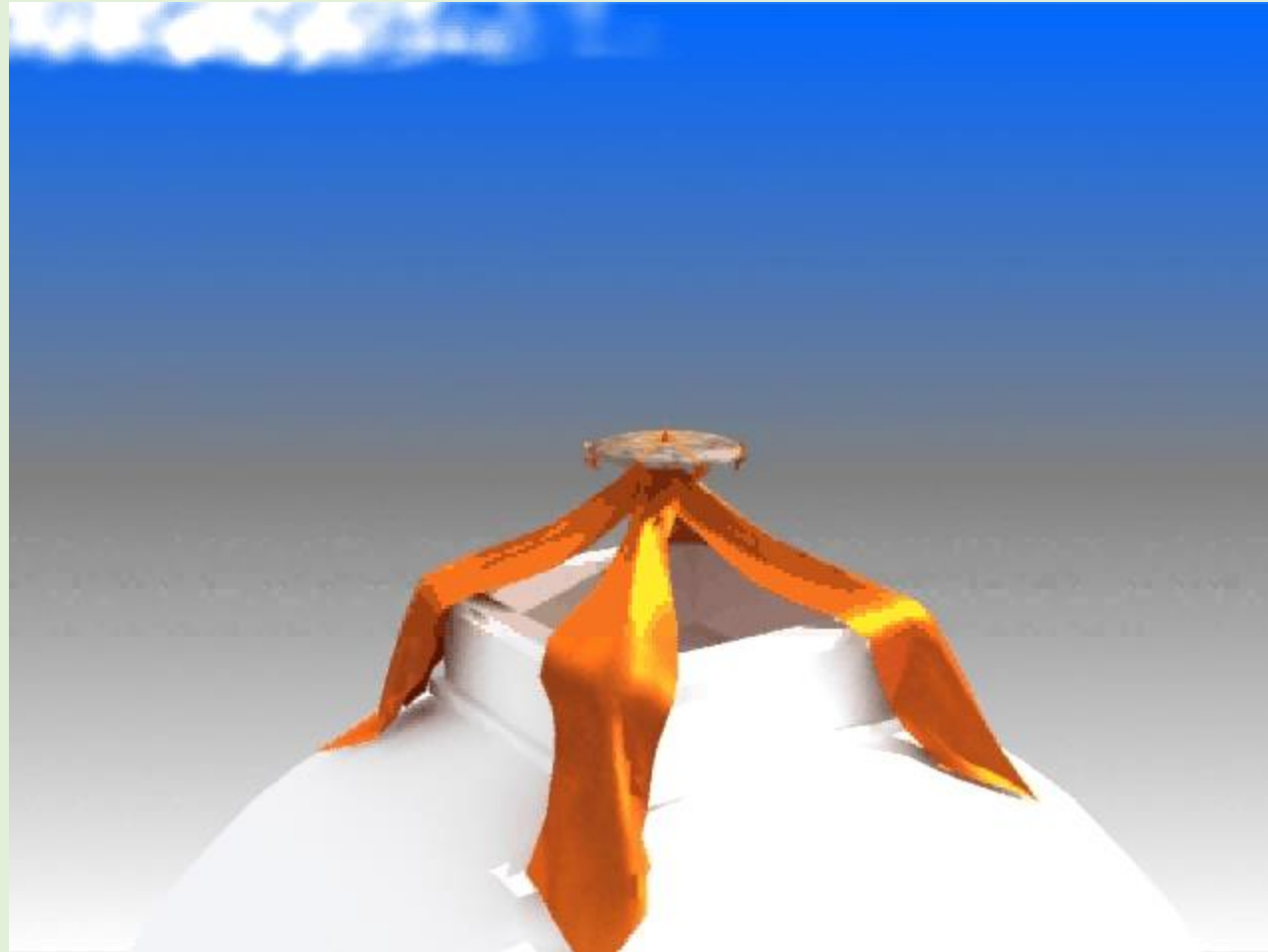
(page 64)

. An outline drawing found on a rock at Kahandagala, in Magam Pattu in Southern Sri Lanka, is described by Paranavitana. The drawing is by the side of an inscription of around the third century and shows the dome of a stupa, and of relevance here is the following observation by Paranavitana: “Projecting from the base of the umbrella shaft on the right side is a curious object, something resembling a banner waving upwards”

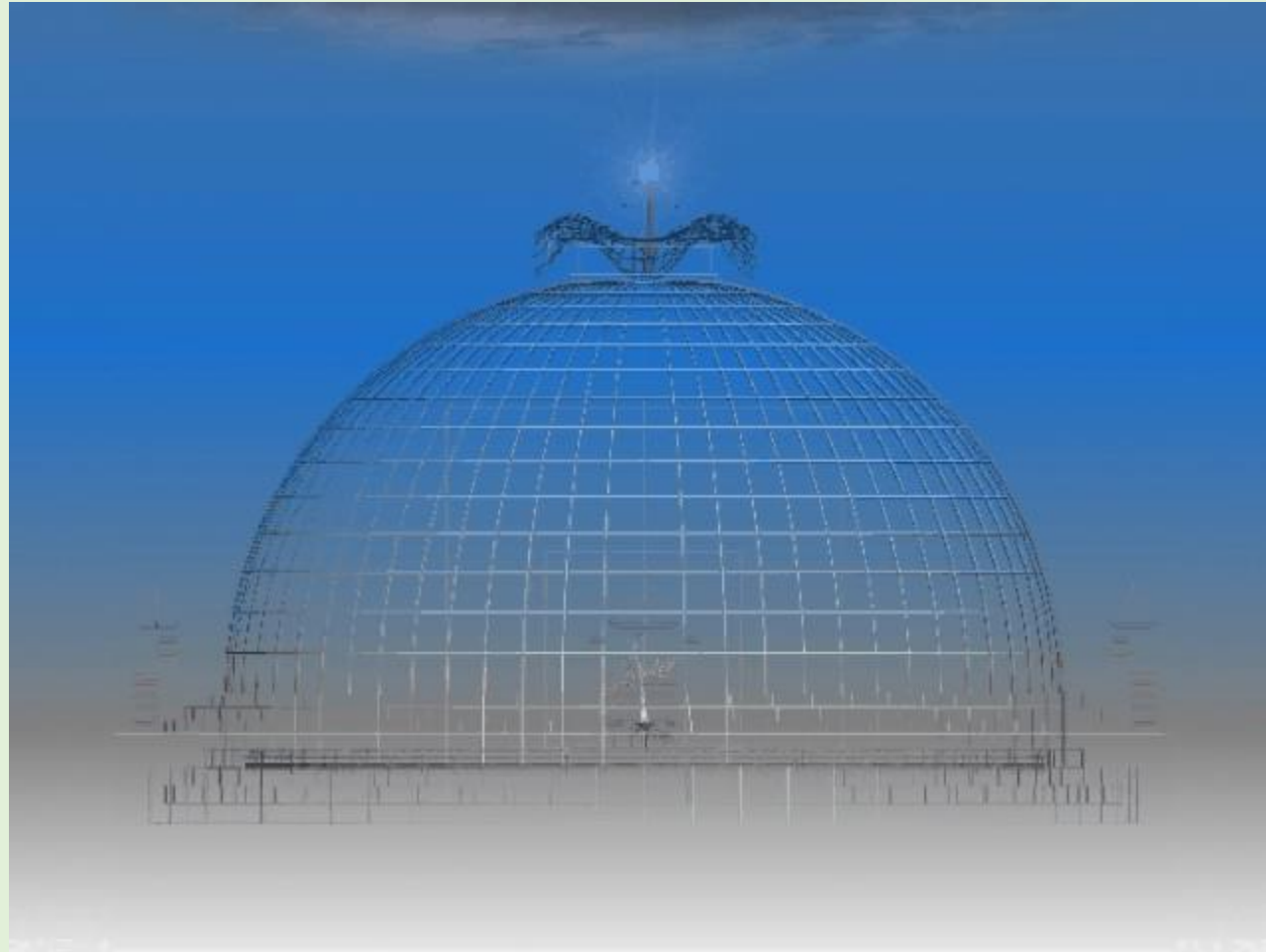
Paranavitana does not elucidate further with regard to this. He however, does mention “several specimens of miniature stupas of bronze found at Anuradhapura.... That these represented... the actual features of the great structural stupas as they then existed.” (p.42) He notes that “in these votive stupas... the conical spire does not taper to a point, but is crowned with a single umbrella.”

(page 65)

Shereen Amendra



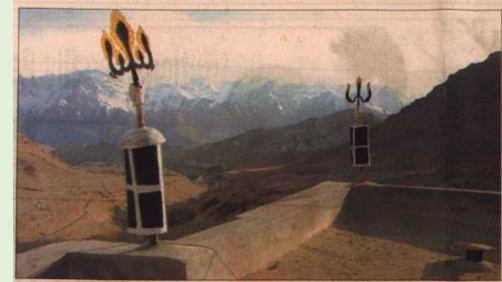
Computer Graphics: Courtesy Sajith Amendra



Computer Graphics: Courtesy Sajith Amendra

# Particular significant features

- **Very specific location of site - visits of Buddhas**
- **The design of the pinnacle**
- the materials for the base of particular interest
- The manner of construction of the BASE LAYERS
- the making of the relic chamber with imported stones (fat-coloured - *medhapindika*)
- the features within the relic chamber
- the enshrining of the Sacred Relics
- the curious adornment by King Saddhatissa →
- King BhatikaAbhaya's experience (& others)



*Pancangulikapantika?*  
Five-fingered ornament

# The Designers - Mahavamsa XXX 98-99

- *“The great **thera Indagutta**, who was gifted with the six supernormal faculties, the most wise, directed here all this, being set over the work. All this was completed without hindrance by reason of the wondrous power of the king, the wondrous power of the devatas, and the wondrous power of the holy (theras)”*
- The great **thera Piyadassi** – by whom the king stood at the foundation laying ceremony
- The great **thera Siddhattha** – who advised to reduce the extent of the circumscribed circle
- Assisted by **Samaneras**

# Site cleared and excavated - Mahavamsa Ch XXIX

- Finding a gold plate in a chest the kind read out the inscription:

*“When one hundred and thirty six years have run their course, in future time will Kakavanna’s son, the ruler of men, Dhutthagamani, build this and that in such and such wise.”* – Mahavamsa Ch XXVII 5-8

Work began in the month of Vesakha when the Visakha constellation appeared:

- *Telambu* tree moved by propitiating occupant – Reason for present name - Swarnamali chaithya – no mention in Mahavamsa
- Removal of the stone pillar
- Excavation
- Laying of the base layers and metals



# Construction of the Ring Foundation

Mahavamsa XXX 51-56

- “When he had ordered to take away the stone pillar the lord of the land had a place for the thupa dug out...” Mahavamsa XXIX 2
- Three terraces for the flower-offerings to the thupa did the theras of miraculous power cause to sink down so soon as they were laid with bricks, making them equal to the surface of the soil”
- Nine times did they cause them to sink down when they were laid.
- The king reverentially asked the brotherhood the reason for the sinking down of the bricks.
- In order that the thupa will not sink down of itself was this thing done by the bhikkhus of miraculous power... they will do it no more, make no alteration and finish the Great Thupa
- For the ten flower-terraces (pupphadhana) ten kotis of bricks were used
- Nine sets of three were sunk and one set remained on surface

The fervour of the people – ‘*Shraddhawa*’

The tenth set of 3 *pesa* exposed at the surface level



Shereen Amendra



# The Base Layers

- **Page 110** [*Amendra (2006)*]
- **THE BASE LAYERS**
- A most important and significant part of this writing is the consideration of the base layers as recorded in the chronicle. In the eight stanzas of the record is embodied **the most curious design and construction**. This is an exceedingly few stanzas considering the length of the entire chronicle, almost as if to veil its purpose until a later date. The physical existence of the layers cannot be verified with archaeological evidence, but the literary reference coupled with the rest of the artefacts available to be seen today is amazing.
- Note also that apart from the soldiers, king and arahant priests, there were no master-builders involved until after the foundation was laid. The lay team appears to be involved only in the superstructure.
- It is best to quote the Mahavamsa itself before analysis:

# The BASE LAYERS

- “Round stones that he commanded his soldiers to bring hither did he cause to be broken with hammers, and then did he, having knowledge of the right and the wrong ways, command that the crushed stone, to make the ground firmer, be stamped down by great elephants whose feet were bound with leather.” (Mah.XXIX 3-4)

# The BASE LAYERS

- Butter-clay\* called so due it's fineness – *“The fine clay that is found on the spot, forever moist, where the heavenly Ganga falls down (upon the earth) (on a space) thirty yojanas around...”*
- Fine clay brought by the samaneras who had overcome the asavas' (pure)
- The king commanded that the clay be spread over the layer of stones.....
- \* *Navanita*

# The BASE LAYERS of the Mahathupa

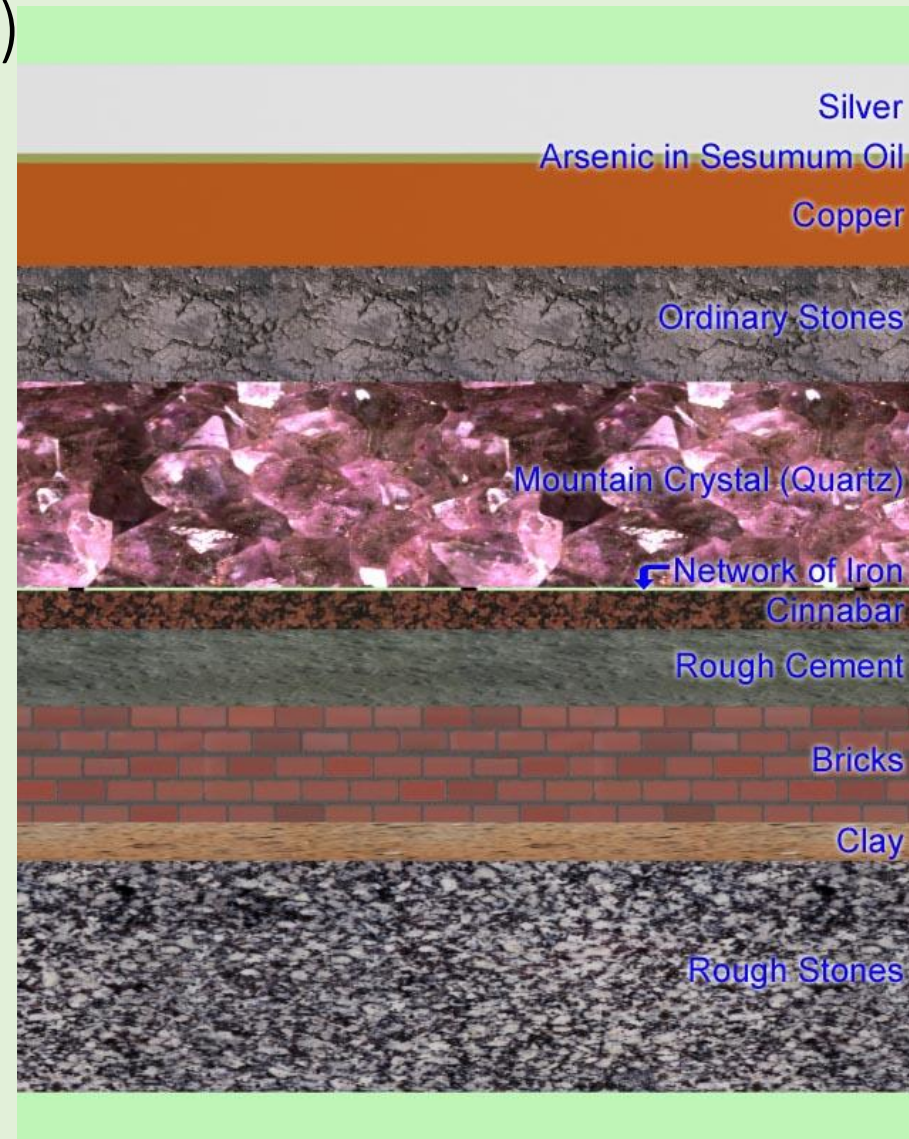
(conjectural graphic- based on texts)



Borax - *Rasasodhaka*

Round stones... stamped by ... elephants.....the clay... spread over the layer of stones....bricks laid over the clay....rough cement and ... cinnabar, over this a network of iron, ... over this ... *Marumba* from the Himalaya....over this ...mountain-crystal.....stones spread; everywhere ... butter-clay serve (as cement). With resin of the *kapitha* tree, dissolved in sweetened water. ... over the stones a sheet of copper eight inches thick ... with arsenic dissolved in sesamum-oil .... A sheet of silver seven inches thick.

Mahavamsa XXIX 3 - 12



# Questions

- What are the materials of the base layers?
- Why are they laid underground?
- Why are they laid in a particular sequence?
- Why are materials such as Ag & Cu present?
- How could electron flow occur?
- Where was the electric charge?



Photo: Dilantha Hettige



## **Jathika Namal Uyana**

500 million year old pink quartz mountain  
and forest of Ironwood trees at  
Galkiriyagama, Sri Lanka

Shereen Amendra

Quartz crystals



The Curious parallel between the  
modern day silicon chip and the  
base layers of the  
Ruwanweliseya  
by  
Arch. Shereen Amendra

A presentation to  
the General Research Committee of the  
Sri Lanka Association for the Advancement of  
Science (SLAAS) for scientific discussion

# Upper layers

- Eight vases of silver
- Eight vases of gold
- 1008 new vases
- 108 garments
- 8 splendid bricks

# Emissaries present at foundation stone laying ceremony

(compiled from Mahavamsa – from ‘Beyond the Seeing Eye: The Mahathupa of Lanka’)

• Name of thera	From	number	Who
• Indagutta	Rajagaha	80,000	bhikkhus
• Dhammasena	Isipatana	12,000	bhikkhus
• Piyadassi	Jetavana	60,000	
• Urubuddarakkhita	Mahavana in Vesali	18,000	bhikkhus
• Urudhammarakkhita	Ghositarama in Kosambi	30,000	bhikkhus
• Urusamgharakkhita	Dhakkinagiri in Ujjeni	40,000	ascetics
• Mittina	Asokarama in Pupphapura	160,000	bhikkhus
• Uttinna	Kasmira	280,000	bhikkhus
• Mahadeva	Pallavabhogga	460,000	bhikkhus
• Yonamahadhammarakkhita	Alasanda	30,000	bhikkhus
• Uttara	Vinjha forest mountains	60,000	bhikkhus
• Cittagutta	Bodhi-manda-vihara, (Bodhgaya)	30,000	bhikkhus
• Candagutta	Vanavasa	80,000	ascetics
• Suriyagutta	Kelasa-vihara	96,000	bhikkhus
• From every side of Lanka		No account	bhikkhus
TOTAL Over 1,436,000			

# Great Theras & other theras mentioned

- **Siddhattha** – the far-seeing, who reduced the circumference. Of wondrous power
- **Indagutta** from Rajagaha, head of a great school. Oversaw much of the work.
- **Uttara** from the Vinjha forest mountains in Kasmira
- **Piyadassi**, the King stood by this thera at the foundation laying & preached rich in blessing to the people
- Yona **Mahadhammarakitha** from Alasanda
- Thera **Mittasena** mixed the clay & Thera **Jayasena** poured water on it.
- Samaneras **Uttara** and **Samana** brought 'fat-coloured stones' for the relic chamber walls
- Thera **Sonnuttara** brought the relics from the Naga king Mahakala to Anuradhapura

# Relic chamber

## The chest Mahavamsa Ch. XXX

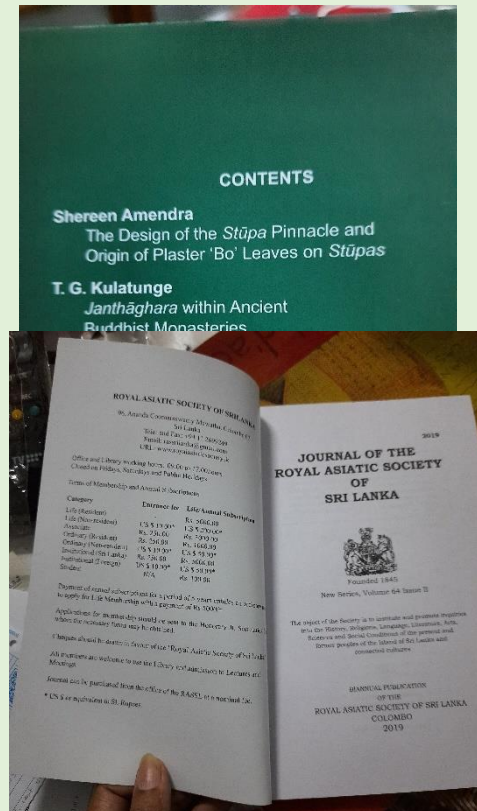
- Two samaneras Uttara and Sumana were asked to bring the fat-coloured stones from Northern India
- 80 x 80 cubits, eight inches thick, bright as the sun and like to ganthi blossoms
- Laid one on the flower terrace in the middle and disposed four others on the four sides in the fashion of a chest
- Placed the sixth to serve afterwards as a lid on the east side making it invisible

# Within the relic chamber

Mahavamsa XXX & XXXI

- “... devas with mirrors in their hands...” Mah XXX 89-91
- “..rows of dewos carrying swords, also bearing reflection dishes.” Smither
- “... devas bearing pitchers. Above their heads were pitchers five cubits high, filled with fragrant oil, with wicks made of dukula fibres continually alight” Mah XXX 93-94
- “the flowers shall not wither, these perfumes shall not dry up; the lamps shall not be extinguished, nothing whatsoever shall perish; the six fat-coloured stones shall hold together for evermore.” Mah. XXXI 120-121
- “On the wall made of fat-coloured stone sparkling zig-zag lines were traced, serving as adornment for the relic chamber” Mah XXX 96
- ‘*meghalata vijjukumari medhapindikabhittiya samanta caturo passe dhatugabbhe parikkhippi*’ Mah XXX footnote to 96
- Meaning: ‘around all the four sides of the fat-coloured walls of the relic chamber were placed lightning cloud-creepers’

“...the devatas let fall a rain of heavenly perfumes and so forth. But the therā Indagutta created, to ward off Mara, a parasol of copper that he made great as the universe.” (Mah XXXI 84-85)

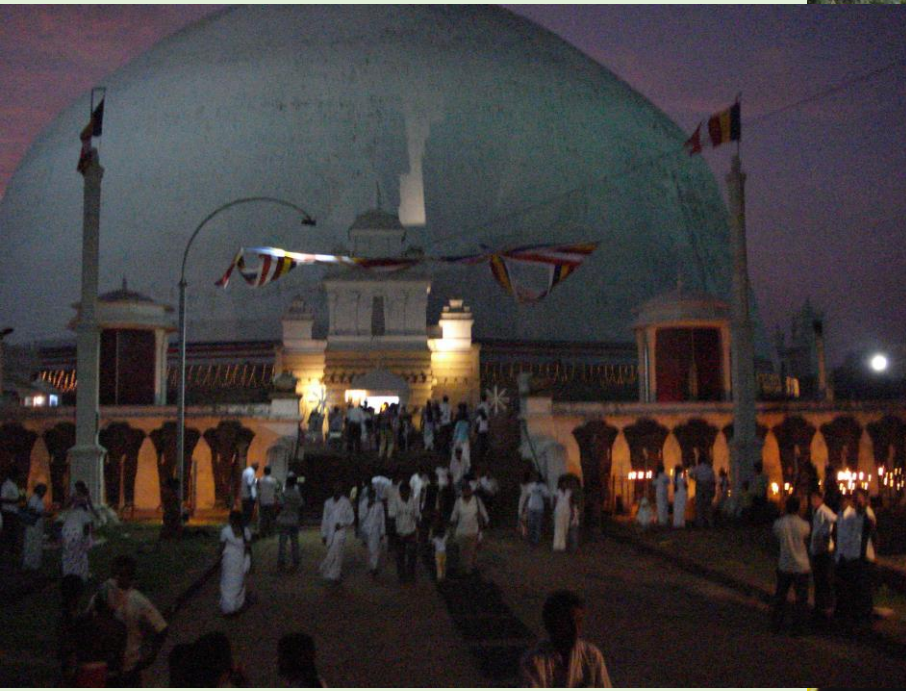


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Authors sketch of cutaway view of stupa at enshrining of the Sacred Relics – *Shereen Amendra JRASSL Vol 64-II*

# The fervour of the people guided by Theras



Ruwanweliseya



Samadhi pilima

Ruwanweliseya

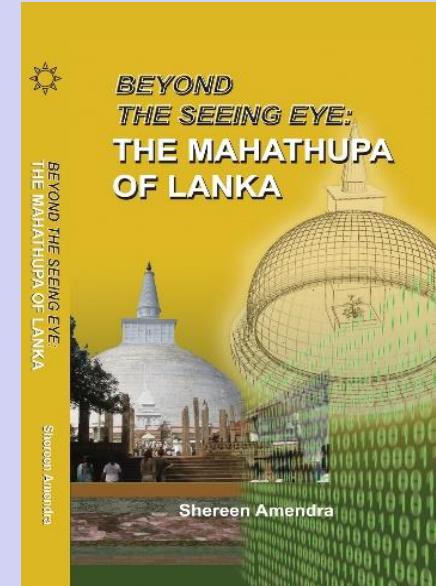
Jethawana stupa

Shereen Amendra



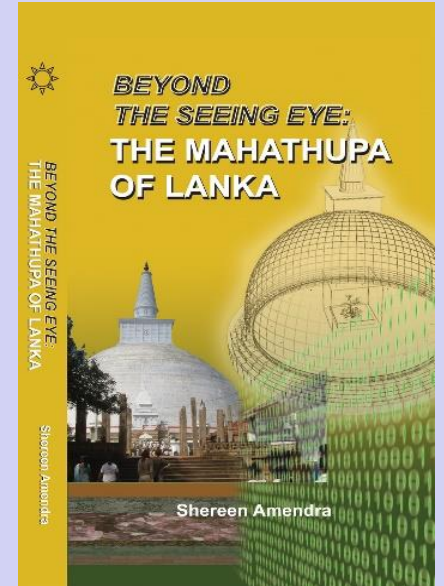
# Questions

- Why copper and silver, known today as good conductors
- Why sandwich in oil
- Why network of iron
- Why jars, why bricks especially in gold and silver
- Why additional vases, particularly 1008
- Why import fat-coloured stones
- Why *vijjulata*, why *pancangulikapantika* (5 finger ornament)
- Why the bodhi tree in silver with coral & gems resting on sapphire, why five branches
- Why so many crystals (gems), coral
- Why such detail in dimensions ??????? Why record?



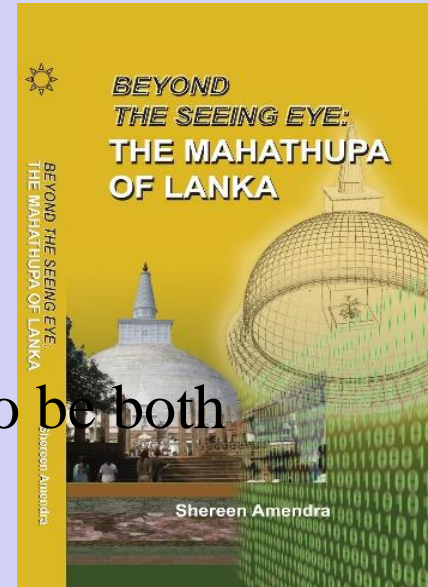
# Findings

- That there is a parallel between the base layers of the Ruwanweliseya as recorded in the Mahawamsa and modern solid state electronics
- Based on
  - the type of materials used,
  - their sequence in construction,
  - a study of each material mentioned and
  - the possible availability of electric charge in relation to present day silicon chip manufacture



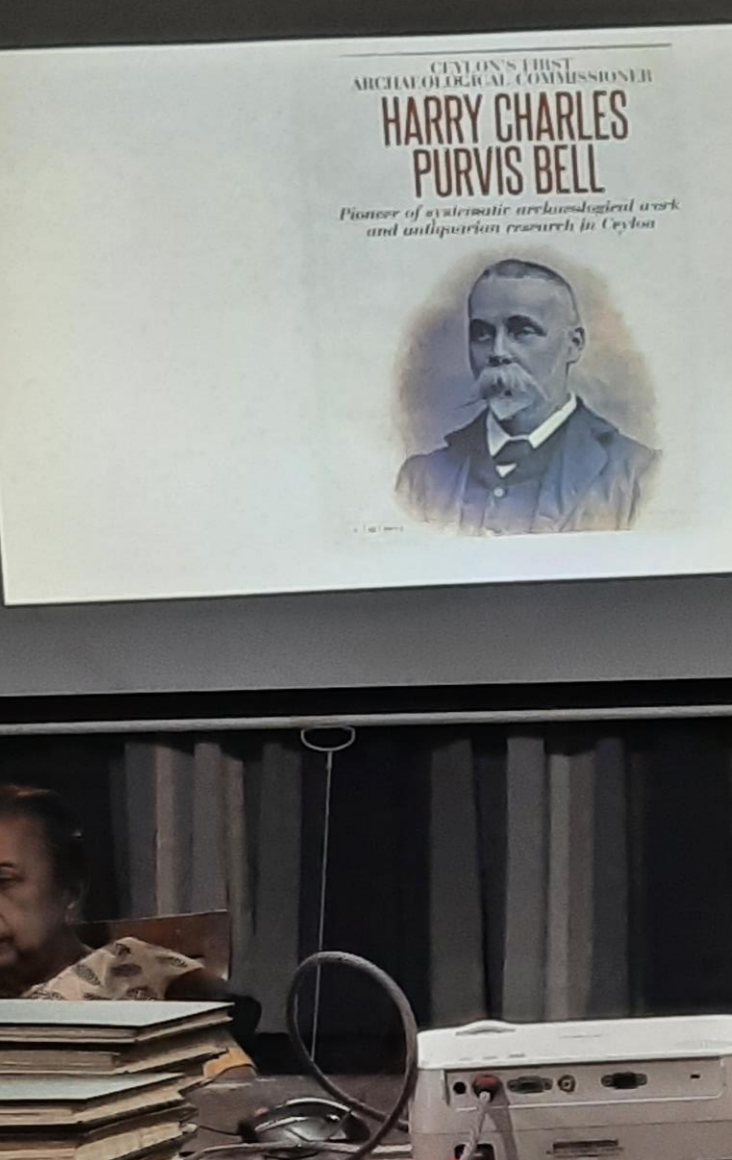
# Findings

- That the early design of the upper termination of the stupa was likely to be both symbolic and technological
- That this design was to protect the stupa against lightning damage and
- That this design was to induce a charge for the functioning of the possible solid state electronic component
- That modern day plaster 'bo' leaves on later stupas or on those renovated or reconstructed are an evolution of the early design of the chattra
- That the design of the relic chamber relied on many scientific principles
- That the design of the relic chamber formed an intrinsic part of the overall design



# Technology embedded in the Landscape

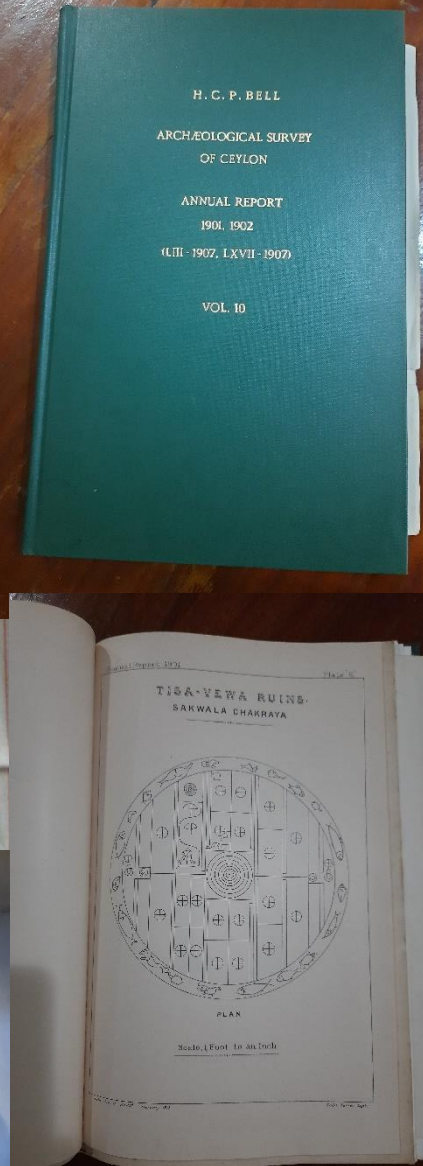
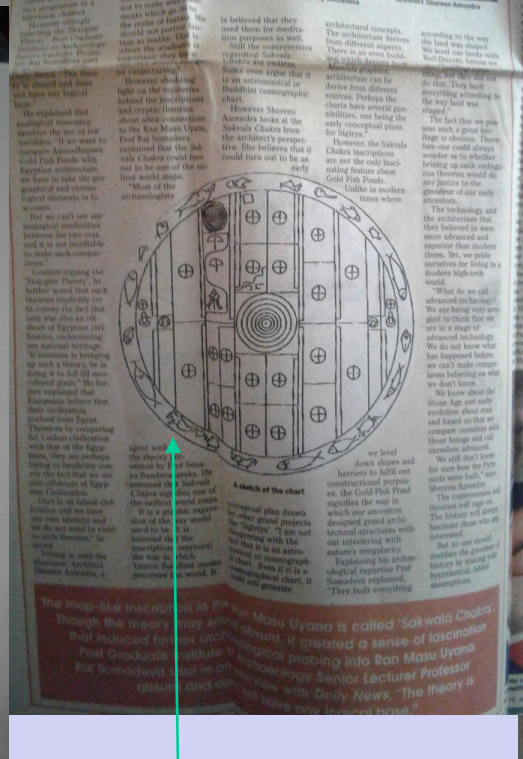
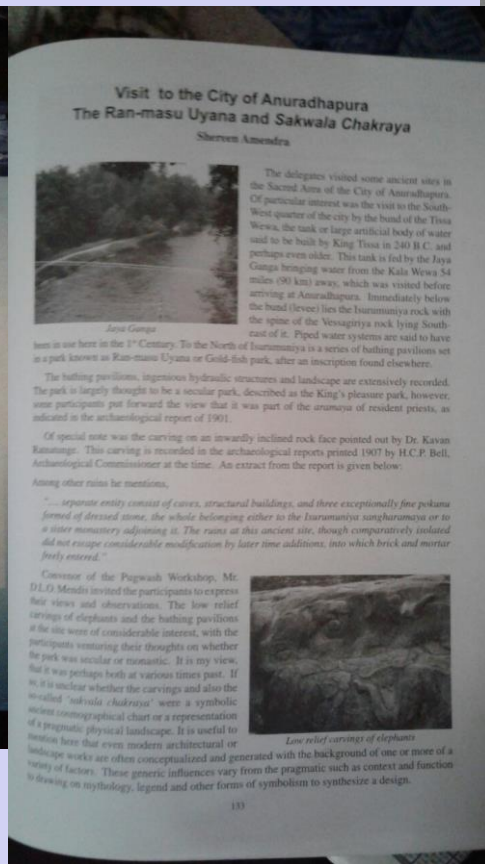
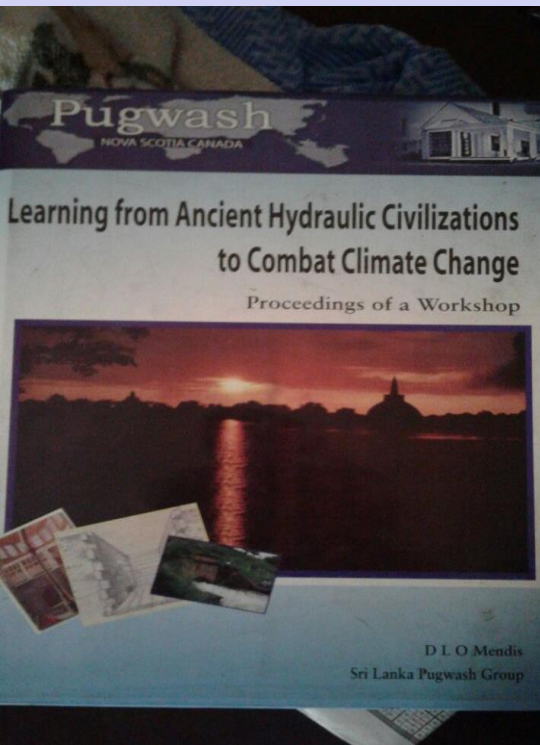
- With such amazing technology, a highly technical team would have been present
- This led to yet another curious artefact in the Anuradhapura landscape
- In the so-called Ranmasu Uyana, a beautifully laid out park
- A find by Archaeological Commissioner HCP Bell in 1907



H.C.P. Bell – First Archaeological Commissioner in Sri Lanka

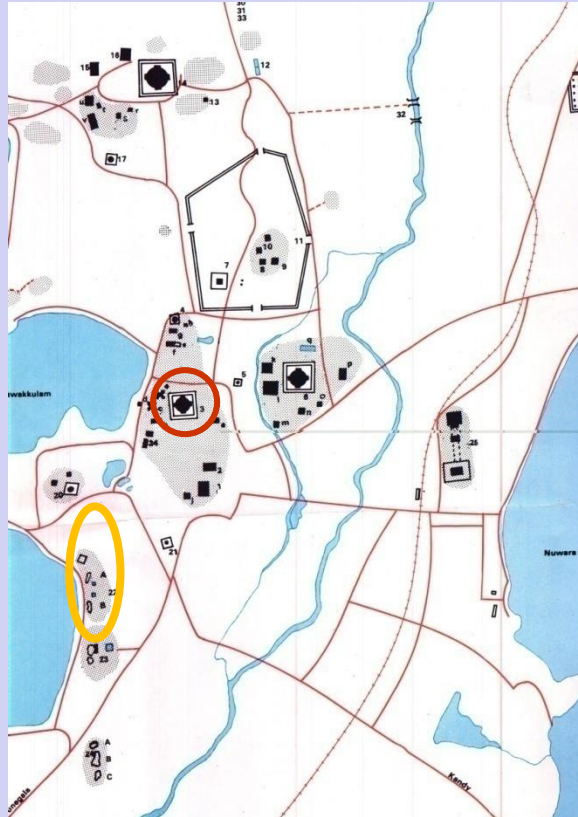


Andrew Bell presents original manuscripts to President RASSL Dr. Malini Dias 82



Pugwash publication – Shereen’s proffered paper - the engraving - News article – Andrew Bell at RASSL - the HCP Bell Report

## Ranmasu Uyana & Sigiriya



Bathing pond in 40acre Ranmasu Uyana

Photo credit: Sri Lanka Tourist Board



Landscape from top of Sigiriya



Sigiriya – the gardens, with wavy path

○ Location of the  
Ranmasu Uyana

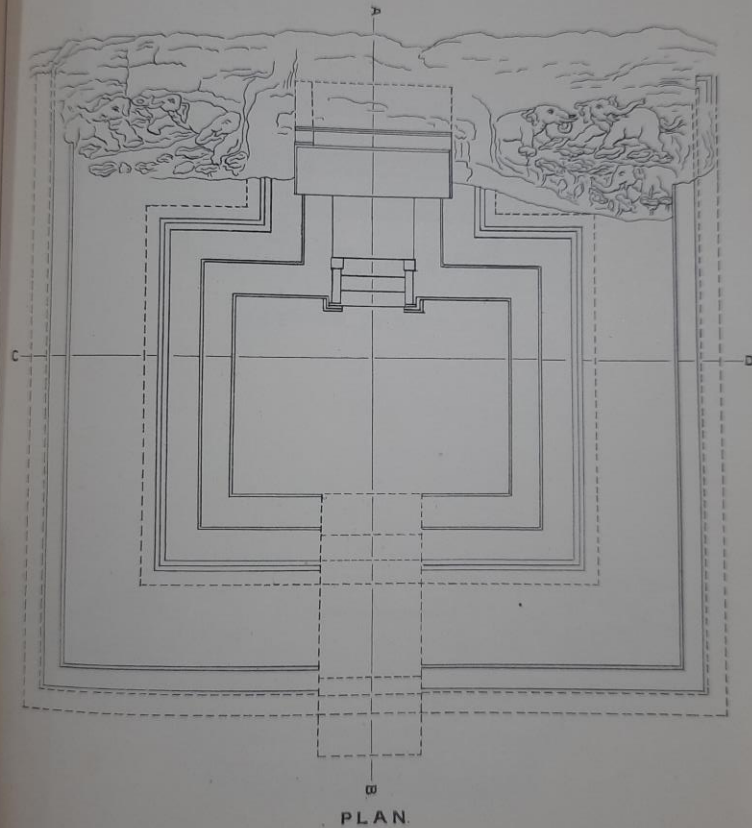
○ Location of the Mahathupa  
(Ruvanweliseya)

However, Shereen Almendra, senior lecturer of landscape design at the University of Moratuwa, Sri Lanka, offers a different, more earthly perspective. "I think the Sakwala Chakraya chart is a plan for a complex project similar to the enormous stupas that were being built at the time," she said. "I lean towards it being a plan for Sigiriya."

Sigiriya is one of Sri Lanka's most recognised ancient landmarks, a 5th Century BC rock fortress, complete with flowing water, landscaped gardens and multiple living quarters.

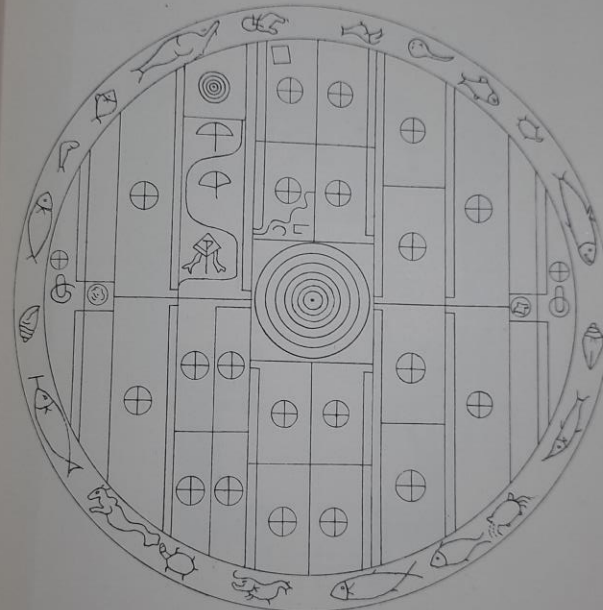
Shereen Almendra

# TISA-VEWA RUINS POKUNA 'A'



Scale, 6 Feet to an Inch

# TISA-VEWA RUINS. SAKWALA CHAKRAYA



PLAN.

Scale, 1 Foot to an Inch



# Technological advances in Anuradhapura period

- Water management – Yoda ela supply from Kalawewa
- Monumental buildings - stupas
- Urban organization – streets and planning
- Guilds – experts and training, new projects
- Construction expertise – particular building technology
- Secular and monastic life
- Recreation – the ‘goldfish park’ Ranmasu Uyana
- The arts – sculpture, painting, architecture, landscape architecture.....



Kala  
wewa  
sluice



Malwathu Oya

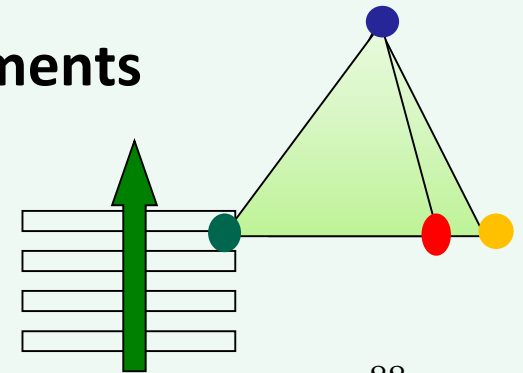
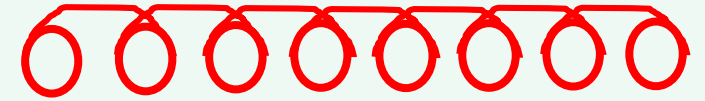


Shereen Amendra



# Conclusion

- Anuradhapura is as vibrant and sacred today as earlier
- The layers over time, the PALIMPSEST, is not wholly erased
- Reversion to early values is evident
- The Mahavamsa is a **credible** Chronicle
- That considerable **knowledge of technology** was known even in times BCE
- **That Synergistic landscapes by design address many aspects**
- All was done for the **well-being of the people**
- Great works are possible if individuals are **pure and free from defilements**







*Thank You  
May you all be well and happy.*

Tissawewa, Anuradhapura  
Photo - Niloo Amendra

# REFERENCES

Extensive list of references and bibliography appears in

- Amendra, Shereen (2006) 'Beyond the Seeing Eye: The Mahathupa of Lanka',
- Amendra, Shereen (2019), 'The Design of the Stupa Pinnacle and Origin of Plaster 'Bo' Leaves on Stupas' in Journal of the Royal Asiatic Society of Sri Lanka (JRASSL) New Series, Volume 64 Issue II

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**Vice-President** – 2023 - 2025 Royal Asiatic Society of Sri Lanka (RASSL)

**President** – 2013 - 2015 Sri Lanka Institute of Landscape Architects (SLILA)

**President** – 2012 - Engineering – Architecture - Surveying  
Sri Lanka Association for the Advancement of Science (SLAAS)

**Fellow** - Sri Lanka Institute of Architects (SLIA)

Life Membership: National Trust of Sri Lanka, Organisation of Professional Associations,  
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