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Preface

The Journal of the Centre for Heritage Studies, University of Kelaniya is one of the two annual publications of the Centre. The sister publication is in the Sinhala medium and it is named as "*Yugathara*" which means in between eras. The present journal has not been given a specific name though its main focus is also into studies in between eras. In fact, one may broadly translate it as "In between the past and the present era".

We would like to reproduce rare manuscripts, documents, indexes and catalogues in our future journals along with critical research papers. In accordance with its themes and the scope of the Centre for Heritage Studies, University of Kelaniya, the journal contains research papers on heritage related topics and can be considered a representation of research studies which explore various issues that characterize the changing cultural and heritage landscape of our times. When we compiled articles for this journal, we were fortunate to read and edit articles on a wide range of topics, which we received from both national and international scholars representing diverse and vibrant academic communities. It is the genuine interest and commitment we witnessed in the scholars that motivated us to overcome the challenges we encountered in publishing this journal. We are grateful to all those who sent in their articles and for the research done. It is our sincere hope that this journal will contribute to develop more interest in cultural studies particularly in the field of heritage, promoting a nuanced understanding of the value of our own heritage.

Editors,
Journal of the Centre for Heritage Studies.

Content

Role of Information Technology in Preservation of Cultural Heritage

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Abstract

Heritage and Information Technology (IT) may seem inconsistent at first. But, IT has a significant role in heritage tourism. IT provides effective resources by which heritage tourism has evolved as a modern tool without harming its cultural and heritage identity. IT applications in heritage tourism include many disciplines of computer science from work flow from archaeological discovery to scientific preparation. As such, there are a range of areas cooperation as well as interaction at different levels. Use of IT as a tool in heritage tourism has paved the way for three-dimensional (3D) model with the use of input data such as photos and scans. At the same time, computer graphics have created accurate visual creations. This paper will focus on the role of IT in heritage tourism and its advantages to heritage tourism.
Keywords: Heritage Tourism, Artificial Intelligence, Bayesian networks, Sharing Economy

Introduction

Heritage preservation has been the cornerstone of archaeology for centuries. As "heritage" and "preservation" get older, there has been a need to merge technology into domains in archaeological processes. The obligation has been sprung by the "spring" of sharing information coupled by collaborations in the global community comprising of a plethora of heritage research fields. This merge is clearly made dominant in two main areas: information gathering and information preservation.

As discussed in this paper, several methods are currently applied for information gathering. Of these 3D modelling has been a great trend due to its remarkable visualizing competencies. Information preservation is made possible with content management systems and databases while sharing information such that "copies" of information are distributed in a "localized" manner across heritage researchers.

However, "discovery" of information in archaeology is still in its primitive stages with consideration of a technological approach. The main focus of archaeological knowledge discovery systems has been onsite excavations and assessment of known archaeological findings to recent discoveries as a medium to extract information. Hidden information

prevalent in archeological findings is often not highlighted with manual processes. Furthermore, current technological uses focus on the processes and the outputs in archaeological and heritage research while ignoring the need for key inputs. Therefore, a methodology to automate knowledge discoveries in artifacts is quintessential as a phase of preservation.

This study presents the amalgamation of fuzzy logic and Bayesian networks as "probabilistic" systems of AI to archaeology to reveal the "stealth of knowledge" in artifacts. The probabilistic approach is made a key input to second and third tier modelling and knowledge sharing schema to fine tune overall processes of IT in heritage.

Current Methodology

3d Modelling

3D modelling is used as a technique for conservation and experimentation of archaeological artifacts. With the advent of 3D modelling software such as AutoCAD and Autodesk 3ds Max, IT has enabled archaeology and other heritage based norms to create computer imagery of materials ranging from artifacts to entire buildings. With the use of such software it is very easy to create models of existing materials for preservation for future generations as well as for materials which are not easily transportable.

Several techniques have been devised recently under this paradigm including triangulation, Stereo photogrammetry, Structured light and Time of flight. The process of obtaining a 3D image include steps of data registration, data integration, model conversion and visualization which can all be performed using 3D modelling software (Pieraccini, Guidi and Atzeni 2-4). Another key area of improvement recently is the use of 3D laser scanning of buildings as a process of preserving cultural heritage sites (Brizzi et al. 11). Utilization of IT has enabled remote fruition of artifacts to many and has enabled digital restoration for the course of preservation and further study. (interregeurope.eu)

IT has also enabled electronic data acquisition, data analysis and presentation in archaeological projects. With the use of computer-based systems, new archaeological instruments such as electronic Vernier calipers, video imaging systems and logging systems to store data have evolved. A key instrument that can be highlighted in this context is the total station theodolite used to record 3D location of artifacts. Data analysis stage involves using a database to store information and using data mining systems to analyze information pertaining to excavations. Computer Generated Imagery (CGI) and other modelling tools coupled with presentation software enable easy dissemination of information about findings from archaeological excavations (Couch).

Quantitative Analysis

Before the developments of IT, archaeology and heritage procedures were based on manual tabulation of data and analysis based mainly on statistical concepts which often required additional expertise in statistics and consumed considerable time for the process. Recent developments in software applications enable users with minimal knowledge in IT to effectively and efficiently preserve and perform data for analysis. Concurrently, these software applications provide a platform upon which analyzed information could be easily presented and shared. For archaeologists, quantitative analysis has helped to identify key patterns in archaeological findings and to explore ardent areas of archaeological research.

Database management of records

After data is analyzed, it is equally important to store data for future retrieval. The role of IT in this context has been significant with the advent of database management systems. Database management systems not only help to create, save, update and delete data in a "database", but are the cornerstones in most content management websites today. If database management systems were not used or were publicly restricted, there would be minimal chance that archaeological apprentices could generate a "heat map" of a country to obtain information about archaeological sources.
Suggested Methodology

As stated in recent researches, (Puyol-Gruart 4-5, 10-13) several techniques in the domain of artificial intelligence can be applied to archaeology. Main schemes include KDD (Knowledge Discovery in Databases), VIM (Visual Information Management) and MAS (Multi-agent systems). As discussed earlier, this research paper will explain about the use of two key areas in AI as solutions to "knowledge discovery" issues prevalent in current systems.

Use of Fuzzy Logic in Archaeology

With logic currently used in archaeology only a defined output could be reached, i.e. in the form of true or false. However, there are instances with multiple variable outputs which need to be evaluated but cannot be classified as definitive. In these instances, a probabilistic output is required to measure the degree of vagueness and to measure the degree of ignorance in the classification. For these purposes fuzzy logic could be used to measure the aforesaid.

Fuzzy Logic involves several steps to achieve the output: fuzzification of inputs, Execution of rules and defuzzication to achieve the output. For example, this research study considered a scenario whereby fuzzy logic can be used coupled with association rules to determine the era to which a particular artifact belonged. Current methods in determining chronological order include relative dating and absolute dating. Relative

dating involves the assumption of the chronological order of events without absolute age references. Fuzzy logic was chosen in this research to overcome pitfalls in a popular relative dating method called seriation in which inputs need to be restricted based on locality and cultural tradition. In this experiment, inputs include material and color and output includes chronology.

Step 1 – Fuzzification of inputs

Step 2 – Execution of rules

If-then rules can be used to map a relative output from input variables.
IF material is glass AND color is white THEN chronology is x
IF material is ceramic AND color is white THEN chronology is y
IF material is glass AND color is blue THEN chronology is z

| If material is glass | AND | color is white | THEN | chronology is X |
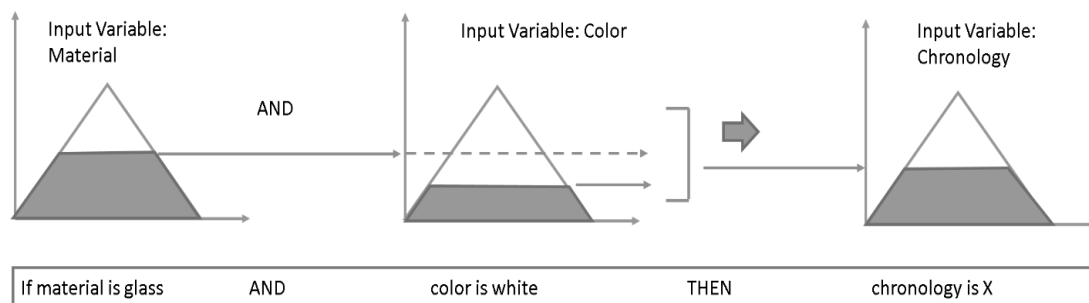
Another key area of research in the domain of KDD is Bayesian networks. In Bayesian networks the probability of a key event occurrence is evaluated in conjunction with another event(s) to identify an inference. This inference is either a conclusion or a collection of such inferences and they are used to make a conclusion. When using computer-based modelling software, the user has to provide only the input to obtain the conclusion.

For example, a simple Bayesian based model would be as follows:
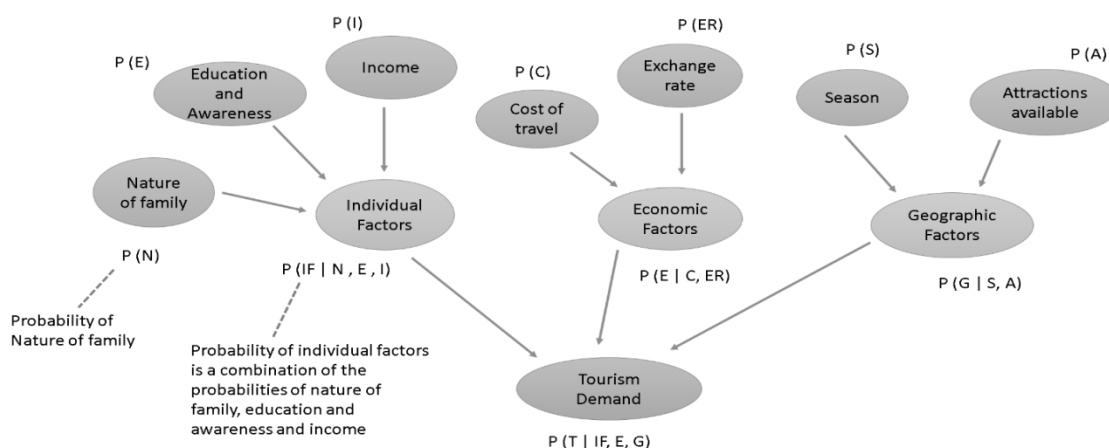
VIMs are equally important, especially in classification of artifacts. For example, different types of pottery can be identified at different locations. However, it is often difficult to determine to which classification they belong by visual impression. To effectively perform the process, an AI system can be used to determine its classification based on texture, color, era and other factors using image processing algorithms.

Conclusion

IT has been used for heritage preservation, especially in the areas information gathering and information preservation. 3D modeling which has remarkable visualizing competencies has been used in many countries and this technique has been successful. Yet, the "discovery" of information in archaeology is still in its primitive stages as knowledge discovery systems have been onsite excavations and assessment of known archaeological findings. As such, there should be more technically advanced systems to gather data of hidden information prevalent in archeological findings.

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Winged Animals: Mediator between Celestial and Terrestrial World

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Introduction

Animal world and fancied creatures are a common subject depicted in the art and religion of Persia and India which has a remote historical background in Asian scenario even before the advent of the Aryans. Seals of Indus civilization show imaginary animals such as the Unicorn which is attached to some religious beliefs and thus representation of imaginary animals was common in artistry in the Indian subcontinent. The same trend was also followed by the dwellers of the valley of Euphrates and Tigris in modern Iraq and these peoples established powerful kingdoms and religious cults which had a space for imaginations about the animal world as well. The unicorn of the Indus seal and the lions fighting with Gilgamesh, the divine hero of Mesopotamian myths are two examples of this tradition.[i] (plate 1&2) Representation of imaginary creatures was a common legacy in art in the Asian scenario which was boosted deeply later by Aryan culture.

In the ancient art of India and Persia the representation of animal figures and griffins in sculptural art and painting is a common subject. This is not an exclusive subject concentrated only in India and ancient Persia, as in ancient Mesopotamia, Egypt and the Mediterranean region, we can see divinities and griffins composed by both anthropomorphic and zoomorphic aspects. But Persia and India shared a common legacy of Aryan influence. As a result, in these two countries, faint traces of affinities or similarities in the field of religion, imagination and artistry can be found. Animal figures in art in both the countries work as a bridge in between the celestial and terrestrial world more or less in the same way. To the Indo-Iranians and their close brothers the Indian Aryans, animal sacrifice in the fire alter was the way to communicate with the God. Persia or Iran was the land of Indo-Iranians and India was the land of Aryans who clubbed off from the Indo-Europeans and migrated here with a legacy of pastoralism, cattle rearing and animal sacrifice. The Indo-Iranians even eulogized their god Mithra "as the Lord of Wide Pastures" ((Mihir Yašt, *Avestā*). They were linked with each other linguistically. They believed that nature reflected the expressions of God. In both the lands natural phenomena like water, wind, fire, storm or thunderbolt were worshipped with offerings and animal sacrifices. Some of the natural phenomena were described in anthropomorphic form which gave birth to the specific forms of deities while others were imagined as abstract concepts. The *Avestā* and the *Vedas* represent developed phases of Aryan religion. The Kassites (a branch of the Aryans in Persia whose kings had names of Aryan origin) worshiped Šuriaš (Sanskrit Śūrya, the sun god), Maruttas (Sanskrit Marut, the wind god), Šimalia the mountain goddess (Sanskrit Himāli, the

snow range). The Mittanian (branch of Indo-Iranians) gods like Mithra (Sanskrit Mitra), Varuṇa (similar in both the lands), Vāyu (the wind god similar in both the lands as well), Naonhaitya (Sanskrit Nāsatya) and other deities are prominent in both the *Vedas* and the *Zend Avestā*.[1] Some of them were connected with some animal or bird, some were imagined to be sharing the same features as a bird like eagle or an animal like lion or bull, some had specific animals as their mount.

Ancient Persia nurtured various religious faiths, such as Zoroastrians, Zurvanites, Manicheans, Hindus, Buddhists, Greek, Pagans and Christians. But they had something common in artistic endeavor and imagination which rests on a deep relation with nature and the animal world. India has the legacy of toleration in history of religion. Various religious faiths emerged and were adopted by Indian people from remote past. Animals were innately connected with these religious faiths. At the same time, this is one of the features of innate relationship between Persia and India.

Celestial world in connection with the animal world

The three periods of Persia's centralized rule, the Achaemenian empire (emerged under Cyrus and Darious around 500 BC), the Parthian empire (emerged around 150 BC under Mithradates) and the Sasanian empire (emerged around 224 CE under Shapur I) had a continuity in the representation of the imaginary animal world. In the scenario of artistry both animal figures and griffins were presented in stylized and symbolized manner according to the prevalent religious myth. This tradition was a continuity from the Assyrian artistry. As for example the imaginary animal with human head, body of a lion and wings of bird named *Lamassu* used to be plaed as protector in the entrance of the throne room of Tighlat Pileser II, the Assyrian king. [2]

In Achaemenian empire this tradition was repeated again and again to represent god and relation of king with god. In Persepolis winged symbol of Ahura Mazda can be seen. He himself is represented with wings of an eagle in sculptural art. (plates 3a&3b) Winged creatures in the palace of Achaemenian empire are common which have a connection with the invincible king of kings the Ahura Mazda. (plate 4) The divinities are described as having the qualities of animals, birds or fish. In Mihir Yašt of *Avestā* (XVIII,70) it has been described that god Verathraghana, made by Ahura, kills the liars with severe blow in the battlefield. In that fatal moment he emerges in the shape of a large wild boar with iron jaws and iron fore-paws and iron tail.[3] In this context one can remember the *varāha avatāra* or the boar incarnation of lord Viṣṇu. (plate 5) According to the Hindu mythology he emerged in the period of turmoil to secure the world from sin. Though this instance cannot be a proof of immediate influence but this similarity perhaps indicates

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[1] Iranianism, p.5

[2] *Lamassu* can be found in Sumerian epic of Gilgamesh, it is depicted as a protective deity who enompasses all the life within it. Another name of it is Shedu who is the symbol of power.

[3] The Zend Avestā, Part II, translated by James Darmesteter, The Sacred Books of the East Series, ed. F.Maxmuller, vol.XXIII, Oxford, 1883, p.137

the faint trace of remote cultural relation in between the two lands when in both the lands people used to think the vivacity of animal power as the expression of god who secure the world from lie and sin. In human form Verathraghana is a charioteer god with wings.[4] Two of his incarnations are popular, that as a great bird and that as a boar. In both the cases he is attributed with the special wild qualities of the specific creature. Noted qualities of animals were attributed on divinities. Kista is a goddess of Zoroastrian origin and growth, she is goddess of religious knowledge and she leads to bliss. Her description does not rise above abstraction. The qualities attributed to her are as follows- strong eyesight like the Kara fish, who can measure the rippling of water not thicker than a hair or like a male horse who can see in the dark of the night or through the rain, snow or hail or the eyesight of a vulture.[5] Thus the divine power is attributed with the qualities of the animal world. Gods and goddess are attached with the animal world as can be noticed again and again in *Avestā*. In Aban Yašt of *Avestā* (III, 13) goddess Ardbi Sura Anahita, the goddess of undefiled water is said to have been carried away by four white horses.[6] Yima is eulogized as a good shepherd as can be seen in Zamyad Yašt.[7]

In the same way in India different animals are attached to divinities or their qualities are attributed to the divinities, sometimes animals are symbol of some abstract conception of nature or virtue which is related to some divinity. As for example, lion in India is symbol of knowledge. In India prior to the image representation of Buddha he used to be represented as a lion (*Sākyasiṁha,* i.e., greatest as a lion in the *Sākya* clan). His mother dreamt a white elephant before his birth which was a sign of advent of a magnanimous high soul on earth. White elephant in India and in Sri Lanka is pious symbol of nobility. Before anthropomorphic representation of the Lord Buddha, he was represented in this form in India. The same trend can be seen in Mauriyan and post Mauryan period which is noteworthy for stout and realistic representation. The Mauryan pillars possess upon their capital stout and realistic bull (in Rampurva) or stylized lion (at present in National Museum, New Delhi) or elephant (in Dhauli carved on a live rock and also can be found as pillar capital) as the symbol of power of the Buddha. In sculptures of Sanchi, Amaravati or Bodhgaya the might of the Buddha is often represented by the figure of a bull or an elephant or a lion. (plate 6)

In Brahmanical religion one can notice the *avatāras* of lord Viṣṇu, i.e., *matsya avatāra* (the fish incarnation)*, kūrma avatāra* (the tortoise incarnationm), *varāha avatāra* (the boar incarnation), *nṛsiṁha avatāra* (the lion-man incarnation). (plate 5) Imagination of all these incarnations is indebted to the animal world. According to Indian religious myths in all these incarnations god saved the world from turmoil. The myths are beautifully narrated in the *Purāṇas* such as the *Matsya Purāṇa, Viṣṇu Purāṇa,*

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[4] John R Hinnels, *Persian Mythology*, London, NewYork, Sydney Toronto: The Hamlyn Publishinh Group Limited, 1973, p 26

[5] *Avestā*, Din Yašt, II,III,IV

[6] The Zend Avestā, Part II, translated by James Darmesteter, The Sacred Books of the East Series, ed. F.Maxmuller, vol.XXIII, Oxford, 1883, p.57

[7] *Avestā*, Zamyad Yašt, III

Bhāgavata Purāṇa etc and continued to be echoed in literature of medieval period in India. This tradition was followed in the *Gītagovinda Kāvya* written by poet Jayadeva. As can be quoted from Jayadeva-

> *"Pralayōpayōdhi jale*
> *Dhṛtabānasi vedam*
> *Bihitavahitra caritram akhedam*
> *Keśavadhṛta mīnaśarīra*
> *Jaya jagadiśa Hare"*

<div align="right">

(*Gītagovinda Kāvya*, in Sanskrit)

</div>

……In time of deluge Keśava adopted the body as a fish and saved the four *Vedas* from the water of the ocean of universal cataclysm, hail to the lord of the world.

Indian gods possess their own specific mount or *vāhana,* as for example Indra's mount is Airāvata, the elephant who fly in sky amidst clouds. Śiva's mount Nandī the bull is depicted variously in sculpture and painting. These mounts are bestowed with some divine power and seem like a bridge in between terrestrial and celestial world. The most striking resemblance of mythical bird in India is Garuḍa. He is the mount of Viṣṇu. He is sovereign of the feathered tribe and the enemy of the serpent race. He is figured partly as a human creature and partly as a bird. He is provided with feathers and wings and with a beak (*tunda*). But he also has arms (*prakoshṭha*), ears and hair (*keśa*) like a human being. He wears various ornaments but he is described as being of a terrific appearance (ugradṛs). His worship is stated to be conducive to the destruction of the enemy (*śatru-nāśa*).[8] Though does not fall in the category of winged animal creature still *kinnars* are noteworthy because these mythical beings are imagined with legs of animal and wings but furnished with hands with lute. These are categorically semi divine creatures and used to carved on arches and on chariots.[9] River goddess Ganga has the mount Makara, which is a fancied creature and a combination of crocodile and other animals.

Another creature is Kāmadhenu or Surabhī, the mythical cow with human head, peacock tail and wing of birds. She is believed to be the 'cow of plenty'. She emerged from the churning of the cosmic ocean. These imaginary creatures are still in worship in India.

Terrestrial world in connection with the animal world

A king is a representative of God on earth. Similar to a deity he shares the same qualities of an animal or a bird which add a feather in the crown. Sometimes he is depicted as defeating a mythical creature. It is symbolic of the power and at the same time it is an indication of heavenly connection of the king who is a part of the mortal world. The motif of divine Gilgamesh lifting lions in both hands from Mesopotamian myths can be found as imitation on Achaemenian seals and it is applied to the kings. In some

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[8] Mānasāra, chapter. LXI, Garuḍa-māna-vidhāna
[9] *Mānasāra*, Chapter. LVIII

Achaemenid reliefs found in Persepolis, the king or the Persian hero is shown stabbing the lion-griffin or grappling with it; a similar iconography is also found on the relief and columns of Apadana. The myth in behind the theme of this kind of imagery indicates the divine grace of kingly or imperial power battling and defeating a cosmic malevolence. (plate 7) It is noteworthy that motifs once reserved for gods in Mesopotamia could be applied to kings later in Persia. Kings were attributed with the qualities of wild animals to express their bravery and courage in the world of the artistic creation. In Persia, king was presented in hunting scene with the stance of famous Persian shot. It includes the turning of the upper body indicating the motion and lightning swiftness of a hunting lion. This subject of fighting with lion and fighting like a lion has a long history of remote past of human civilization. As for example the subject of Mesopotamian seal, Gilgamesh the divine hero fighting with lions have travelled in the path of artistry till late medieval period. As for example, the same concept was repeated in medieval Europe in the realm of Christendom.There were brave knights who were the heroes of feudalistic society, they can be seen slaying the dragon. Sagas were composed in the name of these brave heroes.

In India according to the prescription of *śilpaśāstra* heroic figure either divine or secular should have *vṛṣhaskandha* and *siṁhakaṭi*, i.e., stout shoulder like a bull and slender waist like a lion. Again *gajahasta* or *karihasta* is recommended for hand gesture which requires the suppleness and power of elephant trunk. Thus attribution of beauty, power and quality of an animal on a devine or a secular figure was a way of eulogy which was common in India.

Imaginary animals bestowed with some magical power acted as a part of decoration: Different animals have different quality and it was the desire of mankind to adopt or achieve all the qualities, if not possible in reality but certainly in imagination. This wisdom perhaps was partly responsible for the birth of the subject of fancy animals having the qualities of different animals in one which again was sometimes bestowed with magical power. Imaginary animals or griffins shared the requirement of decoration and at the same time indicates either the heaven or the nether world. They found place in myths and the mythical origin resulted in artistry. Thus the might of a lion or the power of a bull was added with the sharp eyesight of an eagle. From Mesopotamia one can have instance of Urmalullu, as a guardian spirit, which is a lion-man. In Achaemenian art winged lions can be seen in relief protecting the eternal fire. In Achaemenian art the griffin *Shirdal* is a common subject. (plate 8) *Shirdal* means lion-eagle. The lion-griffin or *Shirdal* is seen in the art of the Near East since the 2nd and 1st millennium BC.

The *shirdal* had become a common subject in the art of Persia. The mythic griffins were keepers and protectors of gold and other treasures. The more benevolent of these mythical creatures were also known to secure people from the danger of slander, witchcraft and other evils. Some popular motifs like lion attacking a bull can be seen in Persepolis. Here, the bull is symbol of rain which is being defeated by summer, the lion. So, animal symbols were also connected with season and desirable seasonal change. The

bull was a widespread symbol of vitality and fertility. Pillars in situ from the great hall at Persepolis show capitals with head of bull, head of griffin and head of lion. At Persepolis one kind of capital has been found which can be dated around 500 BC. It has a creature on top which has a sharp beak of an eagle, neck curved like a horse with mane and stout front paws like lion. It possibly represents the Homa bird. (plate 9) This mythical bird apparently never touches the ground and always flies because it spends its full life flying in the sky. The Homa bird sacrifices itself in fire. Then it takes new life from the ashes. It is like a phoenix, who takes birth from the ash after it get perished. This mythical tradition was followed even in execution of ornamental motifs of Persia. As for example one can notice the winged animals even on vessels or ornaments which have been found in Persia in a large number. The Homa bird is quite popular in the Persian poetry. Probably in the memory of the mass these types of Achaemenid capitals worked as the root of this kind of poetic inspiration.

In both the lands Mythology connects the animal world with religion and artistry. According to the Indian mythology elephants are the caryatids of the universe. During the *samudra maṇthana* eight white elephants emerged from the churning of ocean and they had wings and their offspring were also bestowed with the same. One day the winged elephants were alighted on the branch of a giant tree north of the Himalayas and disturbed a sage ascetic named Dirghatapas while he was in meditation. As a result, they were cursed by him and the whole elephamt race were deprived of their wings. Motifs of elephants were always a favourite subject for decoration. In India, ancient temples possess band of elephants as moulding of the base and as caryatides. Stylized figures of lions were also placed in the mouldings of temples. According to Indian myths horses also had wings but Lord Indra sheared them off with his thunderbolt to make the free-ranging animal submissive. So that they could be appointed to draw the chariots of both celestials and royal terrestrials. In sculptural art figures of birds was common in ancient India. In *Śiśupālabadha kāvya* written by Magha, it has been described that how the cats were crouching towards the carved birds to catch them which were set on the roof of the beautiful houses of the city of Dwaraka. [10] All these decorations were treated as auspicious and symbol of prosperity in India. In Indian context swan as a decoration was so auspicious that the dress of a bride [11] and the dress of a king during his coronation used to be decorated with swan design. [12]

Several types of sculptures of imaginary animals can be seen in abundant in Indian *stupas* and temples till medieval period. In India in the caves of Bharhut or Sanchi in Madhyapradesh and other places like Udayagiri in Orissa imaginary creatures can be seen. (plate 10) In some cases they have striking similarity with those from Persia. As can be seen on the *toranas* of Sanchi these winged creatures have typically carved wings alike their counterparts in Persia. Perhaps this is the result of the contact of Persia and Mauryan Empire. The Mauryans were the first empire builders in ancient India.

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[10] Magha, *Śiśupālabadha kāvya,* III,51
[11] Kālidāsa, Kumārasambham,5, 67
[12] Kālidāsa, Raghuvaṁśam, 17, 25

According to some historians they were influenced by the magnanimity of the palace at Persepolis. Chandragupta Maurya, the founder of the Mauryan dynasty built a thousand pillared hall in his capital Pataliputra for which he took inspiration from the Achaemenian empire. This relation continued till the beginning of the Christian era.

Indian artists gave birth to their own fancied creatures which were in comparing the previous powerful examples were supple in nature. Fantastic creations of human imagination present fancy animals like *Ihāmṛga, gajavaktrajhasha* or *mīnavāji* where the animal has the face and trunk of an elephant and the hind quarter of fish united in a single creature. Sometimes these creatures had wings. In the paintings of Ajanta these creatures can be seen abundantly as the motif used for ornamentation. These can be seen as a common subject in sculptural art of Indian temples till medieval period. These creatures hae been mentioned in canonical texts as well as in *Rāmāyana* regarding the description of *Puspaka ratha* of demon king Rāvana. The fish elephant is called *mātangaṅakra* by Kālidāsa in *Raghuvaṁśa* (XIII,11) (plate11) These elephants and horses have carved with lovely scales on their body and also sometimes depicted with wings. It is an interesting observation by C. Sivaramamurti that in case of placement winged creatures are carved near or top of the capital of pillar and those with tail of fish have been found near the base of the pillar suggesting terrestrial and aquatic spheres respectively.

There are other kinds of mythical combination of elephant with birds which is a common feature of temples of Jammu and Kashmir. Examples can be seen in Avantisvāmi temple of Avantipur, built by king Avantivarman in between c. 852 A.D. to 885 A.D. (plate12) This instance can be seen again in Śiva temple at Krimchi in Jammu built in the late medieval period.

There are some fancy creatures such as *gajavyāla* which has the head of an elephant and the figure of a *śārdula. Śārdula* is a kind of imaginative animal shape 'made by art' or *kṛtrima-grāsa* as has been described in the *Samarāṅgaṇa Sutradhāra*[13] Stella Kramrisch explained that *śārdula* indicates a tiger, leoperd, panther,or a demon or a kind of bird, or the imaginary animal Śarabha which has eight legs and is stronger than a lion. Terms are used in the canonical texts of Orissa such as *nara-virāla* (when the creature has the head of a man), *gaja-virāla* (when it has the head of an elephant), śimha-*virāla* (when it has the head of a lion). Often it is represented as rampant, but sometimes in crouching posture.

One specific motif was styled as *gaja-siṁha* and it was a general feature of temple sculptures especially in medieval temples of eastern India. Temples of Orissa present numerous instances of *gaja-siṁha.* Generally, *gaja-siṁha* is a combination of rampant

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[13] *Samarāṅgaṇa Sutradhāra*, chapter LVII, 643

lion on the elephant in a mood of fighting. Here the elephant is symbol of darkness caused by ignorance and the lion is the symbol of victory caused by knowledge. In Chhattisgarh, the temple of Tuman, built in Kalacuri period, possesses *gaja-siṁha* in basal moulding where the figure of rampant lion is in profile placed on the crouching elephant.

One of the finest creations of the Indian artists is the *Kīrttimukha* or the face of glory. Stella Kramrisch interpreted beautifully that it is like a mask made up of the combination of the face of lion, face of the Kāla (death) and face of the Rāhu (dragon causing eclipse). The lion is the Solar animal, the flag of the sun and the upper part of the *Kīrttimukha* has radient eyes which blaze like lighting resembling the rays of the sun or knowledge. The lion is behind the skull of death or Kāla and as the life-giving power breaths forth and thus knowledge surpasses death. The lion face has the serpent component of the Dragon at the lower part where in most of the cases the bulging component is placed without chin. The open mouth out-breathes and emits the breath of life. Thus the living breath and death, two contraries are embodied in this creature. (plate 13)

One of the finest examples of imaginary animals can be seen in the Rani Gumpha of Udaygiri (Orissa) which was executed in narratives of a royal hunter and vanadevi. The relief shows a royal hunter with bow and arrow and a group of dears in the forest. The royal hunter is attacking the deers and one of the deers is presented with wings flying high to the branches. The same deer transformed in *vanadevī* i.e. the goddess of the forest who is seated on the branch of the tree. She is preventing the hunting by uplifting her right hand. Thus she has been represented preventing the attack. This shows how imaginary animals are placed in our fables. (plate 14) This narration represents the eternal truth of love and peace between animal world and human world.

Conclusion

Nature provides feelings to the human mind, and thus nature provides instances to be followed in art. The representation of animals and imaginary creatures in Persia are full of energy and artistic charm but rigid in expression. They are either the prey of human civilization or human is a prey for them, they are powerful and hardy. In comparison to the Persian sculptures the Indian creations are mild in expression. The lines are more plastic and the carves are softer. Specimens from these two lands convey two different definitions of art and imagination.
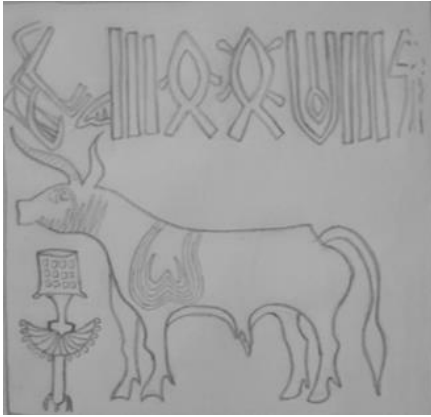
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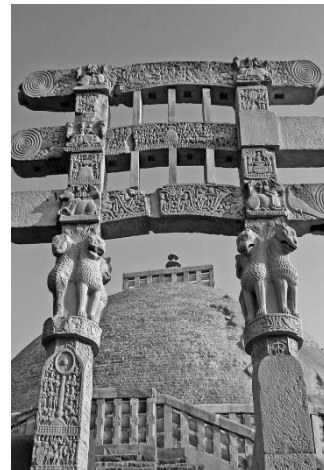
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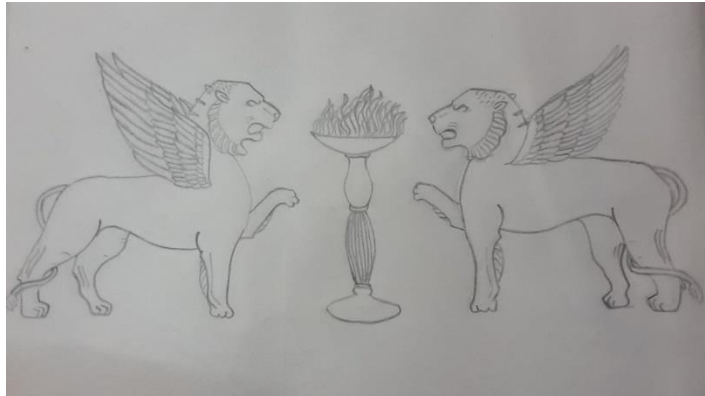
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Legacy of "Sri Lankan Cricket" Portrayed through "Chinaman"

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Abstract

Cricket plays an integral role in the lifestyle of Sri Lankans as a result of the proud legacy of Sri Lankan cricket team, who has performed remarkably well amongst the other nations in striking fashion. Although Sri Lanka has obtained Test match status in 1982, the sport has a longer history dates back to British Imperialism. During the stormiest period of Sri Lanka, which is the ethnic conflict, cricket provided Sri Lankan society a reason to celebrate. The current study is based on the novel *"Chinaman"*: the faction written by Shehan Karunatilaka, which depicts the legacy of Sri Lankan cricket. Through this research, Sri Lankan cricket during 1942 to 1996 is taken into consideration and parallels are drawn between the facts in the novel *"Chinaman"* and the actual incidents. The main objective of the research is to portray a comprehensive picture of Sri Lankan cricket journey from 1942 to 1996 World Cup victory and to depict the hard earned success. In order to achieve the aforementioned objectives, primary and secondary sources were referred as the methodology of the research. The findings of the research suggest the difficult journey Sri Lankan cricket team had had, on their way to the victory of 1996 Cricket World Cup. Whilst facing the ethnic conflict that created turbulences in the country that affected the international Test matches in Sri Lanka, the team had to endure the loss of 9 regular players of the team as a result of the betrayal of Arosa South Africa tour. Thus, the fact that the Sri Lankan cricket team could emerge as the champions amidst facing these difficulties is exemplary for the cricketers today as well for Sri Lanka as a nation, since it shows the country can continue its development even whilst facing stormy seasons.
Keywords: Cricket History, International Cricket, Sri Lankan Cricket, 1996 Cricket World Cup

Introduction

"Sri Lanka", a nation where cricket is highly celebrated, owns a proud legacy of cricket as a country who has gained the Test status. Winning the ODI Cricket World Cup in 1996 and ICC World T20 in 2014, the national cricket team of Sri Lanka had reached pinnacles of success. Lifting the Sri Lankan flag high, the cricket team of Sri Lanka serves as a sporting delegation of the nation who makes the motherland proud.

Influenced from the legacy of Sri Lankan cricket, many fictions are composed. In addition, motion pictures, documentaries, tele dramas are also made based on based on Sri Lankan cricket. Among them the current study is based on the novel *"Chinaman"* which depicts the remarkable legacy of Sri Lankan cricket. The Commonwealth Book Prize winning novel of 2012: "*Chinaman"*, is written by Sri Lankan author Shehan Karunatilaka. Through this research, Sri Lankan cricket during 1942 to 1996 is taken into consideration and parallels are drawn between the facts in the novel *"Chinaman"* and the actual incidents.

Introduction to the book

Shehan Karunatilaka's debut novel, *"Chinaman"*, is all about cricket and Sri Lankan life depicted through the amazing game, cricket. It is woven around the fictional character Pradeep Mathew who had played intermittently for Sri Lanka in the late 1980s and 1990s, performing mesmerizingly in old matches. As the curious and increasingly obsessive journalist: Karunasena, begins to peel back the layers of Mathew's life, and he realises something is amiss. Mathew has vanished not just from the cricketing scene, yet it appears that he has ceased to exist. His existence has even been expunged from the record books. Vadukut (2010) states that, there is something disturbingly Orwellian about it all.

Most of all *Chinaman* is a book about cricket, which is a faction inclusive of facts as well as fiction. Karunatilaka has crafted the unsung legacy of Sri Lankan cricket and portrayed a comprehensive picture of Sri Lankan cricket journey from 1942 to 1996 World Cup victory in order to depict the hard earned success.

"Cricket allows Karunatilaka the outfield to show what his country is capable of, without being overt about it. For concurrent with Sri Lanka's cricket success (1996 world champions, finalists in 2007 and 2011) is the appalling fraying of the nation – Tamil separatism, suicide bombs, the brutal end of the war, and the devastation of the 2004 tsunami." (Tripathi: 2011)

Cricket in Sri Lanka

Cricket is a game through which Sri Lanka has performed on the stage of world sport in consistent and striking fashion. Although Sri Lanka only gained Test match status in 1982, the sport has a much longer history in the country which dates back to British colonization. During the stormy periods in the country such as colonialism, World War II and the civil war period, cricket gave Sri Lankan society a reason to smile. Even though the cricket journey from the initiative stage to so far is not an easy task, players could able to bring the glory to this little nation by hosting 1996 ODI Cricket World Cup and ICC World Twenty20 in 2014. Currently, the administration and governance of Sri Lanka Cricket are carried out by Sri Lanka Cricket Council, which was established initially as the Ceylon Cricket Association.

Objectives of the Research

- To portray a comprehensive picture of Sri Lankan cricket journey from 1942 to 1996 World Cup victory in order to depict the hard earned success.
- To discuss how Shehan Karunathilaka has successfully portrayed the legacy of Sri Lankan cricket through the book *"Chinaman"*.

Research Problem

How does the novel "Chinaman" portray the legacy of Sri Lankan cricket from 1942 to 1996 World Cup victory?

Literature Review

History of Cricket - History of International Cricket

Many believed that cricket may have been invented during Saxon or Norman times by children living in the Weald, in the South-east England. There is also the thought that cricket may have derived from bowls, by the intervention of batsman trying to stop the ball from reaching its targets by hitting it away. (ICC)

> "How and when this club-ball game developed into one where the hitter defended a target against the thrower is simply not known. Nor is there any evidence as to when points were awarded dependent upon how far the hitter was able to dispatch the missile; nor when helpers joined the two-player contest, thus beginning the evolution into a team game; nor when the defining concept of placing wickets at either end of the pitch was adopted." (ESPN)

According to the International Cricket Council's official website, the first reference to cricket being played as an adult sport was in 1611, and in the same year, a dictionary defined cricket as a boys' game. The Telegraph magazine published in Britain mentioned that, in the first half of the 18th century cricket established itself as a leading sport in London and the South – eastern countries of England. Moreover, its spread was limited by the constraints of travel, but it was slowly gaining popularity in other parts of England. Consequently, women's cricket history dates back to the 1745.

> "In 1744, the first laws of cricket were written and subsequently amended in 1774, when innovations such as IBW, a 3rd stump, the middle stump and a maximum bat width were added." (ICC)

Evolution of Cricket around the Globe

Cricket was introduced to North America via the English colonies as early as the 17th century, and in the 18th century it conquered the other parts of the globe.

"It was introduced to the West Indies by colonists and to India by British East India company mariners. It arrived in Australia almost as soon as colonization began in 1788 and the sport reached New Zealand and South Africa in the early years of the 19th century." (ICC)

According to ESPN records, the first international cricket game was played between the USA and Canada in 1844 at the St George's cricket club in New York and in 1859 a team of leading professionals visited North America on the first ever overseas tour.

20th Century Cricket

As the Imperial Cricket Conference which was later altered as International Cricket Council (ICC) was established in 1909, only England, Australia and South Africa were members. Consequently, the West Indies (1932), New Zealand (1930) and India (1932) became Test nations before the Second World War and Pakistan (1952) soon afterwards. And in the closing years of the 20th century, Sri Lanka (1982), Zimbabwe (1992) and Bangladesh (2000) became Test nations. There are 12 Test – playing countries including Sri Lanka, Australia, India, England, Zimbabwe, Bangladesh, Pakistan, Afghanistan, Ireland, West Indies, South Africa, New Zealand and Scotland, Kenya, United Arab Emirates as the associate and affiliate countries.

Sri Lankan Cricket - History of Sri Lankan Cricket

Cricket was introduced to ancient Ceylon by the British as a result of the colonization and the first recorded match was dated back to 1832 as reported in the Colombo Journal. (Roberts: 2005) So far, the national team has achieved international glory by winning the 1996 Cricket World Cup and the 2014 ICC World Twenty20. Administration and governance of Sri Lanka Cricket are carried out by Sri Lanka Cricket Council, which was established initially as the Ceylon Cricket Association. Significant events of the Sri Lankan cricket history and the impact of them on the progress of the game are listed below.

World War II and the status of Sri Lankan Cricket

Because of the World War II, not only the world but also Ceylon was hugely affected as a result of being a colony under the British rule. Consequently, Sri Lankan cricket was also faced a fluctuation in its progress due to WWII. One incident is where the cricket grounds of Sri Lanka were transformed to aerodromes in order to provide military support for the British army. (SLC) However, the WW II could not affect the world's longest running big match: "Battle of the Blues" by Royal College, Colombo and St. Thomas' College, Mt. Lavinia.

Royal - Thomian Annual Cricket Encounter

The game was first played in schools by the 1860s, and the annual fixture between Royal College and St. Thomas (first contested in 1879) is one of the oldest continual fixtures in the world. Royal – Thomian Cricket Encounter official webpage mentions that the "Battle of the Blues" is over 135 years old, played by two great schools which even World War I and II could not halt despite all the fury, a game of cricket which is the second oldest in the World, a game that is older than the Ashes series between Australia and England, is indeed unique. Currently, it is the longest running big match in the world. In Ceylon of the years gone by and Sri Lanka today, the Royal - Thomian cricket match is an undeclared holiday for the young and old of both schools.

The AROSA Rebel Tour of 1982

No sooner had Sri Lanka attained international recognition and begun playing Tests, its cricketing ranks were split asunder by the attractions of the South African rand. Despite the international rules that were imposed not to play against South Africa, a rebel team consisted of many talented players like Bandula Warnapura, travelled to South Africa on a tour in the year 1982, during the "apartheid era" in South Africa.

> "The cricketers were all amateurs and were relatively easy targets once the South African Cricket Union (SACU) decided to extend its sponsorship of rebel tours... The ICC had excluded South Africa from its ranks in the early 1970s because of the apartheid policy of its government... A body of Englishmen led by the former England captain Graham Gooch served as its first catch in February/March 1982. Its next seductions were directed towards the Sri Lankans and West Indians." (Roberts, 2005:18)

As a result, 13 Sri Lankan cricketers were immediately banned for 25 years by the Board of Control for Cricket in Sri Lanka. (BCCSL) Needless to say, the capacities of Sri Lankan cricket team were severely weakened with the loss of the experienced cricketers which paved the way to defeat the Test matches drastically during 1882 -96.

1987 Cricket World Cup

Roberts (2005:4) mentions about the war between the Sinhala-dominated state and the Tamils which sometimes impinged on the cities in the south. Indeed, the metropolitan area around Colombo was a war zone from 1987 onwards. The political circumstances worsened further when an indigenist and socialist force known as the Janata Vimukti Peramuna (JVP, or People's Liberation Front) launched an underground war in 1987 intended to oust the ruling United National Party.

The JVP was virtually Sinhalese in composition and its threat led to what was in effect a civil war in the southern and central heartlands of the island. In this situation both

tourists and international cricket teams avoided Sri Lanka. The period from April 1987 to mid-1992, therefore, was a kind of hiatus and a distinct setback for Sri Lankan cricket.

1986 – 1987 New Zealand Tour of Sri Lanka

Roberts (2005:18) mentions about scoring heavily in a high-scoring series in New Zealand in 1992 where all three Tests ended as draws due to the ethnic problems prevailed in the country at that era. The war between the Sinhala-dominated state and the Tamils sometimes impinged on the cities in the south. Indeed, the metropolitan area around Colombo was a war zone from 1987 onwards.

> "The New Zealand cricket team was on tour when two bombing attacks occurred, one a horrendous atrocity involving car bomb at the Central bus station in the Pettah on 4 April 1987 and the other an attack on the navy commander's car by a suicide bomber opposite the hotel at which the Kiwis were staying on 11 November 1992." (Roberts: 2005)

1992 Australia Tour of Sri Lanka

However, the cricket status of Sri Lanka gradually bloomed during 1990s' and 1992 but 1992 Australian tour of Sri Lanka is still remembered as one of Sri Lanka's greatest heartbreaks. Several of those who played the Test have said it would have been remembered as one of the best ever had it been widely televised. (Fernando: 2016)
"What might have been a sweet and marvelous moment, the game against Australia on 17–21 August 1992 at the SSC grounds in Colombo, where Australia was on the hop throughout the game, turned sour during the last session. An unholy collapse by the Lankan batsmen (8 wickets for37) enabled the Australians to seize victory (by 16 runs) from the very jaws of defeat." (Roberts, 2005:18)

Sri Lankan Cricket during 1994 – 95

Sri Lankan cricket during 1994-95 progressed in rapid pace, showing the signs that the Sri Lankan team were dark horses and could grab the World Cup at any time. Roberts, (2005:19) mentions that during the World Cup in the Antipodes in 1992, Sri Lanka began the series with two remarkable victories against South Africa and Zimbabwe in New Zealand, even chasing a target of 312 runs at Napier on 23 February to defeat the latter by 3 wickets. He also states that, in one of the preliminary games during the Triangular Champions Trophy competition at Sharjah in October 1995, Sri Lanka was confronted by a West Indian total of some 333 runs, the highest in the history of ODI cricket till then. They proceeded to score 329 runs in reply and lost gamely after 49 overs when Hashan Tillakaratne was caught on the boundary seeking a winning six.

However, many problems were confronted by the Sri Lankan cricket team due to its breathtaking performance. The international cricket community bombarded the

Sri Lankan cricketers due to their unwavering success. However, all these obstacles were the sources of inspiration Sri Lankan cricketers had had to win the World Cup in 1996.

"The Sri Lankans were subject to unprecedented psychological warfare from the Australian media, accused of ball-tampering by a Pakistani umpire on the first day of the first Test and then had to undergo the traumatic experience of Muralitharan being branded a thrower by Darrell Hair on the first day of the second Test on 26 December 1995 in what is now known to have been a pre-considered move. After he was called a second time at Brisbane,[37] he did not bowl again – so that the team's battles in the latter part of the ODI series were staged without his aid." (Roberts, 2005:19)

1996 Cricket World Cup

Amidst the trail and tribulations during 1990s due to LTTE terrorist attacks, the young souls could able to hoist the glory of the nation by hosting the World Cup in 1996. This series is so far the most remarkable series in Sri Lankan cricket history since the young players showcased their exceptional talents for the first time in the history.

Roberts (2005:20) highlights several points as remarkable cricketing factors that laid the foundation for this emphatic march to victory. Some of them are as follows: the close rapport between Ranatunga and de Silva as captain and vice-captain, Ranatunga's leadership, the experience that all the players had garnered on the international circuit in the early 1990s and the fact that they had been playing together as a team since 1992, if not earlier, the resolve that had developed, especially after the 'assaults' they had encountered from all sides in Australia in December–January 1995–6, the balanced bowling attack, centred upon four spinners suited to sub-continental conditions, a superb batting line-up right down to number seven, competence fielding, with Mahanama and Jayasuriya as sharpshooters in the inner ring.

Moreover, Dav Whatmore's role and influence as the coach made everything possible for the Sri Lankan players. Especially his advent of man-management techniques and the professionalization of training methods, choice of Alex Kontouri as the physiotherapist and the transformation of the team's fitness levels by this intelligent, hardworking and approachable man can be considered as the significant improvements.

"That said, his insertion of modern sport science into the preparation of the cricket team was a significant factor in the mix of forces. Evaluating the relative weight one should attribute to each factor is impossible without having been a fly on the wall of the Sri Lankan changing rooms over the years 1994–6; and even such a fly would be hard put to make precise assessments." (Roberts: 2005:21)

Methodology

As for the research methodology of the present study, primary and secondary sources were referred to collect data. Primary data was gathered from the faction *"Chinaman"*. Secondary data for this research has been adopted from scholar articles, journals, magazines, newspaper articles and websites regarding cricket. Thereafter, they were analyzed and compared based on the incidents mentioned in *"Chinaman"*.

Furthermore, secondary data sources have helped in providing insights on the faction *"Chinaman"*.

Findings and Discussion

World War II and the status of Sri Lankan Cricket

As a colony under the British rule, Sri Lanka too was affected by World War II, especially due to the harbours: Colombo and Trincomalee. Knowing the loss of both of the harbours would definitely be a disadvantage for the British armies, they took actions to prevent the enemies from conquering it.

However, during this period cricket in Sri Lanka too was affected by World War II. Especially the army took over the cricket grounds in Colombo and turned them into military base camps. Karunatilaka mentions about the impact this World War period had on Sri Lankan cricket in his book, *Chinaman*.

> "So the Brits decommissioned one of Colombo's cricket grounds and turned it into a fully equipped aerodrome. It was a timely move. The Japs sent a fleet of bombers to disable Colombo harbour on April 4, 1942. The aerodrome at the cricket ground served its purpose." (Karunatilaka, 2011:221-222)

> "The ground's scoreboard was demolished to make way for landing strip. The pavilion was turned into a hangar, the dressing rooms into mess halls, and the Dutch tunnels under the cricket ground into bunkers. Two of these bunkers served as radio rooms, providing support for makeshift towers on makeshift runways." (Karunatilaka, 2011:223)

The ground that was described in the above extracts should be the ground of SSC cricket club, according to the official website of Sri Lanka cricket. Proving the statements in "*Chainman*", the Sri Lankan Cricket website mentions that: "In 1952 again club crown leased another 20 acres (81,000 m2) and shifted in to present location in Maitland place, which was used as an aerodrome by the allied forces in World War II."

Yet, an interesting fact to add is that amidst the chaos of the world, when thousands were killed worldwide, in Sri Lanka, the famous Royal-Thomian big match was played.

Though the school teams did not have a ground to play in Colombo, they had shifted the venue and continued playing the world's longest running big match between schools to the present date. Karunatilaka (2011: 222) mentions about the Royal-Thomian match as follows:

"The aerodrome meant that the Royal-Thomian match, played at this ground in the 1930s, had to find itself a new venue. The world's longest running match, Eton vs Harrow, had already been cancelled as Britain exchanged bats for rifles. But in Sri Lanka, the match would go on, even as the world crumbled, a fact duly noted by today's politicians."

Proving these statements, the official website of the "Battle of the blues": Royal-Thomian annual cricket encounter provides records of the big matches played during 1939 to 1945, where 3 matches were won by St. Thomas's College, 2 by Royal College and 2 matches were drawn.

The AROSA rebel tour of 1982

In the year 1982, during the "apartheid era" in South Africa, a rebel team consisted of many talented players in Sri Lanka, travelled to South Africa on a tour, despite the rules that were imposed on not to play against South Africa. The team comprised Bandula Warnapura, by then the Test cricket captain of Sri Lankan team and was led by Manager-cum player Tony Opatha. During this tour, Sri Lanka played four 'ODI's and two five-day Tests, all of which were unofficial. Yet, they lost most of those matches. (Silva, 2013)

However, upon the arrival of the cricket team to Sri Lanka, they were banned playing cricket for 25 years. Aftermath the incident, losing the contribution of 9 regular players of the national side including the Test captain Bandula Warnapura had a drastic negative impact on the Sri Lankan national cricket team.

Karunatilaka (2011:150-151) elaborates on this incident as follows:

"The Arosa Sri Lankan were the first non-white national team to tour South Africa during the apartheid era. The South African Cricket Board offered the rebels five years' salary to play one series… The Lankan rebels were banned from playing any form of cricket for life. Many migrated."

However, as a result of this unfortunate incident, in the 1983 World Cup, Sri Lankan cricket team which did not have adequate experienced players, was out of the World Cup series right after the group stage matches.

1987 Cricket World Cup

Though the first recorded cricket match of Sri Lanka dates back to 1832, Sri Lanka was given the Test status only in year 1982. Thus, when playing for the 1987 World Cup matches, Sri Lankan cricket team were amateurs to the international cricket field. By then, the giants in the international cricket field were countries such as Australia, England and West Indies where Australian cricket team emerged as the 1987 Cricket World Cup champions. (Cricbuzz)

In the book "*Chinaman*" written by Shehan Karunatilaka, the author mentions about the way how the amateur Sri Lankan cricket team was bombarded by the more experienced teams, and even by countries such as Zimbabwe.

> "For the first time ever Windies failed to reach the semis, despite Viv Richards plundering a then record 181 against, who else, Sri Lanka." (Karunatilaka, 2011:35)

> "Sri Lanka had an awful tournament. Even Zimbabwe looked more competitive. Our team was shunted from Peshawar to Kanpur to Faisalabad to Pune: two day journeys each way, with more hours spent in transit lounges than in the nets." (Karunatilaka, 2011:35)

In addition, the author states more facts about the disappointing performances of Sri Lankan cricket team at that time, where the number of defeats were more than the number of victories.

> "In 1987, Sri Lanka had been a Test nation for five years, but were, statistically at least, a disappointment. 25 tests: 2 wins. One-dayers: 41 losses." (Karunatilaka, 2011:36)

However, little did either the world or the nation predicted, that this amateur cricket nation, would be the champions of World Cup after a decade.

1986-1987 New Zealand Tour of Sri Lanka

Already a Test cricket nation for more than five years, in 1986 Sri Lanka faced a Test series with New Zealand, which was known to be a pro-cricket playing nation at that time. However, those were the years in which the ethnic conflict in Sri Lanka was risen. Hence, due to a bomb attack that took place during the New Zealand tour very near to the hotel where the New Zealand team stayed, the last two Test matches of the series were cancelled. Thereafter, till 1992, there were no international cricket tours that was undertaken in Sri Lanka.

As Roberts (200) describes the bombing attacks of 1987 were a disadvantage for Sri Lanka as a nation as well as a for Sri Lankan cricket team. He explains that: "In this situation both tourists and international cricket teams avoided Si Lanka. The period April 1987 to mid-1992, therefore, was kind of a hiatus and a distinct setback for Sri Lankan cricket."

In the book: "Chinaman", Shehan Karunatilaka had mentioned about this incident vividly along with the descriptions from the only Test match that was played.

"The first Test of the 1987 New Zealand tour was known as the Kuruppu Test, due to the aforementioned wicketkeeper-batsman spending every minute of it on the field. The match was as dreary as Kuruppu's unbeaten 201, the first double century by a Sri Lankan, quite possibly the dullest innings ever. Stretched over 778 soggy minutes, it remains the slowest double century in history." (Karunatilaka, 2011:276)

Moreover, Karunatilaka (2011:276) states: "1987's bomb had no such compromise. As soon as the death count of Colombo's then biggest tragedy hit the headlines, the New Zealanders had their bags packed."

Thus, as the above extracts show, whilst facing the ethnic conflicts as well as the war that were inflaming throughout the country, Sri Lankan cricket team had to continue playing international cricket to enhance their skills and techniques. In this situation not been able to play at home was a great disadvantage for them, especially since they were in the emerging state as a cricket team. However, despite all the difficulties, after a decade from these incidents Sri Lankan cricket team could find the way to win the World Cup a decade after.

1992 Australia tour of Sri Lanka

In the year 1992, the champion cricket team of Australia toured in Sri Lanka. This series was the Test debut of the veteran cricketer Romesh Kaluwitharana. However, Australia won the 3- Test series 1-0. The player of the match was Greg Mathews from Australia whereas Sri Lankan batsman Aravinda de Silva scored most number of runs. (ESPN) Karunatilaka (2011:241-242) mentions about this Test series as follows:

"The '92 Australia Test in Sri Lanka is remembered for magnificent centuries by Gurusinha, Ranatunga, and Kaluwitharana, for 3 wickets in 13 balls by a younger spinner named Shane, and as a shining example of Sri Lankan incompetence. Having made Australia follow on, and chasing a target of 180 for an era-defying victory. Lanka slumped from 127-3 to fall short by 16 runs. It was a defeat of great immaturity. Aussie utility all-rounder Greg Mathews was awarded Man of the Match for his part in triggering the collapse."

From this series, it was evident that the Sri Lankan national team batsmen were emerging as talented players. Yet, they needed more experience and had to develop their skills in order to find their success path in 1996 World Cup.

Sri Lankan cricket during 1994-1995

During 1994-1995, Sri Lanka played several Test series and among them, three series are mentioned in "*Chinaman*". Those three are: 1) Sri Lanka in Pakistan 2) Sri Lanka in Australia and 3) Sri Lanka in New Zealand. (ESPN) In those three series, Sri Lankan cricket team showed a skilled performance, enhancing the hopes of Sri Lankans on the upcoming World Cup in 1996.

Karunatilaka (2011: 32-33) summarizes these two series in "*Chinaman*" as mentioned below:

> "It is November 1995. Little do we all know that in less than six months, Sri Lanka would also be going bananas. In the preceding year, Sri Lanka had won their first series overseas, humbling Craig Turner's New Zealanders, and had become the first team to beat Pakistan at home in fifteen years. Later this year they would travel to Australia, where Darrel hair would no-ball Murali for chucking, setting-in motion a chain of events that would climax at a World Cup final in Lahore in March 1996."

Thus, it can be identified that by the time of 1994-1995, Sri Lankan cricket team was skillful and almost ready to perform well in the upcoming World Cup. However, a fact to note is that it was only in 1994 that the Sri Lankan team had won their first series overseas, against New Zealand. It depicts that Sri Lankan cricket team is still young in their performance. Therefore, what is mesmerizing is that the fact they somehow managed to win the World Cup, right after two years of winning their first series overseas. It proves that the World Cup winning cricket team of Sri Lanka had achieved their targets not from the sheer experience, but also from the commitment, dedication and determination they had had.

1996 Cricket World Cup

After one and half decades of gaining the Test status, Sri Lanka became one of the host nations to host the World Cup in 1996, along with India and Pakistan. This series is so far the most remarkable series in Sri Lankan cricket history for it is the only time where the Sri Lankan cricket team won the ODI Cricket World Cup.

Defeating Australia in the finals, the young cricket team of Sri Lanka emerged as the World Cup champions whereas the all-rounder Sanath Jayasuriya was awarded as the Man of the series. (ESPN) However, the victory of Sri Lanka was a surprise, not only for the world, but also for the Sri Lankan team itself. Fernando (2015) mentions:

"That Ranatunga was dead certain a team of part-time bank clerks, insurance men, and salespeople would win a World Cup suggests both vision and self-delusion, because while it was reasonable to expect Sri Lanka to turn heads, there was little to suggest they could lift the trophy."

Moreover, the players as well as the Sri Lankan Cricket Board had financial difficulties then. Fernando (2015) discusses about the financial difficulties of the team as follows:

"Worst of all, the team was funded by a cricket board with little more than Rs 300,000, or around US$5700, at its disposal. Before each tour, the BCCSL (as it was then known) took a beggar's bowl to sponsors, hoping for a generous corporate to fund operational costs. Player salaries were an afterthought. Younger cricketers from outside Colombo couldn't afford rent in the city, so they relied on the kindness of friends and fellow players."

In addition to the financial difficulty, Sri Lankans were also facing a hard time as a nation, where due to the ethnic conflict several bombs exploded in the country. Fernando (2015) mentions about the turbulence in Sri Lanka just prior to hosting the World Cup:

"On January 31, 18 days before Sri Lanka were to host their first World Cup match against Australia, a lorry, pregnant with explosives, crashed through the main gate of the Central Bank and detonated its payload, killing 91 and injuring as many as 1400. The city reeled. Schools were shut for the week. Office workers refused to return to the middle of town, particularly on buses and trains, which they feared would attract more violence."

As a result of these bomb blasts, several nations refused to play in Sri Lanka, due to security issues. Amongst them were Australia and West Indies. Karunatilaka (2011:119) mentions that Ranataunga thanked Wasim and Azhar after winning the World Cup finals, for they have supported Sri Lankan team when they were in need, when other nations refused to play in Sri Lanka.

Thus, amidst all these situations, the fact that the 1996 cricket team of Sri Lanka winning the World Cup, facing the giants of world cricket back then, was truly an astonishing victory that shows the determination and courage of Sri Lankan cricket team.

In the book *Chinaman,* Karunatilaka had managed to provide a proper justification for the proud victory of Sri Lanka in 1996. The author discusses about the astounding performance of Sri Lankan spin quartet: Murali, Dharmasena, Jayasuriya and de Silva. In addition, descriptions of the superb playing of Aravinda de Silva and Asanka Gurusinha are also mentioned. The author states that when the duo was playing, nothing in the streets moved and it seemed as if the cats and crows and beggars had found TVs to crowd around. (Karunatilaka, 2011: 118)

The victory of the 1996 Cricket World Cup was not just another victory of a cricket team to Sri Lanka. Instead it was a victory as a nation, where the Sri Lankans across the globe could celebrate as if they have conquered the world. (Karunatilaka, 2011: 119) describes the victory of Sri Lankan cricket team as follows. "We watch Arjuna hoist the cup. And we watch rerun after rerun after rerun. Credit and Kudos are multiplied and then divided. And our cricketers transfer from international punching bags to national gods."

In addition, (Karunatilaka, 2011: 118) discusses how the cricket victory brought joy to the nation. The author states:

> "Uncle, we are the champions! Shouts my sweat drenched companion. Mid-hug. Colombo explodes into fireworks and men embrace strangers. The party goes on all night and continues for the next three years. Sri Lankans across the world stood taller; believing that now anything is possible. The war would end, the nation would prosper, and pigs would take to the air."

Thus, it shows that the Cricket World Cup victory of 1996 was not just another cricket victory to Sri Lanka, but a victory that brought hope to Sri Lanka as a nation. The victory was not only about cricket and Sri Lankans believed that they could succeed as a nation.

Therefore, the legacy of Sri Lankan cricket depicted in Chinaman from the World War II to the 1996 World Cup through several incidents not only shows the long, difficult path the Sri Lankan Cricket had had, but also it shows the way how cricket as a sport gives hope to the nation and how it brings the nation together.

Conclusion

As for the aforementioned analysis of the legacy of Sri Lankan cricket shows, the journey the Sri Lankan cricket team had, since the beginning to the victory of 1996 Cricket World Cup was not an easy voyage. Whilst facing the ethnic conflict that created turbulences in the country that affected the international test matches in Sri Lanka, the team had to endure the loss of 9 regular players of the team as a result of the betrayal of Arosa South Africa tour. Amidst the difficulties that were faced nationally as well as internationally, Sri Lankan cricket team were dedicated to find their way in the Cricket World Cup on 1996, which finally resulted in them emerging as the champions. This was not merely another cricket victory, but a victory that brought hopes for the nation.

Knowing this legacy of Sri Lankan cricket where the past players faced several turbulences and yet finding their way to the victory is exemplary for the cricketers today, who are not only playing for the national level but also for school levels.

Nonetheless, the legacy of Sri Lankan cricket is a fine example for Sri Lanka as a nation, since it shows the country can develop and progress even whilst facing stormy seasons. Above all, the Cricket World Cup victory of 1996 clearly depicts success is the fruition of hard work and learning from failures.

Limitations and Further Research

Since this study deals only with the legacy of Sri Lankan Cricket, a further study can be done on the grounds of the history of International Cricket, by referring to the historical facts present in "Chinaman" with regard to International cricket.

Moreover, a comparative study can be conducted, comparing the heritage of Sri Lankan cricket with the other nations who own a glorious legacy in cricket, yet have faced fluctuations in their progress.

Nonetheless, though the time period taken for this study is from 1942 to 1996, another study can be conducted focusing on the journey of Sri Lankan cricket after the victory of 1996. In the same way, more elaborative study can be done on the complete history of Sri Lankan cricket to date as well.

In addition, the present research can be expanded by adding other instruments to the methodology such as interviews with cricketers and the personnel who are involved with Sri Lankan cricket in the past generations.

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Dharmarajika Stupa: A Great Buddhist Heritage of Taxila (Pakistan)

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Abstract

Pakistan is rich in its cultural historical sequence and plying a vital role to keeping intact to its heritage being custodian. Modern Taxila is situated near Rawalpindi on the east of the Indus, almost thirty kilometers from north wet of Islamabad, capital of Pakistan. It lays the Dharma Nala on the head of Sind Sagar Doab between Indus and Jhelum River. Taxila is the abode of many splendid Buddhist establishments. The first introduction of Buddhism in Taxila at the time of third Maurya king Asoka the great. At that time, in Taxila we have no evidence of existence of any architectural remaining like stupas, monastery, caitya and cave. The story of Buddhist art and architecture establishes with Asoka the great in Taxila. Buddhism spread all over the region of Gandhara at the age of Asoka through his missionary activities. Asoka built large numbers of Stupas, Viharas and stone pillars for the spread of Buddhism. The transmitted of Buddhism constantly continue Maurya to Kushan period. Taxila was the cradle of Gandharan civilization during the Kanishka period, which gave nativity to the famous Gandharan art. In 1980 Taxila was declared a UNESCO World Heritage Sites. It attracts tourists from across the globe throughout the year, especially from the Buddhist. Taxila was excavated in the early 20th century and three main cities along with dozens of stupas and monasteries were unearthed. The objects found during the excavations are displayed in chronological orders in a beautiful museum established in 1918 by Sir John Marshal.

Keywords: Taxila, Buddhism, Asoka, Gandharan civilization, World Heritage, Sir John Marshal

Introduction

Taxila is the Great city of Greater Gandhara and well known from early history to till. Besides its materialization and development as an artistic and cultural center, the distinctiveness of Taxila lies in its location because it was linked with all important towns of ancient India Uttaraptha. Several roads give it access west to east. This ideal geographic location of Taxila became it the meeting point of several cultures. The trade and commerce was flourished due to its notable geographical location and connecting it with all the other important trade centers. Taxila is the abode of many splendid Buddhist establishments. In early Indian literature Taxila has a legendry history. Recent archaeological excavations and literary evidences have shown that the history of this city goes as far back as 3100 B.C. According to Ramayana, Bharta, younger brother of Rama

built a new city for his son Taksha, appointed him the ruler of the city and city got named Takshakasila, by its ruler Taksha (Ramayana, 16 V111, 101.V, V.10.16). In Chines version the name of Taxila had been Ta-cha-shi-lo (Beal:91) Some Chinese travelers tried to represent a religious background of the name of Takshasila. The Chines pilgrims Fahian, who calls it Chu-sha-shi lo, and gives it's meaning as" Cut -off -Head ". Here, when Buddha was a bodhisattva, and born as a Brahman in the village of Daliddi. He gave away his head to a man and the region got name that event. (Giles;2012: 42) Fahien interpreted this name with the help of a Buddhist Jataka. According to him Buddha, in one of his erstwhile lives, was born at Taxila as Pusa or Chandraprabha (Moon - faced). In his youth he, as an act of charity, fed a hungry lion or Devadatta, his arch enemy. So, the locality was christened as Takshasira or "cut –off- Head. (Dani;1999:2) The original Sanskrit name must have been Chutyasira, or the "fallen head," which is a synonym of Taksha-sira, or the "served head" the usual name by which Taxila was known to the Buddhist of India. In 502 A.D "the place where Buddha made an alms -gift of his head " was visited by Sung -yun ,who describes it as being three days , journey to the east of the river Sin-tu, or Indus.(Beal ⸱1966:200)Hiuen Tsang(Watters;1961: 240-241) point out the name of the city as Ta- Cha -Shi-Lo which approximately the same meaning. It appears that due to some difficulty of phonetics, the Chines travelers heard "sils" (city) as "sira"(head) and thus the original Takkasila sounded as Takkasira, to the pious Buddhist pilgrims and translated as "Cut - off - head ". Taxila came under the Mauryan dynasty and reached a remarkable matured level of development under the great Ashoka. The emperor Ashoka was later said to have dug them out, and distributed the ashes over a wider area, and built 84,000 stupas. (Sharma; 2012: V)   Dharmarajika stupa (Taxila) was the earliest stupas of Taxila, erected on the orders of king Ashoka and contained the real relics of the Buddha. During the Asoka period, Buddhism was adopted as the state religion, which flourished and prevailed for over 1,000 years, until the year 10 AD. During this time Taxila, became important centers for culture, trade and learning. Hundreds of monasteries and stupas were built together with Greek and Kushan towns such as Sirkap and Sirsukh, both in the Gandharan civilization was not only the center of spiritual influence but also the cradle of the world famous Gandharan culture, art and learning. It was from these centers that a unique art of sculpture originated which is known as Gandharan Art all over the world. Buddhism left a monumental and rich legacy of art and architecture in Pakistan. Despite the vagaries of centuries, the Taxila preserved a lot of the heritage in craft and art. Much of this legacy is visible even today in Pakistan.

The Dharamarajika Stupa and monastery

Some of the stupas are traditionally claimed to have been the earliest period and Dharmarajika (Fig: 1) stupa of Taxila is one of the oldest Buddhist edifices in Taxila. The earliest Buddhist stupa and monastery at Taxila known as the name of Dharmarajika, which is locally known as Chir Tope but Marshal nominated it as "Dharmarijaka" (Marshal;1951:233). The famous Chinese pilgrims Hiuen-Tsang recorded this stupa and monasteries. The most excellent account of Taxila city and the

size of stupa show that it was founded by King Asoka the great Dharmaraja the righteous one at the time of redistribution of the relics of Buddha who was the true Dharamarajaor Law lord. (Marshal; 1960: 102) The name Dharmarajika itself suggested because Asoka enshrined the Buddha relics inside the stupa which were got from original stupas of Buddha. However also be indirect that it derived its name from the general fact that all the stupas containing a body relic of the Buddha were built the king Ashoka and consequently became Dharma-raja ji ka. According to Dr Dani "The name Dharmarajika, whatever the origin of the word, the stupa became a source of inspiration and a place of attraction from the very beggingand hence a large number of subsidiary stupas and shrines were later build around it". (Dani: 1999;118) The other name Chir top given to the stupa, in the later time and indicated to the split (chir)made by the treasure hunters through the dome of the stupa. It was one of the most important and outstanding Buddhist stupa in Taxila among all of them who founded Asoka to house the relic of Buddha. "Among the north western cities or towns no doubt, Taxila, received fame because of the role it played in imparting knowledge in the region but so far away the size of the Chir -tope is concerned it does not seem an exception. In the absence of concrete evidence, therefore, it seems hard to suggest or identify any stupa unearthed in Gandharan as well as Taxila valley". (Ahmad;2013:410)The stupa site is situated from three kilometers east of the first city site of Bhir mound and Taxila museum and to the south of the Hathial spur on an eastern route along the Tamara rivulet, which goes across the Margala spur over to the Rawalpindi pateau and to Manikayla and beyond towards Simhapur and the Jhelum river. (Dani, 1999, 118) This important compound belongs to 3rd century BC TO 5th century. It is suggested that the earlier stupa had four gates in axial direction. This stupa was discovered during the archaeological survey of India and excavated by Sir John Marshal in 1913-1914 A.D. The whole complex of Dharmarajika consists of two parts, the first part is called the stupa area which combination of several type construction of different periods and second part called monastic area which is situated to north side.

The main stupa of Dharmarajika

The Dharmarajika stupa is a large Buddhist complex and consists of Dharmarajika stupa along with votive stupas and monastery. The structure of the Dharmarajika stupa was very impressive and shows it was constructed by several times even in the last period of Buddhism because "the follower of Buddhism could not satisfy with this unaffected form of stupa architecture and in the course of time they started to adornment of the stupa. It was the model stupa among the later succeeding stupa in Gandhara. In this regard this stupa could be the best examples which clearly mark the architectural and decorative development. The architectural experiments of the different generations and cultural influences of foreigners, together greatly contributed to the development of the Buddhist architecture in Gandharan and the Dharmarajika stupa passed through a number of constructive and decorative stages" (Ahmad; 2013:411) The original form of a stupa is known as Sanchi and Bharhut are consideration to have preserved their original forms, having a hemispherical mass of masonry forming a solid domed structure

which contained the relics of the Buddha and on the top of this dome present a wooden chhatras. This simple, rather crude pile of rough rubble masonry marked the imitation of a new beginning of the architecture to be evolved in the succeeding centuries under the auspicious patronage of the followers of the Buddhism" (Ibd). The main stupa was established on plain ground surface without platform or plinth, almost circular in shape, with a raised terrace around the base which was arisen by four flights of steps head up to the terrace, one at each of the basic points, the whole presence surrounded by a cemented ambulatory way, the exterior of which is further full by numerous votive stupa. We see the further decoration is on the four flights of steps which take the forms of projections and are eminent by a bold roll moulding running along the top of the plinth and are crowned by three niches for the enshrinements of Buddha figure. The terraces are raised around the base and were used as a procession path (Pradakshina patha), The procession path (Pradakshina patha) is 11 to 12 feet wide but the votive stupas have influenced it many time. The terrace and the open path along the foot of the original floor of the pardikshana patha was make of lime and sand plaster while part of it was ornamented in an interested fashion with shell bangles fence in the plaster and arranged in many geometrical design. Finished this floor a coating of rubble and another floor with many pieces of glass tiles was come upon. It would go to recommend that possibly the whole procession path was once covered with these tiles but when it fell into disorder, number of them must have been detached to be used elsewhere. According to Sir John Marshal when this floor fell into ruins, these tiles were used in other buildings here as well as at Kalwan. (Marshal;1960: 104) The last floor of this patha was identified with slabs of dark grey slate which is now visible. The first earlier patha indicate that in the time of Ashoka this great stupa was in this size but we have found no evidence about it. The date of first floor goes back to the time of Ashoka, the second is dated to the first century A.D and the last to the fourth and fifth century A.D. (Marshal;1951; 239) An interesting feature in the shape of the lower part of circular pillar of kanjur stone was found on the left of the steps on the eastern side of the stupa. The pillar probably supported a lion capital. (Marshal; 1960:104) The dome of stupa was found from the top. It stands on tiers of decorated platforms in the shape of a sold dome with a series of umbrella on its top to mark the royal dignity. There are such a huge sixteen inner supporting walls which display from the center like wheel shaped for provide strengthen the foundation base, so that it may transmit the form of the solid stone of the drum. (Dani;1999:119) As these walls have not been constructed right from the level of the base of stupa because these taken to go to a later period, possibility to the rule of Kanishka when he renovated this sacred building. It is also said that walls constructed above the berm recommends that the ruins of the earlier stupa lay underneath. It was to cover the rubbles of the earlier period that the radiating wall was probably erected. The terrace is faced with primary type semi ashlar masonry. The measurement of the main stupa with the terrace and the steps are given as the 150 feet from east to west and 146 feet from north to south with the body of the great stupa having an average diameter of 115 feet and the berm projection of 8 feet and the steps is further projection of 8 feet 6 inches. The height of the main stupa is 14 meters (45 feet) with 35 meters diameters despite of the damages. The base of the drum above the berm was ornamented with decorative stone work during

the late fourth or early fifth century. However when we declared it as the earliest now it is generally believed that in it have relics but unfortunately the relics were not found inside the stupa and the precious objects were also removed by treasure hunters. The earlier period of the stupa ruins are unidentified. In the absence of any remains Sir John Marshal said for the earlier phase from his discovery of some first century BC secondary stupas around. According to Sir John Marshal the original structure of the stupa fell down during the earthquake of the first century AD. However the stupa building is showed the victim of the earthquake which also stunned down some other structure in Taxila 25-30.AD. The succeeding stage of building after the big disaster is marked by the construction of gateway fronting the steps at the four basic point and another circle of small chapel's. The earlier stone style structure clearly turned to die out during this period, presentation a discernible development in architecture. On the eastern side a little placed to north, there are the ruins of another large stupa constructed on square plinth divided into three diminishing terraces on the top most of which once rested the usual drum and dome. The structure of the stupas was renewed several times. It general design and type of masonry decoy archaeologists to place the original structure in the late second century. The courtyard of the stupa area is full of several other shrines of different type and designs over fluctuating over different periods and of several other stupas founded by the pilgrim's and visitors.

There is a group of small votive stupas that bounded the great main stupa. These votive stupas built during the later time period. These small stupas have almost precede the main stupa are found throughout the Dharmarajika stupa and surrounded an earlier base of stupa in an unequal plan. Sometimes, the relics were also deposits inside the votive stupa. The votive stupa consist of a circular drum, sometimes set on a square or circular plinth, sometimes without plinth but with a simple cyma recta moulding running round the base. In one example the square base was divided into panels by a row of eight slender pilasters. This fact indicated that some votive stupas had a kanjur stone railing around them. These stupas erected during the Maues and Azes 1and the later part belong to first century B.C. During the excavations Sir John Marshal found the coins in the relic chamber of these smaller stupas of the Scythian kings Maues and Azes1, evidently place them in the latter half of the first century". (Marshal;1960,105)

Marshal also found a vase shaped casket of grey schist stone curved on a lathe. The schist vase consist has a silver vase inside it. The silver vase had a silver scroll and a small gold casket containing bone ashes and a fragment of carnelian. A coin of Azes was also recovered along with it and another relic casket with the four copper coins of Maues and Azes 1 also found in the relic chamber of votive stupaS8.The grey schist relic casket comprising a small casket of gold and the small gold casket has a miniature bone relic, five little beads of bone, a round bead of garnet, three small pieces of silver leaf, a piece of coral and a piece of stone.

The relic chamber of the votive stupa S9 produced an ivory casket, consist a very little ivory reliquary, seven bowl shaped silver piece decorated of wood, two gold pieces, a

piece of gold wire, two pieces of coral and several beads. One more stupa B6 had a schist relic casket in which was a tiny casket of silver with classified bones and beads. (Dani, 1999: 121) Nearby the tank on the south ward a large stupa in rectangular shape stand with a projected flight of steps. The stupa run around the base and has a modest torus and scotia decoration of kanjur stone. Beside of the north face of stupa, two massive figures of the Buddha are installed side by side in dhyana mudra (meditating pose) style belonging to 5th century and may be further two centuries later than the stupa itself. (Marshal;1951: 259).

Alongside there is another group of building mostly consisting of stupas. The stupas' architecture is described by Sir John Marshal. (Marshal; 19551: 261-62) Another votive stupa is very large in structure situated the southern side of main stupa. It stands on a substantial lime stone podium with square plinth, divided into three waning terraces, uppermost backup the drum and dome. The base was built with lumpy slabs of limestone mixed with mud soil and tiny pebble. The front side built by semi ashlar limestone and kanjur, the complete stupa coated and ornamented with groups of stucco figures in relief. Firstly, the bottom terrace was separated by Corinthian pilasters, the central cove comprising the figure of Buddha with a trefoil arch.

In the later period every cove was given the seated figure of the Buddha, attended by a devote of either side, after the fifth century when the structure fell down on earth and some fragment of the architecture from above to fell down on the Buddha figure, so the head of Buddha detached his body and missing. There is another stupa M5 with a monastery on the north-west side of the compound of buildings during the early Kushan period. The stupa square in plain with a projection for a flight of steps on its east. Four stupa stand in the monastery court during the late period and built by irregular plan.

The first largest stupa that all of them seen on the north eastern side, evaluating 60 feet north to south and 34 feet east to west. The base of stupa built of rough limestone with mixed mud and front chisel robed blocks of kanjur. The structure of drum and dome is missing but some pieces of umbrella were discovered. The flight of steps of the platform has balance scheme on the southern side. The front was formerly reassured by a modest row of Corinthian columns which rest on a base bordered by a torus and scotia molding. On the basis of design and construction suggest the date of the first century. (Dani 1999;126).

There is another smaller stupa measuring 20 feet square placed near the above stupa. The shape of stupa is very simple and as same above mention stupa. The base was ornamented with torus and scotia molding, subsidiary pilasters on the east west and north sides. There was a relic chamber of kanjur stone, wherein a circular casket of grey schist was discovered. It comprises a small gold casket with bone relics a silver coin of Azilises one more silver coin of Augustus Caesar, a shield shaped ornament of thin gold sheet, one gold and one garnet bead, pieces of bone, shell, coral and turquoise and a number of little seed pearls. (Marshal; 1951: 277)

On the eastern side of monastery there are situated two stupas during the later four centuries. The second stupa is standing on a pedestal, measuring 13 feet square and 2 feet 6 inches height. The front of the stupa completed with kanjur and ended by lime pilaster with two groups of relief. After the late 5th century, the stupa court complete with dropped rubble which raised the level of court. The recovered collection are the figures of Buddha and Bodhisattva, pottery jewelry, animal figures and coins of Kadphises to Shahpur 11.(Dani ;1999:127)

Foundations of other, chapels lie scattered on the plateau around the main stupa: built in the distinctive type of diaper stone over the rubble of the earlier stupas.According to Sir John Marshal "After the great earthquake the next stage of Building round the main stupa was marked by the erection of gateways opposite the steps at the four cardinal points and of a circle of small chapels which are similar in plan as well as in purpose to these at Jamalgrahi, being intended for the enshrinement of Buddhist images and relief.

The structure of the chapels is in rectangular or square type. The construction of these chapels are closed the entrance to the main stupa from the north and west. The internal appearance of the masonry of these chapels display signs of a fire that enclosed the ambulatory way at that time. Sir John Marshal well thought that the sign of the fires is unplanned and just accidental. (Marshal 250) These chapels were decorated with stones, terracotta and stucco sculptures. The constructed period of the chapels was the middle of the 1st century AD. To the north-east of the stupa is a rectangle shaped building thought to be a Bodhisattva shrine and near the back wall of the shrine, there are 30 cm below the original floor. The small rectangular chambers given the impression like a house. These chambers were raised on plinth and height is 2or3 feet.

The chambers move toward by a flight of steps, some chapels were decorated with pilasters and others decorative features completed with kanjur and pilasters. The roof and entrance were made of wooden and dated third to fifth century A.D. This chapel was decorated with the stucco sculptures of late Indo Afghan School. The terracotta heads of Buddha and Bodhisattva were also discovered from these chapels. Sir John Marshal said about this discovery: "The discovery of so many heeds in one small chapel raised the question whether such heads were originally provided with bodies or affixed tier upon tier, to the walls of the chapels without any bodies beneath them. It is quite possible that the late practice was followed in a few cases such as this one, but after many years of digging on this and other neighboring sites, I think it more probable that one and all of these heads were at one time attached to bodies made of clay, and that after the devastation wrought by the White Huns a number of heads were brought and kept in one or two of the best preserved chapels. This view is confirmed by the discovery of numerous hands and feet belonging to images. The rest of the figures, being made mainly of mud would quickly dissolve when once the destruction of the chapel roofs and exposed them to the rain". (Ibd: 266) The last three chapels located on the western side against the back of the circular stupa No 4. There is map out a boundary wall on the

southern side and the whole complex to the western side, when the main stupa located in the center.

Outer of the western boundary wall, we saw the structure of the monastic cell dated 1st century B.C. The cell complex contains square rooms and rectangular blocks behind the southern side rooms, the steps on base were provided later there. According to Sir John Marshal "the cells are the specially interesting as belonging to a period before the quadrangular monastery or vihara, like the one at the corner of the site immediately on the north of it, had come into fashion" (Ibd;246) The floor of these cells built by glass tiles of different coulours like red, blue, black, yellow and white and supposed these tiles come from the pardikshna patha of the main stupa. The finding objects from these cells are a toilet tays, a stone lamp, an iron bowl shell bangles, a copper scale pen, a leaf shape amulet, bronze rings, coins and beads.

The coins go to Azes 11, Kadphises1, Kanshika and Shahpur11.There is also a great shrine with long rectangular platform, to have supposed the figure of the dying Buddha. Basically it was built after earthquakes. Another wall built around the first wall and one more ambulatory passage added here. Another chapel is stands to the south west of the main stupa. It is a double chambered chapel assessing 38 feet 8 inches square and standing on plinth3 feet 6 inches high. Entrée is only by a flight of steps on the north side.

The plinth wall which are the   only structure now preserved from the chapel, were constructed on diaper masonry of large variety and hence the building is dated on the end of the first century. Marshal was found a great quantity of Gandhara stone reliefs of this chapels and said about them" these sculptures represent a variety of offerings dedicated from time to time and the Dharmarajika and preserved in this chapel. Like this chapel we see there another commemorative shrine on the west side between the monastic cells and main stupa. Sir John Marshal was given them number from G1 to G8.

A stupa is the earliest construction structure among all of them dated to the 1st century B.C belongs to Scythian period. The structure of the shrine contains a double chambered along with flight of steps on the southward, however other encircle a smaller chambers inside, leaving an ambulatory passage all around. Two relic casket were founds in one chamber. One casket is consist of dark steatite is decorated with carved swastika, lotus and cross headed designs. It contained a tiny silver box, having in a smaller gold casket preserving a piece of gold leaf and two pieces of classified bone. The second casket of mica schist had a bundle of on the cover and bounded a smaller casket of ivory, which had a still smaller one of the same material, containing a reliquary of gold having a piece of classified bone, a small gold circular bead and forty three small gems of various sizes and shapes. Some other objects discovered from this shrine a stucco head of the Buddha, a head of Bodhisattva engraved out of phyllite stone in the school of Gandhara, a persepolitian pilaster, a bristly male head of terracotta, a rectangular lamp of schist with a lotus pattern round the body; a medallion of terracotta with a head; three shell beads

and two groups of Vasudeva coins. One more important building in this area is "the apsidal stupa temple" situated above chapels.

The stupa temple built by diaper masonry during the early Kushan period. According to structure it's compared with the apsidal temple of Sirkap but the present condition of this apsidal stupa indicated that some changes were done in it. The core of the apse is octagonal as an instead of round. Inside the apse there are ruins of other octagonal stupas of kanjur stone can be seen and under the stupa an earlier period floor have been traced. The nave is bordered by strangely thick wall on each side. The adjoin chapel on the east is double chambered. It is from this chapel that a stone sculptures of the Buddha was discovered.(Marshal;1951:254-55)To the north and east of the main stupa found the ruins of several square and rectangular chapels and stupas of the post Kushan period. This chapels show a great popularity of Dharmarajika sit after the Kushan period. (Dani 1999;124)

Monastery complex of Dharmarajika

The next part of the Dharmarajika stupa compound consists of the monastic complex. In this compound discovered many monasteries constructed to the need of monks of different periods. The changing design of the monasteries has been discussed by Dr. Dani. He said that "The first of these monasteries which lie immediately to the north of the complex around the great stupa are lettered V and W, Sir John Marshal is absolutely right in equating them with the monastic cells lettered E,F and T But in the present case the story is somewhat diffidence Although the later construction have much distorted the original feature of these buildings, sufficient evidence is nevertheless available to show that have the monastic cells have been erected at random.

The alignment of W cells appears to form the western wing of a court, which is delimited by a row of cells on the southern wing. It is also possible to trace the eastern wing, where a few walls and cells can still be seen. In the southern wing there is a flight of steps of a later period that provide the access from the court of the great stupa into the monastic court lettered A in the published plate. This great court monastery measures 270 feet north to south and 190 feet east to west. What others monastic features were present at this place cannot be ascertained. However, the begging of a quadrangular monastery can certainly be seen.

Concerning the dates of their construction". (Dani;1999:126) In addition the earliest monastic quarters found along Dharmarajika contain of the three ring cells on west and north of the great structure. All these were built of rubble masonry in the later Scythian period and restored in diaper after the disaster. In the northern part of the site the major group of monastic quarters was situated, belong to four different periods from first to sixth or seventh century, beside the early period's cells of monastery; however, a large court of cells on the far northern side was built during 2nd 3rd century to offer surplus rooms for the monks. It was the first time that a well-planned square court of cells were

established at the stupa site .On the northern side of this court adjoining against the back of its wall is a great structure built in the semi ashlar masonry. It is not clear at all whether these monasteries represented different schools of Buddhism or were erected because of the growing demand of the monks or simply came into existence in the course of time because new donors were available to finance them.

The cells were arranged in a quadrangle facing inwards, with a veranda on the inner side and no doubt, an upper story. In plan, it is approximately square, measuring some 203 feet, each way and apparently comprising fifty two cells on the ground floor and as many more. The double storied veranda in front of the cells stood on a plinth20 feet wide and rising 3 ft., 3 in above the center of the court. The plinth was paved with limestone slabs for a width of 6 ft. from its outer edge, where it was unprotected by the wooden veranda above it; the rest was of beaten earth. An abundance of charred wood and iron clamps in the veranda and in the center of the court left no doubt about the nature of the materials of which the veranda was constructed. Descending from the raised plinth into the center of the court were four sets of steps, one in the middle of each side, but only two of these on the north and west sides have so far been exposed. The floor in the centre of the court seems to have been of rammed earth only. The date of reaction of the main monastery is in the period of Vasudeva and 531 copper coins of Vasudeva a recovered from this site.(Dani;1999:128)Nearby the main monastery two monasteries were constructed as a subsidiary structure.

The issue is certainly much more complicated than an invasion by the White Huns. The final repairs must have taken place after this date sometime in the sixth or seventh century. If this is the chronological position of these two courts J and H, how and when can we account for their destruction, burning, and final disappearance? It is in the open quadrangle of court J that five human skeletons, "some of the heads being severed and separated from the bodies" (Marshall; 1951:. 287), were found. A sixth skeleton was found in room 2 on the west side of the court J were recovered "fragments of a much charred brick-bark manuscript" (Ibid), written in the Brahmi script of the fifth century. These fragments relate to a Buddhist Manu-script. The stratigraphic position of these finds is not known.

In any case the burning of the manuscript and the destruction must have taken place long after the great prosperity of the Dharmarajika establishment. It is this period of decline and desertion about which we read in the account of the Chinese pilgrim Hiuen-Tsang, who was here twice in the early seventh century. Until his time these smaller courts appear to have been in existence and it is only after him that these small courts must have disappeared for lack of patronage and support. The slow reconstruction in the second period shows the poverty that must have overtaken the sanghas (monastic establishment). (Dani 1999; 130)

A small quadrangular monastery built during the Kushan period at the north east corner of the building. This category of monastery structure is common in Gandharan. It is built

by rubble and semi ashlar stone. The size of the monastery is 91 feet north to south and 165 feet east to west. The monks cells are in normal size belong to south to west and the west side has a large Assembly hall but the western side of monastery does not exist. (Dani 1999; 125) The coins deposited there comprising of Menander, Vasudeva, Shahpur11, Azes1, Azes11, Kadphises1, Kadphises11 and Kanishka. In the monastic are a there is a later chapels which are dated fourth fifth century AD. Some stucco images are installed in the lower part of the chapel. The court A and monastic cell established around the stupa 2, 3 in the monastic area and this pattern represent the second stage of the development of the monastery in Taxila. There is sign of strong boundary walls on the borders. The walls are allied in rows round the main court in the center. "The next stage evolution of the monastery is seen in the monastic cells arranged court G to the north of court A. Adjuncts were added to this congregational building on its north and south sides. On the south there are three four halls, which are compared with the assembly hall, kitchen and refectory of the later period, shows a square structure with additional walls to its east and west.

Therefore, the Dharmarajika establishment covers almost the all period of the history of Buddhism in Taxila from about the third century B.C. to about the end of the seventh century A.D. In this long period, we discover a gradual development of the monastic type, its several architectural arrangements, and embracing of new rites and imagery. The houses of monks came to be grand proportions and some of them were extremely deluxe, but in this progress amateur the beginnings of its later decline. After the days of patronage were completed and financial funding was reduced, the older monasteries fell out of order. The new ones, erected in their place, were smaller and, still later, there was hardly enough money even for proper repairs and restoration. Hiuen-Tsang speaks truly of desertion by monks. The glory that was once the Dharmarajika was involved in its own cumbersome ruins that, widespread as they are, today recall the long-forgotten history of the place". (Dani;1999,129-131)

Inscription of Dharmarajika

A Kharoshti inscription discovered during excavation related to Scythian period. The inscription of the scroll in Kharoshti script and dated 136 of Azes (78 CE). According to inscription these relics were those of the Buddha and were enshrined by a devotee called Urusaka, belong to Bacteria. The relics of Buddha concealed for almost two millennia in a beyond shrine are regard as one of the most significant finds at Taxila. (Marsha; 1951:256-57) The text of the inscription are "In the year 136 of Azes ,on the fifteenth day of the month of ashada, on this day relics as of the bless one were enshrined by Urasaka scion of Imtavhira , a Bactrian, resident of the town of Noacha." Translation These relics of the blessed one were enshrined Bodhisattva shrine at the Dharmarajika stupas at Taxila, for the bestowal of health upon the great kings, king of kings the son of god (devaputrasa), the Kushan, in honors of all Buddha, Pratyeka Buddhas, Arhatas, all sentient beings parents , friends ,advisor, kinsmen and blood relation for bestowed of health upon himself. May the right munificent gift lead ton Nirvana".

A Brahmi inscription however in frag- entry shape of much burnt brick bark manuscript was also found on the small level. The Sir John Marshal recover of many Gandhara sculptures in the floor of the east side of the stupa, (Marshal239) including a stone standing figure of the Buddha, a standing Bodhisattva and two small garland bearing figures on lotus pedestal. Besides the sculptures there are also found three groups of coins, the first group of coins was contained in a small block of kanjur which was found above the western flight of steps. In one side of the block hole had been hollowed out, and in this hole was a hoard of 355coins, togather with a copper bangle, three copper rings and a shell bangle. (Marshal;1951:239) The coins were of Rajuvala, Azes11, Kadphises1, SoterMegas, Kanishka, Huvishaka, Vasudeva,Shahpur11and debased of late Indo-Sassanian.

The second group of coins is found in the north east quadrant of the ambulatory passage consist two of vasudeva, eighteen of Sassanian and 285of the debased of Indo-Sassanian. The third group of coins found in the debris of the eastern entrance had one of the Soter Megas, one of the Kanishka of the Naanaia type, two of vasudeva. (Marshal;1951:240) Along with coins there were bangles and rings, the meaning of the deposition receives another dimension (Dani ;1199:121). During the Scythian period a rectangular tank built by rubble masonry, situated on the north side of stupa coated with lime pilaster. The tank was later filled into build stupa during the Kushan period. The tank is supposed to be bating pool for the monks. (Marshal;1951:247) but according to Dr Dani "It is used only for watering of visitors and monks".John Marshal discovered a lot of material during the excavation including the Buddhist and not Buddhist sculptures reliefs, coins, pottery, clay seals and inscription deposit inside the stupa and monastery.

Besides this material he also found the six skeleton of Buddhist monk and nun killed by white Huns at the time of attacked in Taxila and burnt the monastery towards the end of the fifth century AD. The glorious large site seems to have never recovered its original magnificence after this destruction. However, evidence show that after this damage some efforts was made to restore on a smallest level and repaired some of the stupa and chapels and somewhat reconstruct the living quarters. The new structure is not only simple and rough in nature but also weak in character when compared it with the earlier work.

Conclusion

The Dharmarajika stupa and its massive complex is a most important Buddhist monument and provides evidence about the rise and fall of Buddhism in the Taxila region. Dhararaja, a title of the Mauryan emperor Ashoka, in the middle of the 3rd century, erected the Dharamarajika Stupa, the oldest Buddhist monument in Taxila. The Dharamarajika Stupa contained the sacred relics of the Buddha and a silver scroll commemorating the relics. A wealth of gold and silver coins, gems, jewellery and other antiques were discovered here and are housed in the Taxila museum.

(Fig: 1)
Dharmarajika stupa of Taxila

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Indo-Thai Vai Vai- A Soft Song from West

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Abstract

India and Siam. A saga of ancient tale of our ancient traders. Story of offshore brotherhood. Romanticizing People to people contact of chronicles. Already made historical memories. India and Thailand. A legacy of brotherhood continuing at per with flowing Ganga and Mekong. Our old relation was through trade, religion and culture in tandem before LOOK EAST. Now Act East policy broadening of areas of collaborations not only with Thailand but also South East Asia proper keeping Thailand at the center. Old ties and bonds are now being reviewed. Theories are being revisited. What were our soft ties? How far new soft ties are to be implemented and introduced. Precious soft ties are those which acts beyond state sponsorship. Our earlier brotherhood was peaceful. Never assertive. People to people friendship composed opinions of consensus. State then act. We had valued friendship once. We have to repeat it more. This Bangkok - Delhi protocol can intensify it.

Thailand was the first country recognized before Indian Independence. Post-independence diplomatic relations between India-Thailand were established since 1947. There were cold and warm relationship in modern time before India's 'Look East' policy in 1992, and reciprocated 'Look West' policy of Thailand. India has implemented many collaborative works with Thailand exploring a variety of fields. Both countries feel each other now more. Mutualism and symbiotic exchanges are the tools. Soft ties should be prioritized. My paper revisits the ancient and current brotherhood on behalf of common people.

Monsoon and Maritime Asia

South East Asia sandwiched by China Sea in the east and Andaman Sea in the west strongly is driven by seasonal monsoon. Religion and civilization of India is pre-Vedic, at least contemporary of Mohenjo-Daro not the import by Aryans opined **Panikkar (1954)[1]** in his paper "**A survey of Indian History**" arguing that genesis of Indian civilization was older than Aryan. Even Sumerians derived their cultural form from India as commented by Hall in *Ancient history of near east.* Will Durant (1932)[2] in his *our oriental heritage* proposed that Pre Aryan India was aware of maritime navigation up to Sumerian and Babylon. From urban technology Aryans learnt land tenure or taxation. Pre Aryan "Deccan is still essentially Dravidian in stock and customs, in language, literature and arts", commented Kumaran[3] (2008) citing Piggott of

Prehistoric India also informing rice cultivation of Deccan during pre-Aryan era and iron culture of South India, as southern influenced glory.

Srichampa Sophana (2015)[4] cited Kusalasay[5], (2000) to explain Indianization - **"Indian civilization came to Thailand through trade. When traders brought goods, they had to meet with the local rulers to offer presents and to please them. This led the rulers to become interested in Indian culture. Later, there came invitations to Brahmans from India which had an influence on the rulers with respect to Devaraja concepts, language and culture in the court. These ideas spread to the common folk and mixed together with the beliefs of the local people."**

Influenced by major elements amalgamated with local belief and mutual dynamic cultural exchange took the role ignoring the role of any hard Indo-south Asian forged the tie. Monsoon driven shipping linked Far East and near east. Cultural wedding was done by the Salaween River and the Khong River ethnics. Trade is the factor. Travel through maritime route by boat (up to Takuathung or Melayu peninsular) and land routes through Burma. Socio-religious-cultural issues are the outcomes.

Once rural Asia greeted newly formed civilizations what Indo-European contribution to India regarding religious phenomena evidenced by Vedas and Brāhmaṇas.

As for the Śatapathabrāhmaṇa, (7000 BC), the oldest book revealed its Indianness than Indo-European books. Gangetic India absorbed with local ideas and superstitions there. The Vedic hymns celebrate the dawn, the sun, the moon, the rain, the sky, divinised under the names of Uṣas, Sūrya, Soma, Parjanya, Varuṇa, etc. a belief precursor to religion of Nature impregnated with a pure feeling of life, glory of the world, nature as God to worship them. Assumed that Gangetic India turned to Vedic believer by Indo-European codified in the Brāhmaṇas.Vedic tribes synthesized Brahmanism, in a restricted sense—and out of pre-Aryan cults, created the medieval religions, Śaivism and Vaiṣṇavism, which we shall collectively term Hinduism, commented Paul Muse.

When the Vedic tribes entered southern Asia from current northwest of India, what did they find? Questioned Paul Muse[6]-Except Indus Valley civilization what can be guessed, as representative of Asian people, and a cluster in which India, Indo-China, Indonesia, Pacific islands fringe and southern China might be united by **relative** unity of culture in absence of ethnic uniformity. According to the availability of natural communication cultural plurality of community was unified. That is genesis of monsoon religion of monsoon Asia. This Asia meant ancient India, Indo-China and southern China believed in cult of spirits, present in all things and in all places disembodied human souls, spirits of waters and woods, omnipresence etc. Called as Animism.

He therefore proposed to represent the Asiatic world before the appearance of the learned civilizations, in the parts of present interest "not at all as a primitive and barbaric

mass, as it has too often been said to be under the influence of Chinese or Indian men of letters, but as enjoying a culture that had temporarily achieved a state of equilibrium."

Common Classic Past

Munsterberg (1970)[7] recorded that the first phase of the ancient Siam (Thailand) was rich installing outstanding temple and sculpture of vital art forms of the past. Lower Menam under Dwaravati rule had the traditional past from sixth-twelve century created by Mon stock of Burma. Later, Southern China invaders or Thai. The classical beauty of Mon style images were the derivative of Gupta art of India.

The second phase of Siamese art appeared, greatly influenced by Cambodia by conquering upon the large parts of Siam by Khmer. Lopburi (Navapura) adjacent to Bangkok, in southern Siam was the venue of great art form reflecting similar Indian aesthetical beauty, "but there is more emphasis on the plastic form and less of the feeling for sensuous beauty so typical of the Indian images." the Lopburi images racial type were other than earlier Mon statues of broader faces and flatter linear detail. Ichnographically more or less Hinayana Buddhism model.

Onset of thirteenth century, as Thai power established along with the Sukhothai kingdom Thai art proper emerged as true national art independent of Gupta or Khmer models. Iconography style is distinctly Thai and obviously different from old Siamese sculpture of previous centuries but derivative of Indian sources. He observed -"Two most striking characteristics are a greater elegance and a tendency to elongate the forms, with the vertical emphasis continued by the flame like protuberance on the top of the head. Particularly striking is the treatment of the long slender arms and the delicate hands which add to the feelings of refinement and sophistication so characteristic of these images." Refinement brought a loss of spiritual intensity. Well marked in later periods when the characteristic Thai features developed with salient features. More Buddhist icons are now commissioned in new art centre in Ayudhya following new experiments when Indian Buddhist art already depleted.

He further commented -Style of Cambodian Buddhist statue follow characteristics of the Khmer racial type morphology. Broad square face, the forehead flat, the semi closed eyes of Buddha 'indicates looking inward', whose full lips are touched with the mysterious smile so typical for Cambodian images. The style of Buddhist images were blended in Vishnu, Shib and Brahma of Hindu mythology as earlier shown in Khmer art. Different iconography by the same carver were less abstract in Hindu statues more in Buddha even remaining the same smiling in full lips. There is also a lamentation for Cambodian artist on set of uprising of Thai art. He laments-"As in the representations of the Apsaras at Angkor Vat, these carvings show the Cambodian artists' sensitive feeling for the female form. The shapes are pliant yet firm, with a wonderful sense of the underlying plastic form Breathing life vibrant yet abstract, they are works of a high artistic order not unlike those produced by modern Western sculptors. These images of

the twelfth and thirteenth centuries represent not only the climax but also the end of the great tradition of Cambodian art, for after the defeat of the Khmer rulers by the Thai, this art sank into decline." In sum-Buddhist temple, stupa and mural paintings bears Indian influence and Ramayana.

Kumaron (2008)[8] stated -Citing Codes, the S.E. Asian expert "All the regions of India contributed more or less to this expansion and it is South India that had the greatest part , for the Southern half of the greater India ...consisting of Ceylon, Java, Sumatra ,Borneo, Malaya and Bali was naturally most exposed to South Indian influence "to establish the south Indian contribution in art and culture at SE Asia. Wave wise Indianization according to Kumaran (2008) as follows-Dravidian art of Andhra (2nd -3 rd BC) of Amravati schooling, Hindu Gupta art was modified by Greek influence, Pallav art is blending of Tamil Hindu and Dravid sanskritized in nature, Bengal Buddhist Pal period of 8th-10th cent., reputed plastic art from chola art of Tamil origin are successive five zones left immense imprint of Indianization of Indian culture and art defining colonial tradition as local genius could not supersede this expansion in SE Asia.

Erstwhile Subarnabhumi enjoyed influences of Brahmanism-Hinduism and developed the language culture of Indian religions as PL-SKT. Thai language in Bangkok period was enriched through the royal convention induced by choice based sanskrtization. The kings are regarded as the divine gods in Thai society from the former time till twentieth century at per Ram or Narayan or as the Bodhisattva. **Pimpuang (2015)[9]** presumed that the entry of Brahmanism Hinduism into Thailand in the Pre-Sukhothai period as follows:

1. Prakrit inscriptions revealed that Brahmans domination in power during Sukhothai period and at porous Khmer border, Suphanburi province (current Myanamar Bagladesh border adjacent) where mass inflow was taken.

2. Second chance the famous commercial maritime theory by the boats of Indian merchants, who reached the Southern parts of Thailand for settlement. [Malay Peninsula, Nakhon Si Thammarat etc.]

Principle of Brahmanism played by settlers in everyday life, rituals, religious observance and worshiped God of various linage causing sector wise were harmonious with Thai Buddhist, royal family and the elite. Regarding Buddhism that entered to Thailand, it is found that in the reign of King Ashoka, his Buddhist missionaries inspired and launch Buddhism at Nakhon Pathom province and adored by Thailand and Thai till then coexisted with Brahmanism-Hinduism consistently.

Since Sukhothalai period (1238-1438) Brahmans have performed ritual activities in royal the household and mass shrine need. Hindu God and Goddess (Ganesh, Bramha, Narayan, Indra) are incorporated in to Thai life. Deities are established at Govt. and private places. Relations between Thai peninsula and Chola narrated in Mahavasma, the Sri Lankan Buddhist documents, nomenclature of Phuket as Manig ghram recorded by

Nilkanta Sastriin History of Srivijaya may be evidenced as ancient connectivity. **Srichampa (2015)**[10] cited Mishra (2010)[11] in these cultural exchanges.

"It is to be noted that interaction between the cultures of India and Southeast Asia resulted in the spread of Indian culture. The Indian influence was by peaceful and nonpolitical methods. For a long time, the process of Indianization was regarded as an Indian initiative with Southeast Asia at the receiving end….Southeast Asians were able to choose which elements of Indian culture they could apply to their own beliefs…"

Hinduism, Buddhism and Brahmanism influenced language development in Thailand. Pali Sanskrit, script of Ramayana transmitted Indian script. Oldest scripts of Nakhon Si Thammarat are more similar to Indian Script of (500-1000 BE). Pallava scripts have been transmitted to SE Asia during the 12th cent. BC developed ancient Khon script, a modern prototype. Thai script are outcome of hybridization of ancient Mon khon scripts. Thai vocabularies are derived of Pali and Sanskrit with modifications. Transliteration of Indian literature like Ramayana, Mahabharata, Kalidasa have influenced Thai literature.

Dvaravati kingdom was formed on the concept of Indian kingship system from fragmented communities raising Pali and Sanskrit as a common language and tradition. Khmer ruled Thailand (802-1431). Thai introduced Indian culture of Devraja cult (king of Gods) like Campa, Indonesia. Ayitthaya repeated the same cult but modified in the Thai version (Jatusadom) with a ministerial system. Ayutthaya kingdom, established a juridical system based on Dharma Sastra of India. Got it from Mon. Means of testimony in Ayutthaya mixed with Thainess.

Royal family members were schooled by Brahmnas who wrote texts and literature such as Samut-thra-khot-kham-chan of Phra Maha Rajkhru and Chinda-Manee - the first Thai textbook composed by Phra Horathibodi (Brahman) in the reign of the Great King Naraya of the Ayutthaya period. (srichampa 2015)

Thai Renaissance

'The Tai [sic] knew how to pick and choose. When they saw some good feature in the culture of other people, if it was not in conflict with their own interests, they did not hesitate to borrow it and adapt it to their own requirements.' - Prince Damrong Ratchanuphap (1862–1943),

Maurizio[12] (2007) in his book, "Thailand the worldly kingdom" informed us that the West influenced and interfered (and interferences) Thailand surely, never colonized as rest of South- east Asia. Having secular, religious, mythical, historical and imperial glorious and bizarre past configured the institution of modern monarchy by Buddhist monastic order and nation by the nationalist ideology. The emergence and consolidation of modern Thailand, operated by the social, political, cultural and intellectual forces gradually shaped a nation building on erasing imperialism.

Chaophraya River valley, proud of holding the political centre and capital of old Siam kingdoms (14th cent) experienced westernization during 17th cent. And modern Thai nation (1939) enjoying economic Asian tiger status (1987-96). In order to cope with contemporary modernity, Thai always practiced theory of adopting and adapting elements of foreign culture.

Neologisms like Materialism than spiritualism(*Charoen*) during 1850, Victorian societal customs of elite(*siwilai) i*n 1875, Glorious past civilization(*arayatham-Aryan plus Dharma*), *samaimai,* nationalistic cultural element(*watthanatham,*) concept of development (phatthana) during twentieth century appeared including translation of globalization translated as *lokaphiwat in twentyfirst century* were inscripted across the masses propelling to ideas of civilization, progress and development at different stages of Thai nation building. Rulers, monarch, elite, Army ranker adopted external contemporary civilization agency, education, trade from pre modern period to till date without prejudices from east(India, China) or west (British, America) at per with exotic societies anchoring roots in ancient Thai civilization. Classical cultural eastern elements included statecraft, religion, literature and plastic and performing arts disseminated by South Asian merchants, artisans and priests along the trading routes of the Indian Ocean defined as Indianization by orientalists. Citing O. W. Wolters Localisation process, when 'local agency in the double process of adoption and adaptation of selected Indic materials of sanskritization (Localized Sanskritic vocabulary, Brahmanic rituals, Hindu myths, architecture beliefs, urban design and religious architecture) by the local elites'. Another Indic import of Mahayana Buddhism and Theraveda (ceylonic) during second millennium brought into SE Asia what get popularised by elit, commoners and rulers forming Buddhist cult till reconfigured by expanding Islamic oecumene.

During 13th-19th century the Thai world was a scattered bundle of regional polities (muang), balanced by suzerainty, alliances and conflict. The Thai nation originated in the Chaophraya valley in the middle of the thirteenth century, when Sukhothai, a principality under Khmer (Cambodian) suzerainty, proclaimed its independence. In Sukhothai, wrote Cœdès, 'between 1250 and 1350, the Siamese were able to develop their own characteristic civilization, institutions and art'. In the middle of the fourteenth century, Ayutthaya, a kingdom in the lower Chaophraya valley (named after the mythical place of birth of the Hindu god Rama), overtook Sukhothai.

Ayuthha with the Indic culture, Angkor for four centuries stood as regional power as well as a global emporium that, during South-east Asia's 'age of commerce' with China, Japan, the Muslim world and Europe and cultural exchanged with the Chinese court, Neo-Confucian texts gave ideological context, Chinese people migration towards Siam since pre modern period. Burmese recurrent, aggression especially in 1767 demolished Ayuthha demoralising people and tearing states till its resurrection by, the Chakri dynasty decade later in Krungthep on Chaophraya renamed as Bagkok.

Cultural exchange was so diplomatic that Siam court produced Indic epic Ramakian following Ramayana and Chinese, Three Kingdoms into, Sam kok in Thi. An example of Archaic globalization recorded by Bayly, being multi-centered, driven by ideologies of universal kingship and cosmic religion. Later on what dismantled losing importance due to lack of unified worlds system, political treaties, haphazard inter-continental ups and downs of power dominance.

Thai Nation Building

 Maurizio[13] (2007) further informed desiring reformation, that it was the reign of King Mongkut (Rama IV, 1851–68) and the minority of King Chulalongkorn (Rama V), the Thai court's relationship with the Western powers of colonial establishment, adopted civilization norms of 'Victorian, œcumene' with British, Dutch, America and stayed connected with Indian subcontinent. The then west was newly enlightened of arts, science culture and humanism. Chakri Reformation was based on, Education, state, cartography, administration, infrastructure, the bureaucracy, the monkshood and army modernization, under the direction of Western advisers, Mystique Theravada was subjugated by western neo classicalism vicarious knowledge of Europe (1880). Chulalongkorn adopted a refresher course on an eight-month tour of thirteen European countries on diplomatic protocol. Population were brought under modern technologies of governance such as censuses, taxation, law enforcement and military draft.

Developments, reformations, nation building, followed global trends in the nineteenth century, being "internationalization of nationalism", mainly through prosperous elite, as world culture. Nation, Nationality and Nationalism was redefined, interpreted and promoted during the reign of king Wachirawuth (Rama vi, 1910–25). National consensus thus formed leading to global modernity. This nationalism on the concept of Nation-state as basic geo-political unit borrowed from European nationalism and different from nationalism in the rest of South-east Asia being moved from top-down level. Thai 'popular' nationalism worked on the line of erasing absolute monarchy instead of regional anti-colonial nationalist movements.

Mass sentiment was about the great economic depression of 1929 what reflected overthrowing of absolute monarchy. Individual constitutional, civil rights in difference of class and gender disparities was enacted. On the other hand, Asian decolonization and nationalist movement were going on along with .Thailand joined in South-East Asian Treaty Organization(1954) adopted liberal capitalism. Faced students' agitation of western model.

October 1973, 'open politics" took place eliminating military rules.

Indo-Thai Cultural Life of Eastern Values

Mishra (2010)[15] narrated the cultural life. Mon Legacy of centuries to observe traditional values even in updated life styles coping harmonious balance. Xerentological care, decency always, believe in Thai ritual, celebrating Thai festivals, faith in Karma and reincarnation. Smile in conflict. Djai-yen ("come what may"), sanook sanam ("Life is pleasant"), mai pen rai ("never mind"), kreng chai ("respect his feeling "), and phut prachot ("feeling endurance") are some of the common Thai phrases that represent this philosophy of life following the precepts of Buddhism. Ekkalak Thai, -rural, urban or cosmopolitan society hierarchical, elder male or husband nucleated, kith and kin in orbital in family in a house. Children care of seniors, mothers and members. Important family decisions were shared by family members. Normally patriarchal decisions, voice of the females are also considerable. Changing family structure intervened by economic policy, modernity, urbanization, technology, neo globalization. New economic nucleated family created by rural exodus. Popularization of nucleus family life partners by self-selection or parentally arranged.). Polygamy depleting.

Westernization, modernization, industrialization, expansion of education, war, rural migration to city and other factors already have influenced the Thai society. Social mobility has become common. The status of women has increased at per with education opportunity. But the remarkable increasing of the sex industry indicates dwindling status. Contemporary social problems are also many.

The cultural life of Thailand is rich and vibrant. In spite of external influences, the country has retained its unique character. Religion has been an important factor in shaping the destinies of the Thai people. The history of Buddhism in Thailand is age old since the time of Buddha, closely interlinked with developments of the religion in India, Sri Lanka, and Southeast Asia in First phase. Mahayana Buddhism in the seventh century C.E. to southern Thailand, and Theravada Buddhism, was introduced in the eleventh century C.E. Under the king Rama Kamhaeng (1239–1298), a fourth phase, known as Lankavong, began to predominate in Thailand. The invoking of gods from the Hindu pantheon such as Siva, Vishnu, and Ganesha in different ceremonies is prevalent.

The Arab traders brought Islam which is strongly installed in Thailand's southern provinces close to Malaysia. Thai culture is very colourful. The That Phanom Festival, The Chiang Mai Flower Festival, The Dove Festival, The Chakri Day on April 6 is observed in honor of Rama I, Buddhist New Year, the Songkran, Visakha Puja, the Royal Ploughing Ceremony, other agro based ceremonies, royal celebrations etc.are organized around the year.

The official language of Thailand is Thai, from the Tai family of languages Chinese. The Thai alphabet was derived from the Indian Devanagari script, which originated during the reign of Sukhothai King Rama Khamheng in 1283. Some of the ancient place names of Thailand such as Sukhothai, Ayuthia, Haripunjaya; Lopburi, Dvaravati, and

Sajjanalaya have origins in Sanskrit. The influence of India is marked on the names of the kings also: Indraditya, Rama, Ananda, Suryavamsa Mahadharmarajadhiraja, Cakrapat, Trailok, etc. Innumerable words in the Thai language originate in Sanskrit, including Akas (Akas), Maha (Maha), Sthani (Sthan), Racha (Raja), Sabadi (Svasti), and many more. The language is spoken all over the country along with regional dialects. Thailand's classical literature is based on tradition, legends, and history. The stories from the Ramayana were incorporated into Thai literature, with Rama I authoring the Thai version of the ancient Sanskrit epic, the Ramakien, a work that would influence Thai literature, painting, dance, and drama. The Ramakien differed in many ways from the original Ramayana of Valmiki.

The art and architecture of Thailand were influenced by Indian and Khmer styles. While the concepts were borrowed, the choice of pattern and other details add an indigenous touch to artistic and architectural designs. The genius of Thai artists can be seen in the temples (wat), stupa (pra), monasteries (vihara), and halls (bot) found in the monuments of Sri Deva, Visnulok, Svargalok, Vajrapuri, Lopburi, Sukhothai, Ayuthia, and Bangkok. Historic sites and structures include the Emerald Buddha Temple, Grand Palace, Wat Suthat, Wat Arun, and Wat Benchamabophit. The tiered roof of Thai architecture was influenced by the sikhara of the Hindu temples. The super imposed roofs, glazed colour tiles, gilding, and decorative sculptures add magnificence. The scenes of the Ramakien also are found in temples of Thailand. On the bas-relief of Phimai temple, there are scenes depicting Rama's war with Ravana. The paintings on the outer gallery of Emerald Buddha Temple depict scenes from the Ramakien such as remorseful Sita in Lanka and the Rama Ravana battle. Of course, today tall buildings, skyscrapers, apartments, and resorts are also found in Thailand. Thai sculpture encompassed icons of Hindu gods and Buddha. Images of Vishnu have been found from the Si Thep (Sri Deva) area in the Chao Praya Basin dating to the end of sixth century C.E. The inscription of Rama Tibodi I (1312–1369) spoke of the installation of images of Siva, Vishnu, and Buddha. Large bronze statues of Siva and Vishnu were erected at Kampen phet.

Citing Williams 1981, Levi-Strauss 1969, Said, 1993, Said, 1994, Bauman 1999 Henderson (2008)[16] argued in a live and significant social order, sociology of culture includes cultural practice and cultural production. Components of cultural institutions, formations, cultural exploration are interrelated during social analysis. In order to establish specific art form of merit through analytic method, studies run along with the interaction of social and economic institutions of culture and its harvest.

A structure of culture is never a constant. Culture and the aesthetic forms are derivative of historical experience irrespective of genesis through ideology, class or economic history, but their social history is meaningful. Nationalistic mindset appreciates the own version of tradition leading to stagnation resisting hybridism, often producing unwanted fundamentalism of belief creating fragile system in society whereas culture be mobile, global accessible in terms of pattern and products. The traditional theory of culture is

operational when active in a self-enclosed entity, stable, isolated, economically simple, relatively in small populations may be deactivated in current period due to dynamic of cultures on the move. Selected external influences are indigenized by adaptation, retention and recombination in cultural ways ignoring hybridism emerging cultural identities in context.

Globalization, Asian values and Thainess

What are (traditional/modern) Asian values? Who decides? What agendas are involved? Henderson (2008)[17] argued that Asian values are generally meant for Unified family bonding and collective duty in a large family in a home. Compared with Western nucleus family having individual human rights. Power and dominance act at top-down or at equity. Centuries ago, Thailand experienced eastern values till King Chulalongkorn's modernization policy took place in association with Western behavior and technology. Loss of rural ways, means, life style sand community culture inherited as traditional for mainly marginal and mediocre wealth while the dominant desires urbanizations, modern living, Power and preferred ideology. The monolithic approach, desire qualities and, unique persistent stable Thai tradition. Certain behaviors, ideas or attitudes may be viewed against a scale of culture if culture is a static entity in historiography, non-evolutionary and away from social reality. Thai culture is blending of royal and rural customs, Court ion arts and rural folklore. Thais are nostalgic of preserving traditions, glorifying the past. Memories of Sukhothai and Ayuthaya elite rituals misfits in today's modern settings which fit in the museum to commodity tourism. Local folk spirit is romanticized and cherished, and entrepreneurs profit from commoditizing it. Social practices and concepts include tolerance, compassion, and gratitude to parents, the respect for elders, emotional distance and hierarchy. Having adaptability, to absorb cultural differences if political of multiculturalism, including cultural assimilation and integration of ethnic groups.

Modern challenges exist in dealing with refugees from Burma and Cambodia, racism towards the large number of Lao-speaking Thai nationals in Isaan, acceptability of traditional Buddhist ideology, seem to conflict with the meaning and interpretation of 'adaptable' as a description. The increasing global interaction in the backdrop of globalization and globalization and multicultural existence as outcome of mobility, technology, communication and the world market is creating a mosaic, transnational culture willing to harmonious tolerance. Asian values verses transnational values operate simultaneously. Globalization has been criticized for the inequality generated by its deregulated, neo-liberal, free market ideology, cultural homogenization leading to market fundamentalism ethnic absolutism, consumerism, (Hobsbawm 2000: 64-66, cited by Henderson, 2007).

The process of globalisation involves processes of transformation and fragmentation. World decentralization, a weakening of nation states and cultural and political fragmentation of formerly larger units has led to mass migration to traditional centres,

dislocation of populations and renewed politicized identities. The rise of nationalism and indigenous and regional movements are outcomes of this transformation-fragmentation process. In Southeast Asia, a rising area of the world system, there has been a rise of national and regional identities, a new modernism and a decline of minority politics. The globalisation process also involves capitalist and class consciousness; a growing set of elites, including cultural elites are involved in this process. Friedman warns of the combination of indigenisation and cosmopolitan hybridization as two powerful polarizing cultural identifications in today's globalising world system (Friedman 2000, cited by Henderson, 2007).

Having once track record of Indianisation by cultural form and other element of evidently contributed expansion over the SE Asian region, equal was the responsibility of localization in terms of assimilation, reformation, moderation, acceptability determination, alteration at per Indian norms and values. Now the influence challenges global versus nation.

Current Softs

Dash and Mishra (2017)[18] reported that travel and tourism relationship exerts impact on economic development. Being industrial it generates commerce, trade, investment, jobs and entrepreneurial ism. Preserves heritage and cultural values. Development, economic and social growth emerge. Basically tourism is mutual in nature so appreciation of host and guest influence direct cooperation, integration in local regional or national and international level. Indo-Thai relationship deserves careful attention to find out opportunities in term of cooperation and materializing the resources in the tourism sector. Tourism potentialities of India lies on diversity of ecosystem heritage and cultural heritage. During 2017, according to Ministry of Tourism, Government of India foreign tourist arrival, e-tourist visa, and foreign exchange earnings are increasing yet it is underutilized despite country's rich historical, cultural, social and geographical legacy.

According to United Nation's World Tourism Organization (UNWTO) India's international arrivals, its share of international tourist receipts and India's ranking in the Travel and Tourism Competitive Index (TTCI) of World Economic Forum is in lower rank but potential -performance gap is increasing currently following National tourism policy 2015.

Citing Sarkar (2000)[19], authors states that "India's perceived image before foreigners includes ,mysticism, political instability, grinding poverty, illiteracy, terrorism, unemployment, communal discord, lack of social services, and corruption." or citing Chodhury(2000)[20] statement "India in reality, lacks a positive image on infrastructure and safety issues for which appropriate planning and promotions need to be deployed."

The India and Thailand cultural tie is a millennium old since Hindu -Buddhist elements are reflected similarly in Thai arts, architecture, sculpture, dance, drama, mythology and

literature even to this day including Thai languages and literature connections with Pali and Sanskrit and Ramayan. In the context of Buddhist Tourism based on Buddhist philosophy and its way of life, Buddhists all over the world look towards India with great respect and admiration because the genesis of this religion here. Although India yet to harness the Buddha centric potential which have immense role to build political, cultural and diplomatic connection internally and SE Asia. Across the country hundreds of Buddhist cite can accumulated as Buddhist hub (Mahabodhi Temple Complex in Gaya and Kushinagar in addition to hundreds of Buddhist sites spread across the country, UNESCO World Heritage Site Nalanda Mahavihar, Sikkim etc.) in line with religious tourism to fulfill Act East Policy. Cultural contexts include the operation of regular cultural exchanges programmes under the framework of a Cultural Exchange Programme and Indian Cultural centre of Bangkok, India Studies in Thai Universities. Northeast of India and specially Assam being home of Tai ethnic could be a new tourism destination for Thai tourists. On the other hand, Indian diaspora and thousands of ethnic Indians in Thailand connection will be robust.

In order to boost tourism, it needs connectivity and stout communication. Although Air connectivity between India and Thailand is rising, improvement of regional connectivity through land route initiatives like India-Myanmar-Thailand Trilateral Highway, Asian Highway Network (under ESCAP), BTILS under BIMSTEC framework and Myanmar-Thailand (IMT) Highway are under process.

Thai economy earns from on tourism. "Amazing Thailand" which earn foreign exchange is dream project. Thai wealth full of Nature, wildlife, climate, cultural heritage, traditional activities, craft. They can boast their hospitality as potential force for economic development along with its well-known historical attractions, the beach resorts in Phuket, Samui, Krabi, Pattaya, and Hua Hin. Thai have LOOK WEST against India's Look east or Act east in promoting bilateral relations between the two countries. Chaina will do their own way in response to Buddha diplomacy or tourism. Apart from this as strategic partners, India and Thailand works closely in several regional forums for concerns and sharing issues like- the East Asia Summit, ADMM+, the India-ASEAN Summit and others. Both countries are members of the Mekong-Ganga Cooperation, BIMSTEC, the Indian Ocean Rim Association and the Asian Cooperation Dialogue.

Balaji (2017)[21] opines on Strategic partnership and cooperation when implemented in the Indo-Pacific. Thailand and India jointly act as stake holders in the following obligation- in the counter-terrorism, defense industry collaboration, abatement of Transnational crime and related treaties on extradition and legal assistance, defense diplomacy of both parties need to strengthen their military ties to adjust their changing foreign policy and security position in the region according to core national interest and making the relationship. Defence cooperation is an important element of India-Thailand strategic partnership as both share maritime water and face similar geostrategic compulsions.

Bilateral trade is six-fold higher since 2000 and crossed the US$6 billion mark in 2010. A common plan on strategic matters such as defense and maritime security across the Bay of Bengal and Andaman Sea is drafted. Joint maritime patrol exercises, disaster management operations, and regular exchange of officials for defense training purposes are conducted. Navies work together on naval patrols and transnational crime prevention exercises. India is also an integral member of the Asia Cooperation Dialogue (ACD) initiated by Thailand. Likewise, "Thailand is a core member of the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) and the Mekong Ganga Project (MGC) respectively. Incidentally, BIMSTEC was conceptualized to synergies the Look East and Look West policies of India and Thailand respectively" he commented.

Chingchit (2017)[22] Thailand is close to both China and the US. More to China including Conflicts over the use of Mekong, slightly strained with US. Thailand is significant for ASEAN centrality and maintaining a power equilibrium within the region. Thai view on south sea dispute that ASEAN should be united on this issue because peace and prosperity in Southeast Asia is beneficial to all and Thailand supports freedom of navigation and peaceful dispute resolution by international law including UNCLOGS. India utilize ASEAN in two way. Tagged with ASEAN as an organization through different frameworks such as ASWAN-India Free Trade Agreement, Regional Comprehensive Economic Partnership, ASEAN + 6, ASEAN Regional Forum (BARF) and second is its engagement with the member countries in bilateral and multilateral forms.

De (2017)[23] commented, wiling two countries are eager to revive their historical trade routes that once linked Southern India and Southeast Asia (subharmonic, Ethologist, Champa, Ayuthha etc). Ancient routes are now reconfigured in proposed trilateral highway which fall within the Asian Highways 1 and 2. Long highway are identified as More-Tamu-Kalewa-Chaungma-for construction and up gradation. During the Joint Task Force meeting is now operational to make reality.

The North –East India region is gifted with monasteries and temples, the Nakayama, Samson and Parashuram Kund are the popular ones for religious tourism. Connectivity is obvious beneficial. She further suggested in order to boost NEI-Southeast Asia trade is that all the eight North-eastern states should be dealt with as independent entities like other states in the country assuming single identity is lacking for whole the region to promote growth, innovation and development. India needs to priorities tourism and people-to-people contact of its North-eastern states to synchronize the Association of Southeast Asian Nations (ASEAN) objective of transforming the region to an ASEAN Economic Community (which also comes under the Master Plan for ASEAN Connectivity). Observing Thailand's geo strategic location, economic interests and apprehensions about China it is time that New Delhi seek to cash in on the goodwill it has with Bangkok.

Observing long lasting Indo-Thai cultural relationship Soikham (2017)[24] opined, during the implementation of cultural diplomacy, aspect of multicultural and pluralism to be maintained irrespective of power. In a heterogeneous cultural system multicultural dialogue is essential as well as should be mutually supportive. Political, economic, and sociocultural cooperation were acted and functioned separately in Thailand–India Foreign Policy. That is why citizens of both countries continued contact even in absence of political coolness as happened during 1955-86. Cultural diplomacy can be continued irrespective of political and economic relations. This is because cultural diplomacy as soft power is not a one-way communication. It requires mutual understanding, shared interest, and common culture in interacting with other states. Both Governments should keep an eye on state and non-state actors including, scholars, alumni, Buddhist monks, and Indian diaspora who play an important role in strengthening and interacting with Indo- Thailand cultural relations.

From the account of Chinwanno[25] (2018) we learnt the 60-year diplomatic relations could be tri phasic. In the first period from 1947 to 1957, relations were cordial and correct. Experiencing the Cold War tension and the expansion of communist influence as a potential source of regional instability, Thailand joined the multilateral collective defense with the US and western allies in the form of the South East Asian Treaty Organization (SEATO) in 1954. India, seeking solace, co-organised the Afro-Asian Conference in Bandung, Indonesia in 1955, in presence of The Thai foreign minister and the Chinese Premier,

In the second period between 1958 to1986, relations turned cold and distant. India went ahead with its non- aligned policy by helping to set up the Non-Aligned Movement (NAM) in 1961. Differing foreign policies caused Thailand and India to drift apart. India opposed the US in the Vietnam War in the 1960s but Thailand supported and assisted it. Thailand opposed the Vietnamese-backed government in Cambodia after Vietnam invaded and occupied that country in the 1980s but India supported and recognized it. Differing perceptions on international issues also caused a cooling of relations during this period.

During the period from 1987 to the present, Thai-Indian diplomatic relations became warmer, closer and friendlier. The rapprochement began with the visit by Prime Minister in 1986, the reciprocated a historic visit by Thai Prime Minister March 1989, In April 1993 Prime Minister of India came again to Thailand. These visits were important milestones in bilateral relations. Three factors can be cited for propelling Thailand and India for a re-engagement the global strategic changes especially Indian reliance on soviet block was questioned due to the demise of communism in Eastern Europe and the fragmentation of Soviet Union, Thailand also saw the potential of India for political and economic partnership and as a gateway to South Asia.

The second factor was the changing Indian perception of the world and of Asia. The "Look East" policy initiated by Prime Minister Rao reoriented India toward Southeast Asia and Thailand whose economies were growing and expanding rapidly.

The third factor was India's economic liberalization and reforms which were started in 1991 and had contributed to the GDP growth rate of the 1990s averaging six per cent. In the five-year period from 2001-2005, Thailand and India signed ten agreements of cooperation, including one in 2003 to establish a Thai-Indian Free Trade Area (FTA. As maritime neighbors, it is natural for their bilateral security cooperation to focus on maritime security, including naval exercises and naval joint patrols at the northern waters off the Malacca Strait. Booming trade Bilateral economic relations have also expanded over the years. The decision in 2003 to negotiate an FTA with India was the political factor contributing to the trade increase.

Asian brotherhood existed ,but a defeat from Chaina in 1962 owing to sino-India border conflict, war with Pakistan in mid-sixties, liberation of Bangladesh,treaty of peace with former Soviet block in order to netralize American pressure were some historical cicumstances India was compelled to remain busy in her security strategy against America-pakistan and Chaina -pakistan trajectories even it was cool phase with Bagkok tied with SIATO Regional cooperation, econo-political collaboration was blocked with South East Asia till the end of cold war and Indian rapchment towards U.S.A. Only relational improvement gradually shown after bilateral prime ministial visit in 1986 by India, reciprocated by Thailand in 1989 and emergence of Look East policy (1994), Act East policy (2014).

Apart from fragmentation of Soviet block,end of cold war,India's economic liberalisation and beginning of economic growth,India's increased interest in Thailand is a anxiety of new international phenomenon , mainly China's day to day assertive presence in the Indian Ocean as well as the South China Sea. Chinese activities going on in South Asia, South-East and East Asia. To control over Pakistan (China-Pakistan Economic Corridor), Bangladesh (infrastructural development), Myanmar, Srilanka, Maldives, Nepal and Bhutan(border conflict) influencing economically and other soft ways in order to make them develop and reducing Indo dependency.

In this backdrop, the 'Look East' policy emerged to observe Asia-Pacific and to counterweight to China's influence, particularly in South-East Asia. Policy aimed at to forge economic and commercial ties for trade, investments, industrial development and security strategy on the foundation of Asian cultural affinity. ASEAN- India Summit and East Asia Summit are new platform to act towards S E Asia where Thailand at central point by modified version 'Act East' policy (2016).Obviously meant for economic perspective policy includes tourism, information technology, pharmaceuticals, auto components and machinery, infrastructure connectivity and defense co-operation actions, as an area of priority for India's development.1,000-kilometer common

maritime border in the Andaman Sea including sea based trade and maritime securities are also components of relation.

Culture, arts, architectures, religion, language, politics, juridical system, education, diplomatic and trade, tourism bridged ties between India and Thailand since historical period. Such fields may be treated as SOFT power in order to discuss in the line of Nye concept (2004, 2011) utilizing resources of culture, political values, foreign policies and behavioral values. Cultural attractions, political values influence mutually, and legitimate foreign policies interact. Still it is applicable.

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Buddhism in Uttarakhand: Monuments from Past and Present

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Abstract

This paper is going to explore the hidden or we can say unnoticed monuments belonging to Buddha &Buddhist culture in ancient Uttarakhand. At first we are searching and listing the monuments through literature then archeological exploration & excavation and then trying to find out religious influence of Buddhism on the population of Uttarakhand in ancient era. We are also trying to know that how can this area, which was the easiest and popular way for ancient religious travelers to Tibet, China and had long time (till 1962) traditional relationship with Tibet, haven't any religious influence on the local population.... though Tibet is religiously a Buddhist nation. At last we analyze the present influence and status of Buddhism in the region…

Keywords: Uttarakhand, Buddhism, History, Past and present, Religion, Geography

Introduction

Uttarakhand, also known as "Devbhumi" or the "Land of God" with its mesmerizing natural beauty, fascinating upper Himalayan range and snow peaks, fresh & pure water and air and natural aura of Godliness attracts people from all over the world. Kedarnath, Badrinath, Gangotri and Yamunotri are four Hindu shrines, which stands for 'Char Dham' is located in Uttarakhand. The Panch Prayag- Karnaprayag, Vishnuprayag, Rudraprayag, Nandprayag and Devprayag are five sacred sangam's attract pilgrims as they are considered holy places. Haridwar and Rishikesh (yoga city) are two famous Hindu pilgrimages and Gurdwara of Hemkund Sahib,a famous shrine for Sikhs, near valley of flowers are located in Uttarakhand. In the ancient scripts of Hindu religion, the combined region of Kedarkhand (Presently Garhwal) and Manaskhand (Presently Kumaon) has been mentioned as Uttarakhand or Devbhumi. The state is divided naturally by Nanda Devi Mountains, in two regions, Kumaon and Garhwal and Dehradun is the state capital.

Geography

Uttarakhand which is located in the northern part of India shares international boundaries with Tibet in north and Nepal in east and state border with Himachal Pradesh on the west, Uttar Pradesh on the south and Haryana in the northwest. It has an area of 53,483 km² and lies between latitude 28°43' and 31°28'N and longitude 77°34' and 81°03' E. Physiographically the state can be divided into three zones namely The Himalaya, The Shivalik and Terrai region. The altitude goes up to 500 to 7,500 mt. (Nanda Devi

Peak) from the sea level. The state had temperate climate except in plain areas where the climate is tropical and temperatures ranging to sub-zero to 43°C and average rainfall is 1,550mm annually. Uttarakhand is 65% covered by forest and 86% is mountainous. (Forest survey of India)

Brief History of Uttarakhand:

Archaeological evidence like ancient rock paintings, paleolithic stone tools, rock shelters, megaliths, etc. suggests that this mountainous state had been frequented and inhabited from prehistoric times. Findings of Chamoli and Almorah districts clearly reveal the existence of human habitation from Stone Age in the state. The name of the state can be found in the great Purans and Vedas and the legendary epic of Ramayana and Mahabharata. During Mahabharata era, Uttarakhand formed a part of Panchal and Kuru kingdom (mahajanpads). Kunindas were the first major dynasties of Kumaon during 2nd century BC. According to findings, Kunindas practiced an early form of Shaivism. Early presence of Buddhism has been noted in Kalsi region where Ashoka's edicts have been found. The kingdoms of Kumaon and Garhwal, were formed during the medieval period. The region fell to the Gorkha Empire of Nepal in 1803, but in 1816, British took over the kingdom after winning the Anglo-Nepalese war, and formed the Treaty of Sugauli.

Uttarakhand in Buddhist literature

Uttarakhand is known as a spiritual Himalayan state from the ancient times. Many people came here to obtain their spiritual and meditational desire. Though the state more often associated with Hinduism, but the Himalayas are mentioned frequently in the Buddhist scriptures and were familiar to the Buddha himself. In Jataka, Buddha asking his monks 'Do you wish to go a wondering in the Himalayas?' *(Gacchissatha panaHimvanta Carikau, Ja.V, 415)*. In the Jātakas, name of numerous caves, plateaus, valleys, mountains and rivers in the Himalayas but almost none of these can be identified today. The most famous cave was somewhere near the foot of Mount Nanda and was thus known as Nandamūla Cave. Pacceka Buddhas are mentioned as living in this cave and flying from there to Varanasi or elsewhere in India, and back again (Ja.III, 157,190,230,259).

In the beautiful Sama Jataka, the Bodhisattva is described as following the Ganges into the mountains to where the Migasammata River flows into it and then following this second river until he came to a suitable place to build himself a hermitage (Ja.VI, 72). The Migasammata probably corresponds to the Alakanda River which joins the Ganges near Devaprayag (Bhante S. Dhamik).Various rulers may have also played a part in this exploration as well. The Jatakas tell of a king, who sent an expedition into the Himalayas guided by foresters. They tied several rafts together and sailed up the Ganges (Ja.III, 371)

There is evidence of the spread of Buddhism in the Himalaya during Emperor Ashoka. The Ceylon Buddhist chronicle gives the names of missionaries sent to Kashmir to Gandhar and to the Himalayas. Five missionaries (A leader and four assistants), sent to Himalaya region, and three are named as Majjima, Kassapa-Gotta and Dhundubhissara.

From Sanchi we found some funeral urns with inscriptions and one of these bore the legend "Of the good man Kassapa-Gotta, the teacher of all The Himalayan regions". On the inside of the urn is written "Of the good man Majjhima". In the other tope was an urn inscribed "Of the good man Gopiputta, of the Himalaya; successor of Dundhubhissara" (Rhys David's Buddhist India, page- 279, A. Cunningham, Inscription of Asoka).

According to E.Sherman, Himalayan region referred to know doubt denotes particularly Nepal, Kumoun and Garhwal, the part of the mountain nearest to Ashoka's kingdom of Magadha, the modern Bihar. It can hardly have included Tibet, where tradition assigns 640 AD as the date of the introduction of Buddhism (Holy Himalaya; E Sherman).

Hiuen Tsang in his travelogue mentioned a city in the hills called Brahmapura, 300 li or 50 miles north from Mayapura (near to the present town of Haridwar). He states that Inhabitants of this kingdom are follower of both the Buddhist and Brahmanical. There are five monasteries, within which reside a few monks and there are some dozen temples of the Gods. According to Mr. Atkinson that this site is to be found at Barahat (Uttarkashi), which is exactly 50 miles north from the Haridwar. There are also many remains of temples and ancient buildings, and it is traditionally known on the seat of an old monarchy (Holy Himalaya; E Sherman; page-90-92).

Archaeological Findings

Today, there is no adequate evidence related to Buddhism in Uttarakhand but Alexander Cunningham stated that he saw many small sculptures at the outside of the Narayan shila and Sarvanath temples in Haridwar (Archaeological survey report, Part 2, page 233). He also said about a mound Shigri which was a Stupa sometime in the Buddhist era, sited at the east of Fort Mordhvaj (Mordhwajis mentionedas mo-yu-loin "Hiuen Tsang" travelogue Si-u-ki). Shri Markham excavated the mound in February 1887. He found Buddha seals and other things from the site (journal of Aciatic society of bangal, 1891; Fuhrer, M.A.E, page 32-33). All these antiquities are under protection of Lucknow Museum (Uttarradesh).
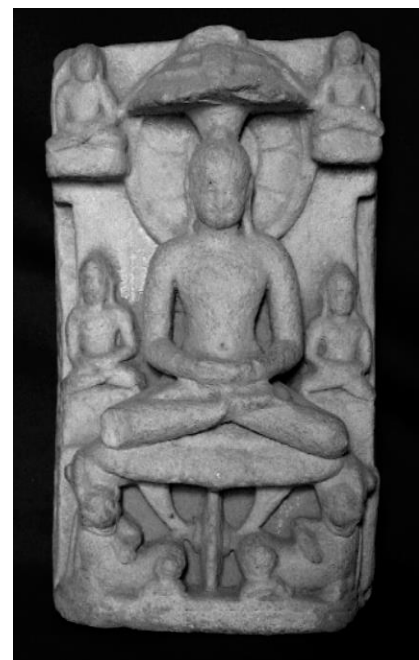
Sculpture of Buddha from Mordhwaj, Srinagar Museum

Department of history, culture and archeology, HNB Grahwal Center University also excavated the site in 1979 to 1981also found remains belongs to Buddhism. A statue of Dhiyan mudra Buddha was found from Mordhwaj. Mr. Fuhrer also mentioned pillars and other Buddhist architectural remains at the Dhikuli village (dist. Nanital) (Fuhrer, M.A.E,page 49)

Govisaan (Near Kashipur) is another place which is mentioned in details by Hiuen Tsang as **kiu-pi-swa-n,** translated by Julian **Govisaan** in Sanskrit. From the account of Hiuen Tsang that "More than hundred Hinyan monks are living in two vihar's, and there is more than 30 temples in the city. There is a Vihar and a Stupa made by Emperor Ashoka, in which nails and hairs of Buddha are placed.

This site is first excavated by Journal A. Cunningham in 1861; he confirmed the location of ancient city, one mile east at the destroyed Fort of Ujjain village from the present city 'Kashipur'. He measured dimension of the city in length 3000 foot in west and breath 500 foot in north-south. These measurements matched with the Hiuen Tsang description as circumference of the city 15 le (2.5mile). At present this place is known as 'Bheem Gada' (Cunningham; Archaeological survey report, part 1).

After Cunningham archeological survey of India excavated the site again in 1960, 1965, 1970, after the scientific examination of the bricks the history of the site goes more ancient in 2600 BC. PGW and many other Gupta period remains were found from the site. So we can say that the followers of both religions were living here happily till the 7th BC or may be early medieval era. *(Y.S Kathoch, Uttarakhand Ka Naveen Itihaas, page-23)*

Seeing the importance of the site, once again the mound was excavated under the direction of Mr. Dharamveer Sharma (former Director of ASI). This time the excavation was totally focused on Stupa and Physical remains (mentioned by Hiuen Tsang) belongs to Buddha and they really found a Stupa and a circular temple. *(History today, No 4 (2003); I. A. Review 2002-2003)* but did not get any physical remains of Buddha.

Another of this many sculpture related to Buddha and Buddhism are found in the different places of the state. Sonapani, sadulimutt stupa and their structural remains are also very important to proof that ancient time the places were occupied by Buddhist.

Existing Monuments

In the comparison of other parts of country, Uttarakhand did not have any ancient monument but in small we have something which is ancient and enough to say that at once Uttarakhand also had a huge number of disciples of early Buddhism. Buddhist monuments exist in Uttarakhand and we can categorize them as ancient and modern.

Ancient monument

Rock Edict (Kalsi)

The important Buddhist monument existing in Kalshi (Vikashnagar) is a Major Rock Edict placed by Emperor Ashoka. The edict was found by the British in 1860. That time locally people called it Chitra Shila because of an Elephant figure is inscribed on it. The site of Ashoka's inscription at Kalsi is the only place in north India where the great Mauryan Emperor has inscribed the set of the fourteen rock edicts. The language of these edicts is Pali and the script Brahmi, which reflect Asoka's humane approach is his internal administration, his fatherly concern for moral and spiritual welfare of his subjects, and his commitment to non- violence and abandonment of warfare. For this proclaimed certain restrictive and prescriptive policies. The essences of the restrictive policies are restraint in worldly amusement, in gratuitous slaughter or non-destruction of animals, in participating in despicable and useless beliefs and practices and in glorification of one's own faith. That of prescriptive ones: self-control, purity of mind, gratitude, and firm attachment service to parents and ascetics, alms to Brahmins and Sramanas (ascetics), seemly behavior towards friends, relatives, acquaintances, servants and slaves, concordance in religious matters. The edict also mentioned the name of five Greek kings Antiochus, Ptolemy (philadelphus), Antigonus Magus and Alexander. Thus it has been possible to fix the date at about 253 BC. (M˙Crindle'Ancient India; and 1869; ASI. Dehradun)
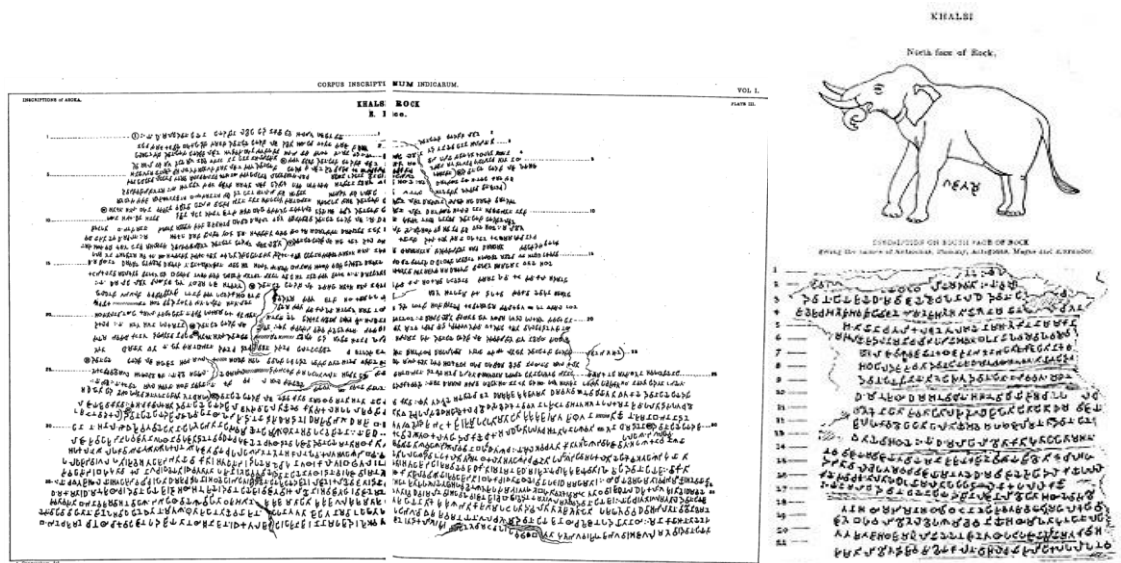
Ashoka's Rock edict, Kalasi, Vikasnagar Dehradun

Images of Kalshi Rock Edict by A. Cunningham

Nala Catti Stupa

A small stupa is located at Nalachatti in the courtyard of old Shiva temple near Guptakashi.Rudraprayag.Nalachtti was a famous resting place for on the walking trail of pilgrims of badrinath and kedarnath till 1955. First it is mentioned by Atkinson in 'Himalayan gazetteer' and again Rahul Sankrityayan mentioned it in his book 'Himalaya parichay 'Garhwal' .

Stone Stupa at Old Shiv Temple, Nalachatti, Guptakashi, Rudraprayag

Gopinath Temple Gopeshwar

One sculpture of Buddha in 'Dharma Chakra Asana' is present at Gopinath temple of Gopeshwar. Gopeshwer is located on the old walking trail of badrinath and Tibat. On the same trail at Tungnath temple also have Buddha sculptures in bhumi Sparsh Mudra.

Out of this many other remains or sculpture were found (Reetheshwar mahadev temple(kumaon), at Badahat-Sakyamuni; Srinagar-Alokiteshvar; Jakheta-Taradevi etc.)

Modern Development

In 1959 many refugees came to the state after the Chinese invasion on Tibet. Indian Government gave these people shelters and some land for their survival. Gradually they built some small temples and monasteries to preach and practice their religion.

According to censes 2011 the Buddhist population in the state is 0.15%. The 0.11% of this Buddhist population who are living in rural area is the resident of Uttarakhand and practicing blend of Buddhist and regional culture. 0.23%, who lived in urban areas like Dehradun are mostly refugees and practice Tibetan Buddhism.

Sakya Center Buddhist monastery

This is the oldest monastery of the state establish 1964 by the Sakya trizen in dehradun. The sakya center also establishes a Buddha temple in 1994. This is basically a monastic institute and its course of study is based on the traditional monastic educational system followed by monasteries in Tibet.

Sakya Center Buddhist Monastery Rajpur Road, Dehradun
(Images copied from goggle)

Mindrolling Monastery/Buddha temple/Buddha garden

Buddha Temple; Rajpur Road; Dehradun
(Images copied from Google)

The monastery was built in 1965by his eminence the Kochen Rinpoche and a few other monks for the promotion and protection of religious & cultural understanding of Buddhism. The monastery is built in Japanese architecture style and located in mohabewala, clement town, dehradun, known as Buddha garden and Buddha temple. It is believed to be the largest Buddhist reliquary in Asia. The temple is 220 feet in height and has five floors that enshrine statues Uru Padmasambhava. First three floors provide mesmerizing experience with eye catching ornate wall paintings. These illustrate Lord Buddha's life and the paintings are painted in pure gold color and about 50 artists took over three years to paint these intricate paintings. 103 feet statue of Lord Buddha is another attraction of the temple.
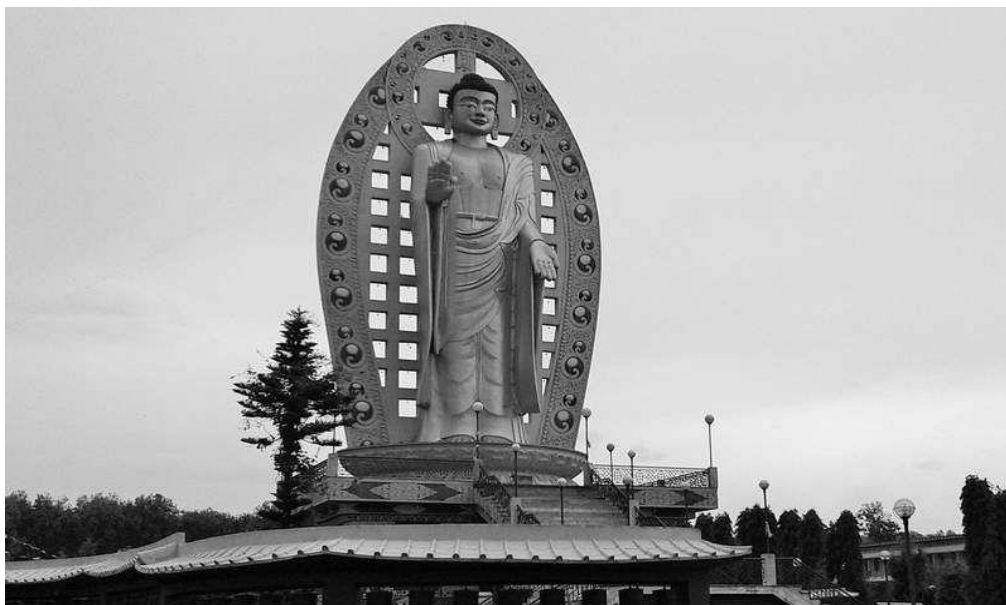
Mindrolling Monastery and Buddha Statue; Clement town; Dehradun
*(*Images *copied from Google)*

Conclusion

Uttarakhand has ancient, modern and a mix of Hinduism and Buddhist culture forms which have been practiced continuously from ancient era to the present. Yes, there is an absence of Buddhism noticed after 9th-10th century. Many historians believe that the Sankar Acharya's Hindu mission is the main factor for this but we have evidence that people of the state were practicing Hinduism and Buddhism equally and peacefully at the same time (Hiwen Tsang). Sankar Acharya had visited Badrikashram in 7th century AD at the time of King Ishtagan Dev (788-820AD), the king of Kartikeypur and they were followers of Vedic religion, means they were equally tolerant for the all religions till his son King Lalitshur Dev (832-856 AD) rule the kingdom. Though proudly calling themselves "Parammaheshvaram" or "Parambrahmparayan". So, it is not convincing that forcefully Buddhism was wiped out. We have only evidence in which the king is saying himself enemy of the Buddha "Parambuddhashramanripu" (Bageshwar stone inscription King Bhudev dev; 9th century AD) (Y.S Kathoch). Concluding all the historic and archaeological evidences we see that Buddhism flourished in this hill state since the Emperor Ashoka to till 9th Century AD. After 9th century a repulsion started towards Buddhism and the result is that all the Buddha Vihara and temples were evacuated totally till 11th-12th AD. But we cannot say confidently that there is no influence of Hinduism in the disappearance of Buddhism from this Himalayan region. Now, this is the right time to explore the region to collect the more valuable addition in the history of Buddhism in this beautiful and spiritual region of Himalaya.

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Stone Age Archaeology in Bam Locality of Indian Siwalik Hills, Bilaspur District of Himachal Pradesh

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Abstract

India witnessed the early story of hominoid evolution in the late Miocene sediments of Siwalik Hills of north western sub Himalayas. In this region, prominent evidence of wide spread hominin occupation since the Middle Pleistocene has been reported which indicates varied patterns of land use and intra regional mobility. The Paleolithic evidence in this north western sub Himalayan foot hills is a perennial issue in the search for human origins. Hominin occupation of this area has been traditionally derived into two types: the Acheulian and the Soanian. Acheulean assemblages are less common than Soanian and are usually represented by small numbers of cleavers or hand axes. In this region The Soanian, rich in cobble tools, occurs into two faces- one dominated by flake production and representing Middle Paleolithic and other dominated by shaping of choppers with, at places, specimens recalling Hoabinian types of Late Pleistocene. Flake appears to be an inseparable component of the Soan element. Soanian industry represents some of the highest concentration of Paleolithic assemblages in the old world. Most of the Paleolithic Stone Age localities of Himachal Pradesh yield Soanian assemblages and they have lack of Acheulean implements which have been reported from various districts such as Kangra, Solan, Sirmaur etc. but the Paleolithic archaeology of Bilaspur district however remained unexplored. The present study has been done in the Bam locality of Ghumarwin Tahsil of Bilaspur district. Findings from the field suggests that, it is one of the rare occurrences in Himachal Pradesh prehistory where a good number of Acheulean implements have been recovered along with Soanian ones from such an area which is well known as Soanian cultural zone. Together with industrial nomenclature, typological nomenclature also went through considerable change. Lithic findings also suggest that the prehistoric people of this region probably had multiple purposes or specialized functions.This paper attempts to throw light on the Stone Age cultural remains of this unexplored area to get a better understanding about its nature under the backdrop of raw material availability and exploitation. This new finding would have important implications in understanding the social, cultural and behavioral interactions between two groups of prehistoric people in this Siwalik landscape.

Keywords: Indian Subcontinent, Siwalik, Bam, Ghumarwin, Acheulian, Soanian, Stone Tool technology, Raw Material, Stone Age Adaptation

Introduction

The Indian subcontinent occupies the major landmass of South Asia. The subcontinent plays a pivotal role in any discussion of out of Africa dispersals given to its central geographic position between western and eastern Asia and its low land position. Its physical distribution of mountain ranges and arid zones have influenced hominin colonization and dispersal patterns through time. The Himalayas, a mountain range in Asia, have a profound effect on the climate of this region, helping to keep the monsoon rains on the Indian plain and limiting rainfall on the Tibetan plateau. The Himalayas have profoundly shaped the cultures of the Indian subcontinent from the remote past. Moreover the basins of the subcontinent have particular spatial boundaries and this would have influenced Paleolithic occupation of the region. Most importantly however, the Indian subcontinent is well known for its prominent monsoon regime, which has been in existence since Miocene times and no doubt must have had major implications on the patterns of human evolution and behavior during the Pleistocene. The Asian-Indian monsoon is one of the most important features of planetary atmospheric circulation and it must have played a role in changing hominin adaptations. During the Quaternary, the intensity of the monsoon over the Pliocene and Pleistocene, sedimentary records show some uniformity in geomorphic processes, phases of deposition and erosion and formation of laterites and ferricretes has surmised that hominins had to adopt to seasonal changes in the monsoon suggesting that settlement was marked by wet season dispersal of groups and dry season aggregation of groups hear spatially limited water sources. The geographical significance of this area which lies directly between Africa to the west and south-east Asia to the east is one of the important locations in the world from where the oldest *Homo erectus* specimens have been reported. But the geographical significance in understanding old world hominid dispersal patterns cannot be overstated particularly since it has received less paleoanthropological attention that most regions in the old world. Recent findings of hominins from central Asia and Indonesia have further increased the importance of the Indian subcontinent because it is positioned at the cross-roads of human evolution and dispersals. For prehistoric archaeology, the most significant fact of this region is that is straddles the Movies lines and represents the eastern most domain of rich Acheulean (Mode-2) localities. Finally this immensely rich source of prehistoric evidence plays a central role in understanding the evolution of the genus 'Homo' in Asia. Considering the vast landmass of South Asia, varied physiographic and mosaic of ecological conditions suitable for adaptive radiation, the scores of early hominoid fossils are not very illuminating. The situation is an unimpressive one when compared to that of the other fossil bearing countries. But whatever hominoid primate fossil records are available in the subcontinent, the sole credit goes to Siwalik.

Siwalik Hills and its Special Reference to North – West India

The Indian Himalayan region is the section of the Himalayas within India, spanning the states of Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Sikkim, Arunachal

Pradesh as well as the hill regions of Assam and West Bengal. The Indian Himalayan range is composed of three units- (a) the Higher Himalayas towards of Tibet plateau, (b) the lesser Himalaya, (c) the sub-Himalaya or foothills. The higher Himalaya consists of metamorphic rocks of low and medium pressure and magnetic rocks. The lesser Himalaya is constituted of metamorphic rocks with an increasing upward metamorphic grade and intrusions of ambhilotites, granites, pegmatites (coarsely crystalline granite or other igneous rock with crystals several centimetres in length) and presence of quartz. According to Mahapatra (2007), lithologically and ecologically the sub-Himalaya presents three zones- (i) the Siwalik frontal range (abruptly rising above and bordering the Indo-Gangetic plains), (ii) the Dun (a series of flat-bottomed longitudinal structural valleys with well-developed terraces and (iii) the lesser Himalayas piedmont against which about the terraces of Duns. The Siwalik frontal range is about 2400kms long extends from the Potwar Plateau (Pakistan) to north-east India and further extended to Mayanmar which constitute the south-western border of Himalayas.
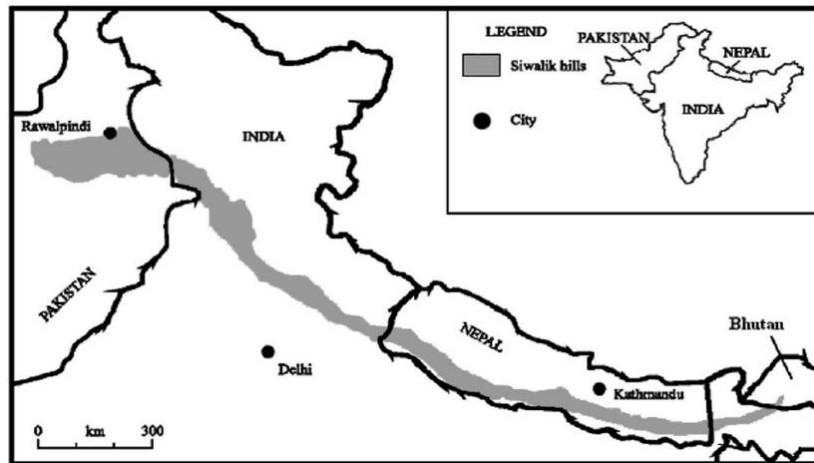
*Image – 1: The map showing Siwalik Hills and its geographical distribution
(Source: Khan, A.M., Aktar, M. and Ikram, T., 2012)*
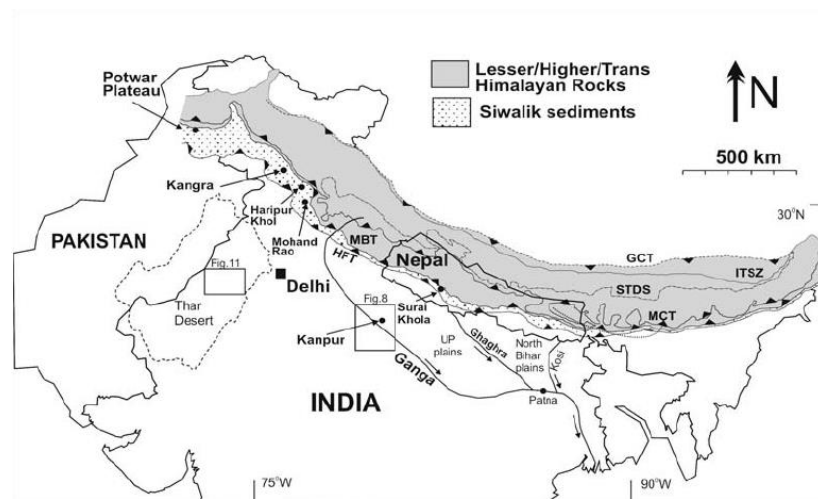
Image -2: The physical map showing the geographical extension of the Siwalik sediments (Source: Sanyal, P & Sinha, R., 2010)

Geologically the Siwalik represents clastic sediments of the nature of fresh water molasse which accumulated in a long narrow foredeep formed to the south of the rising Himalayas which had its inception in the third and most intense uplift during the middle Miocene to Middle Pleistocene in age. Structurally, the Siwaliks have been folded and over thrust to the south by the lower Tertiary formations which in terns are thrust over by the pre-Tertiary within the Siwalik basin itself, frequent reversals of the stratigraphic sequence has been brought about by thrusting.

The Siwalik Hills or the Siwalik foreland basin consists of fluvial sediments. These hills were formed during the period from 14 million to nearly 500000 years ago. The Siwalik foreland basin is an active collisional foreland basin system that developed adjacent to the Himalayan mountain belt in response to the weight of crustal thickening when the Indian plate collided and subducted under the Eurasian plate. With a width of 450 kms.(280mi.) and 2000 kms.(1200mt.) long, the foreland basin span to five countries which include India, Nepal, Pakistan, Bhutan and Bangladesh. Sedimentary rocks records gathered on the greater Himalayan area surrounding India and Nepal traces back to the onset development of the foreland basin which started at Paleogene period around 45-50 Ma. to the time where India and Asia collided. The various stratigraphic succession of the basin is important as it preserves the evidence of the India-Eurasia collision as well as relating it to the Himalayan Orogenesis. The importance of stratigraphy of the Siwalik foreland basin is unparalleled due to its significance on development of the basin throughout the geological time. The foreland basin consist of fluviate sediments deposited by hinterland rivers flowing south words and south-westwards (Gill, 1983) from the lesser and grater Himalayas, when south of these mountains were originally a vast depression or basin (referred to as the foredeep) (Brozovic and Burbank, 2000). The sediments of the Siwalik Hills are divided stratigraphically into lower, middle and upper sub groups which are further divided into individual formations that are all laterally and vertically exposed in varying linear and random patterns- Kamlial, Chinji, Nagri, Dhok Pathan, Tatrot, Pinjore and lower and upper Boulder conglomerate formation (BCF) (Randell et.al. 1989; Chauhan, 2003; Kumarvel et.al., 2005).

SUB-GROUP	FORMATION	Corvinus & Rimal, 2001 (ma ago)	Prasad, 2001 (ma ago)
Upper Siwaliks	Upper Boulder Conglomerate	5.9 - ?	0.9 - 0.2
	Lower Boulder Conglomerate		
	Pinjore		2.4 - 0.9
	Tatrot		5.1 - 2.4
Middle Siwaliks	Dhok Pathan	7.9 - 5.9	10.8 - 5.1
	Nagri	10.1 - 7.9	
	Chinji	13.1- 10.1	
Lower Siwaliks	Kamlial	--	18.3 - 10.8

Image – 3: Stratigraphical division of Siwalik Sediments (Source: Chauhan, 2003)

The Siwalik Hills of the north-west India offers scientists well preserved bodies of multidisciplinary evidence to understand human evolution and behaviour in relation to changing environment. Neogene strata in the Siwalik range of Northern India and Pakistan are exposed in a huge are at the foot of the Himalayas extending from the Indus River to the Bramhaputra. In this vast fossiliferous region, provides one of the most complete successions of mammalian fossil faunas in the world. Siwalik fossils are preserved in a variety of fluviate sedimentary situations. The Indian Siwalik is well known for their remains for their remains for fossil primates. The fossil remains of anthropoid apes of Indian Siwalik region are broadly distributed in the time span between middle Miocene to early Pleistocene. Fossils including large hominoids such as Sivapithecus and Gigantopithecus, have been collected from the Siwalik intermittently since the early 1800s. They all flourished in the Siwaliks more or less at the same time. Gigantopithecus is a fossil pongid whereas Sivapithecus could be reasonable model however disappeared from the Siwaliks when the region experienced a cooler climate during the time from 8 to 6 mya. Other fossil remains from this part of Siwalik are small mammals include Tree shrews, Shrews, Hedgenogs, Squirrels, Gundis (Clenodalylids), Dormice, Bamboo rats (Rhizomyines), Hernsters, Gerbils and in the late Miocene Porcupines and Rabbits, typical carnivores, Felids, Vive rids, Creodents (until early late Miocene), Lorises, Hipparionine horse (Late Miocene onwards), Rhinocerotids and Proboscideans, Chalicotheres, Suoids, Anthracotheres, Giraffids, Tragulids and many bovid groups. Certain archaic lineages persist later here than elsewhere in the old world for example, creodonts and sivaladapids. A few rare lineages are also present such as diatomyid rodents as well as bats, reptiles and birds, but preservation is so uneven for these groups that temporal ranges of genera are unknown, some mammals that are characteristic of other geographic regions. Such as cervids and ursids, appear in the Indian subcontinent only in the last few million years. Many of the large mammals groups have not been revised for many years, although primates and hipparions have had diverse alteration.

The Siwalik Hills are known for their remains of fossil primates, which made them known worldwide as one of the most important evolutionary centres of the sub – Human primates. India witnessed the early story of hominoid evolution in the late Miocene (c. 13 – 5.5 myr.) sediments of the Siwalik Hills of the north-western sub-Himalayas. The Siwalik is well known for the remains of the fossil primates which made it known worldwide as one of the most important evolutionary centres of sub-Himalayan primates. In the Siwalik region of Indian Subcontinent there is evidence of hominin occupation since at least the Middle Pleistocene period which is found from various eco – geographic regions of North –Western India as well as from Pakistan. Paleolithic sites of these regions have been traditionally derived into two types such as – Acheulean and Soanian which are found in the form of sites, site complexes, find spots and numerous surface scatters. In view of the wealth of the Pleistocene mammalian fossils and Pleistocene tools of different periods, the region has received attention of the archaeologist, geologist, prehistorians and anthropologists alike.

Review of the Literature

Quaternary investigations have been conducted for over nearly a century now in the region of sub-Himalaya. Such research studies pertaining to the geological and environmental events revealed the intimate relationship between the sub-Himalaya and the Himalayan regions. The first truly comprehensive Quaternary study of the Himalaya and the adjoining foot-hills and plateau in association with artifactual evidence was carried out by De Terra and Patterson in the Kashmir, Potwar and Jammu areas under the aegis of Yale-Cambridge expedition of 1935(de Terra and de Chardin, 1936; de Terra and Paterson, 1939). Remarkable both in its interdisciplinary collaborative aspects as well as in the substantial results, there has become a standard work of reference against which all subsequent per-historic researches in the subcontinent have become measured. Even De Terra himself used this study as a standard reference for elaborating his observations regarding the lithic culture complex in the valleys of the Narmada and the Kortalayar (South India) during the course of the same expedition. This British-American team was also responsible for assigning cultural labels to some of these lithic assemblages as 'Soan' or 'Soanian' (Hawkes et al., 1934; Movius, 1948) and 'Soan Flake Tradition', and broadly placed their origin in the middle Pleistocene (Dennell and Hurcombe, 1993). Paterson's observations on the terrace sequences and associated surface assemblages in the Soan valley of Pakistan, led him to believe that several technological existed within the Soanian (Paterson and Drummond, 1962) and were thought to be a result of glacial and inter-glacial period. Much later, a detailed analysis of the lithic evidences obtained by this expedition from the Soan valley was brought out by T.T.Paterson and H.J.H. Drummond (1962). Before Yale-Cambridge expedition the first evidence of the presence of early man in the western sub-Himalaya was recorded by Wadia (1928) and subsequently by Todd (1930). Although these were the form of sporadic discoveries of occasional stone tools, they, viewed with the Quaternary glaciological studies in the Himalaya carried out by Dianelli (1922), were in fact the primary stimulus for the detailed investigations planned and carried out in the Himalaya by the Yale-Cambridge expedition; the Indian National Council led an expedition to Karakoram in 1954. Under the aegis of this expedition P. Graziosi (1964) discovered and analyzed quite number of lithic artifacts and sites in north-western Punjab (Pakistan), which is another milestone in the research on early man in the western sub-Himalayan region and adjoining areas. Following De Terra and Paterson's work, a number of lithic localities have been brought out to light in the Indian part of the sub-Himalaya after the partition of India in 1947. The first in this direction is the investigation carried out by Olaf Prufer (1956), who discovered a number of Stone Age sites in the valley of Sirsa within Pinjore- Nalagarh dun while searching for extension of the Harappan civilization in the Sutlej valley. D. Sen (1955) published a detailed account of his observations in the field regarding Prufer's sites and analyzed the lithic artifacts from this area, namely around Nalagarh. Although Sen equated the Nalagarh lithic industry with the early Soan of West Pakistan, Mahapatra (1966, 1974a, 1976) has argued in favor of Soan because of its developed characteristics both chronologically and typo-technologically. Y.D.Sharma (IAR 1954-55) of the ASI picked up a few pebble tools from Daulatput area which

incidentally happen to be the first conclusive proof of the presence of early man in the Soan dun towards Beas River. Almost simultaneously, B.B. Lal of ASI led an expedition and explored valleys of the Beas and the Banganga in the Kangra valley of Himachal Pradesh. In his report Lal (1956) studied the terraces of the Banganga around Guler and tried to fix the horizons of the implement bearing deposits. Besides he also noticed the occurrence of paleoliths in Kangra, Dehra and Dhaliara situated upstream, to the north and west Guler. Others who have since then worked in this area including Khatri (1960), Krishnaswami (IAR, 1964), Archaeological Survey of India (IAR 1965-66; 1968-69; 1969-70), Mahapatra (1966; 1974a; 1976), Mahapatra and Saroj (1968), Joshi (1970), Sankalia (1971), Joshi et.al (1974) etc. Saroj (1974) had investigated the Jammu region between the Chenab and the Ravi which is in fact an extension of De Terra and Paterson's work in Potwar in the west and Lal's and Mahapatra's work in Kangra in the east. He discovered sixteen sites and designated various lithic industries as Jammu A, B, C and D which correspond to all the Soanian industries. In addition, he also recorded the find of some Neoliths from this area (Saroj, 1974). Joshi et al (1975) noted sub-triangular point on quartzite flake along with small choppers on pebbles from the Saketi area of Markanda valley of Himachal Pradesh. Joshi et al. (1978) have recommended evolution of the Paleolithic industries and their stratigraphy independently without tagging them with the successions as worked out by De Terra and Paterson (1939) in the Soan valley. The reported discovery of hand axe and chopper industry from Pahalgam in the Kashmir basin in association with derived glacial boulder clay deposit has created considerable interest in that region (Sankalia, 1971; Joshi et al., 1974). The primary insitu position of the paleoliths recovered from Kangra valley terraces is yet uncertain, although large collections have been made during an excavation conducted on the third terrace of the Beas at Dehra Gopipur (Mahapatra, 1966). However the collections of the paleoliths made by different scholars at different times and places in the Beas- Banganga basin show choppers at the most dominant tool type, in which the unifacials occur in great strength than the bifaces. The presence of unifacial choppers in large number rather unique in the sub-Himalaya because in the Acheulean industries of India the choppers generally accompanying hand axes and cleavers are usually bifacialy worked. In view of the fact that most of the collections made at Guler on the Banganga chopper group should be distinguished as a separate entity and distinguished as Guler industry. Mahapatra (1974a), in a critical survey of the entire mass of prehistoric cultural evidences from Himachal Pradesh, distinguishes Nalagarh industry from that of the Beas- Banganga valley primarily on the basis of many advanced features inclined to consider Beas- Banganga and Sirsa Valley namely the Soan or the pebble –tool culture of the Indian early Stone Age. The Sirsa valley industry according to him is a developed manifestation of the Beas-Banganga industry which undoubtedly is earlier in age. Therefore he equates the Kangra valley industry with the early Soan and that of the Pinjore- Nalagarh dun with the late Soan. The lithic complex of the Chikni valley, adjacent to the Pinjore- Nalagarh dun, is exactly similar to that of the Sirsa valley and in view of their contiguity Mahapatra and Singh (1979) consider the former as part and parcel of the later. Sharma (1977) reported Acheulean bifaces from upper Siwalik deposits near Chandigarh however Mahapatra (1981) later challenged the stratigraphical

position of the artifacts. Although R.V. Joshi (1967-68) also reported Acheulean artifacts in the adjacent Kangra region in Himachal Pradesh, these were later classified as being non-Acheulean in morphology from a re-analysis by Joshi himself (Karir, 1985). During 1981 Khanna recovered few stone implements from Saketi area of Himachal Pradesh. Though it was a sporadic finding but this study had given impetus to researchers to find out more sites in this area. During the mid of 1970, the first Acheulean site (Atbarapur) in Indian Siwalik has been discovered by Mahapatra (Mahapatra, 1981, 1990; Mahapatra and Singh, 1979). It is one of the important Acheulean sites in Siwalik zone (Indian) from where the largest collections of Acheulean artifacts have been reported. The artifacts from Atbarapur provide important information regarding the technological behavior of the Acheulean people of the Punjab plain. Chauhan (2007) reported a new Soanian locality Toka from Sirmaur district of Himachal Pradesh and the study signifies the typological diversity within the Soanian industry and its technological organization is known to be more complex than previous thought. When compared with other Soanian sites in the Siwalik region in general, Toka maintains more differences than similarities. For example, it is the richest known paleolithic site to date from a geographical perspective; Toka is more comparable to the sites on Siwalik frontal slopes in association with post Siwalik streams and terraces than elsewhere in the region. Since 2009, a group of archaeologists under 'Indo-French Prehistoric Mission' has surveyed the Siwalik frontal range near Chandigarh and highlighted a dozen of Stone Age localities on the outcrops where artifacts in quartzite occur with fossil bones, in which a few show butchering marks (Gaillard et al., 2016).

Himachal Pradesh, a state of north-west part of India is well known 'Dev Bhumi' but hardly a few know that it is the most ancient 'Adam Bhumi' too and a centre of origin of human lineage and mammals. It was William Buckland who first recorded Himalayan fossils in 1823. The first occurrence of Soan pebble industry in Himachal Pradesh Siwaliks has been reported from district Kangra (Lal, 1956; Joshi, 1979) and from the Sirsa terraces of Nalagarh dun (Sen, 1955; Karir, 1985). Many Soan pebble industry sites have been found in the Beas valley and its tributary – Banganga at viz. Guler, Haripur, Kupar, Lehr, Nakehr Khad, Dhawla, Thor Khad, Chunar Nala etc. The archaeology of Bilaspur region however remained unexplored. In this region very few researchers (Sankhyan, 1979, 1983) have done their works. In the Ghumarwin area of Bilaspur, the Soanian occurrences were for the first time reported by Sankhyan (Sankhyan, 1983). During his study he has reported a number of choppers, scrapers along with flake tools. Later on he has collected several artifacts (mostly Soanian) from in and around Ghumarwin (Sankhyan, 2017). These collections give some valuable information regarding the technological understanding of both Soanian and Acheulean artifacts of this region.

Material and Method

Present study has been done in Bam village ($31^032.988'$ N; $076^042.579'$ E) at Ghumarwin area at Bilaspur district of Himachal Pradesh. It is located 70 km from the

state capital Shimla. The village is surrounded by Jhandutta Tehsil towards south, Bijhri Tehsil towards west, Bilaspur towards south and BhoranjTahsil towards north. The site is situated in the village Bam. The site is located at the close proximity of the river Seer Khad (tributary of river Sutlej). The elevation of the site is 663m above MSL. This tributary of the Sutlej travels through the district of Bilaspur. The total length of Seer Khad is 35 km and average width is 150m. It lies at latitude of $31^026.59'$ (N) and longitude of $76^043.11'$ (E). Sheer Khad is the main tributary of river Sutlej at Ghumarwin.
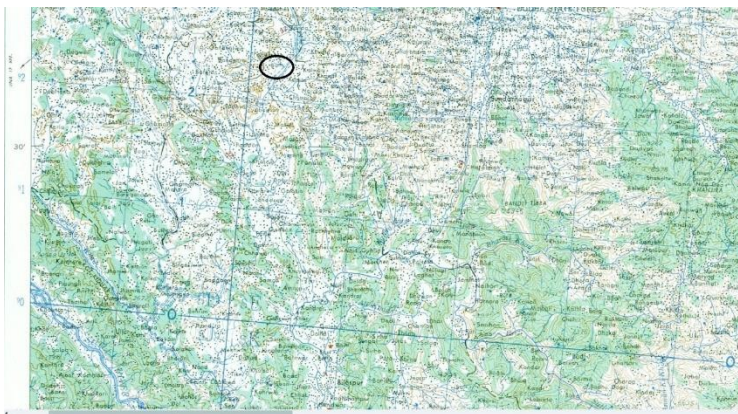

Image–4: Google Earth image locating the site Bam

Image –5: Topography map (NH 43-4) showing the location of the site – Bam (in black circle)
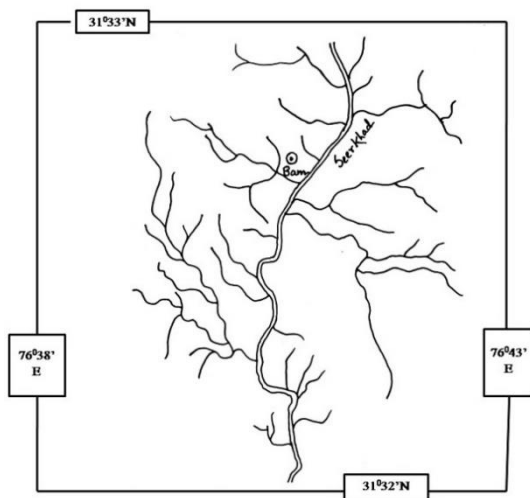

Image – 6: Site map of Bam

Image –7: River Seer Khad at Bam

The study area is selected because of a few reasons such as (a) the study area lies in Ghumarwin area of Siwalik frontal range is an important geographical part of Himachal Pradesh. (b) The Seer Khad River and its surrounding area areas must have formed an equally important region in the past due to its strategic location, topography, geography and suitable ecology for the prehistoric settlements. (c) Nowadays the stretches between Bilaspur to Ghumarwin (in which the study area lies) are under threat due to developmental work such as road and bridge constructions as well as agricultural activities.

The objectives of the present study are as follows - (a) to understand the nature of the site and its potentiality, (b) to understand the nature of the stone age artifacts of the site and its technological orientation, (c) to understand the local paleoenvironment from the naturally exposed sections in and around the site, (d) to develop an understanding towards the typo-technological and morphological attributes of the stone age artifacts of the studied area, (e) prehistoric strategies and adaptation of stone Age people to the local Quaternary landscapes and environments by analysing the different lithic assemblages and associated sedimentary contexts. In addition the another aim of this study was to recover (in a systematic manner) most of the paleoanthropological remains of the study area before these valuable remains are damaged due to ongoing development work between Bilaspur and Ghumarwin area of Himachal Pradesh.

The present study relied extensively on large scale field survey in and around the site. Preliminary surveys were undertaken as a part of the reconnaissance phase of the study, using the available literature, geological and typological maps and guidance from previous works in the region. Pedestrian surveys were undertaken in the potential zones which were identified as a result of the reconnaissance phase. A random sampling from the superficial scatter of artifacts from in and around of the site was undertaken to enable a typo-technological analysis to understand the character of Stone Age artifacts of this region. A primary stratigraphy was established from the exposed sections. Satellite imagery and detailed geological maps were used to better locate the site in a geological context and to identify other features of importance.

Physiological and Geological Context of the District Bilaspur

The district of Bilaspur lies between $31^0 12'30^0$ and $31^0 35'45^0$ north latitude and between $76^0 23'45^0$ and $76^0 55'40^0$ east longitude in the outer hills of the Himalayas next to the Punjab plains and forms a part of the basin of the river Sutlej which flows meandering across it for about ninety kilometers. River Sutlej is the largest river among the five rivers basing of Himachal Pradesh. The River Sutlej basin divided into 11 sub basins. Sutlej rises from beyond Indian borders in the Southern slopes of the Kailash Mountain near Mansarover Lake from Rakas Lake, as Longcchen Khabab River (in Tibet). It is the largest among the five rivers of Himachal Pradesh It enters Himachal at Shipki (altitude = 6,608 metres) and flows in the South-Westerly direction through Kinnaur, Shimla, Kullu, Solan, Mandi and Bilaspur districts. Its corse in Himachal Pradesh is 320 km.

After passing through Mangal area of Solan district and Suket area of Mandi district, it enters Bilaspur at village Kasol in pargana Sadar in the north-east. Its total catchment area in Himachal Pradesh is 20,000 sq. km. The district is bounded on the north by Mandi and Hamipur districts on the west by Una district, on its south lies Nalagarh area of the Solan district. It is encircled on east and north-east by Solan and Mandi districts. The district is divided into two natural parts formed by Sutlej River. The river flows from east to west with a large bend midway and divided the district into two approximately equal parts; the part, on the right bank being termed 'parla' (trans) and that on the left, 'warla' (cis). These natural divisions have been utilized for the formation of the tahsil-parla becoming Ghumarwin tahsil and the warla Bilaspur (Sadar) tahsil. Each of the two tracts so formed stands naturally further sub-divided into side valley of stream, sub-valleys of streamlets all enclosed by hills of varying altitudes. The entire area of the district, therefore, presents a picture of a mixture of hills alternating with dales. On its extreme west is Dhar Kathar and further to the east is the Naina Devi range. These two hills lying north to south with the river in between provided in the bygone days, when wars were regular feature, three natural lines of defense. But the valley between the Bandia Hill and Ratanpur presented, as it still does, a more exposed area, leaving a gap, a convenient traversing ground for the marching armies from the south-east. The district is mostly hilly and has no mountains of higher altitude from the mean sea level. The elevation of the lowest point is about 290 meters and that of the highest is about 1980 meters. The configuration varies from almost flat land along the bank of Sutlej River and the valleys, to extraordinarily broken land of pargana Kot Kahlur and pargana Ajmerpur and precipitous slopes of the main ranges. There are seven main ranges which constituting the hill system.
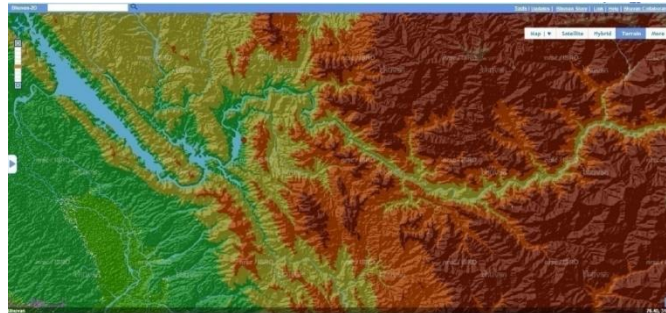
Image – 8: Satellite image of terrain morphology of
Bilaspur district and its surroundings (Source: ISRO

Most of the soil of the Bilaspur district is somewhat sandy which is intermixed with patches of stiff clay. As a major portion of the district adjoins Hoshiarpur district, and, Siwalik range runs through it, the following geological description of the district are –
The rock-facies to be met within Bilaspur fall into two broad stratigraphical zones; such as
(1) The outer or sub-Himalayan zone composed of sediments for the most part of Tertiary age but including sub-recent deposits.
(2) The central zone comprised of granite and other crystalline rocks.

The most important sub-divisions of the former zones are known as Sabathu, Nahan and Krol. Mostly the outer hills are conglomerates, sandstone and soft earthy beds but the rock on the northern side of the boundary consists of lime stones wherein some fossils are found, especially in the Haritalyangar area. Bilaspur is mostly covered by the foothills of the Himalayas except the eastern most portions which are formed of the hills which are grouped with lesser Himalayas. Geographically, most of the area is covered by comparatively younger strata representing the Tertiary and Quaternary rocks and it is only in the eastern portion that the older rocks belonging to earlier period are found. The older formations have thrust contact with the Tertiary. The following table gives the geological sequence in this area (District Gazetteer, Bilaspur).

Chart – 1: Geological sequence in district Bilaspur, Himachal Pradesh (Source: District Gazetteer, Bilaspur)
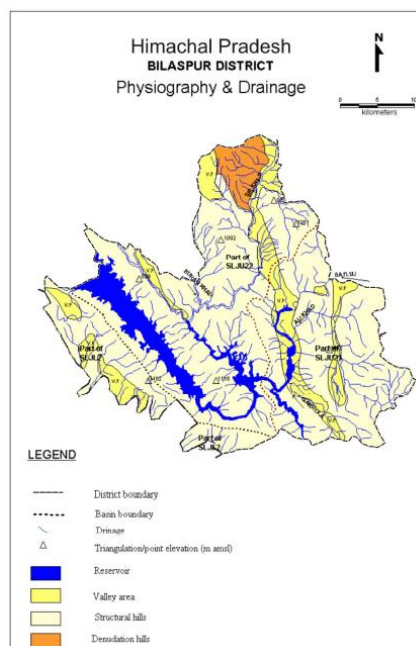
Image – 9: Physiology and Drainage of Bilaspur district (Source: District Ground Water Brochure, Bilaspur District, Himachal Pradesh; Central Ground Water Board, Govt. of India)
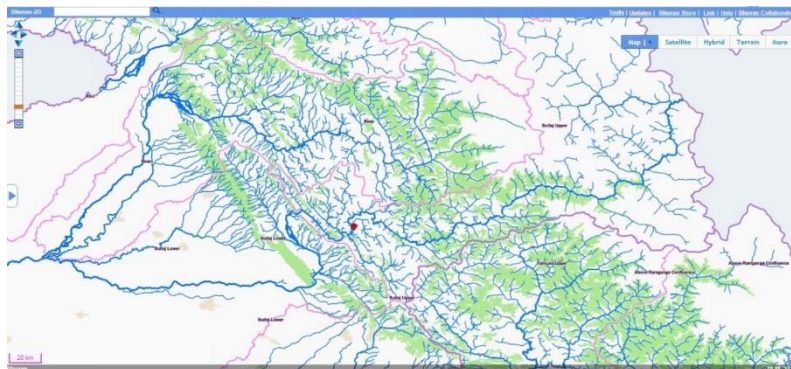
Image – 9: Satellite image of the hydrology of Bilaspur district (red dot) and its surroundings (Source: ISRO Bhuvan SCATSAT -1 Satellite)

Geomorphological Investigation

During fieldwork various aspects of geomorphology have been studied. Special attention has been devoted to the study of some outstanding features like geomorphic units, relief, slope, surficial material, topographic texture, weathering drainage and deposition. The survey included visual observations in the field aided by the study of Survey of India topographic sheets of scale 1:50000. Samples of various grades of sand, pebbles, cobble and boulder were collected from in and around the studied locality that yielded artifacts in order to ascertain their origin, mode of deposition and paleogeographical conditions at the time of sedimentation. The field investigations were mostly concentrated on the Bam locality and its surrounding regions because of varied nature of structure, diverse morphological features, the wealth of fossil fauna and lithic artifacts.

The geomorphology of the studied area essentially comprised of several large middle Pleistocene and Holocene Himalayan piedmont alluvial fans and terraces. The terraces are located along the toe-edge of the fans and have been cut into them. All the basic geomorphic attributes are related to these two features which in terms are related both to the depositional and erosional processes as consequences of the tectonic and climatic events which had occurred mainly in the outer Himalaya. In absolute relief, there is a sudden drop from both north-east and south-west into the area. On the other hand, there is a gradual decline of the relative relief from north-east to south-west in the studied locality. The area being a moderately sloping tract comprising essentially of coarse gravels and subject to the modification brought by small amount of surface run-off, reveals little to the dramatic effects of mass-wasting and mechanical weathering which are so common in the adjacent Siwalik Hills. The studied locality and its surroundings are drained by various chos. The topographic fabric is very fine. Geological evidences of the area show that the drainage pattern had been developed during Pleistocene.

Stratigraphic Observation

In the studied locality, along with the course of river Seer Khad, three aggradational terraces have been observed. These terraces have been designated as terrace -1 (T-1), terrace -2(T-2), terrace -3(T-3).
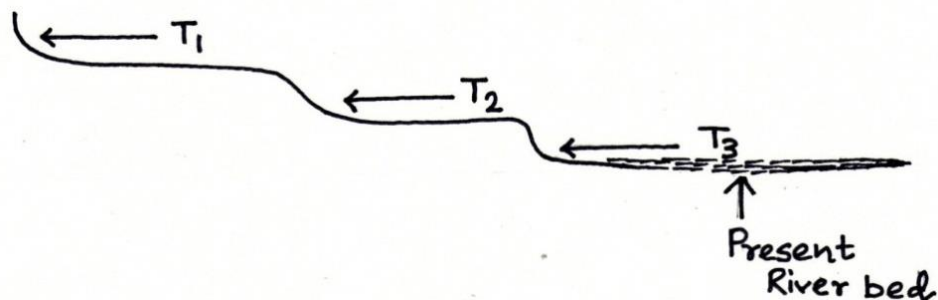
Image -10: Aggradational terraces at studied locality
(not to scale)

The top most terrace is (T-1) which is the piedmond zone of the sub-Himalaya cut by the Seer Khad. It represents the first major aggradational terrace about 25 feet in thickness formed by the erosion of the tilled BSF (Boulder Conglomerate formation of Upper Siwalik). A few in situ paleoliths were in the section but a number of them were lying at the base. The thickness of the exposed sections varies due to washout of the sediments. The sections are comprised of three main layers of the gravels, sands, silt along with red clay too and interspersed with boulders. Below the (T-1), there is terrace -2 which could have been about 20 feet but has been is gradually cut by the river in different phases and therefore descended down gradually up to recent channel bed. The top of the (T-2) is used as agricultural purpose by local farmers. The sections of (T-2) are exposed along with the Seer Khad and implementiferous. Terrace -3 or (T-3) is the boulder-cobble river bed of Seer Khad.
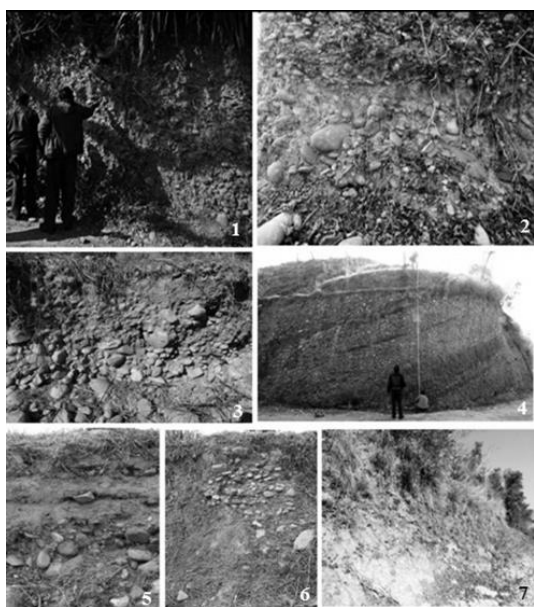
Image- 11: Few exposed sections in and around the studied locality

Archaeological Findings

During the present, cultural evidences of prehistoric past have been recovered from both surfaces both surface (through grid method) and few from in situ context. Altogether 385 artifacts were recovered from the studied area and among them 340 artifacts have been

selected for analysis. The total lithic assemblage is comprised of pounded and battered pieces (such as end-hammerstone, side-hammerstone and utilized clast), core and core fragment and chunk, various types of flake and flake fragment, split cobble, discoid, types of chopper, chopping tool, hand axe, cleaver, scraper, Acheulean peak, point and multi-functional pieces. The technological organization (Nelson, 1991) of the assemblage constitute a broad range of artifact types which can be easily recognized as being either flakes and flake based specimens or cores and core based specimens or detached and flake pieces respectively based on Isaac et.al (1981) typological framework. Their category of 'Pounded and Battered Pieces' applied to hammerstones and pounded but unflaked blanks or utilized clasts in this study.

Image – 12: Artifacts lying on surface

Image – 13: Artifact in an in-situ condition

SL. No.	Artifact types	Number	Percentage
1	Pounded and Battered piece	24	7.06
2	Core and core fragment	57	16.76
3	Flake	82	24.12
4	Discoid	26	7.64
5	Chopper	51	15
6	Hand axe	7	2.06
7	Cleaver	11	3.23
8	Scraper	22	6.48
9	Acheulean Peak	9	2.65
10	Point and Arrow Head	8	2.35
11	Multifunctional piece	43	12.65
Total		**340**	**100**

Table -5: Frequency distribution of the artifact types at studied locality
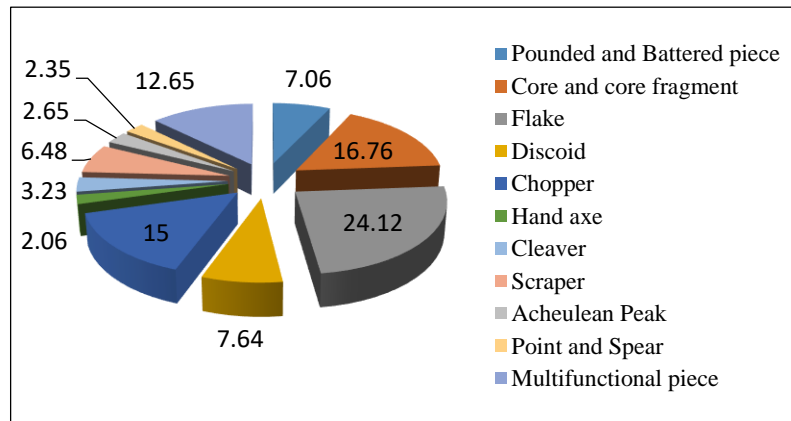
Image – 14: Percentage figures of Table -5
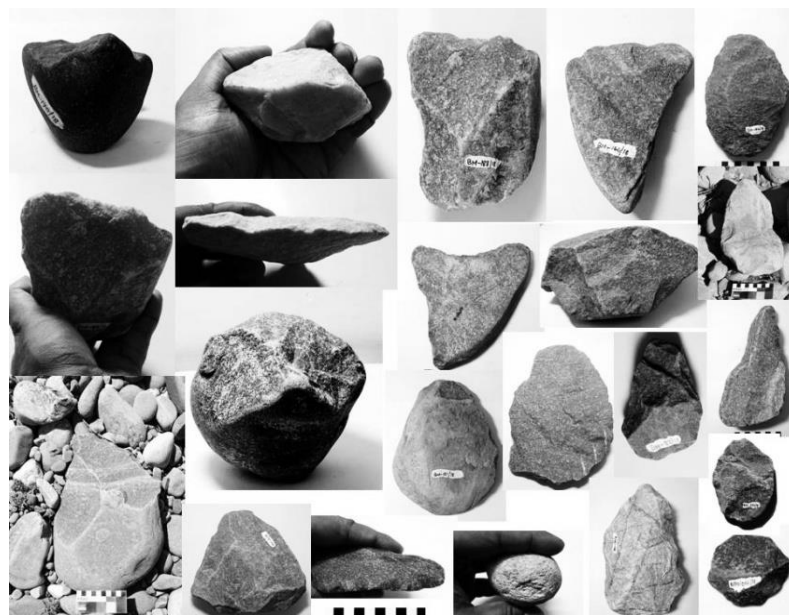
Image – 15: Some of the recovered artifacts from the site Bam

1.   Pounded and Battered piece

Altogether 33 Pounded and Battered pieces had been collected and among them 24 pieces are selected for analysis. This artifact type has been divided into two sub types which are as follows in a tabular form (Table no -6)

Pounded and Battered piece		
Sub Types	**Number (n)**	**Percentage**
Unutilized clasts	15	4.41
Utilized clasts	9	2.65
Total	**24**	**7.06**

Table -6: Types of Pounded and Battered pieces and their number and percentage

a. Unutilized Clasts

During the study many unutilized clasts (n = 15) were found on the surface and few from in-situ of the studied locality and at considerable distances from the stream bed of Seer Khad. These specimens have lack the indicative abrasive marks that often result from long term fluvial transport at Bam. The presence of unutilized clasts in proportion to flaked pieces is a normal feature at prehistoric sites, where raw material is minimally consumed, in relation to the initial quantity acquired (Brantingham, 2003).

b. Utilized Clasts

Some of the clasts have been considered as 'utilized clasts' which are the witnesses of human activity, for they show marks of percussion on the cortex. There are 9 artifacts of such type have been recovered from the study area. Utilized clasts of the site consist of end-hammerstone, side-hammerstone and pounded clasts. Small pits or small circles, lighter in colour, represent the roots of conical fractures resulting from the strokes have been noticed that on the surface of the clasts. The pitting and bruishing marks on these specimens suggest repeated bashing of the cobbles during flake detachment or as a result of utilization (Semaw, 2000). If the marks which found on clasts are not resulted due to river activity then it can be suggested that it is occurred on hammerstones for their subsequent use to produce other tools.

Image – 16: Few recovered Hammerstones
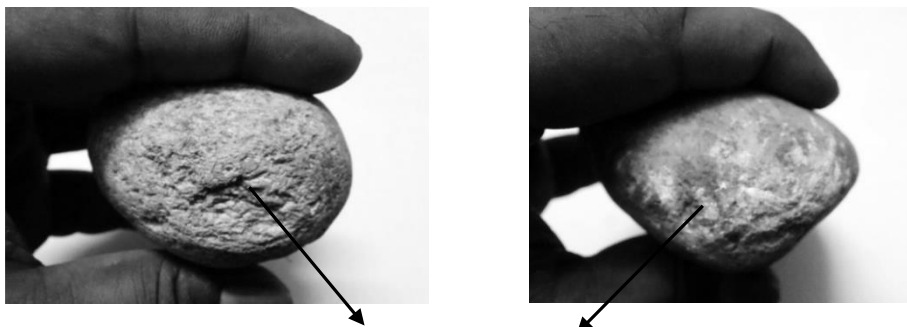
Image – 17: Mark of utilization

2. Core and Core fragment

57 cores and core fragments have been selected for analysis. Among them 18 cores of the studied locality clearly show some patches of cortex attesting that they are river cobbles or boulders. A few of them keep enough of their original shape and volume to show that they actually were cobbles (6 – 25 cm) rather than boulders (> 25 cm). As for the other ones, the convexity of the cortex remnants suggest that they were probably cobble too. It seems that some of the cobbles have been intentionally split into two parts before being turned into cores as they show remnants of flat or slightly convex surfaces in between the concave removal. The category of cores or flaked pieces according to Issac et al. (1981) includes cores, core fragments; in addition, core fragments and exhaustive cores (angular fragments/chunks) comprise 16.76% of the entire Bam assemblage. The mean weight of the artifact is 1.31 kg. There are mainly three types of core that have been reported from the site which are as follows (Table no -7).

Core and core fragment		
Sub Types	**Number (n)**	**Percentage**
a. Single platform core	16	4.7
b. Multi platform core	11	3.23
c. Bi-polar cores	3	0.89
d. Core fragments and Chunks	27	7.94
Total	**57**	**16.76**

Table -7: Types of Core and core fragments and their number and percentage
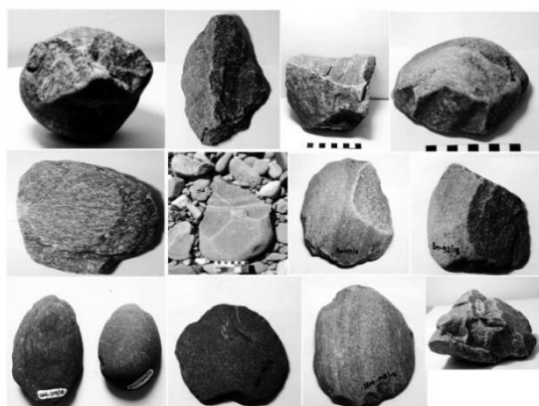
Image – 18: Different Core and Core fragments

a. Single Platform Core

The single platform cores (n= 16) exhibit unidirectional flake scars and generally provide a single platform plain or striking platform for unidirectional and sequential flake detachment.

b. Multi Platform Core

Multi-platform core (n= 11) represents over 3.23 % of all cores excluding core fragments. Flaking type is mostly sequential but multi directional. The majority of these clasts have been flaked randomly to obtain flakes of various sizes or types. Most of the Multi-platform cores are amorphous or lack bilateral symmetry. Although comparatively similar in morphology to the angular core fragments, they both differ from each other in terms of amount of flaking and location of flake scars. Half of the cores appear to be based on split cobbles and 40% show evidence of sequential flaking. At least 50% of the Multi-platform cores show minimal edge damage, possibly a result of rolling, sliding or temping.

c. Bi-polar core

Bi-polar cores are not prominent (n= 3) in this assemblage. The Bi-polar technique is usually employed when suitable raw material is available in the minimal quantities, resulting in the maximum extraction of the raw material from small clasts.

d. Core fragments and Chunks

Core fragments and chunks (n= 27) are approximately higher in frequency among the entire Bam assemblage. This category was established to accommodate amorphous fragments of broken quartzite clasts that do not conform to other standardized core form. They are comparatively smaller than Multi-platform cores in relative dimensions and generally possess lower portions of cortex and complete flake scars. The majority of the specimens also lack bulbs or any clear evidence of conchoidal fracture, key diagnostic features to recognize direct hard hammer percussion.

3. Flake

Altogether, 82 flakes (24.12% of entire assemblage) have been recovered from the site. The flakes are technologically categorized into side struck and end struck flakes and typologically divided into unretouched (n= 63) and retouched flakes (n= 19). The mean weight of the specimens is 0.468 kg. The artifact types and its percentage are given in table no- 8.

Flake		
Sub Type	**Number (n)**	**Percentage**
a. Unretouched	63	18.53
b. Retouched	19	5.59
Total	**82**	**24.12**

Table – 8: Types of Flake recovered from the studied locality

The dorsal face of most of the flakes (n = 54) is entirely cortical. Among the flakes, especially large flakes (> 110 mm) a few specimens have very flat ventral face and a cortical face. They may actually be split cobbles, but they show either a point of percussion or some marks allowing them to be technically oriented and described like the flakes. The larger majority of the flakes are side struck and the end struck flakes are fewer in number suggesting a particular way of flaking. A good number of flakes have cortical striking platform were as very few flakes have non –cortical platform. Few linear or punctiform platforms in both larger (> 110 mm) and smaller (<110 mm) flakes result from strokes applied on a ridge or corner of the cones have been observed among the recovered flakes from Bam. Usually among the flakes, percussion point appears in the middle of the ridge between the striking platform and the flaking surface (n = 36) but sometimes it is angle (n= 11) or in between the middle. This indicates that quite often the percussion was applied near the corner of the face used as a striking platform. The dorsal face of the flakes is essentially cortical in a number of cases (n= 29). Few flakes only bear small patches of cortex that is less than one-fourth of the dorsal face or more often that forms a cortical back. It is important to note that a number of flakes with no cortex, in a broad sense, i.e. struck from the ventral face of a large flake or from the flat surface of the split boulder. The flake scars on the flakes indicate the same flaking direction as the considered flakes indicating that the same striking platform was used for all the removals. Sometimes the direction of all scars (n= 10) is perpendicular or opposite to the flaking direction of the flake itself.
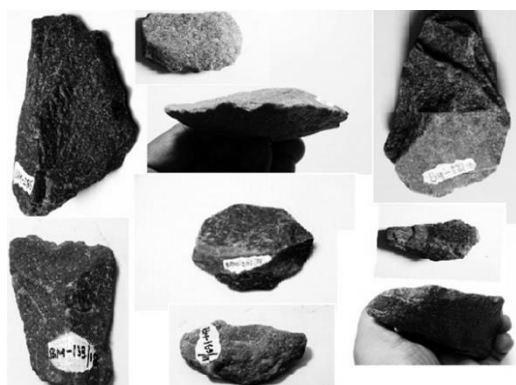
Image – 19: Different types of flake

4. **Discoid**

Discoids at the studied locality (n= 26) show adequate features to group them under three categories- unifacial discoids, bifacial discoids and irregular discoids (see table no- 9).

Discoid		
Sub Type	**Number (n)**	**Percentage**
a. Unifacial discoids	13	3.82
b. Bifacial discoids	4	1.17
c. Irregular discoids	9	2.65
Total	**26**	**7.64**

Table -9: Types of Discoids and their numbers and percentage

The mean weight of the artifacts is 0.591 kg. In the discoids there is no bulb of percussion visible as well as the presence of cortex wrap around which indicate incomplete bifacial flaking on a single rounded clast. Depending on the flaking pattern and the specimens purpose, the flake scars on all discoids are either convergent, non-convergent and semi convergent towards the centre. Some non –convergent discoids appears to be core-scrapers.

a. Unifacial discoids

Unifacial discoids (n= 13) are flaked completely on one side and represent the majority of the entire discoid assemblage of the site. The whole specimens measure 8.5 cm, 7 cm and 4.1 cm in mean length, width and thickness respectively. 7 specimens exhibit retouch beyond the initial core reduction. The flake scars often coverage in the centre of the specimens although non-convergent specimens are also known. The mean thickness of all complete unifacial discoids is 3.4 cm greater than that of the scrapers on discoids (3cm).

b. Bifacial discoids

Bifacial discoids are flaked on both sides and are only 4 of this type have been recovered from the site. Flake scars on the specimens (both sides) appear to be convergent or semi convergent.

c. Irregular discoids

The remaining discoids were categorized as irregular discoids (n= 9) because they maintain general similarities in flake detachment technique with the formal or circular discoids but are not standardize in form. They are larger than the formal discoids. All appear to be made on split cobbles and are oval to amorphous in shape, showing a medium level of edge damage.

5. Chopper

51 choppers (15% of entire assemblage) have been recovered from the site; the original definition of choppers or chopping tools is quite different from modern versions (Ashton et al, 1992): in the late 19th century, "they were nodules or flakes that had been carefully modified unifacially or bifacially along one side opposite to a thick cortical edge", but by the early 20th century, considerable emphasis was placed on flaked pebbles and the function of chopping. For the later perspective, Movius (1948) was responsible for assigning more formal definitions to choppers and chopping tools. Chopper were described as pebbles with unifacial flaking pattern, while chopping tools were regarded as bifacially worked pebbles, a typology quickly adopted by other workers (Leakey, 1951; 1971) and prevalent to this day. Choppers form a prominent typo-functional

component of all Soanian assemblages and Bam is not exception, having a diverse range of choppers. The mean weight of the choppers is 0.779 kg.
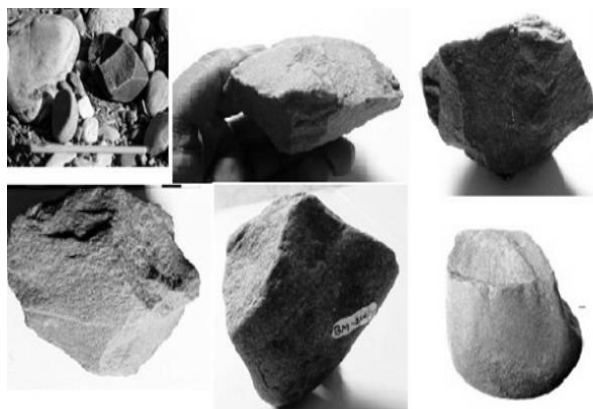
Image - 20: Various types of Chopper

Due to their large number and consistency in type and morphology at Bam, an attempt was made to further classify all choppers into sub-types. Essentially the purpose of this is to avoid confusion and descriptive redundancy with technological nomenclature related to the Acheulean industry, in which true bifacially flaked types are known. The term 'unifacial' and 'bifacial' signify invasive or extensive flaking across the entire sides of a core. At Bam, various choppers were produced through flake detachment across their almost entire faces. Therefore, unifacial and bifacial choppers (i.e. chopping tools), as originally defined by Movius (1957) and Leakey (1971), have been referred to in this work as unimarginal choppers and bimarginal choppers, respectively, to distinguish marginal flaking from facial or invasive flaking (Gillard, 1995). At the same time, the term 'unifacial' and 'bifacial' have been retained to class choppers that have only been flaked along their face(s) not along their margins or edges. In such specimens, the cortex on the dorsal side usually wraps around the butt to the ventral side. For this study the following categories were created- (a) unimarginal end-chopper, (b) unimarginal side-chopper, (c) bimarginal end-chopper, (d) bimarginal side-choppers, (e) unifacial end-chopper, (f) unifacial side-chopper, (g) bifacial side-chopper and (h) irregular choppers (see table no -10).

Chopper		
Sub Type	**Number**	**Percentage**
a. Unimarginal end- chopper	12	3.53
b. Unimarginal side-chopper	9	2.65
c. Bimarginal end-chopper	4	1.18
d. Bimarginal side-chopper	6	1.76
e. Unifacial end-chopper	4	1.18
f. Unifacial side-chopper	5	1.46
g. Bifacial side-chopper	4	1.18
h. Irregular chopper	7	2.06
Total	**51**	**15**

Table – 10: Types of Chopper and their numbers and percentage

a. Unimarginal end-chopper

Unimarginal end-choppers usually tend to dominate chopper categories (n= 12) in general at most Soanian sites and are known to have more inclined working edge angles than those of side-choppers (Gillard, 1995). 20% of the whole chopper assemblage occur in varying shapes while the majority of them are oval, retaining much of the overall shape of the original blank. Only seven of the specimens are pointed. Four of the whole specimens were manufactured on rolled cobble fragments or split cobbles. To obtain choppers or core-scrapers, clasts with at least one flat side were preferred, permitted a smaller edge angle through minimal flaking of edge preparation.

b. Unimarginal side-chopper

Unimarginal side-chopper type is the most abundant chopper type (n= 9) in the whole chopper type at Bam. As in unimarginal end-choppers, these specimens are flaked along one adge or one side or margin of the clast, but on a proximal edge (from the centre of the clast). Most of the unimarginal side-choppers are round to oval in shape. Approximately 43% and 30% of this sub-type maintain medium and heavy retouching respectively. The mean length, width and thickness of the unimarginal side-choppers are 10.4 cm, 8 cm and 5 cm respectively.

c. Bi-marginal end-chopper

Only four specimens are belonging to the bi-marginal end-chopper category and don't seem to be a frequent tool type at most Soanian sites. This type is flaked along one edge but on both sides of the clast, thus resulting in a 's'-shaped working edge often known as alternate flaking or alternate retouching. All specimens, both complete and incomplete bi-marginal end-chopper display sequential flaking and step-flaking.

d. Bi-marginal side-chopper

Complete bi-marginal side-choppers are also not abundant (n= 6) in Bam but are found in good quantity than the bi-marginal end-chopper. Three specimens are found to be incomplete were not included in this analysis. All most all specimens were produced through sequential flaking and the remaining 5 specimens' exhibit both sequential and step-flaking. 3 specimens have heavy retouch while 3 exhibit medium retouch.

e. Unifacial end-chopper

 4 specimens of this type have been recovered from the site. These specimens are flaked almost along their entire face and often resemble unifacial discoids. However, the mean size of the choppers is generally larger and unlike in discoids, the flaking pattern is often unidirectional rather than centripetal.

f. Unifacial side-chopper

5 artifacts of this type have been recovered from Bam. This is significant in that it highlights a preference for specimens with longer working edges, in comparison to end choppers. This higher frequency of side choppers is common in other regions of the Siwaliks as well, but is not linked to the total perimeter of the tool and in this collection (Beas valley assemblage) the mean length of a functional edge is about 130mm. shorter edges are mostly typical of composite tools."

g. Bifacial side-chopper

Bifacial side-choppers are rare at Bam (n= 4) and at most paleolithic sites in Indian Siwalik region. This may because bi-marginal choppers provide an adequate working edge, thus making unnecessary to continue with bifacial flaking once a preferred edge was obtained.

h. Irregular chopper

7 specimens of this sub-type have been recovered from the studied locality. They are amorphous and do not typo-morphologically conform to the aforementioned formal types. Utilization marks are present on the artifacts. Irregular choppers presumably represent extensively utilized specimens that were originally core fragments and chunks. Almost all the specimens' display variable proportions of sequential and step flaking.

6. Hand axe

Among the 7 hand axes, 4 are proper hand axes and 2 are partial hand axes which are bifacially retouched on one side only. One hand axe is atypical, retouched on the margin only. All these hand axes are made on big cobbles and boulder except two are possibly made on small cobble when the flakes used as blanks still keep their striking platform or some technical orientation. Marks, they appear as side struck flakes more often (n= 4) than end struck flakes (n= 2) and one is undetermined flakes. Only 4 striking platforms are preserved.

The dorsal face of the specimens is variable: It is either without cortex or very little cortex, but is also entirely cortical or partly cortical. The extent of the flake scars trimming the blanks into hand axes never covers the entire face, except for one of these tools, which is at the limit between hand axe and core and shows a face entirely covered by flake scars. It is to be noted that none of the artifacts is properly pointed. Most of the tips of the hand axes are more or less rounded or they are cutting edges or short steep edges. Some of the tips are not trimmed and when trimmed the retouch is rather unifacial than bifacial. The butt portions of the most hand axes are un-worked. In some hand axes, the butt seem to have been utilized too as they show some chopping either on both faces or on the ventral face or dorsal face. The hand axes from the site are made of large

flakes, which are not much modified by flaking which hardly covers more than half of each face. Therefore 3 artifacts result from a limited work and the points are not especially trimmed. They appeared to be just the continuation and junction of the edges. If the chipping of the edges results from utilization, it suggests that these tools were utilized in many ways since it occurs on different parts of the edges, preferred on the cutting edges but also on the backs (steep edges), whatever their location is (lateral sides, tips or butts). Mean weight of all complete hand axes is 0.721 kg.

Image - 21: Recovered hand axes

7. Cleaver

The cleavers (n= 11) represent one of the most important components of the assemblage (3.23 % of total entire assemblage). Most of them are made on side struck flakes (n= 7), only a few (n= 2) being on end struck flakes and undetermined flake (n= 2). Striking platform of the cleavers are often cortical as non-cortical; dihedral platforms are quite common. The percussion point is mainly in the middle; otherwise it is an angle of the flaking face or in between. The cleavers are usually trimmed on the margins only; for half of the cleavers, the trimming consists of just one generation of retouch, without further regularization of the edges (which are not supposed to be working edges). The other ones show two generations of the retouch and rarely one (one specimen). Therefore, the original shape of the blank flakes is hardly modified. By definition of the cleavers are characterized by a cutting edge that is unretouched. It is supposed to be the main functional part of the tool, but the edges may be utilized too. At Bam the edges of the cleavers are all slightly convex. Utilization is suggested by chipping of the edge, either on both faces or on one face only and in that case the ventral surface is more often damaged than the dorsal surface. No chipping being observed on the cortex along the edge. The mean weight of the cleavers is 0.956 kg.
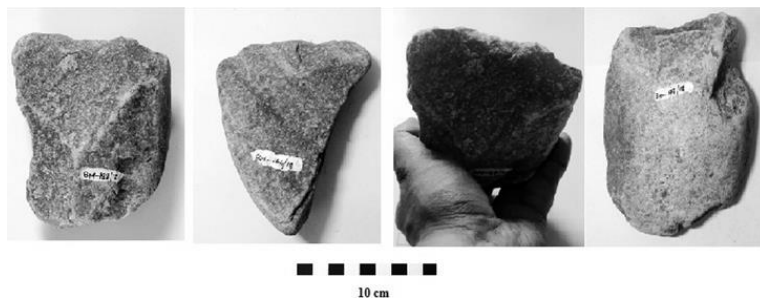
Image - 22: Few recovered cleavers

8. Scraper

22 artifacts (6.48% of total entire Bam assemblage) of this type have been reported from the site. The mean weight of the artifacts is 0.489 kg. The artifacts are further sub-divided by (a) peripheral, (b) sub- peripheral, (c) lateral and (d) double- sided scraper. Artifact types and its number and its percentage are reflected in table no-11.

Scraper		
Sub – Type	**Number**	**Percentage**
a. Peripheral scraper	5	1.47
b. sub-Peripheral scraper	3	0.88
c. Lateral side scraper	10	2.95
d. Double- sided scraper	4	1.18
Total	**22**	**6.48**

Table- 11: Types of Scraper and their numbers and percentage

Image - 23: Few recovered scrapers

a. Peripheral scraper

The specimens (n= 5) of this group show a sharp working edge running almost all around the flakes and are mostly roundish or oval in shape. They are made on flakes. It is interesting to observe that thick, broad, pear shaped quartzite flake had been utilized for making of this type of artifacts. In this type of tools, the bulb of percussion is insignificant. In most of the tools, dorsal surface is fully prepared by detaching flakes all over. Steep flaking if found on dorsal surface. Ventral surface of most of the tools show clean flake scars.

b. Sub- peripheral

The specimens (n=3) falling in this group have a working edge covering more than half of the periphery (nearly ¾ portion of the whole periphery) of the flakes. More or less thick and oval shaped flake have been exploited for this type of artifacts. Most of the flakes have defused bulb of percussion with a flake angle of 100^0. Dorsal surface of the

artifacts exhibit numerous small and shallow flake scars produced by percussions given from the periphery towards centre of the tool there by making it thickness in the centre.

c. Lateral side scraper

This type of scrapers (n= 10) have the working edge which is placed on lateral side just in line with the longitudinal axis. This type is further sub divided by concave side scraper, straight side scraper and convex side scraper. Concave side scrapers have concave working edge which is deliberately produced by selectively removing a deep large flake to produce a concave sharp working edge. This may be left naturally sharp because of the intersection of the two flaked surfaces or may be further retouched. Most of the concave scrapers have been shaped on thick triangular flake. This type of artifacts have broad cortical platform with defused bulb of percussion. Dorsal surface of most of the convex side scrapers show shallow and broad flake scars. Right side of the tool retains pebble cortex whereas left side is thick produced by splitting the flake longitudinally into two, so as to have a thick grip end. The straight side scrapers have straight working edge which is produced through retouch or by intersection of two surfaces. More or less thick square shaped flakes had been utilized for manufacturing of this type of tools. Most of the tools are partly worked by removing flakes at a steep angle from two sides. Flake angle of this type of tools vary between 98^0-104^0.

d. Double- sided scraper

This type of artifacts (n= 4) have two working ends produced through intersection of primary flaking. More or less long thin flake have been utilized for manufacturing of the tools. Some tools show prominent bulb of percussion with an edge angle of 121^0 (varies between 119^0 –122^0). Most of the specimens show narrow cortical platform. Dorsal surface of few artifacts is fully worked. Ventral surface of the tools (n= 2) exhibit concoidal flake scars; intersection of dorsal and ventral surfaces produced sharp concave edges on both lateral sides.

9. Acheulean Peak

From the studied locality, a good amount of peaks (n= 9) have been recovered (2.65 % of entire assemblage). Previously Sankhyan (2017) found few Acheulean peaks from the close vicinity of the present studied locality. The tool makers probably used elongated boulders (more or less cylindrical) for manufacturing the tools. Though the artifacts are rolled in nature, there are some flake scars have been noticed on the surfaces of the tools. From the nature of the scars it can be suggested that hard hammer percussion had been applied to manufacture the tools. Trimming of peaks is mostly unifacial in nature. It is interesting to note that the butt portion of few peaks (n= 4) show some hitting marks. The mean value of the weight of the artifacts is 0.679 kg.

Image - 24: Acheulean Peak

10. Arrow Head

The artifact likes Arrow Head is unique in this area. These tools are very much rare in sub- Himalayan paleolithic culture. There are 8 Arrow Head heads are recovered from the studied locality (2.35% of the total assemblage). Tip portion of most of the artifacts is not well modified (n= 6) but retouching have been found along the margins. In some specimens (n= 3) there are notches in the lower portion of the artifacts. Probably tool makers modified these tools such a way that it could be fitted easily with wooden shaft.

11. Multifunctional piece

At studied locality, many specimens that were initially cores utilized formal tools and large flakes were later re-flaked and re-utilized, probably to maximize their functional life before being discarded permanently. These types have not been assigned formal typical levels and represent the expedient aspects of hominin activity in and around the Bam locality. Nearly 12.65 % of the entire assemblage is portrayed by such artifacts collectively labeled as multifunctional pieces (n= 43) from their combined attributes related to morphology, extensive flaking and degree of retouch. These types have all been recognized and classified as random and miscellaneous tools that do not conform to any pre-defined types, shapes and method of manufacture. Most such specimens are amorphous in general morphology and some range from being round, completely angular and pointed. Sequential flaking patterns are found on nearly half of all specimens and the rest exhibit both sequential and step patterns of flaking. One-third of the specimens have variable levels of edge damage. Six specimens possess prominent bulbs, probably indicating the utilization of core fragments as miscellaneous tools. The mean value of weight of the artifacts is 0.605 kg.
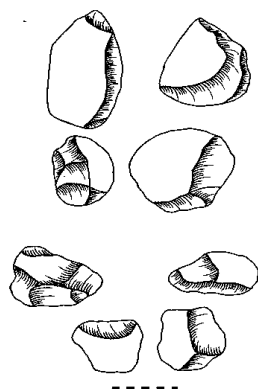
Image – 25: Multifunctional pieces

Type	Average dimensions (in cm.) (L x W x T)
Single platform core	8.2 X 7 X 3.9
Multi platform core	10 X 8.3 X 5.3
Un-retouched flake	9.42 X 9.36 X 3.62
Retouched flake	9.98 X 9.61 X 3.51
Bifacial discoids	7.1 X 6.8 X 4.4
Irregular discoids	13.3 X 11 X 5
Unimarginal chopper	8.9 X 9.3 X 5
Bi marginal chopper	7 X 6.7 X 4
Unifacial end chopper	8.6 X 9.5 X 5.4
Unifacial side chopper	10.3 X 8 X 5
Bifacial side chopper	10 X 7.3 X 5.9
Irregular chopper	8.5 X 6.3 X 4.9
Hand axe	15.1 X 10.7 X 4.23
Cleaver	12.22 X 11.3 X 5.2
Peripheral scraper	7.7 X 6.4 X 2.4
Sub- Peripheral scraper	7 X 5.9 X 2.3
Lateral side – scraper	6.3 X 4.7 X 2.1
Double side scraper	7.9 X 5.5 X 2
Acheulean peak	13.2 X 7.74 X 5.2
Arrow Head	10.6 X 5.7 X 1.3
Multifunctional pieces	8.9 X 7.6 X 4

Table – 12: Average dimensions of recovered lithic artifacts

Raw Material

The artifacts of the studied locality are made on medium of coarse – grained quartzite cobbles and boulders of various colors such as light grey, ash grey, ash brown, chocolate and black. The quartzite is generally fine grained and highly metamorphosed in this area. The tool makers had chosen the cores and blanks purposefully for their desirable tools (see table no -13). The shape of the boulders and cobbles had been selected in such a way that there was little need to flake the cortex. The craftsmanship employed making Acheulean artifacts (hand axe, cleaver) on large flakes varies from medium to coarse-grained quartzite can compare with the highest skill of tool making technology of the Acheulean man in global context. The following tabulation shows the nature of the blanks used for manufacturing the tools which are recovered from the studied locality-

Types of Artifacts	Nature of Blanks				
	on whole pebble/cobble/boulder	on split pebble/cobble	on flake	core	Total
Chopper & Chopping tool	12	14	17	8	51
Hand axe	1	1	5	-	7
Cleaver	-		11	-	11
Scraper		4	18	-	22
Point and Arrow Head	-	-	8	-	8
Peak	7	-	2	-	9

Table – 13: Nature of the blanks used for manufacturing the tools at studied locality

State of Preservation

A good amount of the specimens are found from the dried river beds of Seer khad. They are weathered and patinated (medium to deep) (see Table no – 14) due to river action and nature of deposition. However, the preservation of artifacts not only depends on the physical forces of nature and post depositional environment but also on the nature of raw materials that were used to make those artifacts and the relative age of the artifacts also (Ray et al, 2010). The rolled artifacts from the bed may indicate that the artifacts were transported fluvially from the others places and deposited in this locality.

Type of preservation	Numbers (n)	Percentage
Heavily rolled	198	58.23
Medium rolled	113	33.24
Fresh	29	8.53
Total	**340**	**100**

Table - 14: Percentage of types of preservation of the artifacts

Table 14 shows that the percentage of heavily rolled artifacts is highest (58.23) and the percentage of fresh artifacts is lowest (8.53) in the studied lithic artifacts of the site. The percentage figures of table 14 are reflected in the following pie chart.
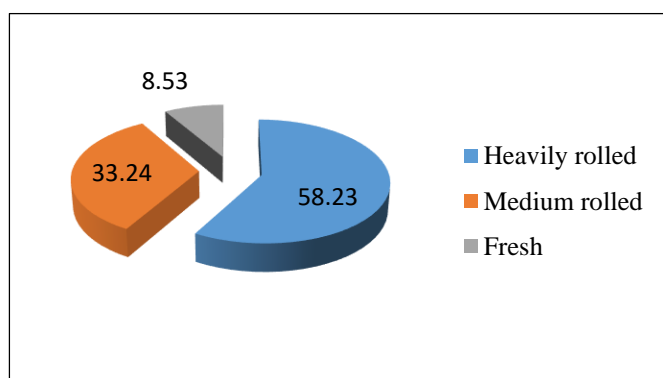
Image- 26: Percentage figure of table 14

General Observation

The prehistoric culture of India is at least evident by the rich cultural materials, mostly the tool types and the associated debitages. The Stone Age tools are made in response to the need arising out of the interaction between the man and environment. Each and every tool is the cultural manifestation of biological behavior. The tool is made with a specific purpose which gives rise to the function. In this regards the northern part of Indian subcontinent is significant in many ways. Ghumarwin area of Bilaspur district of north – western India is well known in the world Paleoanthropological map for the finding of the fossil remains of the Late Miocene apes such as Sivapithecus, Gigantopithecus and Krishnapithecus (Simons & Chopra, 1969; Sankhyan, 1985; Sankhyan & Harrison, 2017) but there is no evidence regarding the paleolithic tool makers of this region still we have. In the sub – Himalayan foothills of India (north – western India), the oldest lithic tradition is Acheulean (Gaillard et al,. 2008, 2010b; Mahapatra & Singh, 1979). Then the Soanian, rich in cobble tools occur in two facies: one dominated by flake production and representing the Middle Paleolithic and other dominated by shaping of choppers (Gaillard et al., 2010a, 2011, 2012). Stone Age cultural remains from the Bam locality fall in both Pebble – tool tradition (Soan industry) and Acheulean tradition. In the absence of absolute dating at this stage, it is difficult to assign any exact chronology for the studied Acheulean remains of the Bam locality. The Indian Acheulean is generally considered as the 'Large Flake Acheulean' (Sharon, 2007) which is the typical to the Acheulean in Africa. However on the typo-technological grounds, it can be suggested that the Acheulean remains of Bam belongs to the 'Large Flake Acheulean' group. Acheulean assemblages from Bam do not appear to be early Acheulean but is more similar to the Late Acheulean. Therefore the relative chronology of the Bam Acheulean evidence might belong to the Middle Pleistocene period if not older. It is interesting to find the Acheulean cultural elements in the Ghumarwin which is dominated over by Soanian pebble culture. A long back the presence of Acheulean culture in the Siwalik Soanian terrain was suspected at Kotla and Painsara in Kangra region of Himachal Pradesh based on a few cleavers and hand axes (Joshi, 1979). The Important Acheulean discovery from Atbarapur in Punjab (Mahapatra, 1976, 1981; Mahapatra & Singh, 1979; Kumar and Rishi, 1986; Rishi, 1989; Gaillard et al, 2008) gives important information regarding the existence of Acheulean culture in Siwalik frontal range. It is important to mention that the unique diversity of the Bam assemblage throws light on the various kinds of specialized occupations adopted by prehistoric man in this zone. Intimate knowledge of environment and it behaviors were well understood by hunter – gatherers as they adjusted well with all kinds of climate and situations. As far as the carrying capacity of the area is concerned it appears that a wide range of forest products resources were available in this foothills. The area has different variety of flora and fauna and their exploitation need some techniques, skills and labour to collect or make them eatable. The large number of tools found, most probably had multiple purposes or specialized functions. The change in tool technology, their sizes, shapes and forms suggest the ways of exploitation of certain types of food items or even possibility of change in subsistence pattern with a developed stone tool technology and wider

choice of exploitation of large variety of flora and fauna and other eatables. It can be assumed that Seer Khad at Ghumarwin was probably the adobe of the prehistoric man as there are perennial water natural reservoirs though the terrain morphology was not same during prehistoric period due to the tectonic instability of Siwalik frontal range. These reservoirs were full of fish and forested Siwalik which played an important source of animals to prey made the region favorable for prehistoric people. In this study, the patterns of site distribution and associated sources of raw material currently do not reveal much in terms of geographical territory size. It remains unclear whether the archaeological evidence in surface context represents continuous occupation or sporadic occupational phase but from the association of the artifacts with the studied locality may represent situations where hominins were exploiting the stream bed for raw material and exploiting flood plains or existing terrace deposits as well. The present study shows the potential of the isolated and neglected areas of the Bilaspur district of Himachal Pradesh. Earlier the prehistoric significance of the Seer Khad was little known in the Indian Paleolithic but this investigation has been successful in establishing that the region was one of the significant areas for prehistoric occupation and adaptations. The work certainly indicates possibilities for further Paleolithic and geo-archaeological studies in the lower Sutlej valley and adjacent areas. There might be many sites along the river Sutlej, which have since sunk in the Govindsagar Lake at Bilaspur but there need to do more exploratory work also in the upper and middle Sutlej valley and its tributaries to find out more sites which can provide a greater insight regarding the prehistoric archaeology of this areas.

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Idea and Status about Conservation for Organic Cultural Relics in Sri Lanka (Palm Leaf Manuscripts)

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Introduction

Palm leaf, also known as Ola leaf, has been the principal career of knowledge in Sri Lanka from early Anuradhapura period to 20th century, for more than 2300 years. Although no original manuscripts written by the ancient authors are available at present, copies of such manuscripts made in later periods, especially from 17th – early 20th century are scattered throughout the country in Buddhist temples and sometimes with individuals. Certain concerted efforts made during the colonial period as well as after the independence resulted in collecting and preserving some of the manuscript copies. It is to be noted here that considerable number of palm leaf manuscripts are collected and preserved in foreign soils as well. The present study is an attempt to assess the efforts taken in Sri Lanka in the sphere of collection, preserving and provision of access to such manuscripts. The ultimate objective of any document is to divulge its contents to interested users. In order to do this two pre-requisites are to be completed. They are the collection of documents and preserving them for future users. This applies to palm leaf manuscripts also. Transition from an old medium of recording to newer medium; always leaves behind a certain amount of documents produced in the old medium untouched. When printing was introduced into Sri Lanka not all palm leaf manuscripts found their way to printing. Only selected manuscripts were put into print and the rest was left behind. This makes it necessary to collect those forgotten manuscripts as well as the base manuscripts of printed works if we really need to benefit from the intellectual heritage of the country. Collection demands organization and preservation. Provision of access to manuscripts can be made successfully once collection and preservation is completed. In Sri Lanka collection and preservation of palm leaf manuscripts are still in a poor stage. Except those collected in libraries no concerted efforts have been taken by the government or private sector for the purpose. It was found that at present only the Faculty of Social Sciences, University of Kelaniya is engaged in the collection and preservation of palm leaf manuscripts in digital form. The collection is around 500,000 leaves. However, the provision of access to manuscripts collected in certain libraries has been done successfully through extensive bibliographies. Catalogues to the collection of manuscripts in Colombo Museum Library is an example. **Somadasa's** catalogue of Palm leaf manuscripts in Ceylon is just a title list of manuscripts found in Buddhist temples in

the country and the list has little use at present as some of the temples are not in existence and the listed works are not found by now in most of the temples. As most of the palm leaf manuscripts are on the brink of extinction it should be a national priority to collect, preserve and provide access to them using modern technology. Libraries have a big role to play in the process.

Preserving Ola leaf Manuscripts

The inimitable knowledge on medicine, science and technology contained in the ancient Ola leaf manuscripts of Sri Lanka might be lost to the world forever if a comprehensive program for preserving Ola leaf manuscripts in not commenced soon. The National Library is planning the preservation process to achieve the two goals; they understand the value of the Ola leaf manuscripts preserved in their original form, and make arrangement to preserve them using chemical and traditional treatment. Two traditional herbal extractions were tested to preserve the Ola leaf manuscripts in its original form.

- Experimental Method

This study investigated microbial and insecticidal activation against the two herbal extractions named as NL and DNA believed to have been used by our ancestors.

- Extracted samples

NL and DNA herbal emulsions were extracted.

- Strains and insects

The fungi strains1 (mould) Cladosporium cladosporioides (H1), Aspergillus sydowii (H2), Penicillum citreonigrum (H3), Penicillum toxicarium (H4), penicillum corylophilu (H5) and Alternaria spp (H7) commonly found in paper materials were obtained from the micro lab of the National Research Institute of Cultural Heritage (NIRCH) in South Korea. Bacteria strains that were isolated from the ancient Ola leaf and fresh untreated Ola leaf used this experiment. For the analysis of insecticidal activities, Lasioderma serricorne (Cigarette beetles), which were bred in NIRCH bio-lab, was obtained. Lasioderma serricorne is the most dangerous library pest found in Sri Lanka.

- Procedure step

Procedure 1 - Assessment of Antifungal Activation

Pasteurized paper discs were placed on the cultured plates. The two types of herbal extracts were made to be absorbed in Pasteurized paper disc by 50μL by using paper disc susceptibility measuring method. Prepared PDA and cultured the mould species (H1,H2,H3,H4,H5,H7) in same concentration (3x106 CFU) using spared plate methods. Petri dishes were sealed up with sealing tape. Samples were incubated at 28 o C for 4 days. Control samples were established adding the same amount of mould species

without herbal extracts. Prepared batches of two samples. Antifungal activities were observed and obtained the inhibition zone diameter (GZD).

Procedure 2 - Assessment of Antibacterial Activation

Six bacteria species were isolated from ancient Ola leaves and fresh untreated Ola leaves. The top of each colony is touched with a loop, and the growth is transferred and spared in medium of Luria bertani in the aseptic condition. The two types of herbal extracts were made to be impregnated in Pasteurized paper disc by 50μL by using paper disc susceptibility measuring method. Petri dishes were sealed up with sealing tape. Control samples were established adding same amount of bacteria species without herbal extracts. Samples were incubated the in 28 o C for 2 days. Prepared batches of two samples. Antibacterial activities were observed and obtained the inhibition zone diameter (GZD).

Procedure 3 - Assessment of Ant insecticidal Activation

Pasteurized filter papers were fed with 200 μL of herbal extracts in three concentrations. (0.3gml-1, 0.1gml-1, 0.05gml-1). 20 species of Lasioderma serricorne were positioned in each Petri dish. The filter papers were installed indirectly with test insects at Petri dishes. Control samples were established feeding 70% Ethanol to the filter paper. Bred in incubator at 28 o C and 60% RH for three days. The number of dead insects was examined every 24 hour, for three days.

- Results

Anti-Fungal Effect of Herbal Extracts

Herbal extractions of DNA and NL controlled growth of three species of fungi in PDA media which were incubated strains of (H1), Aspergillus sydowii (H2), (H5) and H7) and DNA formed growth inhibition zone of 14mm, 14mm, 13mm,13mm and NL formed growth inhibition zone of 13mm,12mm,13mm,12mm.

Anti-Bacterial Effects of Herbal Extracts

Herbal extractions of DNA and NL controlled the growth of species of bacteria, which were obtained from the surface of new untreated as well as ancient Ola leaves. Growth inhibition zone of three bacteria species (E6), (E3) and (E4) obtained from new untreated Ola leaves and two bacteria species (E2) and (E5) isolated from ancient Ola leaves were measured to confirm the antibacterial activity of DNA and NL herbal extracts.

Insecticidal Effect of Herbal Extracts

Both DNA and NL didn't show any insecticidal effects against Lasioderma serricorne. On the third day of the experiment several dead insects were found. It could have been a natural death. However, insects gathered at one direction in the Petri dish had tried to avoid areas of the filter paper, which were fed by the herbal extraction.

Both herbal extractions of DNA and NL showed mild antifungal and antibacterial activities. Results confirmed DNA is more active than NL. NL contains several ingredients rather than DNA. Results confirmed that both herbal extracts are not highly effective against the insect Lasioderma serricorne, but it was observed that most of the insects had gathered in one direction of the Petri dishes, which were the extraction free areas. They may have tried to avoid getting or contacting the herbal extractions. These extractions have some effects against insects. These are not insecticide effects but it would be an insect repellent effect. The herbal extraction of DNA was selected to use in traditional conservation before digitization.

Insect attack

Insect attack is by far the most widely reported problem with palm leaf manuscripts and it has been observed that Palmyra leaves are more prone to it. The insects identified are *Gastrallus indicus,* termites, silverfish, bookworms and cockroaches. While insects migrate from one infested collection to another, or from surrounding areas, at times the wooden cover boards themselves could be the source of insect

Various factors of deterioration reduce manuscripts to such a state

infestation. The symptoms of insect attack on palm leaves are the presence of neat, pinhead-sized holes, irregularly eaten edges, the presence of larvae which eat the leafy matter forming channels in such a way that a paper thin surface remains intact on one side of the folio.

There have been a number of traditional measures used to avoid insect attack. For instance, manuscripts were often stored in kitchen lofts where smoke kept insects away; and the boards between which the folios were stored were often made of a hardwood with insect resistant properties, such as that of the Neem tree.

Natural insect repellents

It has been common practice to keep a variety of insect repellent oils and herbs with the manuscripts. The bark, leaves, seeds and wood of Margosa, the Neem tree (*Azadirachta indica)* have been used in India for millennia for their medicinal and insecticidal properties which are attributed to phenolic compounds and to the active ingredient

azadirachtin. One report mentions that the slightly sticky greenish yellow oil - produced by pressing the Neem seeds - loses its insecticidal and medicinal properties if refined. In Sri Lanka, from *dummela*, the fossilised resin of the Hal tree, a black liquid known as 'resin oil' is distilled and used as an insect repellent. A number of oils like citronella, *lemon grass, clove, sandalwood, black pepper, palmarosa, gingili, dudu* and artemisia [26J have been used in various regions.

The applications of many more natural biocides have been touched upon in the literature. A combination of sweet flag, Acorns calamus, cumin, cloves, pepper, cinnamon, and camphor is considered to be an effective insect repellent for a period of six months. What role each ingredient and their proportions play has not been defined, however. Similar is the case with another observation in Wickramsinghe that mentions the use of *dummela* oil with a small quantity of *goraka maliang,* a resin, and divullatu, a gum. With the help of such profusion of seed information, these indigenous herbs and oils of Asia could be thoroughly researched for their application as insect repellents. Such research would contribute to the non-invasive methods of protection for the millions of manuscripts in the world's collections. Studies like this could be collaborative, involving entomologists, botanists, chemists and art conservators.

Cleaning

Because the leaves exhibit relatively little water absorbency, it has been suggested that incised leaves be cleaned with distilled warm or cold water, applied with a cotton ball wrapped in fine cloth to prevent the cotton fibers from 'catching' the irregular edges. Additives like a non-ionic detergent, glycerine in water (1:10) or 0.2% sodium salts of ortho-phenylphenate (COONa-O-OH) have been proposed. Once done, the leaves can be rubbed dry with a cloth. There is, however, the accompanying possibility of residues depositing in the leaf fibers.

For cleaning surface written or illuminated folios, an ethanol bath has been recommended, with the addition of glycerine in equal proportion, as has been the use of 5% isopropanol (C_3H_7OH) and 1% magnesium bicarbonate ($Mg(HCO_3)_2$) applied by swabbing or soaking. Suggestions like the use of 1,1,1-trichloroethane, followed by boiling with 5% camphor oil in alcohol, or the use of carbon tetrachloride (CCl_4), acetone (CH_3COCH_3) and benzene (C_6H_6), do not mention the possible effects on the

Cleaning and imparting flexibility to palm leaves using oils, moisture and solvents carry inherent risks

leaves after cleaning is completed. Other than further research, there is an obvious need to be sensitive and conscious of the implications of conservation interventions.

Re-inking

When the binders in the inks weaken and pigment particles fall away, especially if the incisions are shallow or when dye inks fade, the incised text becomes difficult to read. The term 'fading of ink' is commonly used to refer to this loss of legibility of the incised writing. During re-inking, a process discussed earlier, it would be worthwhile to use the particular gums, or plant juices, which also have insecticidal and anti-fungal properties. As the inking process requires the ink solution to be applied over the entire surface of the leaf, antibiotic properties would envelope the entire surface.

Inks have been consolidated with a 5% solution of cellulose acetate (CA) in acetone and with a 5-10% solution of Bedacryl in benzene or acetone. One need to weigh the risks and benefits of introducing consolidates as compared to simply applying fresh ink. After all, is the purpose only to render the incisions visible or is it also to preserve the 'original' ink particles?

Tear repair and treatment of leaf edges

Due to the sessile venation of the palm leaf, tears develop horizontally more easily than vertically. In fact, it is not possible to have a clean vertical tear on a palm leaf folio unless it is cut with a blade. Longitudinal and transverse cracks can be repaired using silk gauze, chiffon or tissue paper, along with acrylic rubber adhesive, acrylic emulsion adhesive or starch paste. Edges of folios that are brittle and perforated by insects are broken and lost, often due to careless flipping of the leaves. Edges are also damaged when the covers are smaller than the dimensions of the folios.
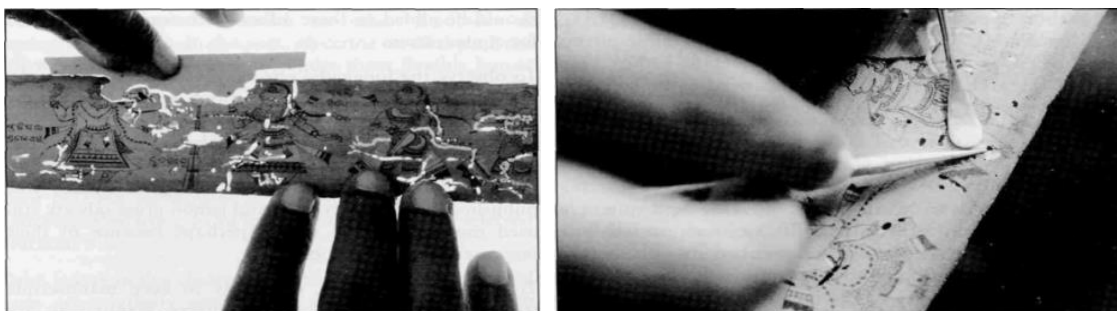
Traditionally if the lacquer is too thick it may harden the edge, and therefore perhaps plant gum could be considered as an alternative. In Sri Lanka, a small flame is used to singe the frayed edges. To protect edges and facilitate easy handling, inlaying is also done using handmade paper.

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Bulls, Bullocks and Bullock-Carts: Masculinity, Transport and Trade in Protohistoric and Historic South Asia

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Abstract

Ever since the domestication of Bos indicus in the Neolithic Period, the prime means of transportation and traction, and therefore the bulwark of carriage, haulage and transshipment of goods during the Protohistoric and Historic Periods in South Asia has been the humble bullock-cart. This paper deals with its representations as seen from the Art and associated archaeological data of these periods. In addition, we look at the representations of the animals themselves, either as stud bulls (सांड) or the humbler bullocks (बैल). We will also look at the portrayal of bulls as symbols of masculinity, as seen in cultural expressions such as Bailgaḍa, Kambala and Jallikattu, of bullocks as symbols of fallen status and bondage and of bullocks unhitched from their carts as the soul freed from its mortal corpse. Expressions of human masculinity, through bullock-cart racing in the Deccan are also looked into. This paper attempts to trace the journey of this mode of transportation though the various different depictions of bulls, bullocks and bullock-carts from Protohistory and History making a case for its origins, evolution, adaptation and use, including approximations of trade routes from published literature. At the same time, it looks at the various cultural connotations of bulls, bullocks and bullock-carts in literature ancient and modern. What is most surprising is that though this was the prime mode of transportation in these periods and that its use was spread over almost the entire landmass of South Asia, it is not very often represented in contemporary art and its very 'common' nature has almost made it invisible to students of South Asian Art History.

Introduction

मनोपुब्बंगमा धम्म मनोसेट्ठा मनोमया
मनसाचे पदुट्ठेन भासति व करोति व
ततो नं दुक्ख मन्वेति चक्कम् व वहतो पदम्

The ending of the first verse of the Dhammapada (Yamakavagga:1) (Buddharakkhita 1986, p2-3) is one of the earliest literary references we find to the bullock cart in South

Asia, alongside multiple references in the Jātaka Tales (Piyatissa 1994). In terms of artefacts however, representations of the bullock-cart go back to much ancient times, including and perhaps earlier than the mature Harappan phase. Nevertheless, references to both bullocks and the bullock-cart have been sparse in the art and architecture of South Asia, compared to innumerable representations of the virile bull, both as animal and as quasi-deity (Krishna 2014).

This paper attempts an overview of the roles of the humble bullock and bullock-cart in South Asian Art, in the context of their enormous contribution, and indeed underpinning of commerce and economics of much of this region's history. Combined with the wheel and axle, this domesticated beast of burden may safely be said to be one of the drivers of urbanization in South Asia, both on the floodplains of the Indus during the Bronze Age and the Second Urbanization in the Gangetic Valley. By exponentially increasing the amount of material that could be hauled over short distances, the bullock cart empowers the centralization of surplus grain production, identified as one of the traits of Bronze Age Urbanization (Gordon Childe 1950).

Fig. 1a (above): A bullock cart in Patiala, Punjab, India. (© Satdeep Gill, under the Creative Commons Attribution-Share Alike 4.0 International license.
https://upload.wikimedia.org/wikipedia/commons/0/0f/Bullock_cart_in_Punjab%2C_India.jpg)
Fig. 1b (below): Bullock carts at Harnai beach, Maharashtra, India, readying to cart away fishing hauls coming in by boat. (© C J Samson, under the Creative Commons Attribution 3.0 Unported license
https://upload.wikimedia.org/wikipedia/commons/e/e9/Harnai_Bullock_cart.jpg)

Domestication of *Bos* species

The importance of *Bos* species to human food has long been evident to archaeology- from paintings at multiple rock shelters to finds of bovid bones are sites of human occupation, often with tool marks. Somewhere between 7500-7000 BCE, cattle were domesticated twice independently in the Near East (taurine line) and South Asia (*zebu*). Evidence for this comes from statistical analyses of craniometric data and measurement of the astragalus bone (Joglekar and Thomas 1993) as well as mitochondrial genetics (Loftus, et al. 1994).

Archaeological excavations report Bos spp at Mehrgarh Phase 1 dated to earlier than 7000 BCE (Jarrige 2008). To quote Jarrige:

... "though in the course of Period I at Mehrgarh, the remains of sheep and cattle became to increasingly dominate the faunal assemblages of the successive strata, at the same time, the animal represented grew smaller in body size". By the end of Period I, cattle bones amount for over 50% of the faunal remains. Osteological studies as well as clay figurines indicate that zebu cattle (Bos indicus) is well attested in Period I and became most probably the dominant form. Mehrgarh provides us therefore with a clear evidence of an indigenous domestication of the South Asian zebu.

Fuller (2006, p26) confirms this as he states:

The earliest levels (Period I), despite inconsistent radiocarbon dates, date to before 6200–6000 BC, and may start ca. 7000 BC or earlier. The subsequent Period II is well dated as starting from 6000 BC. In the earliest level, true wild taxa (i.e. taxa which were never domesticated) made up about 55% of the assemblage. This declines in succeeding levels, where predomesticates, primarily sheep and cattle, increase in importance to ca. 80% of the assemblage. Bos alone changes from 4 to 38% to 65% by ca. 5000 BC (emphasis ours). This dramatic rise in the importance of certain species suggests the gradual emergence of specialized predation, like that of herding. This trend is accompanied by a size trend in which the average size and size range of Bos and Ovis decreases through the sequence. There is no sudden shift, but rather the suggestion of a statistical trend of change in these two species, while wild taxa such as gazelle do not undergo any change.

Bos acutifrons and *Bos primigenius namadicus* fossils have been found at multiple sites in the Indian subcontinent (Chen, et al. 2010, supplementary data), indicating multiple secondary waves of domestication in the Ganga Valley, Gujarat region and the southern Deccan through breeding of domesticated males with wild females. Statistical studies of the astragalus bone (Joglekar and Thomas 1991) demonstrate the presence of wild bovids as late as 2000 BCE among the bone finds at human settlements. Rather than go 'extinct', such wild cattle were possibly absorbed into the bloodline of the domesticated (Joglekar and Thomas 1992). This is supported by genetic evidence, pitching ancient Balūchistan, which includes the Neolithic sites of Mehrgarh, Nausharo, Kili Gul Muhammad and Rana Ghundai among others, as the likely place where cattle were domesticated first in South Asia, with subsequent injections of genetic material from wild bovines elsewhere (Chen, et al. 2010).

The earliest use of the domesticated bullock in South Asia was probably for meat, as can be seen in an undated Harappan seal (personal collection of Dr. Rick J. Willis, Fig. 2). No archaeological evidence of bullock carts emerges until the discovery of bullock cart tracks from the Ravi phase of Harappa (Dales and Kenoyer 1991, p246).

Fig. 2: Undated Harappan steatite seal of side 41 mm, personal collection of Dr. Rick J. Willis. (Reproduced with permission. Source: http://eclecticmuseum.com/index.html.)

Fig 3: Two Pardhi tribesmen with a 'hunting bull', which is used to decoy birds hunted by the Pardhis. (After Nagar and Misra, 1993, Fig. 26.)

When exactly the bullock becomes a draught animal from being a source of food is unknown, though it is often used, without carts, as a pack animal carrying panniers among hunting-gathering tribes even today, such as the Pardhis of Central India (Nagar and Misra 1993). Interestingly among the Pardhis, it is also ridden, and used as a decoy for hunting (Fig. 3). Perhaps the first yoking of the animal was to the ploughshare and not the cart, as shown by the finding of a terracotta model of a ploughshare from Banawali (Danino 2014).

Economic Role of Bulls and Bullock-carts

Multiple archaeological studies have established the centrality of the bullock-cart in South Asian economy and culture. Although the wood used for constructing bullock carts does not survive well in the climate of South Asia, indirect evidence from bullock cart tracks as well as terracotta and bronze toys point to their extensive use in the Indus Valley cultures (Kenoyer 2004). Co-evally in the Chalcolithic period of the Deccan and the Aravallis, evidence of this means of transportation come from representations on pottery (Sankalia 1974) and rock art (Neumayer 2016).

The streets of Harappa, at 5 meters width (Dales and Kenoyer 1991, p243) are wide enough to accommodate two bullock carts at a squeeze, considering the designs reported, and their similarity to the ones used in the region even today (Kenoyer 2004, plate 10). Long, long after the decline of the Indus cities, the bullock cart would define street design until the advent of motorized transport in the late 19th c. CE. If we consider the *Arthashāstra*, dated to a time between the 2nd and 3rd centuries CE (Olivelle 2013) as a mirror for the Early Historic period, we find a number of points indicating the economic significance of the bullock cart. The width of roads leading to villages is fixed at 8 *daṇḍas* (~48 imperial feet), while royal/chariot roads were fixed at 4 *daṇḍas* (~24 feet) (Shamasastry 1915, Book II). These could thus accommodate six and three bullock

carts in a row. Three bullock carts would imply that vehicles could be safely overtaken even in the face of oncoming traffic. Other recommendations pertinent to bullock carts include:

- That a superintendent of ships should charge the following for crossing rivers (Shamasastry 1915, Book II):

  A *small cart (laghuyána)—5 máshas*;
  A *cart (of medium size) drawn by bulls (golingam) —6 máshas; and,*
  A big cart (sakata)—7 máshas.
- That the bullock cart and cows be given as inheritance to the youngest son for sustenance, while the horse-chariot be designated for the eldest (Shamasastry 1915, Book III).
- That the theft of a bullock cart be considered an offence serious enough to merit a fine of 300 *panas* (Shamasastry 1915, Book IV).
- That people dealing in carts be taxed at 30 *karas*, indicating the existence of the specialized occupation of cartwright (Shamasastry 1915, Book V).
- That cart tracks be constructed across the country for transport (Shamasastry 1915, Book VII).

Epigraphical evidence comes from three inscriptions at the rock-cut cave complex at Kuda, dist. Raigad, Maharashtra, India (Fig. 4). These describe donations of three caves made by carters (Prakrit: *saṭhavāha*) and their families (Burgess and Indraji 1881, p84-88, plates XLV-XLVI). Cave #27 is donated to the *Sangha* by a carter named *Nāga*, cave #30 is donated by *Sivadatā*, wife of a carter named *Vehamita* and cave #31, along with a path, was donated by *Asāḷamita*, son of a carter named *Achaladāsa*. These inscriptions point to the profitability of carting as a profession. Indeed, a mention of caravans of 500 bullock carts is found in the Jātaka Tales (Piyatissa 1994, p126), led by a caravan-leader (Sanskrit: *sārthavāha*), who offered to pay the Bodhisattva (born as a bull), 1000 gold pieces to help him ford a river.
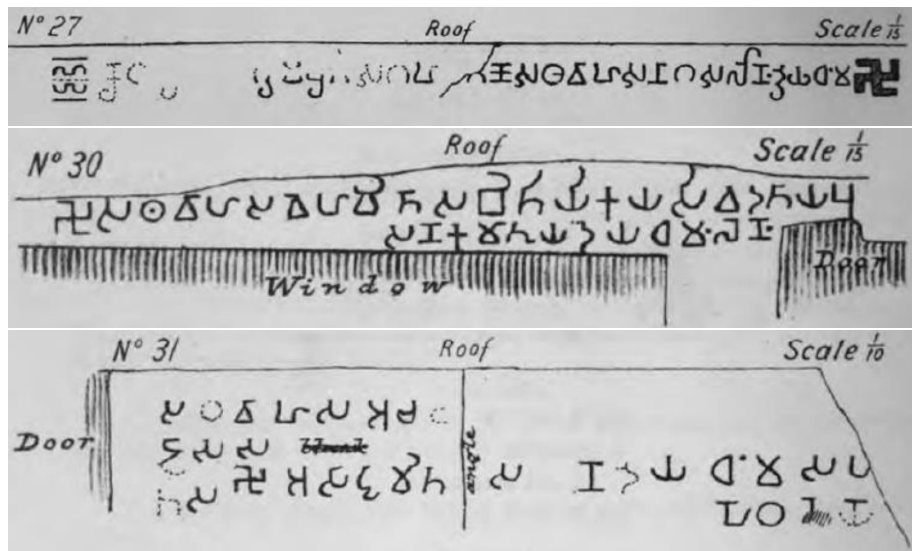
Fig. 4: Brahmi inscriptions at the Kuda caves no. 27 (top), 30 (middle) and 31 (bottom) proclaiming the donations made by carters and their family members. (Reproduced from Burgess and Indraji, 1881.)

More obliquely, we look at the structures of various gateways from early historic and medieval periods. Consider the gateway of Apshinge, dist. Osmanabad, Maharashtra, India as an example (Fig. 5). On the path from the coast to the medieval city of Tuljapur, this gateway is broad enough to permit the passage of a single bullock cart at a time, and for it to be inspected from both sides. The gateways of multiple forts, such as the land forts of Paranda (Fig. 6, left) and Ausa (Fig. 6, right) too demonstrate this feature.
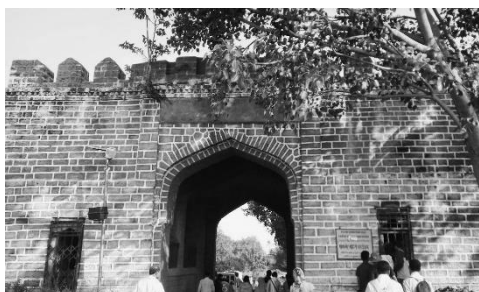
Fig. 5: The Medieval Gateway at Apshinge, tal. Tuljapur, dist. Osmanabad, Maharashtra, India, erected by Mahmud Gawan (1411-1481). Image © Apurva Kale, 2017.
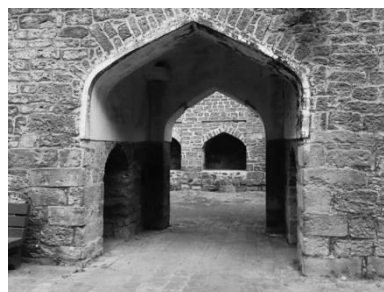
Fig. 6: The gateway at Paranda Fort, tal. Paranda, dist. Osmanabad (left, © Priyanka Pangale, 2017)
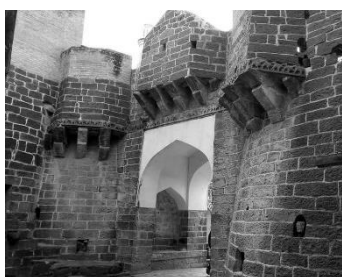
Fig. 6: The gateway at Paranda Fort, tal. Paranda, dist. Osmanabad (left, © Priyanka Pangale, 2017) and at Ausa Fort, tal. Ausa, dist. Latur (right; © Apurva Kale, 2017), Maharashtra, India.

Three Trade Routes: The Yojana and the Flow of Power

The bullock is a slow-moving animal, but capable of tirelessly moving long distances. On average, a cart pulled by two bullocks can move twelve imperial miles in a day, which is the measure defined as the *yōjana* (Fleet 1906, p 1101). Indeed, the word comes from the root *yuj-* (to yoke), and refers to the distance for which the bullocks can be under the yoke. A quarter of a *yōjana* was a *krōsha* (*kōs* in the Medieval period), which was the commonly used measure of distance. The *yōjana* and the *kōs* determined the standards of road-building through most of South Asia history. For example, the royal road of the Mauryas that extended from *Pāṭaliputra* (modern Patna) to *Puruṣapura* (modern Peshawar) was marked by a distance marker at every *kōs* (which, according to Megasthenes, corresponded with 10 Greek stadia), a well at every half-*kōs*, alongside banyan trees, mango-orchards and rest-houses, according to Aśōka's seventh edict (Mookerji 1928, p188-189).

Early Historic Period

The Western Coast of India was well-known for the flourishing trade between India and Rome (Gupta 1993) (Tomber 2007), and this trade has been known to support a number

of Buddhist monasteries that were established in rock-cut cave complexes, which also doubled as banking centres (referendum). We plotted the monasteries that align along the major trade routes (Fig. 7). For two of the trade routes, we have calculated the distances (in *yōjanas*) between monastic cave complexes, from the port of Kalyan to the hinterland emporium of Ter (Table 1) and from Ḍābhōl to Kolhapur (Table 2).

Stage	Distance in *yōjanas*
Kalyan - Kōṇḍaṇē	3
Kōṇḍaṇē - Karla	1.25
Karla - Bhaja	0.5
Bhaja - Bedsa	!
Bedsa - Ghorawadi	!
Ghorawadi - Shelarwadi	1
Shelarwadi - Pataleshwar	1
Pataleshwar - Shirwal	2
Shirwal - Dharashiv	12
Dharashiv - Ter	1.25

Table 1: The trade route from Kalyan to Ter

Stage	Distance in *yōjanas*
Ḍābhōl - Panhale Kaji	1.25
Panhale Kaji - Chiplun (navigable)	2
Chiplun - Patan	3.5
Patan - Agashiv	2.5
Agashiv - Kolhapur	4

Table 2: The trade route from Ḍābhōl to Kolhapur
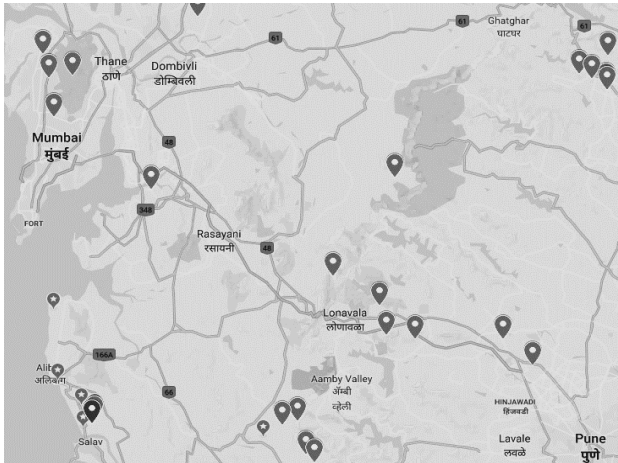
Fig. 7: Buddhist Rock-cut Cave Complexes on the route from Kalyan to Pune.

Early Medieval Period

One of the author's excavations at Chandore, dist. Raigad, Maharashtra, India, coupled with explorations in the towns of Goregaon and Mhasala adjoining it can assist to illustrate this point further. All sites date to an early Medieval period, during the rule of the Northern Shilaharas and Yadavas (K. F. Dalal 2012) (K. F. Dalal 2013) (K. F. Dalal 2013) (Dalal, Kale and Poojari 2015) (Dalal and Gowri Raghavan in press). Chandore was a minor trade hub, exactly a day's ride away by bullock cart from the main hub of Goregaon (~20 km or ~12 miles, *one yōjana*), which lies on the main transportation highway of the Western Coast of India, a route that dates from the Indo-Roman Trade period. From Chandore, a return trip to the port town of Mhasla (10.2 km, 6.33 miles or 2 *kōs* away) can be made within a day, as has been observed by one of the authors during his fieldwork. Chandore is also a day's cart ride away from Charai Budruk (10.3 km)

and Talegaon tarf Tala (12 km), where there are multiple early Medieval remains (Dhanawade in press) (Fig. 8).
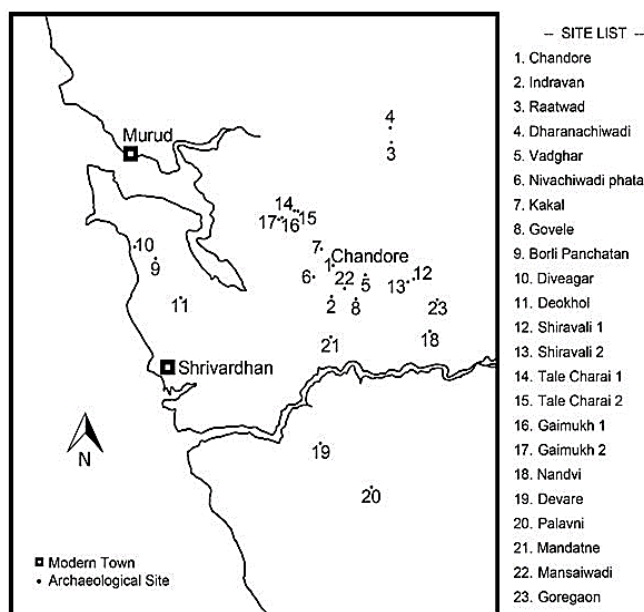
Fig. 8: Location of Chandore, dist. Raigad, Maharashtra, India with respect to Goregaon, Tale-Charai and Mhasla. After Dalal (2012).

Suri-Mughal Period

The Grand Trunk Road from Calcutta to the Khyber, as refurbished by Shēr Shāh Suri to include one *sarāi* (resting place) every two *kos* (Dar 1998, p161), would have provided a carter two stops in a journey, enough for meals, water and rest for himself and his bullocks provided free of cost by the state. His son Islam Shah Suri built additional *sarāis* at certain stretches of the Road. Jahāṅgīr is said to have built a *pakkā* (stone/brick) *sarāi* every 8 *kōs* apart (two days travelling by bullock cart), alongside the pre-existing *kaccā* (mud) *sarāis* (Dar 1998) (Fig. 7). The *sarāis* along the Delhi-Lahore route were grand structures, with upto 160 rooms, mosques, tanks, bāolīs, stables and kitchens (Dubey 2017). A similar series of *sarāis* is said to have been built on the road from Delhi to Daulatabad by the Tughlaqs (Dar 1998). Distance markers, called *kōs mīnārs* were also built by various Sultans of Delhi and Mughal rulers, some very highly embellished, at every *kōs* (Dubey 2017).

Fig. 9: Surviving *sarāis* and *kōs mīnārs* from Delhi to Peshawar, based on data from Dar (1998) and Dubey (2017).

Although other draught animals have had their role, such as tamed elephants, donkeys, mules, horses and buffaloes, none have had the economic heft or versatility of the bullock cart. A study in 1977 by the Indian Institute of Management, Bangalore (India Today), well into the period of motorization of transport, estimated their contribution to the economy at 10 billion-ton kilometers, hauling 60% of the farm-to-market transportation. Unlike the horse-cart or other carriage by draught animals consigned to obsolescence limited to mountainous tracts (Kosambi 1955, 69), the bullock cart is still a familiar feature on South Asian roads (Fig. 1a). The bullock's ability to handle wet sand as well as a firm road makes it possible for bullock carts to be driven right upto beached boats (Fig. 1b). Not only does it make it suitable for modern fishing loads, but the cart would also have taken the historical Indo-Roman cargoes equally well.

Considering the centrality of the bullock cart, we note with surprise that their representation in art, sculpture, toys and architecture in the subsequent historic period of South Asia is few and far between. Herein, we present a small review of the role of the bullock cart in Indus and post-Indus South Asian Art.

The Bullock Cart from the Harappan Period to the Modern

The bullock-cart makes its first appearance in South Asia (and the world) in the form of cart tracks (Fig. 10) in the Ravi Culture levels of Mound E on the southern slope of area C at Harappa (Dales and Kenoyer 1991, p246), dating back to 3500-2800 BCE. Terracotta and bronze bullock cart toys make their appearance shortly (Fig. 11), and have been discovered in several sites of the Harappan Culture.
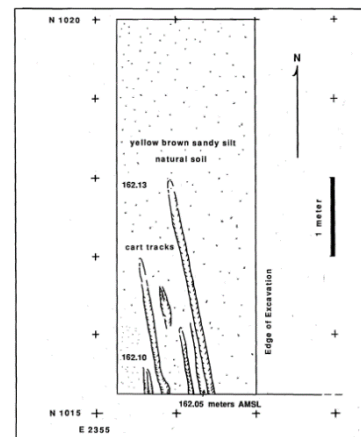
Fig. 10: Bullock cart tracks in the Ravi levels of Harappa. (After Dales and Kenoyer, 1991, fig. 13.41)
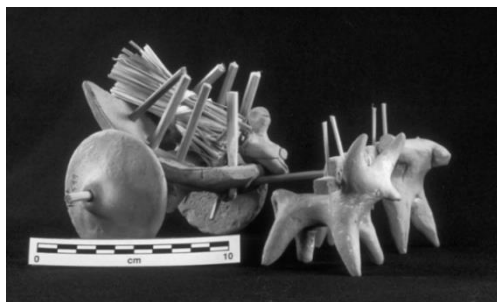
Fig. 11: Toy Harappan Bullock cart with bullocks and driver. (© Sharri R. Clark/Laura J. Miller, Courtesy Dept. of Archaeology and Museums, Govt. of Pakistan. Reproduced with permission from Harappa.com.)

These toy sites point to a diversity of designs of bullock cart that developed over the next period (Table 3), driven by the need for commodities such as stone, wood and brick in the rising cities (Kenoyer 2004).

Cart type	Number of finds
Square-compartment	6
Solid-side board	6
Flat solid chassis	12
Double side frame	17
Oval-compartment	27
Four posted	236
Hollow Frame concave end	722
Hollow Frame	1737

What is interesting to the authors is the longevity and stability of these designs, continuing into the modern period in the villages of India and Pakistan, surviving de-urbanization in the Late Harappan Phase, as evidenced by a variety of designs of bullock carts and bullock chariots represented in Chalcolithic rock art (Neumayer 2016). It is only in the 20th century CE that the advent of ball bearings and rubber tires have led to an improvement in the design (India Today 1977) (Kenoyer 2004). Of particular interest is the triangular-framed hollow-chassis cart first mentioned by Kenoyer (2004, plate 6 fig. 15 & fig. 16), the design of which has continued into the present, unchanged for over three millennia.

Triangular Chassis

Either synchronous to or after the Mature Harappan phase, the triangular chassis continues into the Chalcolithic (Neumayer 2016), as seen in Fig. 12. The late Jorwe culture of the Deccan (~1000-700 BCE) also displays the triangular chassis (Fig. 13a, b), as seen by an etching into pottery mentioned in passing by Sankalia (1974, p505, fig. 204).
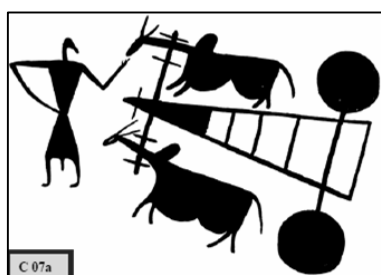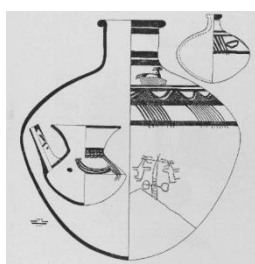
Fig. 12   *Fig. 13a*   *Fig.13b*

Fig. 12: Triangular chassis with bullocks and carter, Asan River, Morena, Madhya Pradesh, India. (After Neumayer, 2016, slide 0007.)
Fig. 13a: Cart drawn by two-humped bulls, etched on Late Jorweware pottery, Inamgaon (~1000-700 BCE), dist. Pune, Maharashtra, India. (After Sankalia, 1974, fig. 204.)
Fig. 13b: Close-up photograph of above, Deccan College Museum, Pune. (© Abhijit Dandekar, reproduced with permission.)

This type of cart is subsequently reported in a sealing of the Early Historic Period, from Balathal, dist. Udaipur, Rajasthan, India, in a layer radio-carbon dated to about 330-160 BCE (Fig. 14) (K. F. Dalal 2001).

Fig. 14: Triangular chassis bullock cart with two humped bulls, on a sealing from the Early Iron Age level (330-160 BCE) at Balathal, dist. Udaipur, Rajasthan, India. What might possibly be a smaller wheeled vehicle is seen to its right. (© Kurush F. Dalal, 2001)

Rock art from Ramapura in the Megalithic site from Benakal also displays a triangular chassis bullock cart with one humped and horned animal to the left, possibly a bovid and one un-humped and possibly unhorned animal to the left (Neumayer 2016, slide 82) (not shown). However, the author credits the painting, with some doubt, to the historic rather than the Megalithic period.

That the bullock cart was not restricted to mofussil regions, but was also part of urban life is illustrated by the parable of *Anāthapiṇḍika* purchasing the *Jētavana* for the Buddha at *Sravasti* (Fig. 15). Depicted on a medallion in a *tōraṇa* of the Bharhut stupa (100-75 BCE), on the bottom right is a cart, with the bulls unyoked and the yoke raised, to show the emptying of the cart; the gold coins having been spread out on the ground to depict the price that Anāthapiṇḍika paid Jētakumāra for the purchase. In a latter section of the paper we also discuss the symbolism of the bulls unyoked.

Fig 15: Medallion on Tōraṇa at Bharhut Stupa, Indian Museum, Kolkata. Note the hollow, triangular chassis. (© Ken Kawasaki, under the Creative Commons Attribution-Share Alike 3.0 Unported license.)

Neumayer's review (2016, slide 75) also includes a Kushāṇa period (1st-2nd c. CE) rock painting from Urden, in the Malwa region of Madhya Pradesh India (not shown), which is clearly a triangular chassis cart with humped oxen.
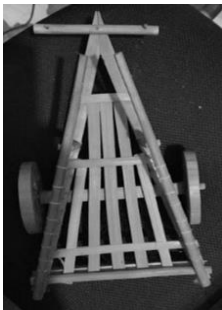
Fig. 16: Bullock cart toy made of bamboo, Assam. (© Raamesh Gowri Raghavan, 2011.)

Finally, we skip a couple of millennia into contemporary times, in which the triangular cart motif is still present in Indian arts and crafts. For an example (Fig. 16), a bullock cart toy made of bamboo, purchased by one of the authors from Guwahati, Assam still follows the hollow, triangular chassis design.

Rectangular Chassis
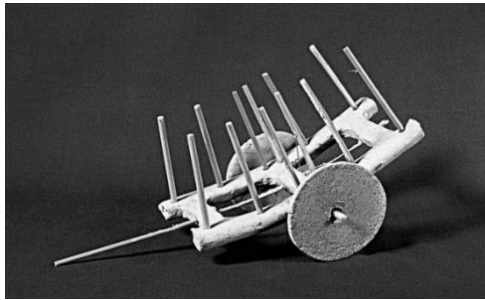
Fig. 17: Hollow frame rectangular chassis toy bullock cart from Nausharo, Sindh, Pakistan. (© J.M. Kenoyer, Courtesy Dept. of Archaeology and Museums, Govt. of Pakistan. Reproduced with permission from Harappa.com.)

Alongside the triangular chassis, there is also art historical evidence of the continuance of the rectangular chassis, first seen at Harappa and Nausharo (Fig. 17) (Kenoyer n.d.). Though heavier, this can bear more load, and is seen in greater diversity among Harappan toys. (Kenoyer 2004, plate 6, figs. 4-7).

This design of cart is also seen, catalogued by Neumayer (2016), in the Neolithic rock art of Edakal Cave, dist. Wyanad, Kerala (slide 0086) as well as Chalcolithic rock art at Kotra, dist. Rajgarh (slide 0042), Chaturbhuj Nath Nulla, dist. Mandsaur (slides 0057,0058) and Jalawatrun in the Mahadeo Hills (slide 0076), all in Madhya Pradesh; in Naldeh, Bundi dist. Rajasthan (slide 0067) and also in Koppagallu, dist. Bellary, Karnataka (slide 0081).

Fig. 18   *Fig. 19*   *Fig. 20*
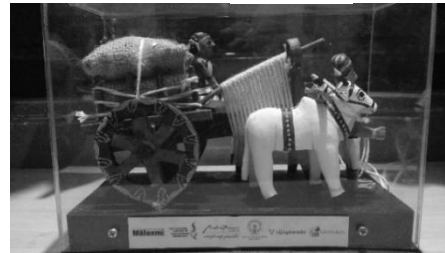
Fig. 21   *Fig. 22*

Fig. 18: Terracotta Bullock cart sealing from Early Iron Age Balathal, District Udaipur, Rajasthan, India. (© Kurush Dalal, 2001)
Fig. 19: Basalt Stele from Sannati, dist. Gulbarga, Karnataka. © Prof Srinivas Padigar.
This type of cart is also depicted occasionally in Indian Medieval miniature paintings (Fig. 20), and also as part of Indian rural scenes in the Company School, which were popular among British and other European expatriates as souvenirs to take home (Fig. 21). In modern times too, miniature wooden toys in the Etikoppaka tradition of Andhra Pradesh, India depicting the rectangular chassis are made and sold as tourist souvenirs (Fig. 22).
Fig. 20: Miniature painting by Raqim Abul Hasan, 17th century, Delhi. (Source: (Tomczak 2016)
Fig 21: Company School, Trichinopoly, 1840s: "Bullock cart with caparisoned dome and wealthy passengers.". (Image credit: Peter Blohm, www.indianminiaturepaintings.co.uk.)
Fig. 22: Wooden toy cart of the Ettikoppaka handicraft style, Vijayawada, Andhra Pradesh, India. (© Raamesh Gowri Raghavan, 2016)

Representations from the Early Historic Period come from a terracotta sealing at Balathal, dist. Udaipur, Rajasthan dated to about 330-160 BCE (K. F. Dalal 2001) and a basalt stele fragment from Sannati, dist. Gulbarga, Karnataka, both in India. The Balathal sealing shows in profile a cart, probably with spoked wheels, drawn by a proportionally diminutive bullock with a prominent hump (Fig. 18). Both this sealing, and the sealing pictured in Fig. 11, are the only sealings from the Early Historic Period (400-280 BCE, uncalibrated C^{14} dates) to have been found in India (K. F. Dalal 2005). The Sannati stele depicts an unyoked cart, with three bullocks, one of them seated (Fig. 19). The detail of the third bullock is of note: the artist has observed the practice of taking along a reserve bullock that can take turns with the hauling bulls to give them some relief, allowing the cart to be on the move for longer.

The Bullock Racing Cart or Chariot

The absence of the horse, and the horse-chariot among the Bronze Age Harappans, and their Chalcolithic counterparts have long been discussed, e.g. by Neumayer (2016). Nevertheless, as Neumayer shows, the bullock chariot is not absent from Chalcolithic Rock Art (Fig. 23), and in a spectacular bronze sculpture from the Daimabad hoard (Fig. 24), of Maharashtra. Similar cart/chariot designs are shown by Neumayer in Chalcolithic Rock art from Badami/Hiregudda, Karnataka, India (slide 0083), as well as from Adarshila, dist. Mandsaur (slide 0047), and Putli-Karad, dist. Raisen (slide 0032), both in Madhya Pradesh, India.
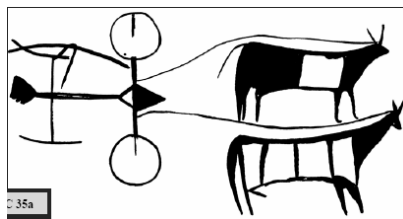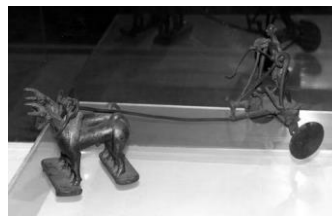
Fig. 23   **Fig. 24**   **Fig. 25**

Fig. 23: Chariot with triangular platform for rider, with humpless (Taurine?) cattle, Asan River, Morena, Madhya Pradesh, India. (After Neumayer, 2016, slide 0007.)
Fig. 24: The bronze Bullock chariot from Chalcolithic levels at Daimabad, Dist. Dhule, Maharashtra, India. (© Yann Forget, under the Creative Commons Attribution-Share Alike 4.0 International license.)
Fig 25: Shankarpat in Maharashtra, undated. (Figure taken from http://www.dnaindia.com/india/report-maharashtra-to-seek-legal-recourse-on-bullock-cart-race-minister-2295907)

In contemporary India, bullock cart racing is a popular sport in the states of Punjab and Haryana in northern India, in Maharashtra in central India where it is known as *Shankarpat* or *Bailgaḍa*, and in Cumbum in Tamil Nadu, where the race is called *Rekla* (Hindu 2017). The cart used is often a light-weight, single axle vehicle, with no more than a small platform for the racer-driver to stand on, and a bar for the rider to grip with one hand while he holds the whip or reins in the other (Fig. 25). Both the Asan River and Daimabad bullock chariots/carts are similar enough to modern racing chariots for us to surmise that these were primarily used for racing rather than any other purpose. Indeed, referring to the transport or war chariot of the kind depicted in the Kausambi

clay tablet (Neumayer 2016, slide 0077) (not shown), its clear that the racing cart/chariot lacks space for storage of weapons of any kind.

Neumayer (2016, slide 0078) says of the Daimabad chariot:

The Daimabad chariot is drawn by a pair of long-legged oxen. The yoke has a double curve which indicates that it was originally developed to fit horses' necks instead of humped cattle. The extremely long pole similarly points to the originally intended harnessing of horses which need more space for their hind legs when galloping, while in a bullock-drawn vehicle it was necessary for the charioteer to get close to the animals which are controlled by poking their rear and by twisting their tails. The reins in bovids are used only to break speed. The yoke-ends on the Daimabad chariot show open loops, which can be understood as rein-sorters, which were indispensable in crossed-rein trains, in the way that both animals could be forced left or right simultaneously, a feature which is shown clearly in the chariot depictions from Putli Karar…and from Chatur Bhoj Nath Nulla…, where both pictures show non-bovine animals, most probably horses.

That the chariot was actually made with horned, bovid animals rather than horses creates some interesting questions. Maharashtra has never been known for horses, and even as late as the Medieval period horses were imported from Arabia through dedicated ports (Thana District Gazetteer 1882). Although horses are known from Vidarbha in the Megalithic period, no evidence exists of their use for ploughing or transportation (Allchin and Allchin 1982). It nevertheless points to another tradition that has been passed down the centuries, in both tangible (carts) and intangible (the race itself) forms.

Similar to the *Bailgaḍa*, but using buffaloes and plough, is the *Kambala* race of Tulu Nadu region in the state of Karnataka, India (Karnataka.com 2017). Both *Shankarpat* and *Kambala* are staged before the sowing season, when fields are fallow, with the latter being a ritual race to commence the winter sowing season. We note that both races are run by men alone, and only using male animals. Animals in both cases are specially bred for the purpose, with no other uses, except perhaps as stud bulls (see below), often maintained at a high cost, making the 'sport' available only to the rural rich (Nagpaul 2017). Alongside elitism, these races have also been criticized as cultural vehicles of caste oppression by some (Nagpaul 2017) (Soorinje 2017).

Fig. 26: A close-up of the rider of the bronze Bullock chariot from Chalcolithic levels at Daimabad, Dist. Dhule, Maharashtra, India. © Yann Forget, under the Creative Commons Attribution-Share Alike 4.0 International license.

A closer examination of Figure 20 shows one of the animals with an erect penis. Upon closer inspection of the Daimabad bronze bullock chariot, we note that the rider is depicted

with a clearly raised phallus (Fig. 26), and is also otherwise anatomically male. The bulls too, are depicted with muscular features, projecting penises and large horns. This indicates that the race might have carried the same socio-culturalconnotations of strength and masculinity even in the Chalcolithic period.

Bulls and bullocks

Most Indian languages distinguish between fertile bulls and castrated or sterilized bullocks/oxen, for example Hindi uses the terms सांड and बैल respectively. While bullocks are usually penned and used for tillage and haulage, the unsterilized bull is often unbound and used for no other purpose than to provide sperm for milch cows. It is a common sight in Indian villages for such bulls to roam the street, and to nibble greens and grains from the shops they pass by. In order to prevent them from physical harm, these bulls are often dedicated to the village goddess in Andhra Pradesh (Padma 2013) and Maharashtra (Mugdha Karnik, personal communication). In Tamil Nadu, the first calf born to a milch cow, if male, is often given away to the village temple. Such bulls are called 'Kōvil kāḷai', and being considered sacred, are allowed to roam freely.

Metaphors in Indian languages are rich in references to bulls and bullocks. A young male given to loafing around is often compared to a सांड in the Hindi-speaking regions or Kōvil kāḷai in Tamil Nadu, while a person working hard with little or no reward is compared to a बैल. A similar reference comes from the Dhammapada (Jarakavagga, 152) (Buddharakkhita 1986, p60-61), in which an un-enlightened being is compared to a bull (अपस्सुतायम् पुरिसो बलिबद्दोव जीरति). A कोल्हू का बैल is someone whose work permits him little freedom for anything else, such as a bullock going around an oil-mill (कोल्हू). Indeed, this latter image has been rarely depicted in Indian art, bar one depiction in a South India (probably Hoysala) temple of the 13th century (Fig. 27).

Fig. 27: A pair of bullocks provide the power for an oil mill (ghani). (Source: Food and Agricultural Organisation (FAO) Corporate Document Repository; copyright uncertain. http://www.fao.org/docrep/t4660t/t4660t04.jpg)

Despite the indispensability of bullocks to ploughing in most parts of South Asia for most of its history, the plough (otherwise well-depicted within the iconography of the Vaishnava *avatāra Balarāma*) is rarely depicted with bullocks in temple sculptures. It features occasionally in rock-art, such as in Chatur Bhoj Nath Nulla and Lakhajoar (Neumayer 2016, slide 0010) (Fig. 28) and Patsal (*ibid.*, slide 0069). We have recounted the find of a terracotta ploughshare from Banawali earlier (Danino 2014); it may perhaps have been part of a toy that included bullocks.

The expression of the bull with virility is seen in the 'sport' of *Jallikattu*, which is conducted as part of the celebrations of the Pongal harvest festival in Tamil Nadu, India, especially in the Madurai and Dindigul districts. The 'sport' essentially consists of young men chasing and 'taming' a bull of the Kangayam indigenous breed by holding onto its hump (Fig. 29). Such bulls, called '*Jallikattu kāḷai*', are solely bred for this purpose, similar to the bulls of *Bailgaḍa*. A *Jallikattu* 'winner' bull gets the most requests for impregnating milch cows; men who succeed in 'taming' the bull (in reality, holding onto the hump for a few minutes without being knocked down) see better marriage prospects. However, criticisms of elitism and casteism have been made of *Jallikattu*, in the same manner as *Bailgaḍa* and *Kambala* (The Wire 2017)
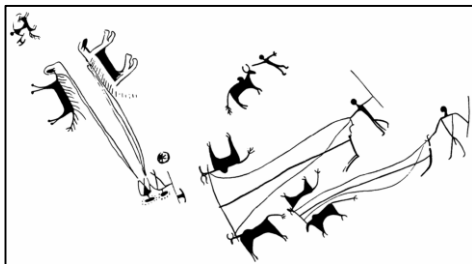
Fig. 28: Rock-art representation of bullocks attached to the plough from Chatur Bhoj Nath Nulla. (After (Neumayer 2016))
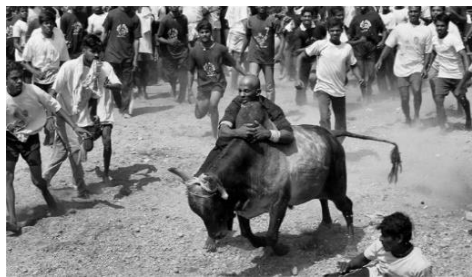
Fig 29: Jallikattu in Tamil Nadu. (Source:http://ste.india.com/sites/default/files/2017/04/17/587300-jallikattu.jpg; copyright uncertain.)

The sacredness of the cow in Hindu and Jain tradition extends to the bull as well, with Article 48 of the Indian Constitution (one of the directive principles) directing states to prohibit slaughter of milch and draught cattle. The bull features in the Hindu pantheon as *Nandi*, the *vāhana* of Shiva (Krishna 2014), and Nandi sculptures are ubiquitous in most parts of India, wherever a temple dedicated to Shiva exists. Among the earliest depictions of Nandi to survive is a coin of the Kushāṇa period, depicting Shiva with Nandi in the background (Fig. 30).

Fig. 30: Kushāṇa coin with Shiva (holding damru, snake, trishūl and kamandala), with Nandi in the background. © PHGCOM, under the Creative Commons Attribution-Share Alike 3.0 Unported license. https://commons.wikimedia.org/wiki/File:KanihkaIOishoShivaCoin2.jp

The humped (zebu) bull was also a major cultural icon in Harappan culture (Fig. 31) as can be seen from the dozens of seals that bear depictions of bulls (but rarely cows), as well as paintings on pottery (StephanieV 2014) and inscriptions on copper plates (Shinde and Willis 2014). Citing Ernest Mackay (1931, p386):

We have certain proof in Nos 327-40 and Possibly No. 542, that this type of bull was known in India in very early times. The characteristic hump on the shoulders allows of no doubt whatsoever. Fortunately, the majority of seals on which this animal is represented are very well preserved. Indeed, rather more care seems to have been taken with the portrayal of this animal than with some of the others. No. 337 is marvelously well engraved and finished; in feeling and in the careful portrayal of the muscles it will compare favorably with early glyphic art anywhere. The heavy wrinkled dewlap is especially well done, as is the case also with the bulls of seals 333 and 339.

Fig. 31: Steatite seal with Two-Horned Bull and Inscription, c. 2000 BC. (Credit: The Cleveland Museum of Art (http://www.clevelandart.org/art/1973.160))

Excavations at the pre-Harappan site of Amri, Sindh, Pakistan have also revealed terracotta figures of humped cattle (Zubair 2016), showing that the animal, while still being used as a food source, had achieved cultural significance even earlier.

Contrasted with the bullock, a figure of humility, the bull has been seen as a symbol of nobility. It is this form that stands Ashoka's pillar of Rampurva, now in the Indian Museum, Kolkata, West Bengal, India (Fig. 32, left). A more muscular bull, not unlike the Ongole breed, also features on Ashoka's Sarnath pillar capital (Fig. 32, middle), and has thus made its way to the National Emblem of India (Fig. 32, right).
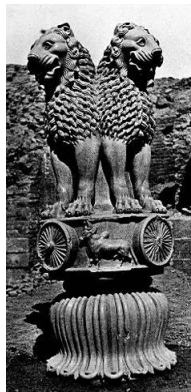
Fig. 32: Left: The bull-capital of Ashoka, as found at Rampurva (1903). Sculpted realistically, note the fleshy hump, muscular torso and the hanging penis. (© Raamesh Gowri Raghavan).

Middle: The bull and Dhamma wheel on the Lion Capital of Sarnath. At the level of the bull are also an elephant, a horse and a lion, the four animals together symbolizing the Buddha. (Image source: https://commons.wikimedia.org/wiki/File:AshokaLions.jpg, no copyright.) Right: The National emblem of India, retaining the bull and the horse, although they possess no constitutional symbolism. (Image source: https://commons.wikimedia.org/wiki/File:Emblem_of_India.svg, no copyright.)

The bull is also found extensively in Buddhist literature. For example, the Jātaka lore mentions that one of the forms that the Buddha took in his Bodhisattva births was that of

a bull (Piyatissa 1994). The Ven. Piyatissa tells two similar stories, '*The Bull Called Delightful*' and '*Grandma's Blackie*', in which the Bodhisattva, as a bull, offers out of compassions to pull a hundred and five hundred cartloads respectively, if addressed respectfully. Another story clearly presents cart bullocks as a life of humility as opposed to well-fed animals intended for sacrifice (Piyatissa 1994, p129).

In Jaina canon too, the bull is perceived as an auspicious symbol, and an icon of fertility, as seen in the legend of the birth of *Mahāvīra*, when his mother Queen *Trishalā* saw a bull among fourteen auspicious signs. The bull is also the symbol of *Rishabhanātha* (Krishna 2014).

Symbolism

The bull, bullock cart and bullocks hold different places in Indian philosophical and literary thought. As seen in the first verse of the Dhammapada (Buddharakkhita 1986, p2-3), the bullock cart represents *samsāra* and mortal suffering following the un-enlightened being represented as the bullock (चक्कम् व वहतो पदम्), with the wheel signifying the cycle of births and death (Fig. 33).

Fig. 33: Illustration of the first verse of the Dhammapada by Mr. P. Wickramanayaka (Source: https://tienvnguyen.net/a1151/kinh-phap-cu-pham-01-pham-song-song-the-dhammapada-chapter-01-pairs)

In his summary of the Buddhist Nikaya, Ambedkar (The Buddha and his Dhamma 1957) writes

Besides these main and minor centres, the Blessed Lord visited many other places during the course of his missionary tour... These distances the Lord walked on foot. ***He did not even use a bullock-cart*** [emphasis ours].

Thus, the bullock-cart is seen as a worldly comfort, which the Buddha abjures. Contrast this with images of the Buddha, as the young Prince Siddhartha, who has not yet achieved enlightenment and is thus not free from desire, riding a cart on his way to school (Fig. 34 a & b).

Fig. 34a (left): Gandharan 'cosmetic tray' portraying a bullock/buffalo cart.
Fig 34b (right): Mathura red sandstone panel portraying a cart pulled by woolly rams. Both images portray the young Prince Siddhartha going to school. Personal collection of Dr. Rick J. Willis. (Reproduced with permission.
Source: http://eclecticmuseum.com/index.html.)

The cow/bull as a symbol of worldly attachment is also denoted in verse 19 of the Dhammapada (Buddharakkhita 1986, p8-9) (गोपोव गावो गणयम् परेसम् न भागवा सामन्नस्स होति; the herder who counts the cattle of others does not gain divine merit). The bullock carts depicted in the medallion at Bharhut (Fig. 15) and the stele at Sannati (Fig. 19) are unyoked, implying the release of the being from his worldly torments. The unyoked bullocks in the Bharhut medallion may be said to represent *Anāthapiṇḍika* himself, who in following the path of the Buddha and by giving his treasures to purchase the *Jētavana* has released himself from *samsāra*. The sitting bullock in the Sannati stele is interpreted as representing death, which in Buddhist iconography is the final release of the enlightened soul from not only its mortal burdens (the cart) but also the cycle of birth and death, represented by the wheels of the bullock cart.

We also see from all the depictions of bullock carts that they are exclusively a preserve of men. No cart from any period covered in this study shows women, not even in the ones whose content is spiritual rather than secular. The racing-cart images not only not show women, but also a heightened level of masculinity. Although they aren't pictured with carts, there have been representations of women with bulls. We cannot omit the spectacular find of the Lady of the Spiked Throne (Vidale 2011, p60-63), possibly from Afghanistan or Pakistan, but undoubtedly of Harappan origin. The entire terracotta sculpture (not shown) consists of a boat with its front shaped like a bull's head, with attendants and rowers, all male, and a lady sitting in the covered rear upon a throne, which has two seated bulls for headrests.

Figure 35 shows bronze figure of a woman (breasts prominent) with her hands on the humps of two zebu cattle. The image is attributed to the late Harappan period from Kausambi, which is rather odd as no excavation level at Kausambi has been attributed to the Harappan culture (Sharma 1969).
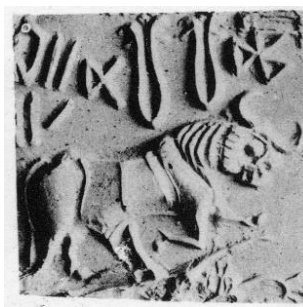
Fig. 35   **Fig. 36**

Fig. 35: Woman Riding Two Brahman Bulls (2000–1750 B.C.), gift of Jonathan Rosen to The Metropolitan Museum of Art, New York in 2015. (Source: https://metmuseum.org/art/collection/search/39126. No copyright.)
Fig. 36: The 'Gaur' seal of Chanhu-Daro. Reproduced with permission from Harappa.com. (Source: https://www.harappa.com/blog/chanhu-daro-seal-gaur-ravaging-female)

An even more striking figure (Fig. 36) shows a human being ravished or savaged by a wild bull, possibly a gaur (*Bos gaurus*), the one bovid species in South Asia that has remained undomesticated (Harappa.com 2014). Although the bull's penis is erect and

seen to penetrate the human, who is not clearly distinguished. This is strikingly similar to a tradition of depicting women ravished by donkeys on ass-curse steles of Maharashtra state, which date from the 10th - 13th centuries CE (Dalal, Kale and Poojari 2015) (Dalal and Wirkud 2015). Such steles proclaim the grant of land to the owner by a potentate, with any person attempting to grab the land being cursed that his mother would be violated by a donkey (तेहाची माया गाढवे झविजे). A parallel interpretation might be to link this seal to a version of the story that in its Greek telling, is of Zeus, in the form of a white bull, impregnating Europa.

Discussion and Conclusion

The chief remit of this review was to cover the art history of bulls, bullocks and bullocks for a period of over 6,000 years, from the pre-Mature Ravi levels to modern times. We make our main observations in the following points:
1. We notice that the bullock cart has been the lynchpin of trade and transport
2. It has shown an incredible conservation of design since Harappan times
3. Cultural associations of nobility and masculinity have also been conserved through this period
4. So important a facet of social and economic life has rarely found expression in South Asian art history.

The bullock cart and highway design

An examination of Fig. 10 (Bullock cart tracks in the Ravi levels of Harappa) reveals the importance of bullock carts in city planning in Harappan times. With streets wide enough to accommodate one bullock cart and a few pedestrians comfortably at any given time, or two bullock-carts at a time, the Bronze Age cities of the Harappan Culture seems to have been designed with wheeled transportation as its key function: mark the straight layout of city roads, designed so bullock-carts do not need to turn frequently. This centrality of transport has remained an enormous influence in urban design, as can be seen even today in the design of city arteries and public transport, often prioritised over other urban needs as housing, sanitation and utilities (Bertaud 2004).

After the second Urbanisation (relocated to the Gangetic Valley) in South Asia, the bullock-cart also becomes the principle around which the Mauryan and later Mughal highways were designed, whether it be the the yōjana (the distance that a fully loded bullock cart can traverse in a day, about 12 imperial miles) as the unit of length used to calculate inter-settlement distances (Fleet 1906), or the kōs in medieval times, which became the bemchmark for the construction of traveller's sarāis. Not just sarāis, but also Buddhist vihāra complexes were built along major trade routes, and at locations that seemed more for suitable for the convenience of caravans, than the penance of monks (tables 1 & 2). A Mauryan carter (sāṭhavāha) would have had water every half-kos and a resting-house every two, while the Suri period sarāis, two kōs apart, would provide a

bullock-cart and its driver two rests in a day's journey, while the kōs mīnār helped him (and it was primarily a male carter) regulate his travel time. The Emperor Jahāṅgīr's imperial sarais, 8 kōs apart (Fig. 9), were probably designed around cavalry, which when travelling light can move a little more than twice as fast as bullock carts (Johnson 1978). That the Sarais Act of 1867 is still used to govern hotels and inns along India's modern highways (designed around the motor-car), remains an anachronistic testament to the import of the bullock-cart in highway design even today (Lal 2017).

Conservation of design
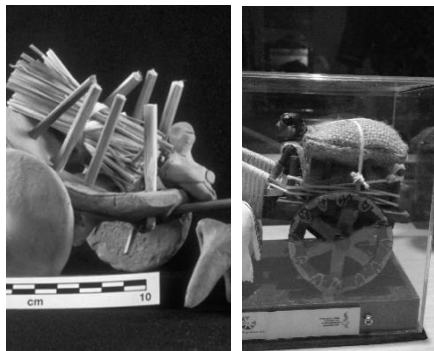
Fig 37: Comparison of cart toys of 'rectangular chassis' type from Harappa, ~2300 BCE (left) and Ettikoppaka, 2016 CE (right).

We draw your attention to the striking similarity between the frames of the carts featured in figures 11 and 22, despite their separation in space (Harappa, Punjab, Pakistan vs. Ettikoppaka, Andhra Pradesh, India) and time (~2300 BCE vs 2016 CE), displaying an unbroken continuity of design and function (Fig. 37) for about 6000 years. A similar comparison can be made for carts of the triangular chassis model (Fig. 38). The visual parallels are strong enough for us to rest our case without further argument. Other cart chassis types do exist, as seen in Fig. 1a (for haulage by a single bullock) and Table 3. Kenoyer (2004) carries an illustration (Figure 6: 17) that suggests a cart for a single bullock; this remains to be investigated further.
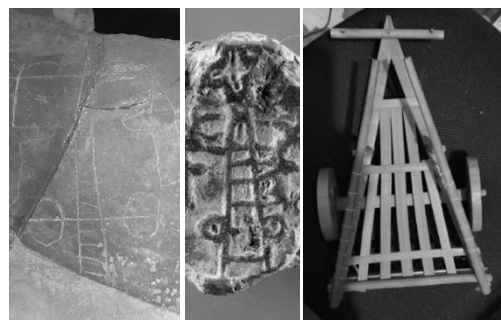
Fig 38: Comparison of cart designs of 'triangular chassis' type from Inamgaon, ~1000-700 BCE (left), Balathal, 330-160 BCE (centre) and Guwahati, 2010 CE (right).

Masculinity

If the contention of Dhavalikar (1982, p366) as to the date of the Daimabad bronzes can be accepted, the tradition of bullock-cart racing (bailgaḍa) in Maharashtra can be said to be in continuity for about 4 millennia, from the time of the decline of the Late Harappan phase (~1800 BCE), and perhaps earlier. The Daimabad chariot rider's masculinity is expressed simply and overtly (Fig. 26), while modern notions of masculinity are cloaked in various social codes of gender, caste and class roles behaviour (Nagpaul 2017) (Soorinje 2017). This is perhaps a cultural expression of the 'Handicap Principle'

(Zahavi 1997), in which this high expenditure on the maintenance of cart-racing bulls and buffaloes acts as an 'honest signal' of wealth. While we report sculptures and seals of women associated with bulls, we have come across no bullock cart associated with women in all the art surveyed, except as passengers.

Poverty of Art Historical Representation

Hindu temple architecture usually requires the maṇḍapa and garbhagṛha of a temple to stand on a platform, the perimeter of which is divided into numerous levles, which are often richly carved with various motifs. One such level is the nara-tara which depicts various scenes of human life, religious as well as secular (Kanitkar 2013). Considering that there are thousands of temples across South Asia, barring one known depiction of a bullock-driven oil mill (Fig. 27), we report with some dismay that bullocks or bullock carts have barely featured in any of the Hindu temple sculptures across South Asia, although the bull, usually as Nandi, is present, and there are multiple sculptures of herders with mixed bovid and ovid herds.

Having discussed the role of the Bullock cart in Buddhist symbology, we note the poverty of representations of the bullock cart in Buddhist art history too. The few that exist have been documented in this paper, including the basalt stele from Sannati (Fig. 19) and the *Anāthapiṇḍika* medallion from Bharhut (Fig. 15). A Kushana-period stele similar to that in Fig. 34b is reported from Charsadda Tehsil, Pakistan, and now in the Victoria & Albert Museum, London (Victoria & Albert Museum, London n.d.); however, it is pulled by rams and not bullocks.

Finally, we report four relief sculptures that represent the bullock cart in Jain art. The first and second (Fig. 39a & b) consists of bullock carts portrayed on the torana of the sole reported Jain Stupa at Mathura (Smith 1901, plate XV). The bullocks are similar in poise to the horses on the same sculpture, and are seen drawing a covered cart with passengers. The third is a wooden panel, supposedly from a 16th or 1th c. Jain temple from Gujarat, with a procession carved in relief, at the extreme right end of which is a bullock cart (Cleveland Museum of Art n.d.). The final is a relief carved into the 17th c. Pārśvanātha Temple in Lodrawa, Rajasthan depicting a bullock cart drawing a couple in a covered cart (Alamy Ltd. 2009).
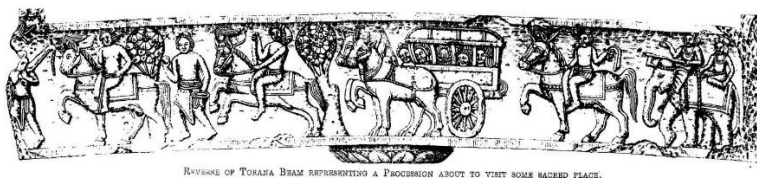
Fig. 39a: Procession with horses, elephant and bullock cart drawing passengers. Bas-relief from a torana beam of the Mathura Jain Stupa. (Reproduced from (Smith 1901), no copyright.)

Fig. 39b: A pair of bullock carts depicted alongside horse carts and mythical beings. Bas-relief from a torana arch of the Mathura Jain Stupa. (Reproduced from (Smith 1901), no copyright.)

In spite of the poverty of representation in formal art, the humble bullock cart has nevertheless held sway over South Asia's economy, as we have demonstrated. And from Pre- and Proto-Historic times right upto the modern era, we note that that bulls, bullocks and bullock carts have maintained an unbroken place within the popular imagination of South Asia for over 6000 years.

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Silk Heritage of Assam and Genesis of Ahimsa Silk

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Sericulture is one of the major cottage industries in Assam, comprising both Mulberry and Non-Mulberry silkworm culture and production of its natural silk. Non-mulberry silk - Muga and Eri silk have been closely associated with the rituals and traditions of Assam, and thus silk production and its uses have been important household activities leading to the economic development of a large section of rural people. It provides self-employment to approximately 2.60 lakh of families. Muga silkworm rearing and its silk production stand a unique position not only in Assam but also in the global map of sericulture. 94 % Muga silk and 62 % of Eri silk is produced in Assam for and placed in 3rd position in silk production in the country.

The period requires for completion of a silkworm crop varies from 22 to 90 days depending on the climatic condition. Generally, in Assam, the silkworm farmers take silkworm rearing 4 to 5 crops per year during leisure time, thereby earning Rs 8000/- to 20000/- per crop. This sericulture industry takes a vital role in eliminating poverty and for self-employment. This sericulture department is running 336 sericulture farms and centers in the entire Assam, excluding two no hills autonomous council and Bodoland Territorial Council.

Assam was popular in terms of the production of high-quality silk since the ancient times. The craft of weaving goes along with the production of silk. Weaving is one of the significant practices of North East India Neolithic culture. It is being practiced among all the ethnic groups of Assam. The practice of weaving grew to such a level in Assam, that it was known all over India and abroad. Kautilya's Arthashastra, a political literature of the 3rd century BC, makes references to the highly sophisticated silk attires from Assam. The knowledge of sericulture came with the Tibeto-Burman groups who migrated from China around the period of 3000 BC. Moreover, there was another trade of Silk through the Southwestern Silk road which started in China, passed through Burma and Assam, which finally got connected to the main silk road in Turkmenistan.

There are various other records to show how Silk came to India through Assam. There are references of Assam silk in the records written by Huen Sang where he has written the use and trade of Silk in Kamrupa during the rule of king Bhaskar Varman. Genetic research on silkworms shows that Assam Silk originated in two specific regions of Assam. One of them was Garo Hills in the ancient Kamrupa Kingdom and the other was Dhakuakhana in the ancient Chutiya Kingdom. Later during the rule of Ahom kings, silk was given royal patronage in the 17th century. Silk was worn only by the royalty as it was a sign of status and wealth.

Muga, the golden silk which is precious for all Assamese folk is known for its durability and has a natural golden tint with a shimmery and glossy texture. The golden colour does not fade even after using for a prolonged time and the warmness of Eri cloth increases day by day of its oldness. This natural silk plays a vital role in the socio-culture of Assamese people, mostly in marriages and different festivals. The silkworms and its pupa have very good protein food value for the indigenous tribal people of Assam. Silk has been in Assam's cultural heritage for quite a long time and is embedded in the daily lifestyle of the people. People depend on sericulture for financial income and also practice it as it has significance in the culture of Assamese folk.

In the present world with the increase of consciousness in the ethics of how we treat animals, people are trying to discover ways to procure animal product without hurting them. One of these products is Ahimsa Silk. Ahimsa Silk also is known as peace, vegan or non-violent silk is a type of silk that is purposed to be made in a more humane way rather than harming the creatures as it is done in the traditional methodologies.

Kusuma Rajaiah, a government officer of Andhra Pradesh state, came up with the theory behind the Ahimsa way of life which includes making of silk in a non-violent way and found that it was possible to create silk without killing the creatures that spun it. Traditional silk manufacturing methods involve boiling of the cocoons of the silkworm and then sorting out the threads to be used later in production and also consumption of the pupa as it is a delicacy in some parts of the country. Rajaiah's idea involves a gentler method, specifically letting the worms hatch and then using the cocoons once they are vacant. He started applying his theory into the process in the year 1992 and has hence been supported by a larger community of people interested in the welfare and rights of animals and non-humans.

Bombyx mori (Assam Silkworm or mulberry silkworm), subspecies of the Ailanthus silk moth (Eri silk) and several types of Tussah or Tasar moths: the Chinese tussah moth, the Indian tasar moth, and the muga moth are preferred for the production of Ahimsa silk.

It is generally said that Eri is also known as Ahimsa silk but that is not the case. Many pages and blogs on the internet by researchers and fashion designers say that "Eri is ahimsa silk and is always produced in a non-violent way as the pupa has open ends." Also a NIFT student Hansika Singh wrote in her blog "Unlike other silks, the moth is allowed to leave the cocoon before the Eri silk is extracted earning the fabric many names like ahimsa, non-violence, peace or vegan silk." This is not true at all as Ahimsa silk has never been produced before and Eri pupa does not have open ends so it cannot leave its pupa easily. Though it can be produced in a non-violent way from an economic point of view, it is quite difficult to produce peace silk as it requires 10 extra days in the process to let the larvae grow and the moths to hatch out of the cocoons. In contrast, the traditional process takes about 15 minutes. Later in the non-violent process, the cocoons yield 2 times less filament. This inflates the cost of non-violent silk cocoon, which is priced at roughly 3200 rupees per kilogram about 4 times the price of the regular kind.

The total life-cycle of a Silkworm ranges from 6-8 weeks. Generally, the warmer climate is suitable for the metamorphosis of a silkworm. However, other factors such as humidity and exposure to sunlight are also very important. Ideally, Silkworms will experience 12 hours of sunlight, and 12 hours of darkness per day, a temperature of 23-28 degrees Celsius is suitable. Under these conditions, the eggs should hatch in a period of 10-25 days. After 20-33 days of constantly munching of leaves, Silkworm will feel the urge to cocoon. Just before it begins cocooning, the Silkworm will excrete a runny fluid in order to clean out its system and prepare it for the last stage of its life-cycle. It will then ooze a tiny drop of Silk for anchoring, before going on to draw one long, continuous filament of Silk by swinging its head to-and-fro. After 10-14 days of developing into a moth in its cocoon, the Silk-Moth will appear from the cocoon and will excrete a brownish fluid upon emergence. Silk-Moths cannot fly, as a result of thousands of years of domestication.
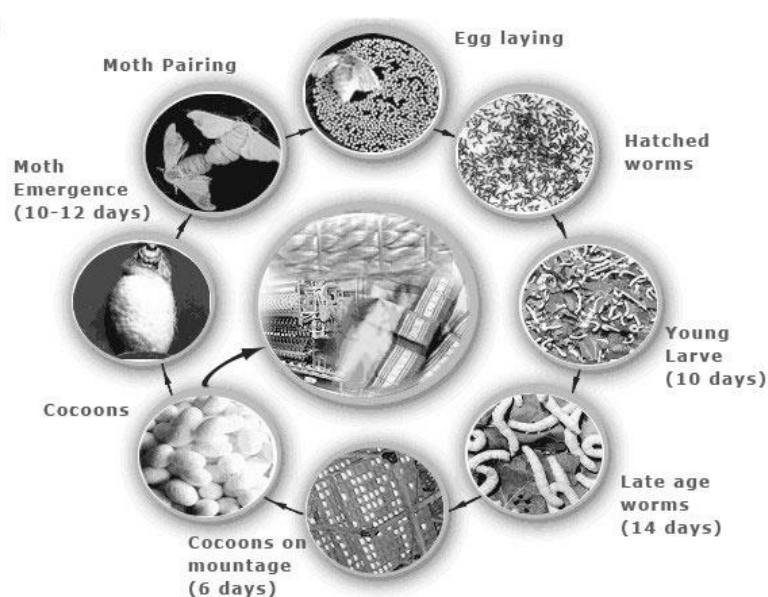
Commonly silk cocoons are boiled with the worm inside to maintain one continuous filament, which results in a smooth and shiny fabric. The humid climate of Northeast India is very favourable for the silk culture. Rural and tribal women traditionally carry out the processing, spinning, and weaving as part of their daily life. For around 30 days the silkworm grows and munches on leaves until it reaches a certain size. The worms then start to spin its cocoon, which takes another 15 days. Once the worm is completely covered with cocoon, the silk is processed. In some areas, the silkworm is considered a delicacy and is also eaten. The empty cocoons are cleaned by boiling in water, made into small cakes resembling cotton pads and then thrown against the mud houses for drying. Once the cakes are dry, they are used for spinning which is done similarly to spinning wool.

Eri silk is funnily enough also known as the silk of the poor. The status of eri clothes in the folklife of Assam is reflected in an old Assamese proverb 'Dair pani, erir kani', which implies that while curd (yogurt) cools, eri cloth warms up a person. Nevertheless, this eri silk has excellent qualities: it is very strong, combining the elegance of silk with

the comfort of cotton and the warmth of wool. Muga is the pride of Assam. It has a golden sheen to it and gets more valuable over time. From time immoral, Royals have been wearing Muga as a symbol of royalty and status.

As the normal process of cocoons involves the killing of pupa in its cocoon, many animal activists or vegan community like Jain wanted a clothing material which would not involve any killing of these pupas. And also even if the pupas are left undisturbed to grow into a moth or butterfly, birds, rats and other worm eating animals eat up the pupa beforehand. They reached Naramohan Das, who is also known as "Silkman of Assam" with a plea to create the first nonviolent silk on a commercial level. These animal activists are ready to finance for the cost related to this process as making silk with killing the pupa is a tedious process and not profitable in a market level. Naramohan Das is known all over the world. Many famous people in and out of India buy the high-quality silk he produces. He has been researching on Ahimsa Silk for over 2 years and still is in the process to create the first silk clothing which will be completely nonviolent. The process of Ahimsa Silk will involve a close monitor of all the cocoons and create a protective barrier around all the cocoons so no harm is done by the predators. After the moth comes out of the cocoons, the cocoons will be collected and sent out for the further production of silk yarn. This process will take a longer time than the time taken by the normal silk production process and plus it will cost more.

An exclusive interview with the silk man of Assam Mr. Narmohan Das was taken by Hiranmayee Das Gogoi (a research worker):

Q: Mr. Das, we have seen many articles on the internet written by some designers about Ahimsa silk and it's clothing. What is your opinion on this matter?

Mr Das: Till date, there is no commercial production of Ahimsa silk anywhere in the world. It is under research and I am associated with is since last three years.

Q. Then why so many of written work and marketing is going on in the name of ahimsa silk?

Mr Das: Due to misconception, lack of field work and illegal marketing people have the wrong notion about Ahimsa Silk. Today's designers never visit a silk farm because those are situated in remote areas and the transportation is very difficult. Silkworm needs very clean and pollution free environment to grow and complete their life cycle. If I come to the point of production of Ahimsa silk then I can say, yes, it is possible to produce the silk without any harm to the cocoon, but commercially it is very difficult. There are three basic hurdles on the way of commercialization of ahimsa silk;

First one is, ahimsa process is three times difficult in comparison to the normal process of silk production. Secondly, in the normal process we produce 600 to 800gms of thread against 1000 cocoon and in ahimsa process we able to produce only 300gms of thread

against 1000 cocoon. Third and most important one is that it is very expensive and difficult find the consumer for it.

Q. What are the basic differences between these two processes of silk production?

Mr.Das: Normal silk cocoons are boiled with the worm inside so that there is no breakage and it will result in high-quality silk. For a month the silkworm as it eats on mulberry leaves. The worms then start to spin its cocoon, which takes another half a month. Once the process is complete, the silk is processed. The cocoons are boiled and left under the sun to dry up. Once they are dry, they are spun into threads.

But in the case of Ahimsa silk the silkworm is allowed to be grown in a natural pollution free environment and also they are protected from predators like birds and bees. after the silkworm turns into a butterfly or a moth the empty cocoons are collected and boiled and processed to be spun into threads. But the thread produced in the latter case lesser thread is obtained.

Q. What inspired you to produce Ahimsa silk?

Mr. Das: Many animal activists or vegan community like Jain wanted a clothing material which would not involve any killing of these pupas. So I was really interested in this research and they too are financing my little bit for my work. This will be a huge break for me and Assam if I am successful to produce it in a commercial level. Let us hope for the best.

After Naramohan Das becomes successful in producing Ahimsa silk, it will be a day for him and Assam of crossing another milestone in the production of clothes. People who know about his works are eagerly waiting to see how the nonviolent silk will be and how it will be received by the customers in the mark.

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Malati Gogoi, Weaver Dhakuakhana, Assam.

Art in the Ancient Water Management System of Sri Lanka

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Introduction

The ancient water management system of Sri Lanka has extended history. The geographical features of Sri Lanka affected the origin of the ancient water management system as Sri Lanka is situated within the Indian Ocean, between northern latitudes 6 and 10, and 5 east longitudes 80 and 82, and Bay of Bengal to its east. The island of Sri Lanka is surrounded by continental shelf, and its extent is 65,610 square kilometers. Rainfall in Sri Lanka has multiple origins as monsoons, convectional and depressional. The geographical condition of the island, has directly affected to form different climatic zones, and the country is mainly divided into two geographical areas as dry zone and wet zone. (The National Atlas of Sri Lanka) Ancient people wanted to collect the water which is brought from monsoon rainfall. Therefore, they constructed water tanks (reservoirs), ponds and canals; to manage the rainfall water for water consumption, maintain the refreshing climate of the environment, and for the beauty of the environment. Therefore, the main objective of this article is to explain art in the ancient water management system of Sri Lanka while describing several examples of art and their symbolism.

Art in the Ancient Irrigation

There could be seen art at the sluice of Manankattiya tank, which is located in the area between Anuradhapura and Kekirawa of North Central Province. According to the history this water tank belongs to the reign of King Vasabha. There are three slabs at the sluice of the Manankattiya tank with carvings. The carved slab located in the middle is with a carving of "Naga" and two other slabs with carvings of female figures. These female figures are carved with a full vase (Punkalasa) on their hands

Carvings at Manankattiya
(Amarasinghe, 2005a, 88 *sin.*)

(Amarasinghe, 2005a, 88 sin.), and wearing a dress similar to a dothi and headdress. However, there is a conflict on these figures as some scholars believe theses as "Nagini" figures and some scholars believe these as figures of Goddesses. Further, it could be considered that these female figures symbolize prosperity by mentioning full vase, and figure of "Naga" symbolizing protection for water resource.

There is another stone carving of "*Naga*" at the sluice of Urusitawewa, which is located at Mahagama village in the Wellawaya Divisional Secretariat of Monaragala District, Uva Province. The carved stone slab is consisting with a figure of seven-headed "*Naga*". This half-relief of "*Naga*" is carved on a decorated pedestal, and it is decorated with the carvings of lion figures and pillars. Further, the figure of "*Naga*" is also decorated with motifs.

Carving at Urusitawewa

There could be found art in the ancient water management system in Sri Lanka at Maduru oya. The Maduru oya sluice is a very important and remarkable evidence in the ancient water management system of Sri Lanka as its' structure and technology consists with salient features. The sluice of the Maduru oya contains parts that belong to two periods as the oldest parts are belonging to Anuradhapura period and the other parts are belonging to Polonnaruva period. The sluice is located at the southern end of the embankment. The sluice gates are made of stone and other parts are made of burnt bricks. Carvings are on the wall of the square shape pit located at 34.77m from the entrance. There are low-reliefs of a male figure of a drummer and four female figures of dancing women. Further, there are carvings of two pillars with moldings and capitals on either side (Jayawardhana, 1982, 7-13, Wikramagamage, 2004, 256-257). Aryasinghe, A. stated that the male figure presenting the god named Balarama, who is a genius for agriculture and irrigation sectors, two female figures are presenting two wives of the god. Furthermore, Aryasinghe, A. mentioned that the other two female figures present maidservants (Aryasinghe, 1984, 33-35 *sin.*). Moreover, Aryasinghe, A. stated that two clay roof tiles were found from sides of Bisokotuwa of Maduru oya, and in the middle of those clay roof tiles consists with a face of a man who wearing jewelries,

Maduru oya sluice

such as earrings and forehead ornaments. Therefore, it is believed that it also shows the god of Balarama (Aryasinghe, 1984, 33-35 *sin.*).

Apart from these examples of art in the ancient water management system in Sri Lanka, the Avukana Buddha statue is also connected with the Kalawewa, located at the Anuradhapura District of North Central Province. According to the site the Avukana Buddha statue is not directly linked to the Kalawewa. However, historical and legendary

stories emphasize the connection between the Avukana Buddha statue and Kalawewa, and as the Buddha statue is facing the Kalawewa is also emphasizing the connection between Buddha statue and reservoir. According to the Buddhist culture of Sri Lanka; the stupa and Buddha statue is highlighting the spiritual development of humans and reservoirs highlighting the secular development of human.

Art in the Ancient Ponds

There are several artistic creations that can be seen at the ancient ponds in Sri Lanka. Among those; twin ponds (*Kuttam Pokuna*) are significant from their structure and art. Twin ponds belong to the Abhayagiri monastic complex of Anuradhapura, as those are considered as ponds used by monks of the Abhayagiri monastic complex for the bathing purpose. There are two rectangular ponds lower than the ground level, and pond located at North is smaller than the other pond. These ponds are built of polished stone slabs (Senevirathna, 1995, 158-160 *sin.*). There was a water outlet from this pond and it is decorated with dragon mouth and motifs. The full vases (*Punkalasa*) made from stone, placed at the entrance of ponds. It could be considered that these full vases (*Punkalasa*) symbolize prosperity. Further, there is a stone carving of figure of five-headed "*Naga*" at the pond of North. The figure of *naga* had been set up near water sources such as ponds and tanks because of the belief that the divine *nagas* (cobras) are associated with water (Wikramagamage, 2004, 111). Apart from that, small figures, including a fish, a tortoise, a conch, a crab and a dancing woman were found at the bottom of ponds during the excavation (The Cultural Triangle of Sri Lanka, 2016, 58). These small figures are also considered as the objects and animal figures which are providing protection, and prosperity for water resources.

| The figure of *naga at* Twin ponds (*Kuttam Pokuna*) | A full vase at Twin ponds (*Kuttam Pokuna*) |
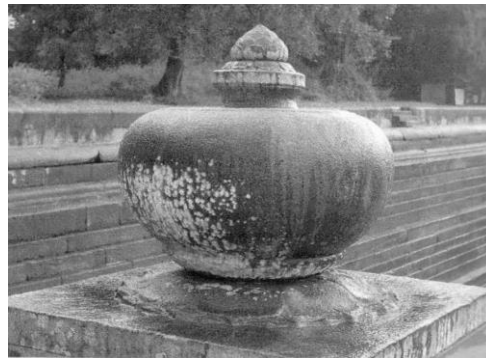
The figure of goddess Lakshmi, figure of five-headed "*Naga*", figures of aquarium animals, such as tortoise, freshwater crab, water snake, frog, and two fish were found from a pond located at the South of Jethawana stupa. These figures were made from bronze and those figures are also considered as figures which symbolizing water and some evidences of ritual belongs to the water.

There is a bas-relief of the figure of "*Naga*" at the Naga pond of Mihinthale. This pond is situated to the East at lower level of Mihinthale complex. The history of the pond goes back to the period of 3rd century BCE. Naga Pond is 38.94 m in length, and there could be seen the five-headed figure of "*Naga*" at a point close to the center of the pond. Here also could be believed that the figure of "*Naga*"

Naga pond at Mihinthale

symbolizes protection for water resource. Further, there is a believe the appearance of *Nagas* from the *Naga* world linked with water underground, and it has been customary to engrave figures of *Nagas* in water sources such as ponds and tanks. (Mallawarachchi, 1993, 128 *sin.*, Wikramagamage, 2004, 169)
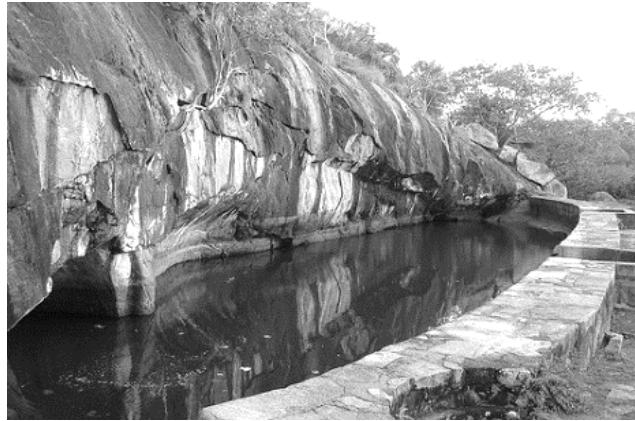
Other examples of art in the ancient water management system in Sri Lanka, could be seen at the Lion pond of Mihinthale. This stone pond is an artistic construction. There is a standing figure of a lion on the lower terrace below the pond. Water is discharged from the mouth of the figure of the lion similar in arrangement to that found as a spout. This could be considered as one of a most ancient ponds with a spout found in Sri Lanka as this pond is

Lion pond at Mihinthale

believed to be belonging to the 7th century AD. Further, there are carvings on the outer wall of the pond, such as lion figures, figures of Mallawa pora players, gajasinha figure, some other human figures, and pillars. (Lagamuwa, 2009, 162-180 *sin.*, Mallawarachchi, 1993, 128 *sin.,* Senevirathna, 1995, 158-160 *sin.*)

Isurumuniya temple has several examples of art in the ancient water management system in Sri Lanka. One example is bas-relief figures of elephants sporting in lotus pool. This carving could be seen at *Pirith pan* pond. The high-relief figures of elephants at the level of water in the pool. The figure of man and horse can be seen near the shrine room of Isurumuniya. There are several perceptions on this sculpture. Among those Paranavitana, S. mentioned that the figure of a man depicted Parjanya, who is a personification of the cloud, and the figure of horse as *Agni*. Further, C. W. Nicholas agreed with this interpretation as expressed the view that Isurumuniya served as a shrine where offerings were made to cause rainfall. (Paranavitana, 2003, 15-17, Wikramagamage, 2004, 144-145)

The figures of elephants at Isurumuniya

The figure of man and horse at Isurumuniya

There are some other bas-reliefs at the Ranmasu Uyana of Anuradhapura. Ranmasu Uyana which is located in the strip of land to the east of the bund of the Tisawewa is a fine example of garden architecture in ancient Sri Lanka. There are carvings of elephants engaged in water sports and carvings of lotus plants with flowers. Further, there are moonstones, balustrade and guard stones bonded with ponds. Among those, guard stones are consisting with carvings of the full

Bas-reliefs at the Ranmasu Uyana

vase (*Punkalasa*). Paranavitana, S. mentioned that bas-relief representations of elephants sporting in lotus pools from the Magul Uyana, the Royal Pleasure-Garden and the "Isurumuni-Vihara" in Anuradhapura, probably connected with rain-making ceremonies of pre-Buddhist origin (Paranavitana, 2003, 129).

Water garden in Sigiriya complex also emphasizes that art is connected with the ancient water management system in Sri Lanka. There are "L" shape ponds, octagon shape ponds at Sigiriya. Apart from that, Paranavitana, S. mentioned that the female figures of Sigiriya paintings represent Lightning Princesses (*Vijju kumari*) and Cloud Damsels (*meghalata*). Further, Martin Wickramasighe mentioned that female figures of Sigiri paintings depicted women who are going for water sports and garden sports. (Manatunga, 2004, 43-68, The Cultural Triangle of Sri Lanka, 2016, 119)

The Lotus pond at Polonnaruva also emphasizes art in the water management system in Sri Lanka. This pond is built in the monastery garden of the Northern Temple or Jethawanarama of Polonnaruva by King Prakramabhahu the Great for the use of the monks. Lotus pond is

The Lotus pond at Polonnaruva

constructed from stone in the shape of an open lotus. The circular steps of this pond, which is representing bloomed lotus, become gradually smaller as they go down. (The Cultural Triangle of Sri Lanka, 2016, 107, Wikramagamage, 2004, 225)

There could be seen art at the Kumara Pokuna (Royal Bath of King Parakramabhahu the Great) at Polonnaruva. This pond is constructed by stone slabs. The lotus pedestal in the middle of the pond, carvings of lion figures on the outer wall of the pond, and water inlets decorated with dragon mouth are examples of art in this pond. On the side of this pond there are remains believed to be that of changing rooms. The carvings of lion figures and lotus pedestal symbolizing the royalty as considering this pond was used by King Parakramabahu the Great. Apart from these, the shapes of ponds are also could be considering as examples of the art in the water management system in Sri Lanka. (Senevirathna, 1998, 136 *sin.,* Wikramagamage, 2004, 207-208)

The Kumara Pokuna

Carvings at the Kumara Pokuna

Conclusion

According to the above mentioned information it could be realized that the figure of *Naga* presenting water, rain, prosperity and protection. Also, the figures of the full vase (*Punkalasa*) presenting, lotus flowers, lotus plants are presenting prosperity. Further, the male and female figures are at the carvings and paintings are also interpreted as gods and goddess dedicated to water, rain, clouds, and prosperity. Furthermore, figures of lotus and lion symbolize the royalty. Therefore, it could be realized that the art revealed from the water management system in Sri Lanka is not established only for beauty, and such art symbolizing the rituals and beliefs on water resources, and worshipful thinking on water resources as water resource is directly connected with the agricultural life pattern of the ancient civilians of Sri Lanka.

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Sattra Heritage Maintained by Celibate Devotees with Special Reference to Auniati Sattra and Uttar Kamalabari Sattra

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Abstract

Assam remained politically detached from the rest of India from early times till occupation by the British, yet in no period of her history was completely cut off from cultural activities along with religion in India. The great *Vaishnava* renaissance movement supplied necessary ethics and momentum, which as a movement spread to Assam (ancient *Pragjyotishspur*) under the great reformer Shrimanta Sankaradeva. He established the Sattra institution (Vaishnavite monasteries) which is functioning as a living organization for propagating and spreading *Neo-Vaishnavite* ideals in the State as well as outside.

Keywords: *Vaishnavism, Sattra, Namghar, Manikut, Guruasana, Sattradhikar, bhakats, sisyas, burabhakats*

Human society is embroidered by a wide array of religious customs, values and practices at different parts of the world. Naturally it has always given rise to inquisitiveness since time immemorial and has been the object of study of different cultural anthropologists.

"An important function of religion is to bring about integration in society through the establishment of certain norms. Religion institutionalizes the social norms and persuades the members of a society to accept these norms. In this way, religion strengthens social relations between individuals. The members are belonging to a religious faith have a sense of security because they form a relatively stable social group" (Sinha, 1965:24).

In this paper an attempt has been made to throw light on the spread of *Vaishnavism* in Assam by Shrimanta Sankaradeva, a 15th Century religious preacher, social reformer, poet, musician and dramatist who brought about a cultural renaissance in Assam through an institution known as Sattra (*Vaishnavite* monastery) which provided the venue and atmosphere for religious, social and artistic activities.

The study of *Vaishnavism* is important in the religious and social sphere of Assam as it has wide influence on the various changes in Assamese culture. Its impact on the social and religious circle of the people of Assam is indeed great. *Vaishnavism* which started around the 6th and 7th Century is the worshipping of Lord Vishnu in its various forms. This movement encompassed the length and breadth of medieval India and amongst

others practiced equality of all, irrespective of caste and creed. This movement reached its peak during the renaissance movement all across the globe. It strove to reduce the practice of image or deity worship in various forms and lay more stress on eternal belief and adoration of Lord Vishnu.

"The Bhakti movement enunciated by the Alwars in South India in the 7th and 8th centuries got gradually expanded in the 10th and 11th centuries; and had its total flowering in the 15th and 16th centuries as a new religious movement in the whole of India. The waves of this movement also surged over the Brahmaputra valley through the Neo-Vaishnavite religion introduced by Srimanta Sankardeva (Puzari, 2005:140)".

Sarma (1999:1) has stated "The current of the religious history of Assam took a new turn towards the closing decade of the fifteenth century of the Christian era. It was caused by the new - Vaisnavite movement initiated by Sankaradeva. Within two hundred years of its inception the movement firmly established the Vaisnava faith as the supreme religious order of the Brahmaputra valley. The movement also evolved a new institution known as Satra which began to serve not only as the instrument of spreading the faith, but also helped to sustain and stabilize Vaisnavism by making it a part and parcel of Assamese social life".

The *Vaishnavism* preached by Saint Sankaradeva is called *Eksarana-nama-Dharma-* the religion of supreme devotional surrender to one i.e. *Vishnu* who has a thousand name. It was popularly called *Mahapurusiya Dharma* as Saint Sankaradeva was perceived by his followers as the *Mahapurusa* (the great being elevated by virtue of his faith in God and not by birth).

Shri Shri Sankaradeva, born in the middle of the 15th Century at Alipukhuri near Bardowa in Nagoan (Central Assam), became an orphan at an early age and was fostered by his paternal grandmother. He married at a very early age. His wife died after giving birth to a girl child and this incident brought about hollowness in his life and he became indifferent to worldly pleasures and sought succour in religious musings. He renounced the world, travelled far and wide, imbibed himself with the knowledge of teachings and cultures of other regions and finally returned home, after twelve years of pilgrimage, with a new energy and spirit and also with a pledge to spread these ideals amongst the people in this part of the country. He stood against the malpractices in the realm of religion through his simplified *Bhakti* cult which preached equality and was free from any visor, lavish and sophisticated ritualistic practices. He popularized the congregational form of religious practices which was institutionalized by the establishment of the Sattra institute and the *Namghar*. The *Namghar* is situated within a Sattra and also in villages. Sattra is a more central institution commanding more power and respect and a large religious complex under the supervision of a custodian, the *Sattradhikar* or *Adhikar* or *Satariya*. Apart from the centrally situated *Namghar* there are four different hamlets or *hatis* surrounding the *Namghar* inhabited by resident devotees (*bhakats*) in East, West, North and South directions. A *Manikut* (*sanctum sanctorum*) is

situated east of the *Namghar* and it houses the *Guruasana* (seat of the *Guru*) on which are placed the religious scriptures. Sometimes two scriptures are also placed together. A statue of *Garuda* (chariot of Lord Vishnu) is almost universally present in each and every *Namghar*. The disciples of the Sattras are known as *sisyas. Nam-prasanga* (prayer-services) as the form of religious ideals brought the people together under the common umbrella of the Sattra institution. The Sattra as an institution was the vehicle of his *Bhakti* movement that aimed at achieving a direct relation between the Almighty-Lord Krishna and the devotees, and the *Namghar* acted as a socio-religious cum cultural centre in this regard. The Sattras proliferated widely ignoring the barrier of caste, creed and religion. Gradually, Sattras were established through the efforts of Shrimanta Sankaradeva and his followers at various places of Assam. In course of time Majuli came into limelight as a foremost centre of *Neo-Vaishnavism*. Majuli is the largest fresh water river island in the world in the Brahmaputra River, Assam.

In this paper we would like to focus on the two most influential Sattras of Majuli in particular and Assam in general.

Uttar Kamalabari Sattra is one of the highly revered, oldest and most influential heritage institution of the Island. This pristine Sattra was established in the year 1673 (1598 *Saka*) by Shri Shri Padma *Ata* (an address to the spiritual tutor by the disciples). The present *Sattradhikar*, Shri Shri Janardan Deva Goswami is chronologically the 20th *Adhikar* of the Sattra and the tradition of a Brahmin occupying the seat of the *Satariya* still continue starting from Shri Shriram Guru. It is customary that the *Sattradhikar* and the residential *bhakat*s need to lead the life of a celibate (*udash*). This monastic Sattra campus maintains a clean and sacred religious atmosphere within the premises of 27 *bigha*s of land surrounded by green vegetations all around. On entering the Sattra through the *batchora* or *korapat* (gate-house), a feeling of serenity, devotion and peace fills the heart and the mind of a visitor. The *Namghar* with its easterly connected unit-the *Manikut* is the most revered place inside the Sattra campus. The *Namghar* serves as the venue for the daily prayer services (*nitya choidhya prasanga*), occassional devotional services (*naimittika prasanga*) and also theatrical performances called *bhaona* which are performed during ceremonies and festivals. The *bhakats* look after supervision and maintenance of the *Namghar* but all works related to renovation, re-construction remains in the hands of the *Sattradhikar*. The *Guru-asana* or the multi stepped wooden pedestal, the most revered and esteemed object of worship along with the *Akshay Bonti* (eternal lamp) is kept inside the *Manikut*, to which only the 'initiated residential devotees' have the permission to enter.

The *Sattradhikar*'s residence is next in position to *Namghar* in terms of 'His Holiness' status and reverence. Situated just behind the *Namghar*, it is a place of confluence between the *Sattradhikar*, *bhakat*s, *sisya*s and lay visitors. All important discussions and decisions related to the Sattra and its management, the internal problems of the inmates and public issues are held in the *chara* (porch/portico) of his residence. It is also used as a place of giving initiation (*sarana*) to new entrants and disciples. The visitors and *sisyas*

are coming from far off places can stay either in the guest house (*atithi shala*) of the Sattra or in the *atithi griha* (visitors room) at the rear of the *Sattradhikar*'s residence.

The residential devotees reside in the four rows of hamlets (*hati*) earmarked for them. Each *hati* is represented by a row of small apartments (*baha*) comprising of two or more rooms. Each *baha* is owned and headed by an elderly *bhakat* who is considered and addressed as their father by the inmates living under his supervision and guidance.

In terms of heritage assets, the Uttar Kamalabari Sattra is a treasure house of many unique antique items and age-old manuscripts which are housed in the *bhoral ghar* and *puthi bhoral* of the Sattra respectively. Understanding the importance of systematic preservation and conservation of such a huge collection of valuable items, the Director of State Archaeology has taken the initiative to build a museum in the Sattra premises.

The *Sattradhikar* as the administrative as well as the religious head, and the inmates classified as new entrants, *Atoi* and *burahbhakat*s (senior devotees) and all other outstationed *sisya*s (disciples) represent the Sattra community as a whole. The *bhakat*s are initially brought to the Sattra in their childhood and are trained by the seniors to lead a celibate lifestyle with a spiritual mental make-up. They are well-groomed by the *Adhyapak*s(senior resident devotees) in *Vaishnavite* religion and culture, and always stay together at peace and harmony with themselves and the world at large. The *bhakat*s are the pillars of the Sattra where they are not only bounded by strict rules and regulations, but are also involved in the day to day activities of the Sattra, starting from recruitment of the new incumbents to grooming them as mentors to taking care of the Sattra and the elderly *bhakat*s as well. They are also assigned with various duties related to the management of the Sattra (administrative as well as financial management). In course of time it has been seen that many religious institutions have been either been influenced by modernization but the *bhakat*s are still maintaining the tradition set and appropriated by their *Guru* under all circumstances. In this Sattra, the '*Guru-Sisya Parampara*' (the tradition of spiritual relationship and mentoring where teachings are transmitted from *Guru* to *sisya*) system of edification is still prevalent in a remarkable way. The senior *bhakat*s imparts training in dance and music, *bhaona* to the juniors. This has resulted in proper handling down of dance and music from the older generation to the younger generations. Freedom from worldly qualms have given an opportunity to those living under the protection of the Sattra, a prospect for the cultivation of performing arts, cane and bamboo work, wood carving, mask-making besides other religious duties. The inmates lead a life of simplicity, regularity and continence. They perform and attend to their duties with utmost devotion and sacred flavour.

The Sattra maintains a very cordial atmosphere with its *sisya*s who remain closely associated by participating in the ceremonies and festivals. The *Sattradhikar* and the *bhakat*s have been trying to inculcate moral values and social norms of the *Vaishnavite* religion among the people of Majuli and the whole of Assam, so that it can bind the society into an integrated one. In this era of globalization, where people are trying to

adopt western culture and mannerism, the *Sattradhikar* always tries to highlight the beautiful elements of the Sattra by organizing workshop and sending troupes to foreign country to display this unique heritage culture through dance, music and *bhaona*. His Holiness also tries his best, with the support of the inmates as well as *sisya*s, to extend a helping hand during times of crisis of the common masses when they are in need. Such kind of liberal attitude on the part of the *Sattradhikar* towards the value system of heritage culture tradition, the movement and the activities of the *bhakat*s in this regard is commendable.

To conclude, Uttar Kamalabari Sattra has stood the test of time and is still maintaining the pioneering features of Shrimanta Sankaradeva's *Bhakti* movement of not only a place of worship but also a centre of cultural activities.

Auniati Sattra has been identified as one of the chief and oldest monastic Sattras of Assam. For the last three and half centuries, the Sattra has been playing a significant role in spreading the *Vaishanavite* faith and traditions amongst the people of Assam. The Auniati Sattra organization is based on a well structured hierarchical order; there are four classes of people attached to the Sattra- *Sattradhika*r and *Deka Sattradhikar, bhakats*, *sisyas* and *paiks. (*Paiks were the men who worked in the Sattra land and they are real occupants of the revenue free Sattra land)For the last three and half centuries the Sattra has been playing an important role in spreading *Vaishanavite* faith and culture amongst the Assamese society. At the same time it has brought significant changes to the society by way of uplifting the backward people and educating the masses by establishing Sanskrit *tols*, schools and colleges in various parts of Assam. Currently Auniati Sattra of Majuli has 294 inmates and more than 10 lakhs of disciples all over Assam. Although this Sattra had been established on the ideals of Srimanta Sankaradeva but idol worship is still practiced in the *Manikut*.

 The structure of the Auniati Sattra has seven components.
1. The supreme deity of Lord Sri Sri Govinda is enthroned in the *Manikut (sanctum sanctorum);*
2. The *Sattradhikar* who is the celebrated custodian of the Sattra stays in the *Gosai ghar (Sattradhikar's* residence*);*
3. The *Namghar (*prayer hall*)* situated at the heart of the Sattra campus;
4. The *Vaishnava* devotees living in the *hatis (*living quarters of the monks*)*;
5. Sattra's treasury(*bhoral*);
6. Storehouse or the granary and
7. The *bhakats*

Being primarily a religious institution, prayers have occupied the foremost position among the list of observable duties of the resident devotees, around which all other activities are arranged. Fourteen different units of prayer services (*choidhya prasanga*) constitute the complete round of activities of this Sattra in a day. Various religious festivals like *Palnam*, *Raas* are also held in the Sattra. One of the most striking feature of

this Sattra is idol worship to one of the forms of Lord Krishna (in the present case, it is *Govinda*) which is carried out parallel with the *nitya choidhya prasanga*. Lord Govinda resides in the *Manikut*. All the works in the Sattra are conducted on behalf of Lord Govinda. The bathing, worshiping, offering food, processes of devotional services like (*arati, arcane, vandana*) and other activities of worshipping the idols of the Lord Govinda along with other idols of Basudeva, Bhubanmohan, Giridhari are carried out regularly according to stipulated schedule. The *bardeuri* (chief priest) performs the ceremonial bath of Lord Govinda followed by worship. The remaining idols are then bathed and worshipped later by *deuri (*assistant of the priest). The door of the *Manikut* is kept closed until the activities for the Lord Govinda are over. After completion of the rituals, the door is opened and the devotees sing devotional songs and take blessings of the Lord. After completion, devotees meet the *Sattradhikar* in his *Gosaighar*. *Sattradhikar* Shri Shri Pitambar Dev Goswami showers his blessings on the devotees as a part of his daily service to the *Vaishnavas*. This is mandatory.

Laksminarayan in the form of *salagrama* is worshiped following the *pancaratra (*The word literally means "one originating on development in five (panca) nights (ratri)". Only the verses from the *Vedas* and the *Puranas* are used in this worship. Auniati Sattra. Locally produced food items like rice, gram, moong pulse and fruits is offered as *prasad* (sacred offerings) to Lord Govinda. There are also occasions when *paka-mithai* (sweet-meat made of rice powder fried with jaggery and *paramann*a (rice, boiled milk) are used. It is known from the *bhakats* that in the earlier days, *paramanna* was offered daily. In the case of *prasad* offered in the Auniati Sattra, one peculiarity that is observed is that along with gram and moong pulse, same quantity of rice is mixed and *prasad* is prepared.

Auniati Sattra is known worldwide for its *Sattriya* dance form, music and arts forms, spiritualism, folklore, folk songs, traditional festivals, rituals, traditional beliefs and museum items. In *bhaonas,* songs and dances on the glory of goodness over the evil are shown and encourage the people to follow the righteous path. Sattra's spiritual ideals are the living tradition for the people of Assam. As a socio-religious institution, the Sattra acts as an agency of social control. Auniati Sattra uses its character as the building influence on the local people, and its preview extends to other places as well. A few traditional crafts are also found in Auniati Sattra. Various audio visual art forms have also emerged centering round the Sattra circle.

Few changes have taken place in Auniati Sattra during the long course of its existence. Such changes are noticeable in the structure, organization, management style and so forth. However, the Sattra is still maintaining its tradition without any fail.

To conclude the present study, it is clearly understood that the Sattra institution is a very important part of Assamese society. It is not only a religious institution but also a socio-cultural organization. Auniati Sattra and Uttar Kamalabari Sattra have been functioning as an instrument of social, cultural and religious cohesiveness among all the people of

Majuli as well as Assam vis-à-vis Northeast India. The study reveals that the religious control over the community declines with economic and technological development. The religious organization itself tends to decline owing to an impact of urbanization and modernization. Even then, the symbolic value of a religious organization remains persistent.

The Sattras are no less than a university in itself considering the diverse cultural activities associated with it. It is a matter of concern that most of the Sattras are ageing or is in the process of decadence. Practical ways need to be found out and implemented in action to save this institution before it is too late. The most heart-touching appeal is to inherit the old cultural treasure trove even at this crucial period where science has affected all spheres of life.

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Tai Phake Community and their Heritage of Trade and Commerce
(Special Reference to Namphake Village of Assam)

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Tai Phake belongs to the Tai-speaking tribal group living in Dibrugarh and Tinsukia district of Assam, principally along the areas of Brahmaputra and its tributary rivers (Burhidihing) as well as adjacent parts of Lohit and Changlang districts in Arunachal Pradesh. They are considered to be one of the Scheduled Tribe hills of the country, but living in plain and also they get the special reservation in the field of education and government services from the government of India. The main occupation of the Tai Phake people is agriculture. They cultivate crops such as rice paddy, potatoes, etc. They also rear cattle, buffaloes and poultries. Fishing is a major practice of the Tai Phakes. This community has been following Buddhism from the day of their migration to Assam. Due to some unique living style, dialect and old monastery of Tai Phake people, nowadays this place is famous for pilgrimage for the people who follow Buddhism. The Tai Phakes of Assam is one of the communities which is now under threat of extinction. This community embraced *Moung Noon Sown Kham* (epithet of Assam derived from the abundance of paddy and bombax trees of the bank of river Brahmaputra). Phakial people begin their day by offering the first morsel of their food to the monks living in the monastery – a tradition that has been going on for ages. The Buddhist monastery in Namphake village was established in 1850. The monastery has mosaic, and tiled floors. The affairs of the monastery are run by the monks with the active cooperation of the people. The people provide food and clothes to the monks. There is a modern-equipped guest house near the Vihar premises.

A Glance on the Phakials

The Tai Phakes are very innocent and peace loving people. The striking factor of the Namphake village is their claim that police have never entered its premises. Any dispute is settled among the people by the monks. The people are also not dependent on modern medical facilities. They rely on herbal methods of curing. To keep their culture and tradition going the y p ractice their religion devotionall y and whe rever possible to do things in a traditional way. The Tai Phakes believe in the existence of spirit and certain rituals are observed to appease to malevolent spirits. For the ordinary personal ailments, the Tai Phakes have their indigenous supernatural treatment. Traditional prescription in respect of sickness and cure is resorted to occasionally when the worship of the Lord has no effect. The Tai Phakes usually marry within the community. The society is basically patriarchal -the son inherits his father's property. They are monogamous, although polygamy is not forbidden provided the man has the requisite means to support such a family. The Tai Phakes do not keep any matrimonial

relations with people of other caste or tribes. Widow and cross cousin marriage take place in the Tai Phake society. The marriage is celebrated with a detailed ceremony. Divorce is not a common affair in the Tai Phake society. The "chow maan" (Village chief) takes decisions in regular meeting with the village elders for the betterment of their village.

The Tai Phake women wear colourful dresses woven by them. Their outfit consists of an ankle-long skirt (Chin), a blouse opens at the front (Nang Wat) and fastened around the armpits and a girdle (Chai Chin) to tighten the skirt around the waist. The female child wears a skirt (Chin) and a blouse. A white turban (Phahu) is worn by the women folk on individual preference. The colours of their dresses are expressive of their ages. The girls wear white sarongs; women stripped red, yellow and green sarongs and old women deep purple and blue sarongs with stripes. The men wear lungis known as phanoot, a kurta, and a folded chadar. The staple food of this group of people is rice, which is cultivated by them. They also consume seasonal vegetables, fishes, chicken, mutton and many other herbs. They prefer boiled and roasted food. This group of people is also known as Phakial. The Phakials are a very small group of people with a population of approx. 2000. This small group of people in Namphake village so far maintained their own ethnic individuality, reflected in their gorgeous costumes, language, customs and traditions. Besides their own dialect they fluently use Assamese language and maximum number of villagers educated through Assamese medium. Now-a-days some of the rich families are now putting their kids in the nearby English medium convent school and it brings a threat to their existing culture. They are very small in number so they need the exposure for the world to know about their existence. So there are lots of chances of them getting mixed up with different people and they will cease to exist. They are trying their best for not mixing up with other community by not marrying people outside their community, not teaching their dialect to outsiders etc. This study will help people all over the world to know about the Tai Phake community. This project will follow field work in Namphake itself and also interact with people of the village and the monks of the monastery to know about their lives better. Through this field work, this study can find out about their issues, difficulties, lifestyle etc.

The Occupations

This study is about the trade and commerce of the Buddhist community (Tai Phake people). This paper also focuses on how the people in the Phakial community earn their livelihood in general and also the role of Buddhism in their daily income. There are some specific rules and regulations in their socio, cultural behaviour and on trade and commerce from the ages. But the trades seem too far away from the community.

This study observes the following types of occupations among the people of Tai Phake

1.Agriculture, 2. Rear Cattle, 3. Waving, 4. Tourism, 5. Government Job etc.

The main occupation of the Tai Phake people is agriculture. They cultivate crops such as rice paddy, mustard, and potatoes and other seasonal vegetables. Maximum numbers of families are owner of tractors by government subsidy.

Besides agriculture, they also have other subsidiary sources of income from which the people earn a good income. The cloth material woven by the Tai Phake people is also very famous among the tourists and other people. They have a center where they weave clothes and produce them on a large scale to sell in the market. But now a days the centre is about to die due to lack of weavers. The Indian government is trying its best to popularize their ethnic dresses.

They also rear cattle, buffaloes, poultry, etc. Fishing is a major practice as they live on the banks of the tributary of the mighty river Brahmaputra. Their fishing is only for their regular food, it cannot be included in the trade.

But with the increase in the development of technology and modernization of the society, most of the people in the village have other jobs than the traditional work done in the Primary sector (farming, weaving, fishing, etc). Now-a-days the villagers are getting out of the village and working in the tertiary or the service sector. They need to go out and do different jobs like the ones in the government sector to earn their livelihood and also get up to date with the present world. Each and every educated member of a Tai Phake community is an owner of government or private sector service. The whole village is surrounded by valuable bamboo trees and Phakials utilize it in everywhere; for making their two storied house (Chang Ghar), materials that they use for day to day life. Bamboo is like their lifeline and they never use it for trade.

The principal source of income which the Namphake village is its Eco Tourism and their religion Buddhism. Namphake is one of the most important stops for the people on pilgrimage. They have a beautiful monastery with very soothing surroundings. One can be at peace once they enter the monastery. Devotees come for their offerings and prayers here. Tourists following different religions also enjoy the whole experience and pray to Lord Buddha .They also come for picnics and enjoy on the beautiful river banks.

Eco tourism in the name of Hapkhaek is established to give tourists the feel of their lifestyle and culture. Hap means guest (Atithi) and khaek means welcome (Aadora). They provide really good hospitality. This package attracts a lot of foreign tourists. There are little cottages built for the tourists who want to stay back and the cottages are on stilts; made in the traditional way of the villagers. They also provide jungle trekking and exploration of the nature, on request tourists also get to enjoy the traditional folk dance of the Tai Phake people and most awaited is tourists get to taste the delicious, lip smacking traditional food prepared by the villagers. The menu includes rice, steamed with coconut leaves; different types of chutneys, roasted pork, fish and chicken, freshly prepared vegetables, the list is endless. There is also a small gift shop or souvenir shop where you and buy souvenirs, their traditional cloth materials, etc to remember your experience in this beautiful village. One more recommendable progress is their herbal   garden of

medicinal plants. Now it is a research topic for the universities around the world. Phakials are using these plants in treating different diseases.

Opportunities for trade

Local markets and weekly trade fairs are the chief opportunity for the Phakial people. But very few people are taking advantage of this marketing process.

Assam and Northeast of India share a land border with Bangladesh, Bhutan, China, Myanmar and Nepal and has a greements of overland trade with these countries through Land Custom Stations notified under Section 7 of the Customs Act, 1962. While for trading through LCSs situated in Bangladesh and Bhutan border, there is a Free Trade Agreement (SAFTA), the Border Trade Agre ement have been entered into with China and Myanmar.

This trade is different from trade through air, land or sea ports as trade through ports involves clearance through customs and has large volume. Border trade in contrast is "over-land trade" by way of "exchange of commodities" from a bi- laterally a greed list by people living along both sides of the international border. There are many opportunities offered by the government of Ind ia but hardly the Phakials using these advantages.

For permitting locally produced commodities, to be traded as per prevailing customer practices, on both sides of the India-Myanmar border, an agreement on border trade between India and Myanmar was signed on 21st January, 1994 an doperationalised on 12th April, 1995. The people of this borderline are very poor and the Tai Phake people taking this opportunity to meet their ancestors but not as a business purpose.

Fifthy percent of eco-tourism is powered by other community of Assam and the Phakials are serving a s working as a chef. The ethnic food of Tai Phake people is very healthy and it is also popular among tourists. Local Phakials and other business persons are using this advantage.

Conclusion

There are many alternative ways by which Tai Phake people can earn their livelihood. The Government also provides funding to them so that they can keep up with their tourism and let the world know about them and their culture. The government also provides a lot of subsidies and reservations in different institutions to help this community and keep up with the present world. Though the people here practice their traditional chores, they prefer the work in the Government sector as it is a stead y means of income and the nature of the jobs is stable, which gives the people a sense of security. This community can be considered an icon who is following ancient Tai language. Due to their small number the opportunities of trade and commerce are not working in flying

colours. There is no balance in supply and demand of their product. The demand is from every corner of the world but they are not able to produce their ethnic products as per demand. Silently trade and commerce are slipping away from the control of the Phakials. Above all they are a proud community as well as the followers of Buddhism and citizens of India.

Their people are working hard to make a mark and let the world know about their existence. In the future hope the Tai Phakes have a booming business and their tribe will be known all over the nation and the world.

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Mr Ngi Yot Weingken, Renown Researcher and School Teacher of Namphake Village.

Mr Ngi Khampay Weingken, Social Worker.

Dr Chenglon Weingken.

Monks of the Monestry.

Villagers and the Owner of 'Hapkhaek' Souvenir Shop.

Categories of Dance in Sri Lanka during Anuradhapura and Polonnaruwa Periods:
An Archaeological Study based on Dancing Figures

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Abstract

Literary sources from the 3rd century BCE and archaeological sources from the 2nd century CE provide adequate evidence about ancient dances in Sri Lanka. Through investigations of both sources of Anuradhapura and Polonnaruwa periods, religious or semi-religious dances and the dances performed for the king and the royal court can be identified. Categories of dance represented by the dancing figures found particularly from Buddhist and Hindu architectural premises as well as unrecorded venues have not been substantially examined yet. Literary sources make repetitive indications towards the practice of dance in ancient Sri Lanka, rather than demonstrating the categories of dance specifically. Thus, the main objective of this research was to discover the categories of dance in Anuradhapura and Polonnaruwa periods. Features of dancing depicted by the dancing figures were thoroughly examined to achieve the research objective. In attempting to distinguish dancing events from other human figures, the postures of the figures, surroundings and the purpose of creation were analyzed, adhering to standard theoretical frameworks. Through methods of detailed and comparative analysis the categories were recognized. It has been drawn as the conclusion that there had been categories of dance as solo/group dances, female/male and mix gender dances, religious dances and celestial dances as a conceptual dance type during the periods concerned.

Introduction

Dance can be categorized in many aspects. Categorizing by its choreography, repertoire of movements or by its historical period or place of origin are major classifications. But the theme of categorizing may depend on the classifier's purpose or vision. Here, the term 'dance category' can be simply defined as a class or division of a dance style or a tradition regarded as having particular shared characteristics. It should be noted that the dance styles are also categorized in some regions having a number of varied dance styles. But here, the term excludes the categories of dance styles.

The categories of ancient Sri Lankan dance are difficult to distinguish, because literary sources are not supportive to identify the categories of dance specifically. Therefore, archaeological sources provide invaluable assistance on this matter. But the categories of dance represented by the dancing figures found particularly from Buddhist and Hindu architectural premises as well as unrecorded venues have not been substantially examined yet. So the main objective of this research was to discover the categories of dance existed during Anuradhapura and Polonnaruwa periods.

Features of dancing depicted by the dancing figures were thoroughly examined to achieve the research objective. In attempting to distinguish dancing events from other human figures, the postures of the figures, surroundings and the purpose of creation were analyzed, adhering to standard theoretical frameworks. The study was limited to Anuradhapura and Polonnaruwa periods considering it as the early historic period of Sri Lanka. Dancing figures dating from 2nd century CE to 13th century CE were examined through detailed and comparative analysis methods to recognise dance categories. First, the features of dancing figures were analyzed individually and then they were compared with each other.

This paper discusses dance categories such as:

  i.   Solo and group dances
 ii.   Female dances
iii.   Male dances
 iv.   Mix gender dances
  v.   Religious dances
 vi.   Celestial dances

Solo and group dances

Dance can be categorised according to the number of dancers as solo or group dances. A dancing figure from a frontispiece pillar at Mihintale Kaṇṭaka Cetiya, an engraved dancing figure on a stone slab of pavement at Abhayagiriya stūpa, a female dancer from a bronze object found at Jētawanaya, an architectural fragment exhibits at Anuradhapura Archaeological Museum and the Dedigama elephant lamp are evidence of solo dances (fig.1-5). Same-sex duets were found among the stone carvings on the frontispiece pillars at Mihintale Kaṇṭaka Cetiya, Abhayagiriya and Dakkhiṇathūpa (fig. 6-8). A group consisting of three dancers are depicted in a frontispiece pillar at Jētawanaya (fig.9). Groups of more than three dancers can be seen in the exhibit plates at Anuradhapura Archaeological Museum and Colombo National Museum as well as at the entrance of Hätadāge in Polonnaruwa.

Female dances

Till the beginning of the 20th century, female dancers were not accepted in indigenous dance traditions of Sri Lanka (Dissanayake, 2011, p.327). But literary evidence proves that the female dancers who practiced Indian dance style performed in royal court and shrines dedicated to gods from Gampola to Kōṭṭe periods (Mayura Sandēśaya, 121-133; Tisara Sandēśaya, 168-182; Saḷalihini Sandēśaya, 73-77; Kōkila Sandēśaya, 271-283; Haṃsa Sandēśaya, 108-112). Likewise, literary sources prove the existence of female dancers in Anuradhapura and Polonnaruwa periods (The Mahāvaṃsa, 29: 24-25; 31: 37,102,112; 32: 78; 74: 216-218; Dhātuvaṃsa, 56,82,92,95; Sinhala Thūpavaṃsa and Glossary, 1994, p.187; Jinakālamālī, p.163). They were in the reign of King Kāvantissa, Duṭugämuṇu, Parākramabāhu the great and Kitsirimēghavarṇa, and seem that they performed in the palace for king's entertainment. The *Mahāvaṃsa* says that the king Parākramabāhu's lady called Rūpavatī was accomplished in dancing (The Mahāvaṃsa, 73: 140-142). This exemplifies that the royal ladies practiced dancing during the Polonnaruwa period. Besides literary sources, dancing figures from both Anuradhapura and Polonnaruwa periods depict female dancers. It is significant that the majority of female dancers in those events alone represent Indian dance style except mix gender dances. Therefore, it can be inferred that the Indian influence was caused to the popularity of female dances.

Male dances

Literary sources like chronicles have rarely indicated males as dancers. But the *Mahāvaṃsa* says that the king Parākramabāhu the great encouraged his brothers and grandsons as well as sons of elites to learn dancing and he too learned when he was a boy (The Mahāvaṃsa, 64: 2-5; 69: 22,23). In contrast to this, only the male dancers were mentioned in early Brahmi Inscriptions of Sri Lanka while the female dancers were not directly mentioned (IC, I, No.642,910,1005,1010; II, p.98). This is a considerable point. The number of male dancing figures is higher than the number of female dancing figures. It is significant that all the male dancing figures were found from the Buddhist religious premises. Considering the above points, it can be inferred that either only the male dancers were appointed in Buddhist temples for service or it was avoided sculpturing female dancers at temples where the monks who practiced a celibate supramundane life, lived. It can be proved that the dancers who were appointed to Buddhist temples were males by the slab inscription from Ruvanvälisäya of queen Kalyāṇavatī (EZ, IV, No.33). The term *'naṭannan'* (නටන්නන්) in the text of the slab inscription can be identified as male dancers, comparing with the term *'nāṭaka strīn'* (නාටක ස්ත්‍රීන්) denotes female dancers which was mentioned in chronicles repetitively. However, above mentioned reasons caused the plentiful depiction of the male dancers in the decorations of Buddhist religious premises. Those males represent both indigenous and Indian dance styles alone and a mixed style of both as well.

Mixed gender dances

Dance events which were presented by both male and female dancers can be defined as mixed gender dances. Since the two visual evidences have found yet respectively from Anuradhapura and Polonnaruwa periods, characteristics of mixed gender dances are still difficult to interpret. But the two plates are evident for existence of the mixed gender dances in ancient Sri Lanka. Indigenous-Indian mixed style is represented by the dancers in both plates.

Religious dances

Literary sources provide sufficient evidence for performing dance in religious festivals and rituals (The Mahāvansa, 34: 58-60,77-81; 54: 37-39; 60: 18; 74: 216-218; Dīpavaṃsa, 16: 28,29; 21: 26; Sinhala Bōdhivaṃsa, p.197). Similarly, inscriptions are evident for appointing the dancers for the service of temples and shrines (EZ, IV, No.33; p.193-196). It is significant that the most of dancing figures were found from Buddhist and Hindu architectural premises.[14] Although they were found from religious temples, it cannot be considered that all the figures represent a religious sense except those are in the pose with *Añjali mudra* (i.e. hand sign of worship). Therefore, the dancing figures are alone unsupportive to distinguish religious dances from court dances or other similar categories.

It is not surprising of performing dances in rituals at Hindu shrines. But sculpturing or painting the dancing figures in Buddhist temples where the monks who should avoid watching dancing, singing and playing consciously[15] lived, is a considerable point. No dancing figure dated prior to 2nd century CE has found yet, other than dancing Vāmana figures. Therefore, it can be inferred that the dancing figures were avoided sculpturing in Buddhist temples in early stages. Dance performance or playing any similar entertaining activity which fulfills to achieve laities' desires were been allowed to be accepted and watched either by consciously or accidentally without a direct involvement of the monk himself (Samantapāsādikā Vinayaṭṭhakathā II, 2009, p.390; Samantapāsādikā Vinayaṭṭhakathā III, 2009, p.213; Sikhavaḷanda Vinisa Pradīpaya with Sikhavaḷanda and Sikhavaḷanda Vinisa, 1950, p.72,73).[16] However it is evident that with the spread of popular Buddhism, other parted branches admitted the cultural items which were avoided by the Theravada Buddhism (Sasanaratana, 1962, p.73). This might be the reason for mentioning misdemeanors of monks in both *Sikhavaḷanda* which were not

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[14] Total ruination of non-religious buildings may also cause of dancing figures to be found from religious architectural premises.

[15] The Buddhist monks were advised to avoid the triple activities of dancing, singing and playing (Sikhavaḷanda Vinisa Pradīpaya with Sikhavaḷanda and Sikhavaḷanda Vinisa, 1950, p.72,73; Heraṇasikha and Heraṇasikha Vinisa, p.1-3).

[16] According to Ven. Moratuwe Sasanaratana, *Samantapāsādikā* contains the sectarian ideas of the monks of Abhayagiriya (Sasanaratana, 1962, p.72).

ordained in *Khuddakavatthukkhandhakavarṇnā*.[17] Likewise the dancing and playing were adopted in offerings and rituals to arouse the devotees' pleasure (*Pasāda*) and emotions (*Sanvēga*) in later periods, dancing and playing figures seem to be sculptured for the same purpose (Gunawardene, 1993, p.242). The extension of dancing figures from common celestial dances to varied dance styles which were depicted in early frontispiece pillar carvings is evident for the gradual evolution of performing dance in a religious setting. The *Mahāvaṃsa* says that the tooth relic of Lord Buddha was followed by both male and female dancers who were dancing, singing and playing music as an offering in the procession for tooth relic in the reign of king Parākramabāhu the great (The Mahāvaṃsa, 74: 216-218). The line of dancers and players sculptured together at the temple of tooth relic called Hätadāgē in Polonnaruwa as well as at Yapahuwa of post-Polonnaruwa period can be mentioned as a demonstration of such religious dances. Especially, the line of performers at Hätadāgē can be considered evidence for contemporary processional dances.

Celestial dances

The *Mahāvaṃsa* says that on festival-days (*chaṇakāle*) the king Paṇḍukābhaya (437-367 BCE) sat with *Cittarāja* beside him on a seat of equal height, and having divine-human dances (*dibbamānusanāṭaka*) before him (The Mahāvaṃsa, 10: 87).[18] The *Vaṃsatthappakāsini* (also called *Mahāvaṃsa ṭīkā*), the commentary for the *Mahāvaṃsa* describes that the word *'chaṇakāle'* denotes the festival season and the compound word *'dibbamānusanāṭaka'* denotes performing the two types of dances by divine-human actors (Vaṃsatthappakāsini, p.222). It implies existing of a dance category named divine dance. But it is still unclear that whether it was an overstatement of dancing deities or a kind of a category was really existed. Charles Godakumbure commented that the dancers who performed the divine dance before the king Paṇḍukābhaya were not the supernatural beings, but the humans (Godakumbure, 1970, p.5). One verse in *Kavsiḷumiṇa* also proves this. The verse mentioned the 'peacock dancers' who dressed up and danced like a peacock (Kavsiḷumiṇa, 14: 673). Likewise, above discussed divine dancers might be humans who dressed like divine beings.

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[17] *"...නටනු ආදිනෙන් පුදකරම්හයි කිව මැනැවැයි එවූ පුද කරවයි එවූ කියත් නොවටී. බුදුහු පුදයට නිස්සහයි එවූ පුද කරනු කටයුත්තෙයයි එවූ කියත් වටී..."* (Sikhavaḷanda Vinisa Pradīpaya with Sikhavaḷanda and Sikhavaḷanda Vinisa, 1950, p.72,73).
Meaning: When laities say 'we will offer with dance and etc, inform us when it needs', it is not recommended to reply 'do offer' in a commanding sense. It is recommended to reply as 'it is suitable to offer Lord Buddha' or 'can be engaged in offering'. (translated by the authors)

"...'උපාසක, චෛත්‍යයට උපහාර දෙවු, කියන්නට ද, නුඹවහන්සේලාගේ සැයට උපස්ථාන කරම්හ'යි විචාළ කල්හි 'යහපතැ'යි පිළිගන්නට ද නොලබයි...'නුඹවහන්සේලාගේ සැයට උපස්ථාන කරමුද'යි විචාළ කල්හි 'උපස්ථාන කිරීම නම් යහපතැයි කීම වටියි," (Samantapāsādikā Vinayaṭṭhakathā II, 2009, p.390;)
Meaning: It is not recommended to ask 'O lay devotee, offer the stupa' or to accept as 'yes, do' when the laities asked to do so… It is recommended to reply as 'offerings are acceptable' when the laities asked, 'let's offer your stupa?' (translated by the authors)

[18] දාපෙසි ඡණකාලෙ තු - චිත්තරාජෙන සො සහ   dāpesi chaṇakāle tu - Cittarājena so saha
සමාසනෙ නිසීදිත්වා - දිබ්බමානුසනාටකං   samāsane nisīditvā - dibbamānusanāṭakam

Dancing deities were often indicated in literary sources (Dīpavaṃsa, 16: 26-29; Aṅguttaranikāya V, 2005, p.201,203; Mahābodhivaṃso, p.94; Butsaraṇa, p.40,179; Dhammapradīpikā, p.126,174; Sinhala Bōdhivaṃsa, p.52,56,98,195,199). There is literary evidence for the existence of two dance categories which were performed in both upper atmosphere and on ground namely 'celestial dance' (දිව්‍ය නෘත්‍ය) and 'human dance' (මනුෂ්‍ය නෘත්‍ය) respectively (Butsaraṇa, p.175; Dahamsaraṇa, p.22). Accordingly, celestial dance can be considered a conceptual dance category. But the depiction of this category in the ancient art is significant.

Undoubtedly, the majority of Anuradhapura and Polonnaruwa period rock and wall paintings including relic chamber paintings of the stūpas represent celestial dancers, literary dancing deities. The *Mahāvaṃsa* says that there were figures of dancing and playing deities among the relic chamber paintings of Mahāthūpa (The Mahāvaṃsa, 30: 91). The *Sinhala Thūpavaṃsa* mentioned "…all the figures of deities who engaged in dancing, drumming, flute playing and holding *Tantiri Ālavatti*…were decorated with seven gems (*Satruvan*) in the relic chamber of Mahāthūpa by the king Duṭugämuṇu"[19] (Sinhala Thūpavaṃsa and Glossary, 1994, p.208). Apparently, sculpturing or painting the deities who were in various joyful and worshipping moods and activities was a common tradition of decorating a relic chamber of a stūpa, which was followed in constructing the great stūpas in ancient Sri Lanka. Accordingly, dancing deities had become a common motif in relic chamber paintings.

Most of those celestial dancers were represented almost in the same posture (fig.10 and 11). One hand of the posture has risen up to head level, bent at the elbow and the palm is turned upward. Amarāvatī sculpture of 2nd century CE and Chōla period paintings of Brihadisvaram temple at Thanjavur are fine examples for representing celestial dancers with depicting them in the manner of flying or riding on clouds in the sky with this type of hand posture (Ambrose, 1950, p.30,35) (fig.12 and 13). The duets in the stone carvings of frontispiece pillars can be also considered a representation of celestial dance category (fig.6-8). The similarity of the posture between some of them and the dancers in the paintings, representation of all the dancers in a flying posture and the conceptual meaning of the whole carving on the pillar presents also prove the point.

Considering all the examples of this category, it can be suggested that the name 'celestial dance' is more appropriate than the 'divine dance', because of the dancers were depicted on clouds probably in a flying manner. Although the category was not a performance in the real world, it is important to having known it while distinguishing other ancient events of dance.

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[19] The description rather implies sculpturing in the relic chamber not painting.

Conclusion

Dancing in both Anuradhapura and Polonnaruwa periods has a considerable relation with Buddhist religious premises. It is significant that the majority of dancing figures of those periods found in the religious architectural remains. Similar to Egyptian and Indian civilizations, survival of the religious architecture rather than non-religious remains can be identified as the reason for this. Therefore, both literary and archaeological sources provide sufficient evidence for the existence of the religious dance category in ancient dance of Sri Lanka. Other branches of Buddhism, except Theravada adopted dance as an offering for Lord Buddha. This had become more popular with the wide spreading of Buddhism in the country. The dancing figures which were found from Abhayagiriya and Jētawanaya temple complexes were higher in number than those from Mahāvihāra complex. This evidences the supporting of popular Buddhism to sculpture more and more dancing figures in the temple architecture as well as to the development of the religious dance. The celestial dance category can be also mentioned as a divided part of the religious dance, although it is conceptual. Offering for the Triple Gem that is Lord Buddha, the Dharma and the *Saṃgha* (the monks) or for the other sacred beings or objects by the deities either in the sky or present on the earth were a common subject in both literature and visual art. Therefore, the dancing deities in the posture that is already discussed in the text and in the worshipping posture might be a demonstration of the movements practiced in contemporary religious dances.

Religious and celestial dance categories are the most controversial categories to be identified. Other categories are dependent on choreography and gender. Accordingly, it could be identified that the both solo and group dances were performed during the period.

The gender of the dancer was fairly concerned in the dancing of ancient Sri Lanka. Accordingly, three distinctive categories as female, male and mixed gender dances are identified. Literary sources make repetitive indications towards the female dancers who participated in Buddhist rituals and festivals. But no evidence has found to prove that they were appointed for permanent service of Buddhist temples. Literary sources imply that those female dancers who participated in religious occasions were ladies who serviced for royal palace. Thus, dancing figures of females from Anuradhapura period are cannot identified as a representation of religious dances. Accordingly, it supports to conclude that the female dancers were entertainers of the royal court during Anuradhapura period. But the position was fairly changed during Polonnaruwa period. Indication of the *Mahāvaṃsa* which describes appointing female dancers to dance with singing when the king entered to the hall called *Dharmāghara* which was built to worship Lord Buddha and to listen to dharma in the reign of king Parākramabāhu the great exemplify the south Indian influence on the Polonnaruwa period culture. Indeed, the religious dances that performed in Hindu temples by females, terminological *Devadasis*, had directly influenced to the existed dance culture in the country at the time. The female dancing figures from Yapahuwa and the evidence for appointing female

dancers in the shrines dedicated for gods which affiliated to Buddhist temples during Gampola to Kōṭṭe periods can be identified as an extension of the Hindu influence which was initiated during Polonnaruwa period.

Dancers who performed in Buddhist temples were males. Except the panegyric indications of female dancers made by literary sources, other indications of dancers may denote male dancers. The *Dātuvaṃsa* and the Ruvanvälisä slab inscription of queen Kalyāṇavatī are evident for appointing male dancers for the service of Buddhist temples. Inscriptions mentioned only about male dancers. Thus, they were the common depiction in dance sculpture of major religious premises. Only the males have been appointed to play daily musical offering called *thēvāva* at the temples even present day. The dancers who received fief lands from the temple of tooth relic in Kandy for the service to the temple were hereditary male dancers. Except the female dancers called *Māṇikya mahagē* who performed in the shrine dedicated to god *Saman* (i.e. Sabaragamuwa Saman Dēvālē) at Ratnapura in Sabaragamuwa province, other hereditary female dance families are unknown. Therefore, all the evidences reveal that the history of the contribution of male dancers and players to the Buddhist religious occasions is going as far back as Anuradhapura period.
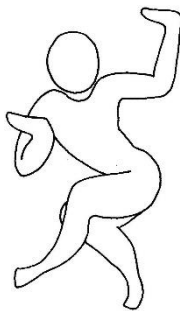
Figure 1
A dancing figure from a frontispiece pillar at Mihintale Kaṇṭaka Cetiya

Figure 2
A dancer from an architectural fragment at Anuradhapura Archaeological Museum
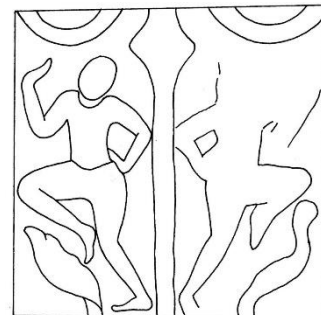
Figure 3
A duet on a frontispiece pillar at Abhayagiriya
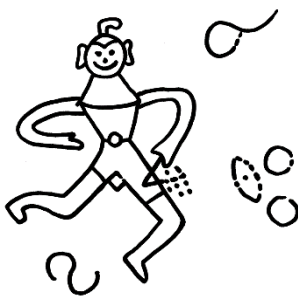
Figure 4
A dancer on a stone slab of pavement at Abhayagiriya stūpa

Figure 5
A dancer from the Dedigama elephant lamp
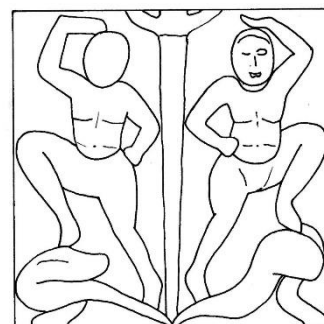
Figure 6
A duet on a frontispiece pillar at Dakkhiṇathūpa
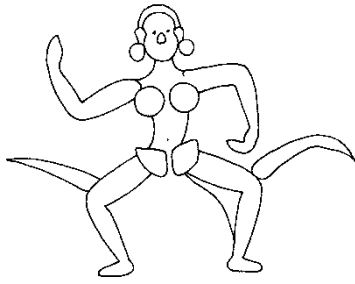
Figure 7
A dancer from a bronze
object found at Jētawanaya
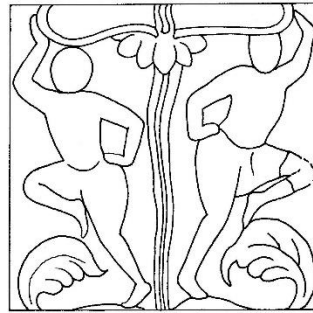
Figure 8
A duet on a frontispiece
pillar at Mihintale Kaṇṭaka
Cetiya
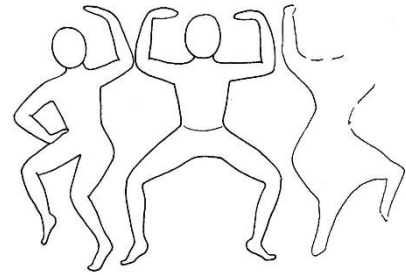
Figure 9
A group dance on a
frontispiece pillar at
Jētawanaya

Figure 10
Dancing deities from relic chamber paintings
at Mihintale
Source: 'Traditional Sinhalese Paintings' by
S. P. Charles, p.11

Figure 11
Dancing deities from Amarāvatī sculpture in
India
Source: 'Classical Dances and Costumed of
India' by Kay Ambrose, p.35
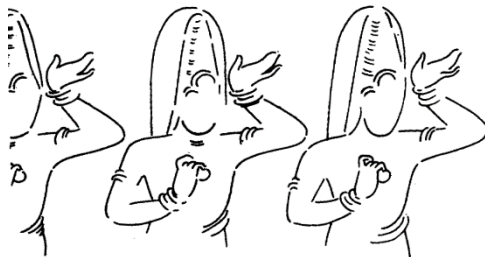
Figure 12
Dancing deities from relic chamber paintings
at Dedigama Sūtighara Cetiya
Source: 'The Rock and Wall Paintings of Sri
Lanka' by Senaka Bandaranayake, p.79

Figure 13
Dancing deities from Chōla period paintings
of Brihadisvaram temple at Thanjavur
Source: 'Classical Dances and Costumed of
India' by Kay Ambrose, p.30

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Protectcting the Last Trumpet of Sinharaja World Heritage:
A Pre-Reading of a Sinharaja Devoid of Elephnats

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Abstract

Sri Lankans have had a long association with elephants according to their socio-cultural, political and ecological canvas. Prior to colonization, elephants were high in number and there was a wide distribution throughout the island. With the advent of the colonists, the elephant population was greatly reduced and limited to dry zone eco systems of Sri Lanka. However, still a few elephant herds are remaining in the rain forests and they are facing a number of challenges for their survival. Sinharaja rain forest is a biodiversity rich, culturally unique world heritage forest site in Sri Lanka. There are more than 24 old villages in the periphery and people who live in these villages have been practicing their folk life since thousand years. Accordingly, this paper focused on studying the last few elephants of the Sinharaja rain forest, their role on ecosystem and socio cultural environment of the Sinharaja. Further, values, threats and conservation needs under three main phases with other 5 sub categories were discussed., This study was mainly based on secondary data while primary data were gathered using focused group interviews and direct observation methods. This study revealed the importance of elephants as a resource and suggests the need of in-situ conservation methods to ensure their lives in Sinharaja.

Keywords: *Sinharaja, Elephants, Conservation, Socio- Cultural, Reintroduce*

Introduction

Sinharāja of Sri Lanka is recognized all over the world as a rain forest characteristic of bio-diversity. As a result, it was declared as a world heritage by UNESCO in 1990. According to the recognition of the community at both local and international levels, this is a prototype of a forest. They opine that to call a forest a forest it must be one like Sinharāja. Various factors have had an influence on the origin and growth of that view. The factor on which the present study concentrates is the meagre presence of elephants in this forest. Elephants live in almost all the leading forests in Sri Lanka. Their presence in a forest is recognized as a characteristic indicative of profoundness and a sign of its ecological prosperity. Therefore, it is necessary to consider the topic "a Sinharāja devoid of elephants" not only through the point of view of ecology but also that of social circumstances because the prototype Sinharāja makes in the mind of the community is so strong. By now there are only three elephants in Sinharāja and it may probably represent the last generation of this largest living land animal. So, once these three "land giants" disappear the elephants of Sinharāja will certainly be just a reminiscence that belongs to

history. The objective of this paper is to examine the role of the elephants in Sinharāja through the point of view of geography. The paper will also be a prophecy of the future existence of Sinharāja.

Literature Review

The elephant, the largest land living animal, except for the continent of Australia, in every other geographical region or land man had lived in its evolutionary various times process in as evidence indicates (Parakrama, 2006). But by now only two kinds of the species remain. That is African elephants *(Loxodonta Africana)* and Asian elephants *(Elephas maximus).* Out of the African elephant two sub species have been identified. Elephants found in the African Savannah are known as "bush elephants" (*Loxodonta africana africana)* and that of forests covered with canopy are known as "forest elephants" (*Loxodonta africana cyclotis).* Three sub species of the Asian elephant have been identified and they are known by scientific names *Eliphas maximus maximus" Elephas maximus indicus* and *Elephas maximus samantranus.* Out of these three sub species one found in Sri Lanka occupies an advanced stage in evolution *Elephas maximus maximus* and is native to the island (Ranjeewa, et al,2018: Fernando,2015).

Elephants and tuskers are held in esteem not only in the sphere of forest systems but also in the socio-cultural environment. So, it is impossible to discuss about elephants ignoring the aspect of their social relations. However, what we focus on is to gain a fundamental knowledge of the elephant population in Sri Lanka. A good number of predictions and surveys have already been made by various individuals and numerous institutions with multifarious objects. (Hendawithaaran and Dissanayaka, 1994: Dissanayaka et. al. 2012) However, it was in August 2011 that an all island investigation was conducted for the first time. Its summarized details are given in the undermentioned table. According to these data over 90% wild elephants live in dry zone environmental systems. In addition, there are about 150 domesticated elephants about which available reports are somewhat questionable. Concurrent with this the human elephant conflict has also been developed as one of the main environmental issues. Owing the human elephant conflict deaths of 63 men and 250 elephants had been reported in 2012. (Dept. of Wildlife Conservation, 2013) This study is carried out with special reference to the elephants confined to the forests of Adam's Peak and Sinharaja both of Wet Zone. According to reports about 19 elephants are found in Adam's Peak range (Rodrigo 2013, Dept. of Wildlife Conservation, 2009). By now (2012) only 2 elephants are found in Sinharaja (Kumara and Ali, 2013).

	Distribution of elephants as per wild life zone	Number	Type	Number
01	Mahaweli zone	1751	Cubs	1107
02	Central zone	47	Grown-up elephants	4650
03	Eastern zone	1573	Tuskers	122
04	North-western zone	1189		
05	Southern zone	1086		
06	Northern zone	233		
	Total	5879	Total	5879

Table 01: Distribution of elephants in Sri Lanka
Source: Department of Wildlife Conservation, 2012

Even in 1994, 2 elephants have been reported from Sinharaja and one of them has been identified as an adult male (Hendawitharan and Dissanayaka, 1994). In this context elephants living in the wet zone are at the danger of becoming extinct.

Methodology

This study is primarily based on secondary data. In addition to collect contemporary information and data methods such as focus group interviews, interviews over telephone and direct observation have been employed as methods of collecting primary data. Identifying some of the respondents is kept back owing to research ethics, photographs have been taken from Internet of which copyright has been acknowledged.

To analyze the data and information mainly qualitative descriptive methods are used and secondly simple quantitative analytical methods are also used according to the text.

Conceptual Framework

Conceptual framework of this study consists of three fundamental strata. i.e.
1. Function (Worthiness) of the *Sinharaja* elephants
2. Threats (Challenges) for their existence and
3. Establishment (Opportunities) of their existence in *Sinharaja*

On the basis of this three-fold strata this structure is arranged under the following aspects: Environmental value, conservational and management value, cultural and spiritual value, socio-economic value and political and administrative value.

Study Area: Sinharāja Forest

Sinharāja, the tropical rain forest situated in Sri Lanka is rich in bio-diversity. Sinharāja which is bounded by districts of Ratnapura, Galle, Matara and Kalutara belongs to the group of Low-Country Rain forests. Solely due to the value of bio-diversity attached to it, Sinharāja was declared in 1978 as a world Heritage forest reserve by UNESCO. Its total spread is 11187 ha and the distribution through ranges of mountains exhibits somewhat strip-like appearance (Forest Department, 2003). In and around Sinharāja about 25 age-old villages lie. Their lives and activities are directly and indirectly

associated quite closely with Sinharāja forest. (Zoyza and Raheem, 1993) By now Sinharāja is famous as one of the principal forest resorts among both local and foreign visitors who enter the place through three approaches (Forest Department, 2003). However, illegal clearing and encroachment, hunting and removal of selected trees and herbs, threat of bio-diversity, illegal constructions, and other human interference are still being reported from Sinharāja.
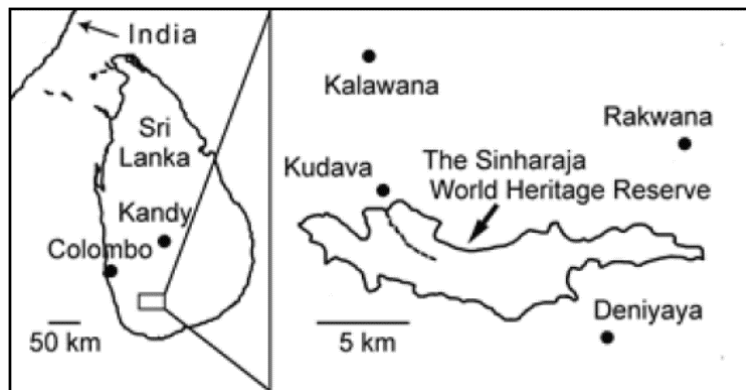
Map 01: Location of Sinharāja
Source: Forest Department, 2012

Result and Findings

1st Phase - Values
Ecological Value

The kind of elephant found in Sri Lanka is a sub-species of Asian elephants scientifically known as *Elephas maximus maximus*. Although Asian elephants are found in dry zone forests of the island by now in wet zone they occur only in the Adam's Peak Range Reserve and in Sinharāja. In spite of the fact their population is scanty in number still they play a significant role in protecting and maintenance of the eco-system. The elephant is ecologically designated as an umbrella species or keystone species as a result of the realization of this ecological value. "A particular species living in a particular eco-system known as an "Umbrella species or key-stone species if it performs an extremely important role for the existence of that eco-system. In other words, so many other lives should depend on the activities of that particular species. If such an eco-system is deprived of the particular species either due to its removal from it or its extinction the latter would collapse the former'' (Parākrama, 2006, 21). Namely, in maintaining the said eco-system balance the existence of those species perform a decisive role. In the case of elephants its existence is important to an eco-system as it determines the maintenance of a definite genus of plants and feeding lands and direct and indirect ecological activities such as food patterns of other herbivorous animals, determination of their routes of migration, going in search of sources of water during the drought existence of living beings depending on elephants, action of insects and micro-organisms, distribution and germination etc. So, removal of them from that environment means the breakdown of the whole system. Such action exerts a decisive influence on a particular animal or plant species or on the whole eco-system. As it is these three elephants who play the above ecological role in Sinharāja and other adjoining forests

their extinction will exert both direct and indirect influence on its eco-system and existence of its fauna and flora.

Photograph 01: The elephant popularly known as "Panu Dalayā" among the villages around Sinharāja arrives in.
Source: Vidanapathirana, 2013

Conservation and Management Value

Assistance given by these elephants to Sinharāja forest and its accompanying other forests for their protection is indeed immense. Anybody fears to enter a jungle where there are elephants. This fear of elephants is instrumental to the protection of the forest and it is an opinion unanimously approved by the Forest Department, Department of Wildlife Conservation the police and the village folk. As racketeers themselves acknowledge, these three elephants pose the major threat to illegal felling, mining gems, hunting and bootlegging etc. On a number of occasions these three elephants have attacked such places and persons. As a result, although the political authority which favoured those racketeers tried to capture the three animals in question in 2008 so as to domesticate them, in fact one of them *(Panu Dalaya – Male elephant with small tusks)* was anaesthetized, the residents of the locality rose to the occasion and made a protest against the racketeers and their friendly politicians. In consequence, the racketeers and the politicians had no alternative but to release the elephant. But Mrs. Malani Premaratne the District Secretary Ratnapura (2002) reported to the effect, that the said protest was made by Non-Government Organizations - NGOs and at a meeting held at Kajugaswatta College on 01.08.2001 that the people made a strong request to the officials so as to capture the elephants and take them away. As she says the reason for this request stems from the killing of a woman, who had been among those who made the protest, by the elephant. But this is actually a distortion of the situation that had prevailed or is still prevailing and is an attempt to put the opinion of the minority on the majority by force.

As the above incident shows the three elephants render an incalculable service to protect Sinharāja and its accompanying forests. As such the Sinharāja and accompanying forests devoid of elephants will be a challenge to the people them.

Socio – Economic Value

Some of the residents hold the view that due to these three elephants the whole of the lifestyle of the community has come to a standstill and they are in dire need of leaving the place. (Premaratne, 2002). This is really an exaggeration of the case in question. Actually, the day-to-day life of the community has not been retarded by the elephants but on the other hand due to annoyance caused by some individuals, harm has been caused to people and property. But this is a case which can be remedied by adopting In-situ conservation approaches. Removal of elephants is not the one and the only remedy for this problem. Such a measure will be the beginning of numerous other difficulties. Attention of policy makers has not been paid to the socio-economic worth of the three elephants. These three jumbos have contributed directly and indirectly to the tourist attraction of the place. Those who come and visit *Morningside, Potupitiya,* and *Rakvana of Sinharāja* do so solely with the intention of watching these elephants of which fact is of course connected with the direct contribution referred to above. They have gained fame among the masses as the last generation of elephants residing in wet zone. Due to tourist traffic, direct and indirect means of earning have been opened to residents. The following table indicates the annual income (through sale of tickets alone) earned by the Forest Department out of tourists who visited Sinharāja Forest through *Kudava* entrance.
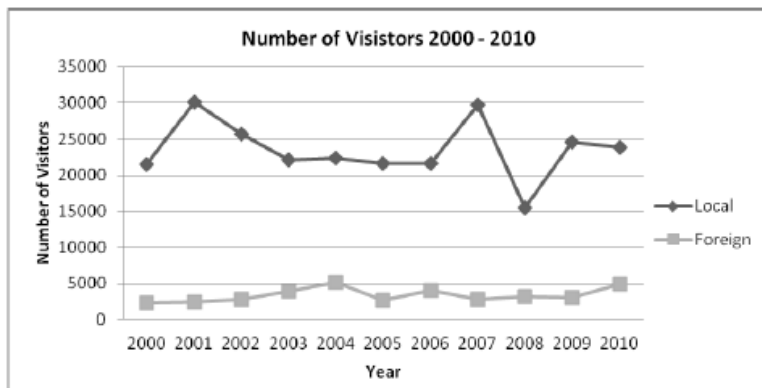
Tourist attraction of
Sinharāja
Source: Karunaratne, 2012

Although all of those tourists do not visit the forest with the sole intent of seeing the elephants the contribution of the latter as a tourist attraction cannot be underestimated on that account.
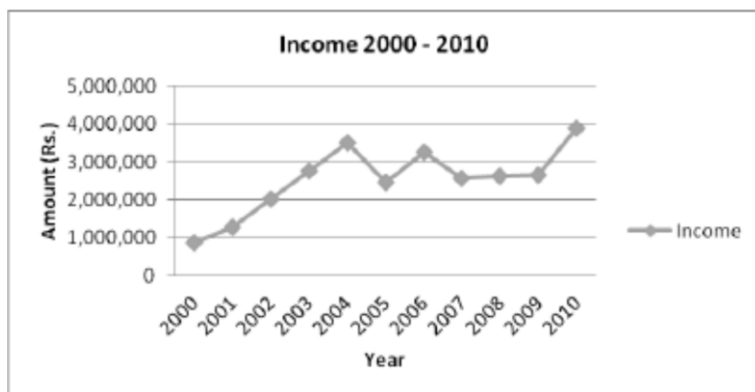
Tourist Income received out of
Sinharāja
Source: Karunaratne, 2012

The indirect contribution they (elephants) make is obviously the protection of the forest cover. Accordingly, we must not only assess the harm caused by them but also must appraise socio-economic benefit they bring in. Otherwise one can see half of the picture and not the whole thing.

Cultural and Spiritual Value

Elephants have made a unique contribution to various religious and mundane affairs in the culture of this country enhanced by Buddhism. So in twin their gratitude is such heartfelt in case an elephant is in distress it is not rare to find men who offer to rescue it from major dangers even at the risk of their own life although they are the very people who clamor on the other hand that the elephant who is branded by colonialism, green revolution as a post and should be destroyed.

Among the community there is such an awe-inspiring affection for elephants of Sinharāja too. Traditions which center on them are also numerous. As these traditions say elephants harm you only if you hurt them and even after a long time they take revenge. Even biologically speaking the elephant is an intelligent being. It is the general opinion that all those who were killed in Sinharāja by elephants had interfered with them.

> *"There are only three one male and two female elephants. Mother, son and daughter they say. I have seen all three together in the coffee land." There was no trouble from them. It was people who provoked them. They hurt them by burning by throwing flam beans at them by shooting. Now see everybody who has been assaulted had done something to provoke him. Villagers know it very well. Further, it is those racketeers who do illegal activities inside the forest who clamour that the elephant be taken away" (X1 official. Kudawa Sinharāja Conservation Office, Kudawa, 13th Jul. 2015).*

The person killed by the assault of an elephant in *Weddāgala* in 2011 was a person who had hurt it and had followed the elephant for about 8 km through the jungle. According to village folk, the intention of those who became victims is to cut and remove the tail of the elephant for its fiber.

Although it is a common occurrence for those who walk along the *Rakwana – Potupitiya* Road to come across elephants they generally do not waylay or drive away the victim and assault him. As reports indicate elephants assault people on a number of occasions. They include brutish actions such as setting fire by men to the grass and chase and confining the animal within it or shooting or burning the trunk of the animal by throwing burning ash and pieces of cloth on it or flinging flambeaus at it or throwing firework at the animal.

A singular attention is paid to the elephants of *Sinharāja* not only because they reside in the most reputable forest in the island but because it is these three jumbos who represent

the last generation of this kind of species of the wet zone. If these elephants cease to exist in the Sinharāja forest spiritual relations that exist between the elephant and men also will die out. Then the elephants of Sinharāja will be a part of history. Therefore, this cultural and spiritual wealth must be protected.

Law, Policies and Institutional Values

Very special provisions have been made in the Wildlife and Protection of Flora Act for protection of elephants and tuskers. According to the law contained in it hunting elephants and tuskers, and catching and inflicting various kinds of harm on them are serious offences. Rules and regulations pertaining to elephants have a direct and indirect effect in protecting the surroundings where they live. It is equally applicable to Sinharāja. It is the Forest Department and Department of Wildlife Conservation which interfere with matters dealing with elephants.

Thence they and their physical environment is protected mainly by dual legal prudent conducts and dual organizations. In addition, organizations such as *"Sinharaja Sumithuro" and "Gaja Mithuro"* extend informal protection on elephants. So, for the implementation of legal procedure and establishments and their attraction referred to above, it is essential for the elephants to live in these forests. It will be a decisive factor not only at the national level but also at the international level.

2nd Phase - Influences
Extinction

As Darwin disclosed a number of factors contribute to the extinction of a species of Fauna or flora. In his description of the struggle for existence among species of plants and animals he pays special attention even to elephants (Kodikara, 2010). Given below is a description of the last population of elephants lived in wet zone by Dr. Nandana Atapattu.

> *"Even following the Independence…………was joined together from one side by Kanneliya Forest Reserve situated in the district to the other side by Adam's Peak Range in Sinharāja Rain forest flocks of elephants and a few individual elephants were frequenting at large. At the time when all these forests had been connected and with no gap the population of elephants was well over some hundreds as the people of the past say even today. But due to human interference by last decade of 1950s this region which was divided into 3 parts forming 3 separate forests where 3 separate herds of resident elephants were living for which fact evidence still exists.*
>
> *Riches of elephants in Kanneliya Forest Reserve came to an end with the shooting of the last of the three elephants in 1990. Even till the middle of the seventy decade there have been reports of a small herd comprising seven elephants including a baby tusker in the Adam's Peak wilderness. By 1987 of this herd there were only five elephants.*

In 2004 the roaming tusker isolated from the herd shot dead and whose tuskers were severed and taken away may be the same baby tusker referred to above. No investigation report since 2000 pertaining to rest of the elephants has so far been furnished. Perhaps just like in Kannaliya even in Adam's Peak wilderness riches of elephants may have already been come to an end.

Even the herd of elephants isolated in Sinharāja is the same. According to unconfirmed reports that reached, in the latter part of 1950 decade 14 elephants were frequenting there. After 1985 7 deaths of elephants that occurred there were officially reported 5 deaths out of it occurred in area associated with settlements on the eastern boarder of Sinharāja and 2 deaths somewhere close to Deniyaya. With the exception of the natural death of an elephant occurred in the process of its attempt to creep through a small gap between two rocks and all the rest was the result of shooting.

However, by 1990 there were only three elephants left. All the three animals were well built males. Accordingly, if the figure 14 (elephants) reported in 1950 decade is correct, in addition to two dead and three living elephants the issue arises as to 4 others treated as missing ones. (In 2001 out of these three elephants one was shot)

As the history of elephants referred to above clearly shows no propagation took place within last 50 years in forestry Kaneliya and Sinharāja which had been the cradle of this gigantic animal. In other parts of the country where killing of elephants is more numerous due to combat between human-elephant conflict breeding of the cubs does not continue. Then what made the breeding come to a stop till the entire elephant population extincted in the Sinharāja forest zone? Efficiency of breeding of the Sri Lanka elephant occupies an advance level why do the elephants of Sinharāja indicate an in equal breeding tendency? (Atapattu, 2012, 225-226).

Photograph 02: Elephants in Adam's Peak Wilderness and the dead body of the elephant found in 2013

Source: Vithanage, 2013   Source: Perera, 2013

Some of the facts and conjectures presented by him are not correct. For instance, in 2001 one of the three elephants that lived in Sinharāja was shot dead is incorrect. Even his conjecture that by today riches of elephants in Adam's Peak range may have been destroyed in its entirety is also not correct.

However, some researchers disclose (Sirisena, 2013) that during the period 1920-60 some 15-20 elephants lived in Sinharāja and there was a report of an elephant around the year 1930. Further, as traditions assert elephants migrated from Sinharāja through Panāmura to Udawalava zone and through Atwaltota to Adam's Peak range (Sirisena, 2013).

Factors such as deforestation and allotment, construction of roads, settlements and plantations, hunting, and auctioning (as oral evidence asserts at Delwala in 1970 an elephant was sold by auction) must have had an adverse influence on the migration of elephants and thus it came to an end.

The three elephants residing in Sinharāja today are males (Perera, 2010:454). Many a villager is of the opinion that one of them is a male and the other two are females. For the process of reproduction of a species there must be a minimum density of population. Although it is necessary to carry out a long and a deep study in order to ascertain this value for reasons such as in Sinharāja only three elephants live and as their age, behavior pattern and biological traits show it is very unlikely that they will give birth to a new generation. In other words, elephants of Sinharāja are at the verge of extinction. This extinction is not only with regard to the elephant but also the extinction of a number of processes connected with this animal.

Human – Elephant Conflict

According to Mrs. Malini Premaratne, the District Secretary, Ratnapura (2002) who presents facts before the workshop held in order to minimize the human – elephant conflict in Southern Wildlife zone in 2002 *Rambukana – Kajugaswatta* zone is the worst affected zone. One (01) death of an individual, 2 cases of serious injury, 3 damages to houses, 2 damages to vehicles and other kinds of damages have been reported in this zone. The root cause of the combat between men and elephants here is the three elephants that reside in Sinharāja. Even in *Godakawela - Kahawatta* zones which the District Secretary names as the fourth risky zone it is the area these three elephants roam. The male elephant designated as *"Panu Dalaya"* by the village folk according to Ali and Kumara (2014) has been reported during the period 2009-2013 to have entered villages and cultivations 129 times and one female elephant had entered the villages 57 times. But the animal they designate as she elephant has not been observed during the said period. In years 2010-2011 two deaths due to attack of elephants were reported. In addition, assault on vehicles, on cattle, on plantations and houses have been reported (Ali and Kumara, 2014). Although this report contains serious shortcomings in respect of methodology, approach and conclusions as a whole what it points out is that in this zone combat between man and elephant is on the increase.

Principal factors behind this expansion include illegal human activities that take place in forests where elephants frequent (mining, illegal distilling, felling, hunting), annoyance caused by action for no valid reason can be given (when they are present in the jungle,

using thunder flash shooting, setting dangerous traps, burning the body by throwing fire from a distance unnecessary annoyance and sounding horns of vehicles), establishment of plantations and human settlements, obstructing traditional routs of migration of elephants, and unawareness on the part of man of elephants etc. However, owing to the combat between man and elephant it is clear that both parties are very much hurt but ultimately it is man himself who has created this situation.

Photograph 03: *"Panu Dalaya"* with injury caused by shooting and those who were killed by the assault of an elephant in 2011

Source: Vidanapathirana, 2013   *Source: Karunaratne, 2011*

Way of thinking of man and traditional systems of knowledge

Elephants and tuskers are not only an essential part of natural surroundings of this country but they also play a significant role in its socio-cultural environment. Elephants and tuskers have contributed to refine the elements such as language, folklore, and artistic creations etc. which express the conscious of the general public. It is this transmission of those elements which compel the community to offer its service when the elephants are in danger even at the risk of their own lives even in a locality where human-elephant conflict is very much threatening. Friendly relations man had with elephants ultimately led to a clash with each other due to a multitude of factors. Yet elephants and tuskers still retain in the conscious of the people in this country as an esteemed animal. Even the pattern of thought of the village folk in Sinharāja is not different from the above. Sinharāja is abundant in folklore, traditions and various beliefs concerning these three elephants too. Further, majority of villagers has an awe-inspiring attitude about them. Their protest demonstration against the removal of the three jumbos is a shining example in this regard. Extinction of elephants in Sinharāja also amounts to an extinction of various other elements which nourish varied fields of the conscious of people. Such an action creates a void not only in the sub-culture of the place but also that of the greater culture. With such an action the corpus pertaining to elephants and tuskers which has been handed down from generation to generation and which of course could be much useful for the management of the human-elephant conflict will retard the nourishment and it will become a part of history.

Deforestation and forest degradation

Forest cover in Sri Lanka is about 19% (Baldwin, 1991) even out of that the forest of bio diversity in wet zone is very few. "Of the total land area of the island, the lowland rain forests cover less than 2%, Lower Mountain and mountain rain forests contribute only a further 1% and 0.05% respectively, to Sri Lanka's natural forest cover (Gunatilleke, 2014:16). Sinharāja belongs to this section. Sinharāja which is a UNESCO world heritage forest reserve is 11187 ha in extent. Like other forests in Wet zone even here the distribution is somewhat strip-like extended through ranges of hills. Moreover, settlements lie both on the periphery of this forest and inside. In Sinharāja there are 24 peripheral villages and 2 villages inside the jungle (De Zoysa and Raheem, 1999). Even Sinharāja forest is not free from the influence of deforestation and forest degradation as the distribution of the forest is strip-like in form and as the forest is not independent of both direct and indirect effect of the fulfillment of the population explosion (De Zoysa and Raheem, 1999). Reports of encroachment deforestation, setting fire, construction of roads and buildings which affects a breakup of the forest, removal of some tree/herbal species and ornament plants, hunting and collection of specimens, illegal activities performed in the jungle gem excavation and illegal distillation) felling (timber), and Bio – piracy carried out jointly with foreigners are still being spread.

As forest officials and villagers opine frequentation of elephants in Sinharāja minimizes incidents referred to above. It is nothing but the fear of the elephants on the part of those who enter the forest which act as an obstructive factor. That is the reason why those who are up to illicit practices in Sinharāja put forward the organized opinion that the elephants should be removed from the forest. On the outside of the Sinharāja World Heritage Forest Reserve there stand many forest either of the same or more important than the former. They come under Land Reform Commission - LRC. The fact that the peripheral forests get less attention from the authorities when compared with Sinharaja forest does not reduce their ecological importance.

The annual migratory patterns of the elephants of Sinharaja fall across these peripheral forest patches. Frequentation of elephants directly helps to minimize the destruction of forests and human activities in these forest zones which are neglected by authorities. Residents of villages Potupitiya, Ilubakanda, Denavakkanda etc. call the elephant that frequent the area as "Ali Ranger". (Forest Range officer- it is a nick name) implies the silent service rendered by elephants in protecting these forests. The day elephants in Sinharāja become extinct the protection afforded to it will also vanish.

Law and policies

Legal protection is afforded to elephants and tuskers in Sri Lanka by the Act of Protectction of Fauna and Flora. Provisions pertaining to elephants and tuskers have been made by Amendment No 49 of 1993. Responsibility for implementation of these provisions is vested with the Dept. of Wild Life Conservation. Therefore, it is this

department which deals with elephants. General control of it is exerted over Sinharāja by Department of Wildlife Conservation and they are under the Act (1907). However, the presence of elephants in a forest contributes to the attention and attraction for its conservation and management at various stages, i.e. global, zonal, national and local. When institutions such as WWF, UNEP, IUCN pay their attention to conservation of elephants it is mainly concentrated on their habitats. Many places in the world elephants recognized as a flagship species for conservation. Patronage and publicity given by it induces to protect the whole eco-system. Even the activities of state sponsored community based organizations such as *"Gaja Mituro"* which can be observed at national level can be taken into consideration. Although their prince object is to protect elephants law and policies pertaining to elephants they emphasize the importance of protecting the whole unit direct and indirect way. Therefore, Sinharāja devoid of elephants will go down considerably in attraction and attention.

3rd Phase – Strategies
Conservation

Conservation is of two kinds, i.e. Conservation In-situ and Ex-situ. Under in-situ a certain species is conserved being it in its habitat itself. Under ex-situ a species under given condition outside its place is conserved. Concerning the elephant both these ways are adopted in Sri Lanka. The method we propose with regard to Sinharāja is in-situ. In other words, to confirm their existence within the forest itself. But here two points come up.

- Are elephants living in Sinharāja in suitable condition to be bred?
- If not how to prepare a suitable environment?

It is important what Dr. Nandana Atapattu (2012) says in regard to elephants of Sinharāja relevant to the factor I referred above.

"Although, it is true that taken as a whole breeding efficiency of elephants and tuskers in Sri Lanka is at a high level, one of the two views contradictory to each other adopted in case of propagation and distribution of animals can be utilized to clarify the condition in Sinharāja".

According to that view natural breeding occurs between male elephants and female elephants if and when a number of she elephants who could give protection to the cub to be borne frequent in the herd and in the surrounding area.

Although some 14 elephants were living in Sinharāja in the latter part of the 1950s, nearly half of them are conjectured as single elephants and the rest can be supposed to be a small group. Although those male elephants that frequented the herd were mature, most of them must have been single elephants who had left that herd. The community of elephants detests internal breeding and among the members of the same group breeding

does not occur. Moreover, there is no way for an elephant to migrate to Sinharāja from a place outside it which is isolated due to human activities.

In these circumstances, among the herd of elephants imprisoned in a rain forest full of trees and shrub jungles, which is not at all suitable for such massive creatures who are also debarred from migration, the need of propagating an offspring would not have arisen.

The fact that it took 10 years for the birth of the first baby elephant in Pinnawala Elephant Orphanage confirms that the chance of breeding among the tamed elephant in Sri Lanka is slim of which fact in return strengthens the Sinharāja hypothesis" (Atapattu, 2012,p.226). Accordingly, an offspring from the rest of the elephants that remain in Sinharāja is very unlikely. According to him all these that reside in Sinharāja are "fat male animals" (Atapattu, 2012, p.225). This can be analyzed in another way.

> *"If breeding of any genus is to continue in the population of that being there must be a definite number of animals. It is called in zoology "critical number". In Sinhala it can be named as "decisive number". If the population of that animal is lower than "decisive number" existence of that particular animal will tend to diminish regularly and will end up in total extinction. This "decisive number" varies not only according to each and every species but also depend on the nature of the environment in which the animal lives. No scientist who knows this decisive number which determines the extinction of the elephant is known to exist in Sri Lanka" (Parakrama, 2006: 17).*

Then has the population of elephants in Sinharāja gone down in this decisive number? What could be decided in these circumstances is that through inter breeding of the present elephants in Sinharāja there will not be a new offspring.

Then we must think of the second solution. Namely how to prepare the necessary ground for the process in question. What must be done is to mix with the elephants of Sinharāja a certain number of elephants of the breeding age under restrictions. A group of elephants that belongs to Udawalava Elephant orphanage which lead its animals to forests by batches can be trained for this purpose. Training implies here the process done at present at Udawalawa near a rain forest (Localities *Potupitiya, Kopiwatta* where Sinharāja elephants now frequent can be selected for this work). It can be hoped that the home range of this group which frequents will adapt to the present forest cover. Information offered by Sirisena (2013) is important in this respect. (Which refers to the areas where they frequent and the nature of food consumed by the animal from each of those zones).

Plant species consumed by elephants	Area where elephants frequent				
	Sinharāja	Delwala forest reserve	Beragala forest reserve	Handapan Ella forest reserve	Rakwana hilltop
Species of bamboo *(Ochlandra stridula)*	×	×	×	×	
Kitul *(Caryota urens)*	×	×	×	×	×
Kala väl *(Derris canarensis)*	×	×	×	×	
Bambara väl *(Dalbergia pseudo-sissoo)*	×	×	×	×	
Wal Enasal	×	×			
Gotamala *(Tripsacum andersonii)*					×
Pus väl (Entada pusaetha)	×	×	×		
Rilā grass *(Ischaemum timorense)*	×	×	×		×
Iluk *(Imperata cylindrica)*					×
Nattan					×
Kuru bamboo *(Dendrocalamus cinctus, and Arundinaria scandens)*			×	×	

Pattern of food and distribution of those sources in respect of elephants in Sinharāja
Source: Sirisena, 2013

However, various obstacles and challenges to this kind of project very likely will crop up. Fields from which such obstacle may come up are,

- Racketeers and those who act under their influence who are anticipating the end of the last two elephants' resident in Sinharāja
- Policy makers, administrators and conservators who cast doubt about this process
- Politicians who work with the aim of winning the election rather than of development the nation and conservational activities

It can be hoped that they will take the lead with regard to this matter. Actually speaking what would be the response of the resident elephants of Sinharāja to this programme is also doubtful, i.e. either the reception or the refusal of the new herd. Reaction of the community living around Sinharāja over the introduction of a new herd of elephants to the forest is constructive. (Sirisena, 2013) At least an attempt must be made in this connection. As a country and nation fond of/ keen on so as to choose the elephants out of their natural habitats (places where they have been born and lived), to catch and remove them, to entrap them, and then to make money by exhibiting such entrapped elephants

must equally pay attention to this kind of project which is of course a moral duty and a responsibility. It is in addition to the destruction caused to elephants and tuskers in the name of development and religion. This kind of projects have been successfully implemented in the world with regard to lions (Watkins, 2015) and elephants (Dublin, H. T. and Niskanen, 2003; Isabell et al, 2010). It is important to study them as pioneer studies.

Control of Conflict between Elephants and Man

What is evident from the observation of the clash between man and elephant in Sinharāja is that it is the human activities which was the stimulus behind the fury of elephants. It is as a consequence of such doings that loss of life and property took place. For instance, obstruction of elephants, walks, illegal activities carried out inside the jungle (felling, sawing timber, illicit distillation, hunting, digging mines etc) and unpleasant activities such as (chasing elephants, assault them with flambeaus and burning ash etc.) Action must be immediately taken so as to control these activities, to make awareness in the community of these activities and to amend planning of kind use. To control the prevailing condition distribution of thunder flash will be suitable. Community must be made aware of areas abundant in elephants and time and places where they frequent and employing officials to observe the phenomenon can be done. More fruitful and efficient step is to seek assistance of community movements such as *"Sinharāja Sumituro"* which comprise young people. Whenever elephants arrive at villages and roads community and officials can be made aware of such matters by establishment of social nets equipped with mobile phones through which such matters could be communicated. Then necessary action could be easily taken and the injuries could be avoided. Wearing radio or GPS collar is another advanced method to mitigate the conflict. Even though this method is advanced and expensive, it will help in providing a long term solution for the problem. Yet another alternative is to grow crops which are repulsive to elephants and erection of Bio fence along the boundary where elephants frequent. As the number of elephants is very decidedly only three by creation of very active community groups with first- hand knowledge the clash between elephant and man can be regulated by 95%. In countries such as India, Thailand, Nepal and Africa in relation to various animal species community movements of the sort have been founded and successful solutions have been found (Banks and Burge, 2004; Kamuti, 2013; Bhatta and shrestha, 2015).

Applicability for Conservation

The elderly (Female/Male) groups having lived in surroundings where elephants frequent possess a lot of experience. By adopting this knowledge, they could either prevent elephants from harming them or impede and thus put off the clash.

But with population explosion and introduction of tea cultivation, the present community has come to be engaged in other means of livelihood detrimental to environment (such as felling, removing some plant species, illegal mining, and illicit distilling etc). As a

result, some people abandoning the attitude that the elephant is also a part and parcel of the environment in which they live have come to treat the animal as his enemy, a pest and a destroyer. The reason is that the elephant is an obstacle to new modes of living. This mode of thinking can be identified as an unfavorable element in the face of the combat between man and elephant in his region. The knowledge and especially the understanding which the community had possessed of the elephant must be made use of where management of the combat of man with elephant. But the modern management planning has excluded the knowledge and comprehension man has of the elephant. On the other hand, community based programmes such as *"Gaja Mituro"* implemented in other Wildlife zones in remedying combat of man with elephant and even in community based programmes in Sinharāja they use higher potential of the traditional knowledge of the community.

Forest Conservation and Management

Although Sinharāja Forest has been declared as a World heritage forest Reserve and accordingly administration has been performed even from Sinharāja incidents connected with deforestation and forest degradation are being reported. These activities mostly take place in particular in forests surrounding Sinharāja where elephants frequent. To regulate these circumstances several methods can be taken. i.e.

    i.   Proclamation of forest lands surrounding Sinharāja as forest reserves and adjoining them with Sinharāja

Sirisena (2013) describes the localities of Sinharāja where elephants frequent and their time limits. What is evident from this is the importance of peripheral forests for conservation of elephants and the importance of stopping processes of deforestation and forest degradation.
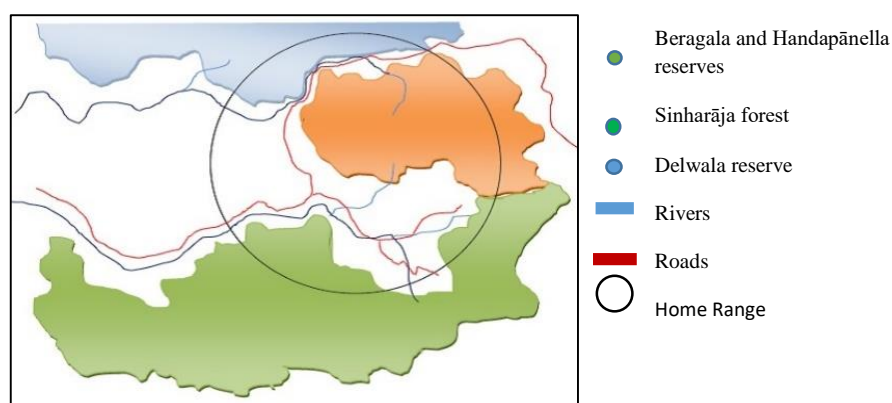
Map 02: Locomotion zones of elephants of Sinharāja
Source: Sirisena, 2013

He (2013) has arranged eco-systems most suitable to elephants of Sinharāja according to the nature of forest cover. Accordingly, the importance of peripheral forests is highlighted.

Area where Elephants frequent	Month											
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
Sinharāja Forset Delwala Reserve Beragala Reserve	X	X						X	X	X		X
				X	X	X	X	X				
Handapān Ella Reserve Rakvan Hilltop				X	X	X	X				X	
		X	X	X								X

Table 03: Annual migratory patterns of elephants in Sinharāja
Source: Sirisena, 2013

ii.   Putting a stop to the processes of deforestation and forest degradation that occur in peripheral forests and Sinharaja.

iii.   Implementation of combined programmes by Forest Department, Department of Wildlife Conservation and the police to regulate those activities

iv.   Providing them with human resources, physical resources and knowledge they need to fulfil it.

v.   Obtaining assistance of non-governmental organizations of national level and international level

vi.   Establishment of Community based organization network around Sinharāja and creation of opportunities for distribution of management responsibilities, opportunities, profit and benefit.

vii.   Bending continually on united conservational and management approaches and fulfilment of their objectives at ground stratum.

By following these strategies deforestation and forest degradation that occur in Sinharaja and forests surrounding it can be controlled and it will directly create an environment especially favorable for the existence of elephants and also will pave the way for minimization of the human-elephant conflict.

New Legal Laws and Policies

What is meant here is legal procedure that makes provision for implementation of new conservational strategies (referred to above). Namely conservational strategies to be adopted with a view to adding new members so as to maintain elephant population in Sinharāja. Although this is a topic which will probably lead to a dispute, still this should be focused on. At least the first step must be taken for a discussion in this regard. Such a beginning will yield useful results in future. In addition, implementation of current legal procedure will help reach a better approach.

Conclusion

By now the population of elephants living in wet zone of Sri Lanka is restricted to Adams Peak Reserve and Sinharāja. In spite of that no definite information about the population of elephants in Adam's Peak forest is available. Some researchers report that among them inter breeding takes place (Widanapathirana, 2015). By now (2015) reports that come from Sinharāja says that there are only two elephants there. Both of them are adult males. One referred to as "mother elephant" by village folks has not been reported. If she died a natural death or perished due to human activities the population of elephants in Sinharaja has already come down to two. But as already has been discussed, the extinction of elephants in Sinharāja does not mean to say that it is the end of a certain animal species because the role elephant plays exerts a number of other disciples such as ecology, socio-economics, culture, legal and spiritual studies. According to the current state of affairs, the extinction of elephants in Sinharāja is imminent of which fact will weaken a number of associated fields. This will introduce new problems, which make current problems more complex and acute. This text suggests In-situ conservation so as to conserve elephants who face extinction.

Although decisive obstacles will arise when implementation is put into effect decisions must be taken so as to conserve these animals and to protect the equilibrium of the environment ignoring whatever obstruction crops up. It will open the door even for conservational and management discourse to be to the masses.

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Raja - The Maligawa Tusker

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This was the majestic and graceful elephant who carried the golden casket of the sacred tooth relic of the Buddha walking calmly and solemnly on the white pawada cloths for forty years. It is` Raja 'the devoted servant of Lord Buddha, the luckiest Elephant among other Elephants, proudly carrying the casket of the sacred Tooth Relic. He is back in annual Easala pageant, where thousands of devotees worshipped the same.

During nineteen twenties capturing Elephants was an art and a live hood of a certain clan of Muslims from Batticaloa. They used to operate Elephants kraals under license from the Government. These days Elephants are becoming hard to come by, as their number was decreasing. European Ivory hunters hunting Elephants and the number were steadily decreasing. Umeru Lebbe of Earavur was one of those Professional Elephant kraal owners, who had been operating in the jungle in the vicinity of Batticaloa in 1925. Two baby tuskers were captured by his men. They were of the same size' and captured in one week's time. Umeru Lebbe thought finding these two baby tuskers within a week was a rare stroke of luck. This good news reached Tikiri Bandara Mampitiye Dissawe of GiragamaWalauwa in Kandy by telegram. Dissawe had discussed with his kinsmen, DehigamaNIlame and Pilimatalawa Nilame, and entrusted them with the task of purchasing the tusker. Both baby tuskers purchased for sum of rupees three thousand a princely sum in those days.

One morning of the month of December in the same year there was an unusually large gathering at the Kadugannawa railway station. News had arrived that the tuskers had been dispatched by train. They had been sent via Vallachchani. Thopawawa' and Polgahawela. Under license number 1318. It had been issued by the Government agent, Northern Province on 30th November 1925. The description indicated that they were four feet tall. Both baby Tuskers were sleeping in the hay tacks when the train arrived, Two Muslim boys who had accompanied with them had to prod and pull them by ears to put them out. They had arrived 11th December 1925. At that time Arambegama Kirihamy had been the keeper of Disawes, the she Elephant. He had come to take charge of the new arrivals. Two tuskers were tied to the she elephants with rope and cover to fellow her to the Wallauwa. The baby tuskers were fed with milk, grass, sugarcane, banana, and jauggery. They bath together at Nanu oya. They were named as Kanda and Raja. This is the early life of Raja. Young Raja is mischievous and naughty, once tore off his left tusk. Raja and Kanda spent twelve years of their youth, the happiest time in GiragamaWalluwa.

In 1937 Tikiri Bandara Mampitiya Dissawe donated two tuskers to Daladha Maligawa the temple of the tooth relic. Dissawe had added a condition to the donation, after the

death of these two Elephants their tusks must be in daladaha maligawa for ornamental purposes. The incumbent Diyawada nanilame Tikiri bandara Rathwatte was the Diyawadana Nilame at that time and two mahanayakes were accreted to that request. A deed had been drawn up by early august in 1937. They were valued at eight thousand rupees. Measuring height eight and seven feet respectively. On 22nd August 1937 two tuskers were offered to the temple of tooth by pooja. Raja and Kanda were not mature enough to take on the responsibility of carrying the 'Perahara karaduwa' right from the beginning, they were taken to other places in the great pageant and gradually come to flank the main tusker who would carry the karaduwa' in the Maligawa pageant. In 1945 the replacement was needed, the services of the Idampitiye Atha were not forth coming. Raja and Kanda trained to take the great responsibility. Raja was selected as the most suitable for the purpose of carrying the Relic Casket. Baldal Gedara Simal Naide has had the privilege of been Raja's keeper for a long period of time.
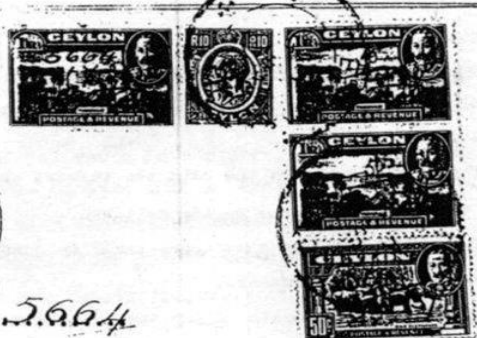
On some occasions, Raja had been angry, but not mischievous for every Elephant would get hard sometimes or the other and especially in times of musk. Raja would never go in to musk during the perahara season. It would always be long before or after the season. Raja appeared during the great period of the great pageant. Its regalia was magnificent and grateful parading on the street in the annual Aluth Sahal Mangallaya, The new rice festival. The second was Aurudu Mangallaya, (New Year festival) "Karthi Mangallaya". A festival to honor the god Kataragama. The Easala perahara the annual pageant. These services here forthcoming for more than four decades. Raja did that part of his duty in a most obliging and individualistic manner, once dressed up he never fussed, and did not spoil his elegant dress. His tusks sheathed in gold casing, Jasmine Garlands swaying from their ends. Silver anklets tingling on his feet, the radiant Golden casket on his back. It never stepped without pawada, nearly four decades, Raja was the most experienced participant in the pageant.

By April 1982 Raja began to show signs of sicknesses. There was a deep seated and gangrenous wound in its right eternal ear and wounds on his fore limbs and hind limbs as well. The Government also gave maximum support by allocation of crown land in close proximity to the maligawa to make temporary hut for sick Raja. The best Veterinary Surgeons in the country gave treatments. Rajas heart, liver' and kidney was good in condition. But Raja was suffering from Rheumatic arthritis. Raja had recovered fully and had even come in to musk by perahara season in 1985. Till 1985 the tusker was in good health condition except general weaknesses associated with old age such as decay of molar teeth. In 02.03.1988 Raja was surely ill and treated by many veterinary doctors. The Department of veterinary clinical studies has been associated with the health aspects of Maligawa Elephants from the beginning. According to their report Raja's age was approximately 65, and the body weight was 4000kg, phenotypic characters of this tusker closely resembled those described for the caste, Mangala in Mahagaja Lakshana Sangrahaya (Deraniyagala 1955)

In 1988 Raja fell sick. Initial examination revealed that pulses were week. Respiratory rate increased, and rapid heart rate and very low intensity' Rajas health condition reported to the highest authorities, since Raja has been declared as a national treasure by the president of Sri lanka. Every fifteen minutes, one clinician was assigned the task of monitoring the record of the tusker. The death caused by Cardiac faller Raja take his last breath on 16th July 1888. After the death the body of the Raja was taxidermised by The Department of national Museums. Now Raja the majestic Elephant stands with prestige in the Raja museum in the temple of the tooth relic premises. Raja was a symbol of national cultural heritage and it projected in a way no human being could have done. The frame and publicity it earned for the motherland would certainly be envy of many humans, for few could achieve recognition for the country with such grace, magnificence and dignity.

(a)

M. Ummeru Lebbe of Eraur is authorised to remove an elephant particulars of which are given below from Batticaloa along the north coast road to Valaichenai, thence to Toppawewa, from there to Matale and Kandy and thence to Kegalle.

This pass is valid for two months from this date.
Given at Batticaloa this 30th day of November, 1925.

V. Viswalingam
for Govt. Agent, E.P.

Particulars referred to.
Tusker elephant captured under license No. 1318 5.1.25. Height 4 ft. 5 in.
(Four feet five inches)

Permit for transport of baby Elephants

Receipt of sale of sale of the baby Elephants

NO: 5664

KNOW ALL MEN BY THESE PRESENTS that IMAMPITIYE WALAUWWE
PUNCHI BANDARA ALIAS TIKIRI BANDARA MAMPITIYE DISAWA and
retired RATEMAHATHMAYA of GIRAGAMA WALAUWWA in GIRAGAMA in
MEDAPALATA of YATINUWARA in the District of Kandy Central Pro-
vince (hereinafter called the Donor) for and in consideration
of the merit to be acquired and devotion towards the TRIPLE
GEM and in veneration of the Scared Tooth of LORD BUDDAH and
for divers other good causes and consideration me hereunto
specially moving do hereby give grant convey transfer and set
out over unto the DALADA MALIGAWA KANDY whose present DIYAWADA-
Na NILAME or TRUSTEE being TIKIRI BANDA RATWATTE DIYAWADANA
NILAME of the DALADA MALIGAWA KANDY in the DISTRICT of KANDY
aforesaid (hereinafter called the Donee) or to his successors
in Office for the time being or to be the Diyawadana Nilame
elected hereafter by way of gift absolute the TWO TUSKERS more
particularly described in the schedule at foot hereof and of
the value of RUPEES EIGHT THOUSAND (Rs:8,000/-) together with
all rights previleges easements servitudes and appurtenances
whatsoever thereof or the eto in anywise belonging or used or
enjoyed therewith or reputed or known as apart and parcel there-
of and all right title interest claim and demand of me the said
Donor therein and thereto.

TO HAVE AND TO HOLD the said two tuskers hereby Gifted
unto the said Donee and his aforewritten absolutely.

I Mampitiye Walluwe Rambukpotha Kumarihamy of Giragama
Walluwa in Giragama aforesaid do hereby accept the above Gift
on behalf of the Diyawadana Nilame and trustee of the said
Dalada Maligawa and take over the said tuskers to my care and
safe—

safe custody on behalf of the said Diyawadana Nilame subject t o the following conditions.

(A). That the said two tuskers should be in the sole custody of the Ratwatte family.

(B). That the said two tuskers should take part in the Maligawa annual Perahera and all processions and pujas in connection of the Dalada Maligawa.

(C). That any earning by the said two tuskers should be utilised for the expenses of the Dalada Maligawa.

(D). The Trustee or his successors shall in noway alieanate or encumber the said two Tuskers.

(E). That after the death of the two tuskers their tusks should be kept in the Dalada Maligawa as an ornament.

IN WITNESSES whereof I the said Donor and Mampitiye Rambukpotha Kumarihamy on behalf of the said Dalada Maligawa and its Trustee the said Diyawadana Nilamedo set out respective hands to three of the same tenor and date as these presents at GIRA-GAMA on this *thirty first* day of JULY ONE THOUSAND NINE HUNDRED AND THIRTY SEVEN.

THE SCHEDULE ABOVE REFERRED TO:-

1. All that TUSKER called and known as RAJA of the height of EIGHT FEET and living at GIRAGAMA WALAUWWE WATTA in GIRAGAMA IN MEDAPALATA OF YATINUWARA aforesaid containing in extent about SIX ACRES and bounded on the East by Wadatte kumbura, SOUTH by Triangekumbura, WEST by Weragale hena , and NORTH by Ambaange kumbura and Metiwalekumbura.

All that TUSKER called and known as DATHPUTTUWA of the height of SEVEN and HALF feet and living at GIRAGAMA WALAUWWE WATTA in Giragama aforesaid.

GIRAGAMA aforesaid.

    Signed and delivered in the presence of us and we declare that we are well acquainted with the within named executants and know their proper names occupations and residences............

1. *[signature]* This is the signature of *[Sinhalese characters]* Mampitiye Rambukpothi Kumarihamy

2. *[signature]*

    I Punchi Banda Ranaraja of Kandy Notary Public do hereby certify and attest that the foregoing instrument having been duly read over and explained by me the said notary to the said Mampitiye Walawwe Punchi Bandara alias Tikiri Bandara ampitiye Dissawa and Retired Ratemahatmaya and Mampitiye Walawwe Rambukpothe Kumarihamy both therein named (the first of whom signed as "T.B.Mampitiye" and latter signed as " Mampitiye-rambukpothe kumarihamy" in Sinhalese characters) the first of whom only is known to me in the presence of Tikiri Bandara Ratwatte Retired Ratemahatmaya and Diyawadana Nilame of Amunu-gama Walawwa in Amunugama in Palkegampaha of Pata Dumbera and Nawaratne Ratnayake Ludiyanse Ralahamillage Tikiri Bandara Ratnayake presently of Dehigama Factory in Luruttalawa in Meda-palata of Yatinuwera (who signed as "T.B.Ratwatte" and "T.B.Ratnayake" respectively) the Subscribing witnesses thereto both of whom are known to me the same was signed by the said execu-tants an d also by the said witnesses in my presence and in the presence of one another all being present at the same time at

                                    Giragama

Ciragama on this thirty first day of July One thousand Nine hundre and thirty seven.

And I further certify and attest that the Duplicate of this instrument bears four........stamps of the value of Rupees eighty, and a stamp of one rupee to the Original thereof supplied by me, and that both in the Duplicate and Original on page 1 line 10 the word " out" was struck off, lines 15 and 23 the letters "t", and "g" of the words " gift" and "Gifted" were rectified , on page 2 lines 16, 17 and 26 the letters "r", "se" and "b" of the words "our", "these" and " Kumbura" were rectified and on same pageline 25 the word "Weragalehena" was rectified and the letter "b" of the word "Ambaange" was rectified, before the foregoing instrument was read ove r and explained by me as aforesaid.

Which I attest.

Date of attestation.
31st July 1937......)

Notary Public.

Deed of Raja

Raja in middle

Taxidermies Raja

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Inscriptional Evidence on Health Sector Administration in Ancient Sri Lanka

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Abstract

Among many inscriptions found in the era of Anuradhapura and Polunnaruwa in Sri Lanka certain inscriptions were found with some rules and regulations that are stated with regard to hospitals in Buddhist monasteries. Most of them were found in the reign of Kassapa V. They illustrate the service rendered to Buddhism in the aspect of care giving for the old and sick monks as well as giving health welfare to facilitate the religious life of those monks towards their ultimate enlightenment. The importance of the information found in these inscriptions is the fact it states the rules which should be obeyed inside hospitals, responsibility of the staff and also the villagers. All the information in the inscriptions were in the manner of orders which should be strictly followed by each stakeholder the hospital. One of the most detailed inscription related to the management of ancient hospital was the Medirigiriya pillar inscription which states the rules that the hospital should be with. Also the evaluation of two inscriptions in Mihintale i.e. A and B shows more detailed information regarding the management of a hospital and its staff. One of the distinguishing features in the ancient hospital of Mihintale and the Alahana Pirivena hospital is that it uses traditional Ayurvedic Principles, similar to Vedic teachings, Alahana Pirivena with greater evidence. Information found in this study has been analyzed based on the texts with regard to the teaching of ancient Ayurveda written over 2500 years ago and comparisons with other historical evidence in Sri Lanka. This study reveals, that the rulers of this country were well aware about the importance of a physician and team work in curing patients and that the due respect must be paid to the physician. Furthermore, it proves the fact that sustainability of any field serving the nation or the community depends with the support, the attention and with the due care given by the rulers of a country.

Keywords: inscriptions, health, orders, rules, patients, villagers, Medicine, food, remuneration

Introduction

Inscriptions in Sri Lanka are considered as the most fruitful source to reveal what occurred in the medieval period. The earliest inscription so far discovered was from the ruling of King Devanampiyatissa (247-207BC) contemporary with King Asoka of India. It is observed that Sri Lanka is endowed with lithic inscriptions in which pronouncements and proclamations of ancient kings and their subjects have been recorded. That is on rocks, stone pillars and slabs and was left to posterity. Although

these inscriptions including other constructions of Anuradhapura were attacked by weathering as well as by the Choli (Tamils) and by European invaders, the matters preserved are legible enough to gather information regarding sovereignty and the reign of ancient kings. Thousands of inscriptions were found as evidence to the privilege of establishing Buddhism in the country, among the discovered inscriptions by the Archeological Department of Sri Lanka, those directly connected with hospital administration are very few in number. On the other hand one of the edicts of the King Ashoka in India, engraved on the second tablet of Girinagar, reveals information on the establishment of a system of medical administration throughout his dominion, and as far as Thamabapanni (Sri Lanka) in which 'both medical aid for humans and animals, together with medicaments of all sorts suitable for animals and humans were provided'. (A.R, PCMO (W.R.Kynsey, 1879, p221) quoted by C.G. Uragoda.

This study continued as an analysis of data mainly in three texts Volume five part 1,2,&3 named Inscriptions of Ceylon launched as an Archaeological Survey of Ceylon Edited by Sirimal Ranawella, for appropriate discoveries regarding the inscriptional matters related with hospital establishment and their management. The Information found is arranged in this article under the name of each king and few inscriptions which stated no name of a king are listed in the end of this article. It should be noted that even though all the listed inscriptions do not contain details on hospital management they are of some contributing value as evidence of health management systems in Ancient Ceylon.

The observations made on this study are listed and extracted from the information gathered of comprehensive coherent reading of each inscription to establish a more logical successful discussion. So they are listed from no. 1-16

The 'discussion' is based on the evaluation of matters contained in other texts, Uragoda C.G, Muller, *Epigaraphia Zeylanica* of Paranavithana and other medical texts associated with the knowledge gained through the years to explore the matters of an untouched area and analyze them balanced with the developed knowledge.

1. Anuradhapura Malwatu-Oya Pillar Inscription King Udaya II [1]

This inscription lies in the inscription Gallery of the Anuradhapura Archeological Museum, labeled M56. The inscription was found in the jungle near Malwatu oya in Anuradhapura with a shape of rectangular stone pillar. The script of the record in Archaic Sinhala of the latter half of the ninth century.

The epigraphically recorded granting immunity in respect of a village named Kelegama attached to a hospital situated near Anuradhapura. And also it has included prohibition for entering the village as well as a curse if violated the rules stated in the inscription as commonly see in other such inscriptions.

2.Ambagahavãva Pillar inscription King Udaya II [2]

This inscription was found on the April of 1961 at a place called Galkanu Māligalanda situated in the village Ambagahaweva of Anuradhapura district. According to the record inscribed, the village named Lahasugama (currently Ambagahaweva) situated in a district named Siporvatu-bima granted to a hospital nearby and was registered by this pillar. Prohibition to Enter the village and the curse for not following rules inscribed there are also stated as usual.

3.Pillar inscription at the eastern gate of Anuradhapura King Udaya II[3]

At present this inscription lies at the Inscription Gallery of the Archaeological Museum at Anurādhapura, labeled M18. It was discovered in a private land in Anuradhapura, about 75 yards to the south- west of the turn to the Nakā-whera, the following paragraph is quoted from "The Inscriptions of Ceylon" published by the Department of Archeology 2001.

"The inscription embodies an edict of a king styled Abhaya Salamevan, registering the grant of a plot of land outside the eastern gate of the city to the hospital at Mädirigiriya. As per the record inscribed we can imagine for ourselves the competition among various interested parties when it was that the plot of land was available for allocation it is , therefore, a remarkable circumstance that recipient of the land was not a high dignitary resident at Anuradhapura, not a courtier who had the ear of the king , and not even one of the ancient religious establishments of which there were so many in and around the city, but an institution dedicated to the healing of the sick, attached to a monastery far away from the capital. The hospital at Mädirigiri, at that time, must have enjoyed a high reputation to have received so signal a favor at the lands of royalty".

…………..Royal household who came here as commanded; assigned the land which extends the near 'the enclosure over the city wall at the eastern entrance (of the city) to the Mäñdiligiriya hospital it is demarcated by the boundary stones, which we have set up here.

4. Mihintale Fragmentary Pillar Inscription King Udaya II (887-898)[4]

A lower portion of a rectangular pillar inscription stone broken into two parts (two fragment put together, measures 2 feet by 8 inches square in section) had been found near the ancient hospital of *Mihintale* in 1952. The script and the language, is Archaic Sinhala used in the latter half of the 9th century as per the information cited by readers. This record is indicated the purpose of issuing a decree, for registering certain immunities granted by the king in respect of the land on which the Mihintale Hospital (*Sagiriya Ved-hala*) had been built. Entry prohibition for certain people, vehicles and farming and domestic animals to the Sagiriya hospital premises are stated in this inscription.

5. Polonnaruwa Council Chamber Pillar Inscription King Udaya II [5]

Recent analytical studies done by eminent scholars confirm that the dates of the inscription fall into the period of King Udaya II. This inscription was done by the identified dignities who ordered granting immunities to the hospital under the condition of supplying one pǟḷa of dried ginger annually. Said hospital was found by a person named Doti Pilakna. Name of the person who gifted some lands to the hospital is not legible. Unlike other inscription this order to grant immunities is not given by the king, but by a high dignitary of the state (*Mahayā*, or an *Āpā*) with the title of *Mahamal*. It is also stated the lands allotment comprising of two *seṇas* of fenugreek and arecanut trees in *koṭagama*, some paddy –fields and a forest land in Maharākāya. These lands were given to the chief Physician and to his children and grandchildren to use as per their will, although their lineage was allowed to utilize the land under said conditions, if they fail to provide ginger to the hospital a penalty of a *Huna* of gold was ordered.

Similar to other inscriptions entry regulations were enacted. Furthermore 'Statements of curse' which were stated might have been damaged and destroyed.

6. Abhayagiriya pillar inscription in the period of King Kassapa IV and King Kassapa V [6]

Even though it did not mention a hospital, this inscription provides facts about the land granted under the royal seal, set aside to compensate the cost of medical treatments given to their lordships and the congregation of honourable monks residing in the Mangul pirivena in Dāras-vatta situated in Abhayagiri Vihara.

7. Kukurumahandamana pillar Inscription of King Kassapa IV (898-914)[7]

This is a stone pillar inscription discovered by H.C.P. Bell, the Archeological Commissioner from 1890-1912, near Kukurumahan Damana some thirty miles away from Anuradhapura in the Vilpattu national park, by left bank of the Sangaranparatti oya in 1896. The inscription was to register immunity granted in respect of a village named Merlagama attached to a hospital that was built by a Commander–in-chief of Army named Sen Senevirad in front of a nunnery called Mahindarama Mehenivara on the highway named Mañgul-Mahaveya which was in the inner city (of Anurādhapura). Dates of inscription have been identified from the facts found by other scholars, and is confirmed as the eleventh year of King Kassapa IV.

Entry prohibition into this village for designated certain government officials and to the farming animals were inscribed similar to the other inscriptions.

8. Mihintale Fragmentary Pillar Inscription King Kassapa IV [8]

The two pieces of fragments of this stone pillar inscription (the upper fragment being 14 inches and the lower fragment 11 inches in height) have been found at the site of the Mihintale Ancient Hospital complex. Therefore, it can be assumed the inscription contains an immunity grant made in favour of the hospital and an entry regulation

similar to other inscriptions. According to the analysis, the era of this inscription was during the reign of King Kassapa IV under the throne name Sirisangbo (898-914)

9.Colombo Museum Pillar Inscription No3 King Kassapa IV [9]

This stone pillar inscription, the place /province where it found is not known. Now it is listed in the inscription gallery of the Colombo Museum. This inscription contains the proclamations issued by King Kassapa IV brother of king Udaya II (887-898)

The objective of erecting this edictal stone was to publish granting immunities in respect of an estate gifted by *Mahale* named *Senelna*, to a lying-in-home built by himself on personal finances. Prevention of entry for officials and unauthorized personnel was also mentioned.

10.Kiribat- Vehera Pillar Inscription King Kassapa IV [10]

The purpose of erecting this pillar was to register some immunities granted by the king for the dispensary of Thuparama in respect of a land, called Uturu–Megiri-Vatta on marking the boundary. It has cited as "...*which is bounded by Veher vatta on east,by the wild Sapota tree on the south, by the cart road on the west,and by the Sambada forest on the north,which had been donated by Brahmin Tunamahārād to the Thuparama dispensary*". Rules preventing trespassing and loitering have been enforced as this was declared a high security area, furthermore even certain government officials were banned from entry, however fugitives pursued inside the premises by local law enforcement, hospital officials were in charge of escorting out any unauthorized personnel. According to analysts the script and the language of this record is Sinhalese composed on the first half of the 10th century A.D. in the reign of King Kassapa IV.

11.Dorabavila Pillar inscription King Kassapa V (914-923)[11]

Boundary stones (*Attani* Pillars) in two Payalas of the "Hena" near Sohona of Balala, Elgal-bima states, "*The record contain an immunity grant made by a Mahapa named Dāpul in the fourth year of a king styled Abha Salamavan Mapurmukā in respect of some land owned by a General Hospital, which was established in the inner city (of Anuradhapura) by Kassapa V; the land concerned had been located in a region named Elgal-bima.*"

Similar to the Kiribat-Vehera Pillar Inscription entry prohibitions were declared, cattle and livestock were prevented wandering inside the premises, local law enforcement could not pursue fugitives inside the premises. All these proclamations are similar in this category of inscriptions and it has been recorded in early tenth century in Sinhala language.

Building of this hospital by King Kassapa V is stated in chronicles and is confirmed by this epigraphical record. According to the Anuradhapura Slab Inscription of King

Kassapa V (a king styled *Abhā Salamevan* in his fourth regnal year) this hospital was built by him on the *Mangul Mahaveya* by the southern Gate of Anuradhapura.

12.Bolana Pillar Inscription King Kassapa V [12]

This is a two sided engraved stone pillar-slab found in Bolana, a village near Ambalantota in *Magama pattuwa* of Hambantota district now preserved in the inscription gallery of Colombo National Museum.

The subject matter of the record was the registering the gift of two *Heṇa*s which appears to be assigned to a hospital in *Mahagama* by a group of members of the royal family in his seventh year of the throne. All the names and entry regulations cannot be observed cause of damages to the inscription.

13.Dorabavila Pillar inscription of King Dappula IV[13] (914-923)

This edictal pillar announces tax freeing of the land *Karabā-payala* gifted to a senior physician named *Punalna* by the state. The decree of granting was issued by a *Mahapā* named *Udā* in the first regnal year of a king styled *Abhā Salamevan* (King Dappula IV). Entry prohibitions, access limitations and pursuit prohibitions were enacted similar to some of the previous inscriptions.

14.Mihintale Slab inscription - B King Mahinda IV [14]

Among the recoded inscriptional data as well as among the inscriptions found, this has a fairly long detail inscribed. Date of inscription falls in the throne time period of King Mahinda IV during his 16th regnal year. Regulations cited in this inscription are mainly regarding the payments of the physicians and health staff of the monastery hospital and other supporting staff of the monastery.

There has been a record of land allotment to a physician, land called *niñda* (a larger area of land) from the *heṇa* consisting of thirty-two plots and a share of food from *Damiya* and two *payas* of land and a share of food from *Damiya* to a physician who applies leaches. Two *Kiriyas* of land and a share of food from *Damiya* to an Astrologer and one *Kiriya* of land and a share of food from *Damiya* to a barber, a keeper of a water- vases two *payas* of land and one share of food per person from *Damiya,* three *kiriyas* of land from the village Maṅgulāva to the two laundry men.

15.Medirigiriya Slab Inscription no 1 King Mahinda iv (956 -972) [15]

The orders made regarding the management of the hospital are listed below as the translation cited in the text.

"..The functions of the hospital shall not be interrupted from the tenants of the hospital shall not cultivate the land belong to the hospital. The buffaloes tethered in the cow-byre   shall not be impressed.

The tenant (occupant) shall not be allowed in any bath attached to the hospital. The functionaries (officers)……… Apart from a boy impressed (for service) the officials of the Workshop shall not impress (others). Apart from taking an apothecary, the officials of the Workshop shall not impress (others) for service.

The functionaries of the hospital shall not accept any gift or bribe from the tenants attached to the hospital ….mandaran……….. in order to exact darandu (penalty)the physicians and functionaries shall not impress…………for service If there be any dispute that has arisen in any land of the village , of which their lordships, the physicians and the functionaries have knowledge , the Warden shall go there and settle it.

At places guarding the collection of Water-tax, the Warden and their lordships, the physicians shall make (the tenants) to perform work on (those) reservoirs ……….they should cause the recordings (of accounts annually). If the functionaries do not adhere to these Determination of rights..... The tenants shall be permitted to......from the places attached to the hospital............

..............of Mahendbāpiţigama, also his Kalideva-madiva......the lands in the, also the places in which yavahu is traded. ....The home–gardens of tenants shall not be confiscated; also the mivan, palmyrah and coconut trees, and oxen and buffaloes of his village (shall not be appropriated)....................without obtaining their services ....in the hospital..........;other than ....shall not drink ....; ....shall not be lifted.

No..... shall be levied from the tenants (living) in the lands belonging to the hospital. After having assessed and considered this Determination of rights, they shall (take one fruit) out of four fruits. Also the utensils taken from places attached to the hospital (be given) to the functionaries of royal household.

If there be any lordship of a physician who has transgressed these (regulations), he shall be dismissed from service, after having taken that service. Also the Warden who by himself has caused a dispute, his house shall be confiscated and dismiss him from service. Those confiscated houses ....the lords of the royal household................

Having properly observed these regulations..................; also the legality shall be taken into consideration

(They) shall take upon themselves the sins committed by a cow killer

16. Mihintale fragmentary pillar inscription No1 9th to 10th century King UdayaII [16]

This inscription was found in the premises of Mihintale ancient hospital in Anuradhapura district and the content was regarding immunities granted to the Sẵgiriya Hospital by the royalty.

17. There has been no statement of the responsible party in the erection of the following list of inscriptions [17].

i.   Hangamuwa Doravēruwa Rock inscription   9th to 10th century

ii.   Mānkdeṇa Slab Inscription No 04
   This inscription states that food must be supplied to monks, which suggests that the offerings were for monks who were meditating.

iii.   Nagollagoda Vihara Rock Inscription
   This inscription stated that food/alms must be provided for monks who meditate in the forest. The author has stated his will to attain Buddhahood in a future birth.

iv.   Tholuvila Guard –Stone Inscription
   This inscription is quite different to others, because it states food patterns for the patients who went through purgation therapy.

Observations and Discussion

Having considered the information of inscriptions selected in this study while comparing them with formal inscriptions illustrated in the texts referred, the following observations can be made. They are listed in numbers below in a reader friendly manner and discussion is placed accordingly.

1) There were hospitals built in the ninth and tenth century and there had accordance for the administration of the hospitals.
2) This period was of Buddhism well established in Sri Lanka and this period of hospital construction took place especially during the period of king Udaya II the King kassapa IV.
3) Immunities were granted to the hospital by the elite.
4) The monastery and the hospital were cared by the ruling parties through the orders imposed specially on giving fraction of food, medicine and cloth for the sick.
5) The hospitals situated in Mihinthale, Medirigiriya and Pollonnaruwa and Bolana were administered independently.
6) All the villages belong to the hospital and the monastery were made free from all the taxes and levies.
7) Hospitals were made free of institutional taxes.
8) Failure to pay ordered dues to the hospital resulted in a penalty.
   - Observations 1-8 reveal the fact that the realization of earning merits by caring the sick for crossing the flow of reincarnation (the Lord Buddha's main

teaching) As a result, institutionally establishing health services were became more popular and acknowledged highly. The rulers of the country devoted to build such medical institutions under their patronage and issued proclamation of securing the institutional administration.

9) There were established hospitals in Hambantota District not only in Anuradhapura
   - Since Buddhism crossed every corner of the country with the civilization influenced by Buddhism.

10) Entry prohibition to the premises of the village and monastery were imposed on certain personnel i. e. Some government officials, unauthorized people, drum beaters, archers and animals such as domesticated elephants, village oxen and buffaloes, and carts.
   - The vicinity of the hospital and monastery premises is needed to be a quiet and trouble free zone where patient and meditating monks are expected to be free from disturbances.
   - Constant arrival of proclaimed people and Domestic animals to the monastery village causes unnecessary arbitration with the authority

11) Curse and Blessing phrases were inscribed in almost all inscriptions.
   - *Shapa pata* (curse) alarms and guard the mindset by act on any mental abuse as stated in Buddhist and Ayurveda Philosophy. In the general community usually has a fear of met with any of a sentient person or a higher authority. Also the social believe is the curse always harms the life today and life after death.

12) The Physician was considered as the highest hierarchical link of the hospital, he was also the most honored.

13) Chief Physician is the main justice for the hospital and the village, he could impose punishments to the villagers and the hospital staff, there by hospitals had some autonomy.

14) No violation of accordance by the physicians were tolerated.

15) Development of hospitals were at a maximum in the latter part of the Anuradhapura era   par with Buddhism.
   - Observations 12.13,14, 15 and 16 are regarding the Madirigiriya slab inscription, (No 13 in this list), the most discussed inscription owes its own distinguish by mentioning strict rules for the tenants, officials and to the lord ships as well. Madirigiriya slab inscription states almost all the proclamations or regulations directed for the management of Medirigiriya hospital, were not cited in the inscriptions before laying this Madirigirya slab inscription.

16) Establishing a system of medical administration throughout the domain of the particular kings i.e King Udaya,II, King Mahinda Iv, King Dappula Iv, King Kassapa IV, King KassapaV .aimed for the proper functioning of the institution.

17) Medirigiriya Pillar Inscriptions no 1 and no 2 of king Kassapa V (914-923AD), Medirigiriya Pillar, Madirigiriya Slab inscription of King Mahinda IV (956-972AD)

The text of Madirigiriya Slab inscription of king Mahinda states only to the hospital regulation of Madirigiriya Hospital.

18) The pillar no 1 and 2 are very similar to each other with the text, In Piller No 1 It was ordered that dead goats, fowl and illegal fisheries must be handed over to the hospital, this was to be seen in the Medirigirya inscription.

• Hence the most inquisitive proclamation in pillar no1 was directing the authorities to hand over the dead goats and fowl for the monastery hospital. However this raises a question, violation of the first of five basic Buddhist precepts. Uragoda C.G. suggests these dead animals were sent to the hospital for research purposes.

• If it was really for research purposes, the fact must've been stated in chronicles, with further explanations.

• When facts are further analyzed it's evident that animals which were handed over to the hospital were the hunted and patients were provided fresh, hunted meat.

• Based on a proclamation stated in this particular inscription, the word,'Dunumadalagama' referred in the Epigraphia Zeylanica helps clearing this uncertainty. As Dunumadalagama is the place where archery was practiced and 'The Department of Archery' was situated, hospital premises lay adjacent to it. Animals such as goats which were shot dead by archery practices may have been ordered to hand over to the hospital.

• Therefore it must be expressed that flesh of these animals were healthy and suitable for consumption, as they were of hunted animals.

• Another reason is the *Majjama Nikaya Jeewaka Sutra* states a conditional on accepting meat offered by devotees named as *Thikotica Parishudda Mansha (sheelaya)* (the morality trio in three aspect); the meat of animal killed or specially prepared for the recipient considered for offering as a food, also not heard or not seen of killing the animal by the recipient. This particular circumstances has been stated in the sutra for the merits of the benefactor or the donor as the recipient, as the monks who took the path of searching enlightenment do not expect the sheer delight of having food but only for the survive the path.

• Handing over dead goats and fowls to the hospital can also be considered as the third reason; these two animals' meat being used for consumption as well as preparation of drugs for the sick as prescribed in Ayurveda medical texts. At the stage of replacing depleted body tissues due to illness and correcting digestive fire of the patient during the treatment course simultaneously. No records or evidence is found that these animals were being used for research or any other purpose as stated by C. G. Uragoda.

- Considering the facts and hypotheses it can be stated that animal meat might have been used for consumption and for preparation of medicine during this period in this particular hospital monastery.

Conclusion

1. The hospital administration of the Anuradhapura and Pollonnaruwa era had possessed the fundamental characteristics of a good governing organization while establishing the peace within the institution while helping for ultimate enlightenment of Buddhist monks.

2. The Royal patronage was in a highest level towards maintaining the discipline and order in the premises while placing the physician in the top of the hierarchical order

3. It is cleared that the regulation inscribed on Medirigiriya Slab inscription of handing over the dead goats and fowls for the monastery hospital has laid for fulfilment of animal protein either the ways of medicinal or nutritional by using fresh meat of hunted animals.

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Medieval Terracotta Horse Figurines from Mundra Taluka, Kachchh District, Gujarat, India

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Introduction

As per the current understanding, pinpointing the time of introduction and use of horse in Indian subcontinent is a controversial topic. Many scholars argued about the presence of horse bones and figurines in the sites of Indus Civilization (Danino 2006). In the absence of substantial data, they had to face vehement criticisms. The availability of terracotta horse figurine in Late Harappan to Painted Grey Ware Transition Phase at Bhagwanpura indicates the use of horses in India during 1500 - 1000 BCE (Joshi 1993). Literary evidence on the existence of horses in the Indian subcontinent is available from the Mahajanapada period (6th Century BCE). Subsequently, for the invasion of India in 326 BCE, Alexander the Great used a large number of horses. His invasion marked the beginning of Central Asian migration to India. Many of these migrants settled in India and through marriages, they became part of mighty clans and throughout their history, horses were closely associated with them. Many of these clans had spiritual connection with horses. Some of these clans made terracotta horse figurines and worshipped them (Mann 1989; Bais 2018).

Terracotta Horse Worship in Western India

The worship of terracotta horse is primarily related to the ethnic groups in Aravalli range. Garasia tribe in Western India is an important social group who worshiped terracotta figurines and ancestors (Mann 1989). Even now a days, people of Gond tribe offer terracotta figurine to the god for protecting their cows and oxen. Some of the major traditions and myths behind the practice of terracotta horse worship are described below. Most of the tribes in India consider the horse as a noble animal and also as their family

god i.e. 'Ghoelo-dev'. They worship the horses when the crops are ready to be harvested and offer terracotta horses to lord Indra. Bhils, Rathwas, Bhilalas, Tadvis, Naikas and Garasias worship horses as a mediator of their gods (Afrozsultana 2015).

One group among the Garasia tribes believes that, Bhavesingh, a past warrior of their community represented them in the war and became a martyr. They consider him a god and believe that his soul is wandering in the Bakhar hills. Garasia community believes that the figurine of his beloved horse can communicate to him and their grievances can be solved (Bais 2018). Sometimes the Bhils and Gonds use the horse figurines to worship natural powers. The horse figurines were placed in the centre of a group of trees, hills, valleys, river banks and open grounds. According to the tribes, these kinds of offerings are for protecting their farm field, cows and oxen from natural calamities (Mann 1989). Rathwas is a sub group of Bhil tribe, who worship tribal god Pithora Baba, whose vehicle is a horse. Normally god Pihora and his bride Pithori is represented as mounted on horses in their marriage procession. Rathwas offer horse figurines to their gods in all important ceremonies in their life and believes that the offer provides prosperity, good crops and betterment in life. Rathwas also believe that the practice of offering terracotta horse will protect their village from calamities. It is believed that, in case the horse is not offered, the mother goddess will appear in their dreams and sit on their chest and ask them about not offering the terracotta horse (Afrozsultana 2015). Standing horse figurines facing a central stone or tree is the traditional way of offering to Garasia gods and goddesses; where the central stone or tree is considered as the divinity (Mohanthy 2006). In addition to these, the Hindu communities especially Rajputs offer terracotta horse figurines to their goddess (*mataji*) during festival times (Kumbhar *Pers. Comm.*).

The legends and oral traditions that are connected with the Jakhs or Yakshas have been recorded from the Kachchh region. The horses and horse riders in Kachchh are linked to the Jakhs who are considered to be the outsiders in Kachchh. As per different versions of the legends, Jakhs killed the king Pumvaro who was nephew of great king Lakha Phulani who died in 979 AD in the battle of Atkot. On the basis of these legends attempt has been made to date the medieval settlements and practice of the horse figurine worship in Kachchh in between 10th and 16th century AD (Shirvalkar *et al.* 2015).

Terracotta Figurines from Mundra

A large number of terracotta horse figurines are reported from various archaeological sites in Gujarat and majority of such sites are located in Kachchh region. Archaeological explorations undertaken by the University of Kerala during 2014-2016 in the Mundra taluka of Kachchh region has revealed horse figurines from 13 medieval sites viz. Madi, Kuvai, Bharudiya, Gelda, Lakhapar, Bhadreswar, Moti Bhujpur, Gunthala, Lefra, Nana Khandagra, Sukhpar, Samaghogha and Tappar (Figure 1). In this article, an attempt is made to understand the characteristic features of the horse figurines collected from the above mentioned sites in Mundra taluka.

Madi - Desalpar

Madi (22° 51' 13" N; 069° 35' 27" E) is a site located in Kandhi Desalpur village. The rough circular site measures approximately 35 ha. in size. Maximum height of the archaeological mound is around 1.5 m. At present, a Durga temple is situated over the mound and a number of roads are running across the site. The site shows large scale destruction due to the recent human activities including treasure hunts. The archaeological explorations conducted at the site revealed microliths (geometric tools, non-geometric tools and lithic debitage) and evidence for rectangular, square and circular stone structures of medieval period, pottery kilns, artifacts like grinding stones, terracotta figurines, large quantity of pottery, iron implements, copper objects, coins, animal figurines, terracotta balls and animal bones. The commonly used raw materials for the production of microliths include chalcedony, chert and jasper. Based on the ceramic data, medieval occupation at the site cannot be dated prior to 10th century AD. The explorations in the site yielded 118 fragments of horse figurines. Among the 118 fragments; 82 are of leg (Figures 2 and 3), 14 are of neck (Figure 4), 8 are of body (Figures 5 and 6), 5 are of head (Figures 7 and 8) and 9 are undiagnostic in nature. Many of these broken fragments retained features such as tail, nose, ear, eye, chin, mane, rein and hoof. Saddle seats are also present in some of the body parts. Length of these figurine fragments are in the range of 20mm to 160mm and the weight varies from 10gm to 580gm.

Kuvai

Kuvai (22°54´10.94´´ N; 069°57´31.29´´ E) is a medieval site. The archaeological mound measured approximately 100mx120m is rectangular in shape and is located on the eastern side of the present village. Explorations in the site yielded a number of medieval structures, sati stones, hero stones and 10 fragments of terracotta horse figurines. Among the 10 fragments; 6 are of leg, 1 is of neck and 3 are undiagnostic in nature. Length of these figurine fragments are in the range of 50mm to 200mm and the weight varies from 50gm to 250gm.

Bharudiya

Bharudiya (22° 56.711' N; 069° 53.410' E), the medieval site is situated near the Kaleswar Mahadev temple located in the south of the present village. The site is currently under the ownership of Mr. Ratan Sumar Gadhvi that measures around 150x150m. Six hero stones were found from the site which is now an agricultural land. Explorations in the site yielded 14 fragments of terracotta horse figurines. Among the 14 fragments; 8 are of leg, 3 are of body and 3 are undiagnostic in nature. Length of these figurine fragments are in the range of 70mm to 160mm and the weight varies from 50gm to 900gm. This site revealed the use of hollow horse figurines.

Sukhpar

Sukhpar Timba (22°54.020' N; 069°32.278' E) is a medieval site located in the village land near the pond situated to the south of the present village Sukhpar. The site is roughly square in shape and ceramics were found from 75 x 75 m area. Major vegetation of the site is *Acacia arabica*. Explorations in the site yielded 21 fragments of terracotta horse figurines. Among the 21 fragments; 12 are of leg, 7 are of body, 1 is of neck and 1 is undiagnostic in nature. Length of these figurine fragments are in the range of 30mm to 120mm and the weight varies from 10gm to 100gm.

Gelda

Gelda (22°54.861' N; 069°36.249' E) is a medieval site located near the Nageswar Mahadev temple situated to the south of the present village. The archaeological mound is roughly circular in shape and covers an area of about 60 x 60m. Cultural materials from the site include pottery, terracotta figurines and stone and shell objects. Explorations in the site yielded 13 fragments of terracotta horse figurines. Among the 21 fragments; 10 are of leg, 2 are of head (Figures 7 and 8) and 1isof body. Length of these figurine fragments are in the range of 30mm to 120mm and the weight varies from 20gm to 60gm.

Lakhapar

Lakhapar (22°55.056' N; 069°41.129' E) is a medieval site located in the village land. The low lying mound measures roughly 50x50 m in size. Explorations in the site yielded a large number of pot shreds and 9 fragments of terracotta horse figurines. Among the 9 fragments; 6 are of leg, 1 is of neck and 2 are undiagnostic in nature. Length of these figurine fragments are in the range of 30mm to 130mm and the weight varies from 30gm to 90gm.

Bhadreswar

Bhadreswar (22°54.833' N; 069°53.954' E) is a medieval site located near an old Nagara style temple which is a protected monument of Archaeological Survey of India. Cultural materials of the site are scattered around an area of about 2x2 km. A number of hero stones and sati stones are present in the site. Explorations in the site yielded large number of ceramics and 3 fragments of terracotta horse figurines. Among the 3 fragments; 2 are of leg and 1 is of body. Length of these figurine fragments are in the range of 60mm to 100mm and the weight varies from 80gm to 230gm.

Moti Bhujpur

Moti Bhujpur (22°52.658' N; 069°37.711' E) is a medieval site located in between Neelkanda Mahadeva temple and Mangleshwar Mahadeva temple. The archaeological mound measures approximately 60x60m in size and faces the Nagmati River. The land

currently belongs to the Jadeja community. Explorations in the site yielded large number of potsherds and one neck fragment of terracotta horse figurine. Length of the figurine is 30mm and the weight is 45 gm.

Gunthala

Gunthala (22°52.793' N; 069°46.875' E) is a late medieval site found in the forest land. The site located in the south east of the present village is rectangular in shape and spread in an area of about 250x250m. Explorations in the site yielded large amount of ceramics and 3 body fragments of terracotta horse figurines. Length of these figurine fragments are in the range of 60mm to 100mm and the weight varies from 50gm to 240gm.

Lefra

Lefra (23°02.495' N; 069°45.289' E) is a medieval site located in the right side of Lefra-Mundra road. The rectangular mound is situated to the northern part of the present village. Explorations in the site yielded good number of ceramics and 2 fragments of terracotta horse figurines. Among the 2 fragments; 1 is of leg and 1 is undiagnostic in nature. Length of these figurine fragments are 30mm and 60mm and the weights are 20gm and 30gm respectively.

Nana Khandagra

Nana Khandagra (22°57.275' N; 069°42.956' E) is a medieval site located in the back side of the Primary School in the village. The site measured approximately 75x75m. A number of herostones and satistones are also seen at the site. A canal dug for irrigation purposes yielded large amount of ceramics and 2 fragments of terracotta horse figurines. Among the 2 fragments; 1 is of head and 1 is of body. Length of these figurine fragments are 120mm and 130mm and the weights are 105gm and 315gm respectively.

Samaghogha

Samaghogha (22°53´23.31´´N; 069°40´33.92´´E) is a medieval site located in an agricultural farm. The site measured approximately 100x100m in size. A number of hero stones and sati stones are also seen at the site. Explorations in the site yielded a number of pot sherds and 3 fragments of terracotta horse figurines. Among the 3 fragments; 2 are of leg and 1 is of body. Length of these figurine fragments are in the range of 40 to 70mm and the weight varies from 30gm to 130gm.

Tappar

Tappar (23°01.779' N; 069°39.970' E) is a medieval site located in the village land. The site measuring 100x100m in size yielded large number of ceramics, agate nodules and 2 leg fragments of terracotta horse figurines. Length of these figurine fragments are 40mm and 80mm and the weights are 10gm and 40gm respectively.

Morphology of Figurines

Solid and hollow figurines were reported from Mundra and these were manufactured using multiple techniques. Solid figurines are hand modelled with applique decorations. Finger impressions are present on surfaces of a few figurines and it may be an indication of hand making technique. In case of hollow figurines, different body parts are made on wheel and assembled into a single piece through looting. Majority of the figurines have powdery surface and a few have rough surface and others have smooth surface. The powdery surface is formed due to continuous human handling, natural weathering or deficiencies in clay preparation and firing. Texture of all the figurines was recorded using sand paper chart (Rajesh 2011). Majority of the figurines are of fine texture followed by a few pieces of coarse and medium texture. The sand particles present in the figurines may be included deliberately during the clay preparation. The probabilities of the natural presence of sand in the clay cannot be ruled out as well. The slip is present on many of the figurines and a few of them have burnished surfaces. Majority of the figurines have deoxidized core and a few have oxidized core. The reasons for the deoxidization of core may be the deficiencies in heating or presence of certain minerals in the raw material. Cores of many of the figurines also showed pores in them probably due to the loss of sand grains. Smooth fracture is an indicator of the developed pyro-technological skills and advanced clay processing techniques. Majority of horse figurines from the study area have irregular fracture and a few have conchoidal fracture. Thus, the fracture clearly reveals that there are deficiencies in clay preparation techniques and heating of the figurines. The present condition of surface of figurines can be divided into four, namely even, uneven, eroded and calcium/salt encrusted. Only a few figurines have even surface. Surface of many of the figurines are irregular in nature with lot of calcium/salt encrustations. The presence of calcium/salt encrustation on the figurines clearly show the condition of the soil in which the artifacts were preserved. Uneven surfaces are the indicators of hand making. Small sand particles are present in all figurines from the region while a few have big sand particles. Crushed potsherds/grog is also visible in the core of a few figurines. Mica is also visible on the external and internal surfaces and core of all the figurines from the site. The presence of mica and sand particles in the figurines may be due to the deliberate additions in clay or natural presence. Various marks present on external surface of the figurines from Mundra include soot mark/smoke clouding and finger marks. Soot marks present on the figurines may be due to the deficiencies in firing technique or conditions within the kiln. Scratches are visible on majority of the figurines and it is the probable result of cultural and natural transformations to which the figurines are subjected to.

Color of the external surface, core, slip and paintings of the figurine fragments from the site were recorded using Munsell Soil Color Chart (2011). External surface color of the figurines include pale red, light red, reddish brown, light brown, light reddish brown, bright reddish brown, dark grayish brown, brown, pale brown, dark brown, reddish yellow, yellowish red, white, pinkish white, pink, pinkish gray, light pink, red, light red, pale red, weak red, dark reddish gray, gray, black and dark grey. Color of the cores include dark brown, dark reddish gray, gray, black, brown, dark grey, dark reddish grey, dark grayish brown and dark brown. Color of slips on the figurines include strong brown, dark red, pink red, weak red, very pale brown, dark reddish gray, reddish brown, white and pink. Painted decorations are mainly

mono chrome and in a few cases they used bi-chrome combinations. Paintings on the figurines are in colors such as red, strong brown, light red, brown, light brown, pink, dark reddish brown, dusky red, reddish black, dark reddish gray, weak red and white. The decorations on the figurines can be divided into appliqué, molded, stamped, incised and painted designs. The designs can be divided into two viz. geometric and natural. Natural designs include floral designs like climbers, leaves or plants and geometric designs include circular patterns and horizontal or vertical parallel lines around different body parts or on saddle seats. Majority of the decorations are on legs, which was followed by body, head and neck.

Fabric Impressions on Horse Figurines

37 terracotta figurines from the study area revealed the presence of fabric impressions on them (Figure 9). Some of the impressions are very clear while others are faint in nature. In terracotta figurine fragments, the fabric impressions are mainly seen on the legs, lower part of the body and decorative incisions. Now a days during the making of solid terracotta horse figurines, once the clay is shaped it is kept on a tapering wooden log with a cloth covering for further modeling (Figure 10a). This practice is adopted in order to prevent damage, to avoid shake and to provide support. The cloth wrap is destined to prevent wood impressions on the figurines. As a result, cloth impressions may occur on different parts of the figurines. Modeling of minute body parts and retouching of important ornamentations of figurines are done by small sticks wrapped in cloth (Figure 10b). The resultant small impressions may retain in decorative incisions. Fabric impressions on terracotta horse figurines were studied with the help of simple hand lens (10x zoom). Preliminary typological study of fabric impressions clearly showed that major production technique of the clothes used at the sites of Mundra was warp and weft; which is the process of interlacing two set of yarns in right angle (Figure 11a). The threads which lie along the length of the fabric are termed warp threads, while toes which lie across the width are termed as weft threads and this method was used in simple hand looms in the early periods (Schomann 1925; Drooker 2000).Within the warp and weft technology, two different methods were existed. They are plain weave with single warp and weft (Figure 11b) and plain weave with double warp and weft (Figure 11c) (Burnham 1980). The cloth impressions from the sites in Mundra taluka clearly show that textiles used during the manufacturing of terracotta figurines were produced by plain weave with single warp and weft technology. However, there are variations in the size of threads.

Similarities and Chronology

The horse figurines reported from the medieval sites in South Gujarat, North Gujarat, Saurashtra and Kachchh are similar in shape and other features. Based on the analysis of associated ceramics, coins and other artefacts and relative dates from the sites in Mundra and other parts of Gujarat (Shirvalkar *et al.* 2015), the horse figurines from the study area can be dated from 10th century AD onwards. Among the figurines, solid type is earlier in nature. Though this type continues even today it is not popular like hollow type figurines. The

hollow figurines are much later in date and that tradition also continues in some parts of Gujarat. After the introduction of wheel made hollow figurines, the handmade solid figurines lost its importance (Dutta 2013).

Conclusion

In the medieval period, many tribal communities who were in the lineage of migrants from Central Asia worshipped terracotta horse figurines and even today this practice is in vogue in many parts of India. Many medieval sites in various parts of India including Gujarat yielded evidence for large scale use of terracotta horse figurines. The study of figurines from Mundra taluka in Kachchh district, Gujarat has yielded very interesting results regarding their production and cloth production. The typological analysis clearly showed that in the early medieval period, the figurines were produced by hand in various sizes and shapes. Preferred color of the figurines was red. The study also showed that they applied slip on some figurines and also made natural and geometric paintings on these figurines. Another interesting find was the availability of ornate and simple variety of horse figurines. There were differences in the production techniques such as clay preparation, firing and finishing. It clearly shows that the artisans were producing the figurines of various grades/qualities. One grade may be for the wealthy elite groups and another may be intended for the common people.

The study also showed the presence of solid and hollow terracotta horse figurines at various sites which indicates the use of two techniques of production. The detailed study showed that solid figurines were produced by hands while parts of the hollow figurines were produced separately in wheels and later joined using sticky clay. As per the archaeological evidence, the solid horse figurines can be dated from 10th century AD while the hollow figurines cannot be dated prior to the beginning of 19th century AD. The availability of similar kind of figurines from various parts of Kachchh and other parts of Gujarat indicates the extensive practice of horse worship in Gujarat during the medieval times. In addition to the aspect of worship of horse figurines, the study of cloth impressions on horse figurines clearly showed that the warp and weft textile weaving technique was in existence during the medieval period. The clothes produced using plain weave with single warp and weft technology was used during the medieval times in Kachchh.
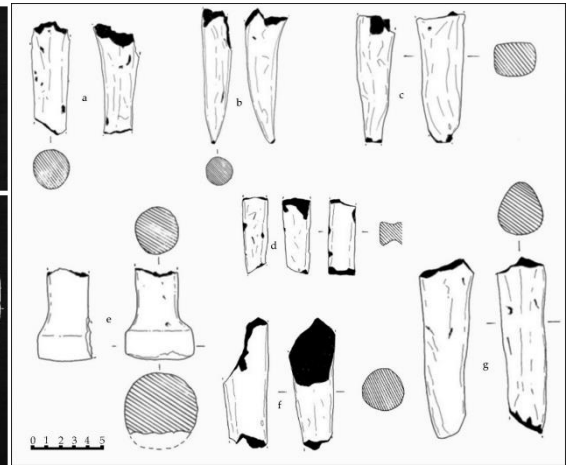
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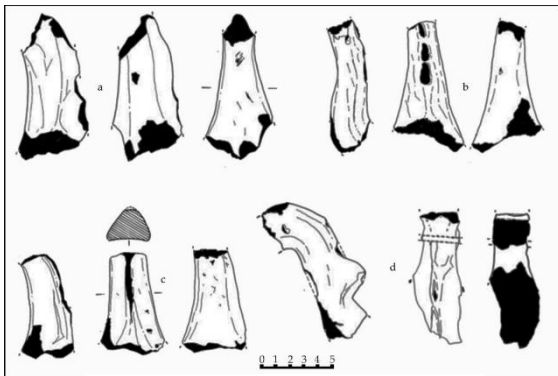
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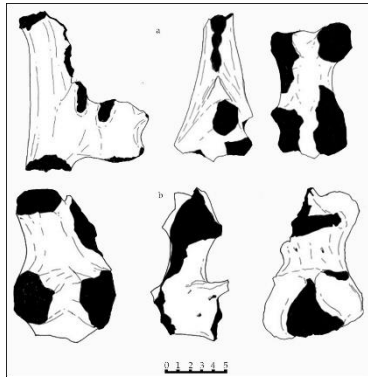
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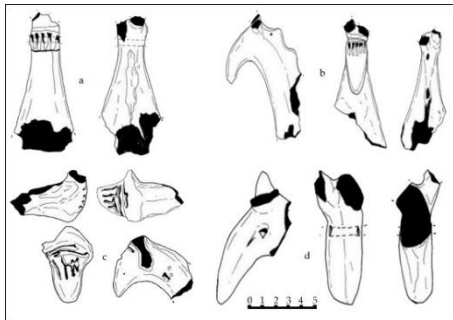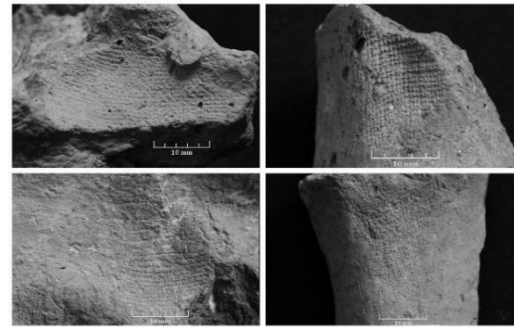
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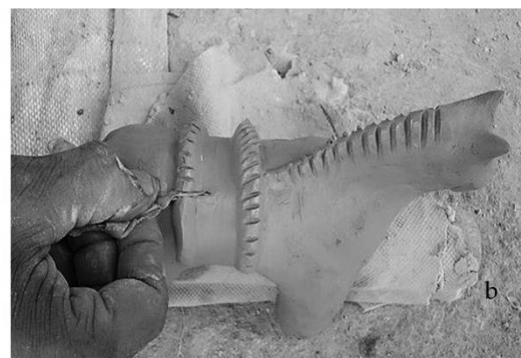
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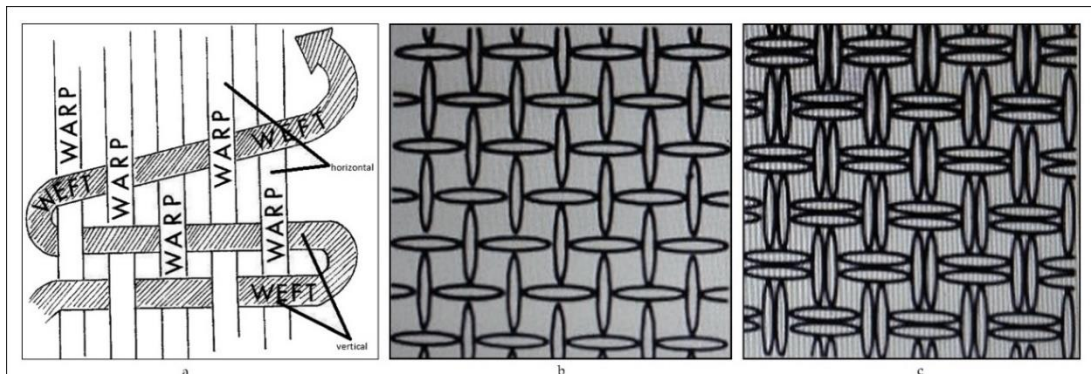
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Indian Carpets in the Accounts of Foreign Travellers

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Abstract

Carpet making, as a functional art, has caught the attention of the Indian kings. The interiors of the palaces, apartments, courts, gardens, pavilions and even the bazaars were decorated with beautifully designed carpets lending charm, sophistication and spirituality to the ambience and surroundings. Indian carpets not only embellished places, but they were also painted as one of the elements of Indian miniatures. Their designs were used to be adorned as ornamentations and patterns in historical buildings and other crafts. Historical documents like biographies and accounts of foreign scholars and travelers are among those documents in which the name of this craft has appeared. Therefore, they are among the important sources to study about the origin and history of Indian carpets and their features.

Introduction

Although the history of Indian carpets, traces to a period as early as 500 B.C. (www.indiancarpets.com), the official history of the Indian hand-woven carpet begins in the fifteenth century in northern India and achieved its perfection steadily in course of time. The Indian carpets reached the luxuriance in the sixteenth and seventeenth centuries under the Mughal emperors, especially during the reign of Akbar. He brought some carpet weavers from Persia and set up workshops in his palaces to produce the finest carpets that have ever been woven in the entire realm. As Beattie (1986) mentions, some surviving examples suggest that the exquisite court carpets of seventeenth century India must be among the finest ever woven. Indian carpet is one of the interesting subjects that has always been the matter of discussion and argument by the Indian as well as the foreign carpet experts, scholars and art historians like Daniel Walker (1998) and Robert Skelton (1984). The shortage of the survived Indian carpets during the centuries is one of the major problems which researchers face during the study of Indian carpets and especially ones belonging to southern India.

Methods of Studying Indian Carpets

The fragile structure, the possibility of always being damaged by vermin and the change of climate makes the availability of carpet samples from early centuries an impossible

task. However, in this context, questions arise like: how to trace the origin of Indian carpets in case of shortage or absence of samples (?) and what are other ways of investigation that help to understand the carpets that existed in ancient India? Study of surviving carpets or fragments is the authentic method. The second way to understand carpets of a region, especially when investigating the designs and patterns is by analysing historical illustrated books, individual miniatures, frescoes, crafts and ornamentations of historical architectures and the third way is by examining the historical literatures.

The architectural ornamentations show the refined aesthetic, elegance and harmony in a monument as well as wealth and luxury of its period. The monuments' ornaments clearly influence other handicrafts from the same period, such as miniature painting, jewelry work, textile motifs, furniture, calligraphy and carpet-weaving. For example, the designs of Ibrahim Rauza (c.1627 AD) one of the monuments from Ibrahim Adil Shah II period, is the best example of the Bijapur style of architecture that influenced other arts and crafts of the region. The similarities between ornamentations in Ibrahim Rauza and Deccan carpets from Bijapur Museum, Karnataka show these influences (Figure 1).

Moreover, scholars like Daniel Walker (1998) have taken Indian miniature paintings as one of the reliable sources to study the features of Indian carpets. Walker (1998) mentions that the role of manuscripts in the royal library as reference tools for artists at the Mughal court should not be underestimated. One of the Mughal miniatures of the early 17th century demonstrates Mughal Emperor Jahangir seated on a gold throne under a canopy as Prince Khusrau offers him a cup of wine (Figure 2). In that, the feet of noblemen rest on a Timurid carpet having a pattern of rows of geometric units, a type well- known from 15th century paintings (Walker. 1998:77).

Carpets in Chronicles and Travelogues

Memoirs and travelogues provide important information on Medieval Indian carpets. Travel is one of the best ways to acquire knowledge about the world especially, people, their culture and art. Many of the travelers' accounts became sources of information and guidance for others who were ambitious to explore the world. India, as one of the unfathomable lands has welcomed foreign travelers for many years. For centuries these travelers' diaries and travelogues have become valuable sources to understand the history of India. Travelers like Xuanzang or Hiuen Tsang (602-664, Chinese traveler), Marco Polo (1254-1324, Italian explorer), Ibn Battuta (1304-1369, Moroccan traveler) and Vasco Da Gama (1460-1524, Portuguese) visited various parts of India. Their writings provided information such as political condition, geography, topography, vegetation, wildlife and cultural and artistic knowledge of the people from different regions of India. Fine textile and hand-woven mats always caught travelers' attention. The elegance and beauty of the luxurious carpets which were used to decorate palaces, houses and courts of Indian kings and noblemen fascinated the foreign travelers and a

few of them have mentioned about this fine craft item which they have seen during their stay. Though these information are very brief, they are very useful data for the understanding of ancient arts and crafts. Akbarnama of Abu al-Fazl and accounts of different travelers are some of the important historical literatures used for this study.

Abu al-Fazl

Akbarnama of Abu al-Fazl ibn Mubarak (1551-1602), the *vizier* of the great Mughal Emperor Akbar, provides information about Indian carpets during the reign of Mughal Emperor Akbar the Great. It mentions about the craftsmen in Akbar's workshops, quality and value of Indian carpets, major carpet production centres in the world and types of carpets imported from different parts of the world (Blochmann 1873: 55). It says that:

"*His Majesty has caused carpets to be made of wonderful varieties and charming textures; he has appointed experienced workmen, who have produced many master-pieces. The carpets of Iran and Turan are no more thought of, although merchants still import carpets from Goshkan, Khuzistan, Kirman and Sabzwar. All kinds of carpet weavers have settled here, and drive a flourishing trade. There are found in every town, especially in Agrah, Fathpur, and Lahor. In the imperial workshops, single carpets are made 20 gaz, 7 tassujes long, and 6 gaz, 11 1/2 tassujes broad, at a cost of 1810 rupees, which those who are skilled in the business have valued at 2715 rupees.*

Takyahnamads, or woolen coverlets, are brought from Kabul and Persia, but are also made in this country.

It would take up too much time to describe the jajams, shatrinjis, baluchis, and the fine mats which look as if woven with silk" (Blochmann 1873: 55).

Ibn Batutah

Abu Abd allah Mohammed Ibn Abd allah El Lawati t-Tangi known as Ibn Batutah traveled for 30 years and visited Africa, Middle East, Central Asia, South-East Asia, China and India. In India, He visited Multan, Samarkhand, Bokhara, Delhi, Deccan, Malabar and Kollam. His account titled '*Tuhfat an-Nuzzar fi Gharaib al-Amsar wa Ajaib al-Asfar*', gives detailed information about various aspects of people's life including costumes, food habits and marriage. Ibn Batutah has mentioned about the carpets he has seen in different parts of India during his journey in the fourteenth century. This is significant information as we do not have enough available sources about Indian carpets before the fifteenth century. He says:

"*When I entered his presence (the governor of Multan, Qutb al-Mulk), he rose to greet me, shook my hand, and made me sit beside him. I presented him with a white slave, a horse, and some raisins and almonds. These are among the greatest gifts that can be made to them, since they do not grow in their land and are imported from Khurasan. The*

governor sat on a large carpeted dais, with the army commanders on his right and left and armed men standing at his back" (Gibb 1929: 189).

Ibn Batutah reached Delhi in 1334 and visited the court of King Muhammad bin Tughlaq (Figure 3). He describes:

"*As a rule his audiences are held in the afternoon, though he often holds them early in the day. He sits cross-legged on a throne placed on a dais carpeted in white, with a large cushion behind him and two others as arm-rests on his right and left . . .* " (Gibb. 1929: 198-199).

He also describes the house that was prepared by the king for his stay. According to him:

"*After visiting the palace of the sultan's mother and presenting her with a gift, we returned to the house which had been prepared for our occupation, and hospitality-gifts were sent to us. In the house I found everything that was required in the way of furniture, carpets, mats, vessels and bed . . .* " (Gibb. 1929: 205).

After his stay in Delhi, Dawlat Abad was one of the cities he visited. He mentioned that:

" *. . . In Dawlat Abad there is an exceedingly fine and spacious bazaar for singers and singing-girls, containing numerous shops, each of which has a door leading to the house of its proprietor. The shop is beautified with carpets, and in the centre of it there is a sort of large cradle on which the singing –girls sits or reclines. . . . In the centre of the bazaar there is a large carpeted and decorated pavilion in which the chief musician sits every Thursday after the afternoon prayer, with his servants and slaves in front of him . . . .* " (Gibb. 1929: 227-28).

Vasco Da Gama

Vasco da Gama, was a Portuguese explorer and the first European to reach India by sea. He reached the Indian coast at Calicut (Kozhikode) in 1498 AD. In his account, Vasco da Gama mentions about a house having carpet in Calicut where he and his retinue admitted due to the rain. He described it as:

" *. . . The Moor then took him to his own house, and we were admitted to a court within it, where there was a verandah roofed in with tiles. Many carpets had been spread, and there were two large candlesticks like those at the Royal palace . . .*" (Ravenstein 1898: 59-60).

Sir Thomas Roe

Sir Thomas Roe, a diplomat of the king of England reached the Indian port of Surat in 1615 and visited the Mughal court. His account gives broad information about court life in the Mughal period in the 17th century. In his account later published as 'Journal of the

mission to the Mughal Empire', he mentioned about the use of carpets in a ceremony in the court of Jahangir that was associated with the king's birthday.

" . . . *I found him in a Court, set above like a king in a play, and all his Nobles and myself below on a stage covered with carpets . . .*" (Foster 1899: 112).

Thomas Roe also mentioned about his travels to Burhanpur where he visited the court of Parviz Mirza, the second son of Mughal emperor Jahangir from his third marriage. While describing the court of Parviz Mirza, he mentioned about carpets. According to him the court was:

" . . . *Covered with Canopies of velvet and silk, under foot laid with good Carpets . . .*" (Foster 1899: 108).

Jean-Baptiste Tavernier

Jean-Baptiste Tavernier (1605-1689), the French traveler and gemologist, spent a long time in India during the reign of the last great Mughal Emperor Aurangzeb. In his account, *Travels in India*, he described the galleries of Agra palace of the Mughals and mentioned in his text about the carpets he has seen during the stay in India. He mentions:

" . . . *This gallery is painted with foliage of gold and azure, and the floor is covered over with a carpet . . .* " (Ball 1889: 108).

He also mentions about carpets while describing how Prince Dara-Shah took care of his father Shah Jahan during sickness:

" . . . *Indeed, this prince did not absent himself for a moment from the presence of his father, in order to be at hand to attend upon him during his sickness; and, wishing to be present at all times, he slept at night close to the King's bed on a carpet spread on the floor*" (Ball 1889: 327).

He comments about the use of carpets at Tajmahal, the splendid tomb of the wife of Shah Jahan at Agra. According to him:

" . . . *The same changes which are made below in this subterranean place are made above around the tomb, for from time to time they change the carpet, chandeliers, and other ornaments of that kind, and there are always there some Mollahs to pray . . .* " (Ball 1889: 110).

He described one of the great festivals of Mughals, the Aurangzeb's birthday on November 1665. In that occasion, noblemen from all over the territory salute the emperor and offer presents including carpets to him. He describes:

" . . . *In diamonds, rubies, emeralds, pearls, gold and silver, as well as rich carpets, brocades of gold and silver, and other stuffs, elephants, camels, and horses, the king*

receives in presents on this day to the value of more than 30,000,000 livers" (Ball 1889: 380).

His account contains a description about some of the carpet production centers in India. According to him:

"*Firstly, carpets of silk and gold, others of silk, gold, and silver, and others altogether of silk are made in Surat. As for the woolen carpets, they are made at Fatehpur, 12 coss from Agra*" (Ball 1889: 3).

He also mentions about the quality of Persian carpets and those that were produced in Ahmadabad. According to him:

"*It is in Ahmadabad, where, as I have said, an abundance of these stuffs is made of gold and silk, silver and silk and of silk alone; and carpets of gold and silver and silk, but the colours of these carpets do not last so long as those of the carpets which are made in Persia. As for the workmanship, it is equally beautiful. It is for the eye of the broker to observe the size, beauty, and fineness of the work in the carpets worked with gold and silver, and he ought to judge if it is good and rich. Finally, in the case of carpets, and in other stuffs worked with gold and silver, it is necessary to withdraw some threads to prove them, and in order to see if they are of the standard which they ought to be*" (Ball 1889: 27).

Tavernier travelled to Masulipatnam and in his work described the beautiful interior of the masjid he had visited as follows:

"*At three coss from the town there is a very fine mosque where there are the tombs of the Kings of Golkonda; and every day at 4 o'clock p.m. bread and palao* [dish of rice] *are given to all the poor who present themselves. When you wish to see something really beautiful, you should go to see these tombs on the day of a festival, for then, from morning to evening, they are covered with rich carpets*" (Ball 1889: 154).

He also mentions about the customs and carpets used in the tent of Nawab of Gandikot town in Kingdom of Carnatic during his visit. He says:

" *. . . According to the custom of the country – where one goes with naked feet in slippers, without stockings, because wherever you enter you walk on a carpet, and sit in this country as in Turkey, and as our tailors do here, the Nawab had the intervals between his toes full of letters, and he also had many between the fingers of the left hand . . . *" (Ball 1889: 291).

He also talks about carpets in an incident when an English man revenged Governor of Tatta in Sind, Shah-bandar and Master of the mint by throwing pig grease in front of them for imposing duties on his gold articles. He says:

" *. . . As the pig is abomination to the Muhammadans, and since by their law they regard as defiled whatever is touched by it, it became necessary for them to change their*

garments, to remove the carpet from the divan, and to make a new structure, without daring to say anything to the Englishman, because the Shah-bandar and the Master of the mint have to be particular with the Company, from which they country derives so much profit . . ." (Ball 1889: 11-12).

Discussion and Conclusion

Ibn Battuta explains about the courts and palaces of Indian kings and grantees as well as bazaars in the fourteenth century AD. In his opinion, carpets have been used as an object to decorate palaces of Muslim rulers and also for conveying philosophical meanings. As part of Islamic culture, spreading carpets show the respect, supremacy and spirituality of a place and people. He also mentions about a bazaar and a large carpeted and decorated pavilion where the musicians sit. This tradition is still followed in places where the stages for religious ceremonies and major functions are decorated with colorful carpets. Jean-Baptiste Tavernier described the palaces, mosques, tombs and tents located in different parts of India that have been embellished with fine carpets. According to them, Mughal carpets are among excellent hand-woven crafts with magnificent colors and designs. He mentions about various carpet production centers in India. Tavernier also comments about the long lasting colors of Persian carpets in comparison to carpets produced in Ahmedabad. Vasco Da Gama who has visited Calicut (Kozhikode) in 15th century noted an interesting point that proves the use of carpets in medieval Kerala which is contrary to popular belief. These carpets may not have been woven in this region, but possibly imported from northern India or from other countries that had trade connections with Calicut.

Thus, the accounts of foreign travelers who visited India can be considered one of the reliable sources to understand the origin or use of carpets in India. Foreign travelers, as outsiders paid more attention to those aspects of society that are more interesting to them. Culture and arts and crafts of sultans' courts as well as ordinary people were part of their observations. Though, the information collected from travelers' accounts might not be detailed in nature, they help to understand the origin and existence of carpets in late Medieval India.
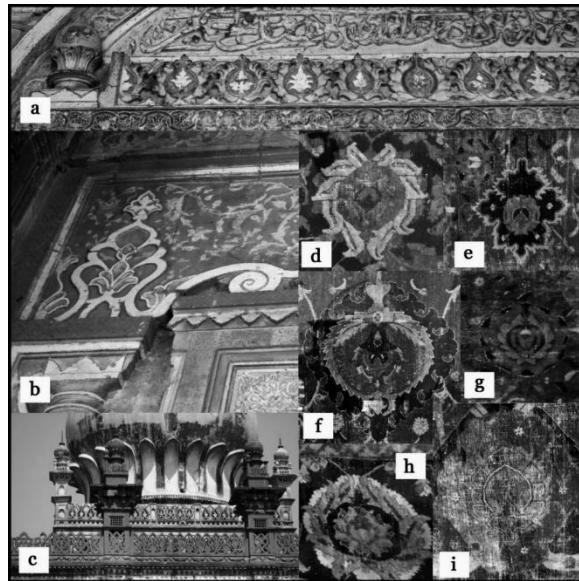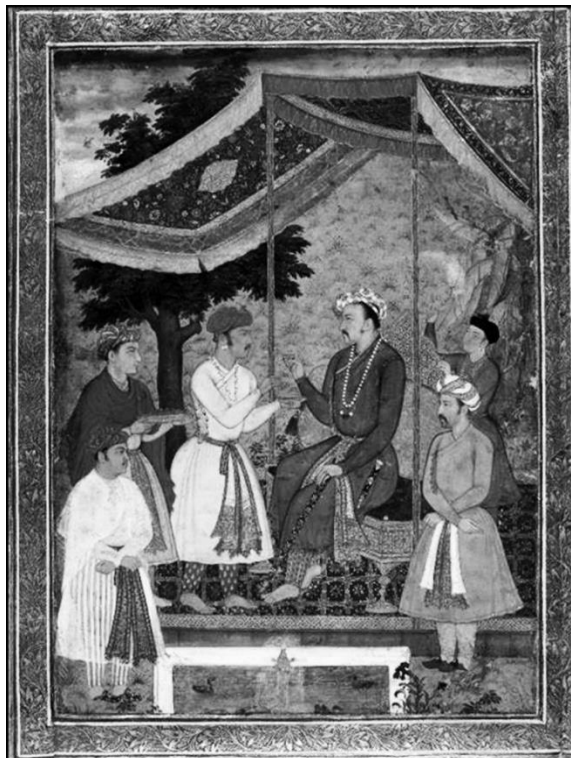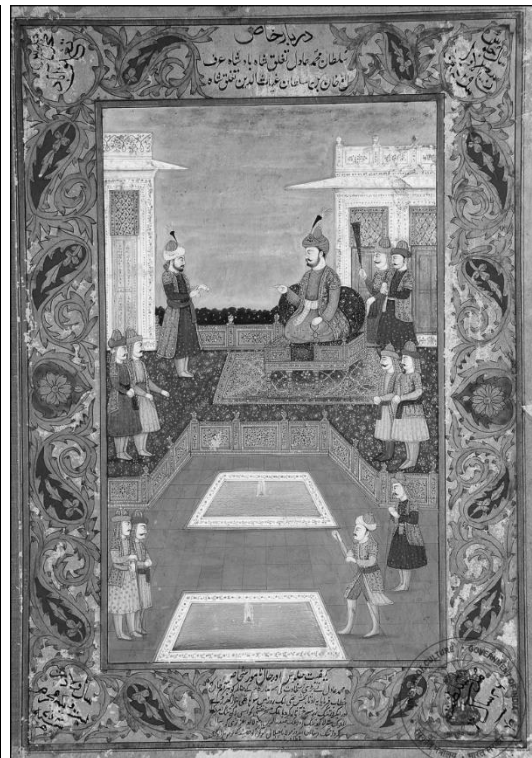
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Figure 3: Portrait of the Court of Sultan Muhammad bin Tughlaq, Salar Jung Museum, Hyderabad (Courtesy: *www.pinterest.com*)

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Administration of Heritage *Sattra* Institution of Assam
A Study on Monastic *Sattras* of Assam

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Introduction

Sattra and society are closely related in this field of art, culture literature, and religion. The administrations system of the great *Sattra* institutions especially the monastic *Sattras* of Assam are very interesting and unique. The *Sattra* institution was developed in Assam in during the reign of *Ahom* and Koch dynasties. If we study the administrative system of the monastic sattras of Assam we will find a hierarchy system along with important posts with specific duties and responsibilities. It is worth mentioning that the history of *sattra* is part of the history of Assamese society and culture. None can deny or lessen the importance of the fact that the root of the community living system of the Assamese society lay in the impetus which the *sattra* provided. Most of the *sattras* were established during 1600-1700 AD, Assam, when Assam was very much backward in all respects. The *sattras* existed as institutions to uplift the socio-economic condition of the rural society. During the last few centuries these institutions have been trying to enrich the Assamese life morally, socially and educationally. Their major contributions are literature, music, dance, craft and painting etc.

Objective: The objectives of the paper are to acquire knowledge of Monastic *Sattras* of Assam and their administrative system and to focus on the organizational structure of *Sattra* and duties and responsibilities of people attached to the various positions.

Methodology: This study is purely based on primary and secondary data. Proper scientific method, mainly the analytical method has been applied. Historical method has been followed for proper understanding of the history of Sattras. Field study and interview has also been followed for collecting facts.

Sattra

The word *sattra* has been in use in the *Assames* language since ancient times. The Word is also present in the *Ambari* inscription written in ancient prose. But scholar are not Convinced about the exact meaning of the word in this inscription and thus it cannot be assumed bear the same meaning of the *sattra* of the *Vaishnavism* of the later era. In ancient times this word actually meant long lasting sacrifices. Three are four types of sacrifices, viz. *Ekaha, Ahina, Satra* and Sadyaska. There were numerous sacrifices of one ,six, twelve days etc. as well and some of them were of them were of much longer durations and sometimes were called *satra sahasram sattramasata* in the *Bhagavanta* which means that in the ancient times the seers carried out their sacrifices for

millenniums. The Bhagavata also greatly influenced the naming of this place as sattra, because during the course of their sacrifices spread across millennium, great seer *suta*, son of *Vedavyasa,* was once requested to narrate the story the ;lord and this is the root of the beginning of the Bhabavata legend. Was once requested to narrate the story the lord and this is the root of the beginning of the Bhagavata was narrated by suta before the assembled seers engaged in the millennium- long sacrifices at the *Naimisaranaya*. It is not a strange thing to name the place as 'Sat' where the *Bhagavata* was narrated for a long period. In the explanation given by *Bhattadeva,* there is no historical reference. It is only a description of the then situation of the *sattras*. Even then, his description

" Yatraacaranti saddharman kevala bhagavatapriyah
Navadha bhagavadbhaktih patyaham yatra vidyate
Tatt sarttram uttamam ksetram vaishnavam suravanditam
*Tatratha vaisnavh sarv harinamaparayanah"- (**Sarana Samhita**)*

"The Place, Where there is nonstop devotion to the lord through the nine forms of *Bhakti,* at all times, is the best *sattra* for the pure" speaks well about the historical reasons.

Classification of the *Sattra*

After the death of Sri Sri Sankardeva the *sattras* were divided into four *Samhaties* viz. *Brahma, Nika*, Purush *and Kala.* Each of the *Samhatis* has several *sattras* in different parts in Assam as well as in Cooch Bihar. On the basis of celibacy of *Satradhikar* and *Bhakats, sattras* can be classified into *Monastic,Grihasthi,* Semi-monastic and Admixture. In monastic *sattras* both *Adhikar* and inmates spend and inmates spend their life in celibacy. Purely Monastic *sattras* are Auniati,D akhinpat, Natun Kamalabari, Uttar Kamalabari, Madhya Majuli Kamalabari, Beloguri, Jarabary, Hati Sattra and Jinkata Rajahuwa Sattra.

Administrative Structure of the Monastic *Sattra*

The administration of a monastic *sattra* is very peculiar and autonomous. This unique system has been running since its inception. This is more so with the state made *sattras* like Auniati, Garamur, Dakhinpat and other *Sattras* of Majuli. These *sattras* have their own system of Administration and economy, which have been running since 370 years ago. The heritage administration has cultural and social significance in Assamese society as a whole.

The administrative structure of *Sattra* is hierarchical. There are four classes of people attached to the monastic **Sattra.**
1. *The Satradhikar   2. Bhakatas   3. Paiks   4. sisyas*

Satradhikar

The head of the Sattra is called *Satradhikar* or *Adhikar*. The position of Adhikar lies in the apex of the hierarchy followed by the *Deka Satradhikar.* The *Satradhikar* is the spiritual and the executive head of the *Sattra.* As a trustee of Gobinda in Auniati *Sattra,* the *Sattradhikar* is seen to enjoy full right in every dimension of *Sattra* administration.

Deka Adhikar

Next to the *Satradhikar* is power and prestige is the *Deka- Satradhikar* who usually become the head after the demise of the *Satradhikar.* When the *Satradhikar* remains absent in the *sattra the Deka Adhikar* performs the duties of the *Satradhikar.*

Bhakat

The Organizational structure of any *Satttra* is primarily based on second category of people, namely the *Bhakatas*. Position of the *Bhakatas* in the organizational structure is next to the *Adhikar* and Deka *Adhikar.* A close examination of the monastic *Sattras* of Majuli confirms that not all *Bhakatas* are functionaries but all are related to cultural activities within the *Sattra*. As *Bhakatas* all the resident devotees belong to one category; but the functionaries are different from them in terms of status and opportunities. In Auniati, Garamur, Dakhinpat *Sattras,* traditionally the seven member group (Sat-man-bhogiya) has been occupying the highest position in the gradation of *Bhakatas.* The seven members are appointed by the *Satradhikar* from among the *Bhakatas* on the basis of age, experience and qualification.

Paiks and Sisyas

The third category of people attached to the *Sattra* is *paik* and *Sisya*s. Paik and *Sisyas* consist of those persons who lead a household life especially in the village. The system of *Paik* was created by *Ahom* king especially for the *Sattras. Paik* were the men who worked in the *sattra* territory and they are real occupants of the revenue free *sattra* land. The Village developed on the basis *sattra Paik* is generally known as '*Paikan'* Village. The *Paikan* Village of Auniati Sattra are Alimur Koibartta, Birinabari, Mohorisuk, Lahalial, Bormukoli. Guwal gaon etc. These Villages are under the control of *Chaul Bharal.* According to S.N. Sarmah, "the Paik system of *Ahom* administration was introduced in a few *Sattras.* The principal *Sattras* in Majuli were favoured by their patron king with several villages consisting of a few hundred *paiks* were to serve their respective *sattras* with manual labour and to supply the *Sattras* with necessary things" (S.N. Sarmah, New –Vairshnavite movement and satra institutions of Assam, 1966, p.203.)

The *Sisya* is the main capital of the *Sattra,* whose position in the organizational hierarchy is next to the *Bhakata.* They live in the Villages and towns leading household lives.

Every Vaisnava householder in Assam belonging to the Assamese community is invariably affiliated to one or other of the *Sattras* of Assam. It is still a tradition that every youth of Assamese Vaisnava family must have his initiation before he gets entry in married life.

Functionaries' positions in the Hierarchical order

> Satradhikar
> Deka Adhikar
> Govindapuria
> Rajmedhi
> Satmanbhogia
> Pachoni
> Bor-Medhi
> Medhi
> Pakhi-Medhi
> Satola
> Muktiar
> Sisyas

As the head the *satradhikar* enjoys both spiritual and administrative power of the *sattra*. The office of the *Sattradhikar* is purely based on the rules of Neo-Vaishnavaite religion; it is very difficult to draw a distinct line of demarcation between the religion and secular functions of the *Sattradhikar*.

Functionaries directly concerned with the office of the *Satradhikar*

1. Bor-Aldhara   -   Chief personal attendant
2. Guwakata   -   Supplier of betel-nut to Satradhikar
3. Bor-Mojinder -   Private secretary
4. Panitola   -   Water supplier
5. Nisaphura   -   Night Choukider
6. Suwadhuwa   -   Indoor cleaner
7. Kamaldhuwa -   Office Cleaner
8. Chworachowa-   Office keeper

Sattra **management committee**

The twentieth century brought about a significant change to the traditional system of administration of some principal *Sattras* of Majuli. It was *Sri Sri Hemchondra Gosawami* and *Sri Sri Pitambar Dev. Goswami* who advocated many democratic elementary to the *Sattra* system. They suggested decentralizing the power to certain extent by the creation of some new system. The new system in Auniati is called *Sattra Sangrakhini Sabha* and *Byabasthapok Sabha* in Garamur *Sattra*. There is a general

council known as *Samuh* that consists of all the *Bhakatas* of the *Sattra*. The *Samuh* shall have the right to turn down the decision taken by the *Sattradhikar*. All the important matters concerning the *sattra* are taken by the *Satradhikar* with the Help of *Sarmah.*

There is an executive body of the *Samuh* known as *Sattra Sagrakhini Sabha*. The executive body consistsof 14 elected members and some additional members from different functionaries of the *Sattra.* The *Sattradhika* is ex-officio president of the Council and other members are elected by the *Bhakatas* for three years.

All the matters of religious, administrative and judicial origin are discussed in council and they take unanimous decisions for the *Satradhikar*. The introduction of democratic procedure in the election of advisory council in the *Satra* is the landmark in the *Sattriya* history.

Administration and Management of various departments

The pattern of administration and management of *Sattras* in general has been changing since the time of its emergence. For management of the *Satra* in both religious and administrative affairs, the *Adhikar* appoints from among his devotees several functionaries to hold responsibilities in departments. The management of any Monastic *Sattra* of Assam has the following units.

> a. Monikut Management   (Shrine)
> b. Namghar Management (Prayer Hall)
> c. Dhan Bharal   (Treasury)
> d. Chul Bharali   (Granary)
> e. Chahar Management   (Social Communication)
> f. Khats and Mouja Management
> g. Cultural Management
> h. Social justice Management

Manikut

 The *Manikut* is the heart of all activities of *sattra* institution. The *Bor-deuri* is the chief of the *Monikut* section and he is assisted by other four *Pujaris* and three *Deuries* in the rituals of worship. In Garamur and Dakhinpat *Sattras* the chief of *Monikut* is known as *Bor-pujari.* There is a Duvalia Pujari who performs the worship of lord *Gobinda in* the absence of the *Bor-deori.* They are assisted by four *pali-deuris* whose duties are to prepared offerings and *chandana* for use of the *Sattradhikar.* There is also an officer called *Malia* who supervise garlands and supply them to the *Sattradhikar.* The duties of *deuri* are to distribute offerings made to the deity. There are two *Thaimosas* (floor Cleaner) who are appointed by the *Sattradhikar* for maintaining cleanliness of *Manikut* and *Namghar.*

Namghar **Unuit**

Every *sttras* has a big congregational prayer-hall called *Namghar.* From morning till the early hour of night a series a series of devotional functions are held in the *Namghar.* Most of the functions of *Namghar* are connected with the *Sattriya* school of music and dance. The *Bagis* is considered the head of *Namghar* unit having high social status. He is assisted by *Bhagawati* in *Namghar* management. The functionaries like *Bagis* or *Bhagawati* have to recite and explain the *Bhagawat* puran. There is one *Bor-pathak* who is the head of *Pathaks. Pathaks* read *Assamese* scriptures in front of *Bhakatas.* There are six *Namlaguwas* among which three are placed in charge of different categories of Nama Called *Bornama, Boiraginama* and *Burhanama.* The person who leads the congregational prayer service is called *Namloguwa.* There are also a few orchestral parties known as *Gayan –Bayana and Oza-pali,* who are all skilled in the art of singing and dancing. All the functionaries have special privileges granted by the authority in terms of allotment of scats in *Namghar* and allotment of special *Chahar* for maintaining relation between *Sattra* known as disciples.

Dhan Bharali (In charge of Store)

The treasury of the *Sattra* known *as Dhan Bharal* remains in charge of an officer called *Dhan Bharali* in Auniati Satra and *Bor-Bhandari* in Dakhinpat Satra. His role is similar to that of a treasury officer of modern time. He is the custodian of all valuable properties of the *Sattra.* He is required to keep regular account of expenditure incurred in connection with the management of the *sattra* with the help of the *Majinder* (account cum Clerk), *Guwa-Bharali* (in-charge of Betle nut, cioves and cinnamon) and *Lon Bharali* (in-Charge of the store relating to Salt, Oil and Ghee) are the main subordinates of *Dhan Bhorali.* Generally there are three *Mojinder* in *Auniati sattra* viz. *Mojinder* for *Choul Bhhoral, Mojinder* for *dhan Bharal* and *Majinder* for *Mojinder* for *Sattradhikar* office. All the functionaries are appointed by the *Sattradhikar* with the help of the advisory council. There is a Barichowa (choukider) who provide banana leaf for daily use in *Manikut* and *Namghar.* The functionaries like *Dabagharia* (dram player) and *Thaimusa,* especially for *Namghar* are also under the control of *Dhan Bharali*. These are the functionaries appointed by the *Sattradhikar.*

Choul Bharal

The store of the *Sattra* known as *Choul Bharal* contains all food items and is placed under the supervision of an officer called *Choul Bharali* or *Choul Bhandari.* In addition to his usual duty of looking after the food provision of the *Sattra*, he is required to supervise the work done by the *Paiks,* who were gifted to the *Sattra* by the *Ahom* kings for its services by issuing copper plate inscription. Under him there are few functionaries in charge of different branches of this department. They are four number of *Bhatidharas* (receiver of gifts) one *Mithoi Bondha* (in charge of sweets), one Mojinder kakoti (record keeper). Under each of them a few junior officers are attached to conduct the affairs of

the department. Above these there are *Boras* (peon) who convey the message of *Sattradhikar* to the officers of respective units and other person as well.

Chahar management

One of the important terms associated with the economy of the *Sattra* is Chaha. On the other hand, *chahar* is the most popular way for maintaining a good *relationship* between the *Sattra* and *Sisyas. Chahar* means a definite area mainly inhabited the *sisyas (*disciples) of a particular *sattra.* Several villages constitute one *Chahar* over which a *Rajmedhi*, in case of Royal *Satras* of Majuli, Exercises his religious power. The founder *Sattradhikar* of Auniati sattra Niranjjan Dev for the first time introduced the tradition of ecclesiastical tour *Sattradhikar* (Bahor Pura) in the history of Sattra, Immediately after taking the responsibility as *Sattradhikar* of Auniati he visited Medela, Tipam, Abhaypur with prior permission of Sutintha Alias Naria Raja (Ahom King), where he recruited many *Sisyas* through *Sarana* ceremony and elevated some *Sisyas* to *Bhakatas* throught the ceremony of *Bhajana.* This tradition still prevails in all monastic *Sattras* of Assam. It is popularly known as *Chahar Phura*. To maintain a systematic relation between *Sattra* and *Sisyas* of far-off villages through religious means some functionaries are there .The person who holds liaison with *Sisyas* is known as *Rajmedhi* (circle officer) and there is another officer who helps the *Rajmedhi* known as *Pasani* are filled according to the portfolios already held by the celibate devotees within the *Sattra* .In *Chahar Phura* the head of the respective *Chahar* especially *Rajmedhi* goes out to collect *Gurukar* and other gift materials offered by the *Sisyas* to the *Sattra.* In ecclesiastical tour the head of the *Sattra* goes out to the *sisyas* area to see the conditions of disciples. In the field they are assisted by a number of functionaries like *Bormedhi, Medhi, Pakhi-Medhi*, and Bormedhi has to look after the religious life of one or more villages under the supervision of the Rajmedhi. The Bormedhi is usually assisted by a few functionaries viz. *Medhi, Pakhi-Medhi* and *Satola*. The posts of *Bormedhi* and other officials are filled by aged and reputed *Sisyas* of the respective villages by the *Sattradhikar* with the consent of *Rajmedh*i and *Sisyas*.

Khat and Mauja Management

Khats and *Moujas* are the permanent property of some *Royel sattras* of Assam and it is a major source income. The various types of grants especially land grants are made by the **Ahom** king from time to time since the reign of **Jayadhvaj Sigha** helped the *Sattra* in having a sound economic footing. The land belonging to a particular *Sattras* of Assam has been found in three board categories namely *Lakheraj (*revenue free) *Nispekheraj (*Half revenue) and *Kharaj (*full revenue). As per land revenue administration report of 1959-60 there was 182,558 acres of *Lakheraj and* 18,567 acres of *Nis-pekheraj* land in Assam. During the British period the *Sattra* authority divided their entire land into a number of big plots known in *Sattriya* language as '*Khat* and *Mouja*'. There is a *Moujader* in every *khat and mouja* who collects land revenue or crops accordingly. The administration of *Kha*t and *Mouja* is almost similar to that of present state government

Mouja system. These officers are appointed from among leading resident *Bhakatas* of the *Sattra* by the *Sattriya* authority.

Cultural Management

It is worth mentioning that *Sattras* have played an important role in the sphere of Assamese cultural life. During the last few centuries of their existence they have been enriching the Assamese society morally, socially and educationally and contributed a great deal to the realm of literature and art. In every *satra* all the residential devotees have to learn *satriya* culture from childhood. *Sattra* has an administrative branch under the officers called *Bor-bayan, Bor-Gayan* and *Bor-Oza.* They are the first class officers in cultural unit. These officers under the directions of the *Adhikar* teach the children of the inmates various techniques associated with that art form under well-framed schedule and procedure. In Auniati *sattra* there is a big *khel* consisting of 21 members, all residential devotees, who are expert in music and dance. This group is popularly known as *Khel*. The *khel* has these different classes of expert namely Bayana, Gayana and *Oza* and six assistants under the one head of each sphere. The *Satradhikar* appoints all the members of the *Khel* with the consent of head of the respective fields.

Social Justice

The institution of *Satra* in Assam was the regional expression of all India Neo-Vaishnavite movement which has emerged on the protest movement of existing dominant Hindu tradition. Since its inception, the *sattra* has been working for unification of 'Assomiya Samaj'. Thus the *Sattradhikar* plays a crucial role for maintaining peace and solidarity among the people within and outside the *Sattra*. The *Sattra* has served as a High Court of appeal and the village *Namghar* is considered as the lower court of Assamese social setup. The *Satradhikar* is the chief justice of this social court. He is assisted by *Bagis* who is expert in Hindu *Sastras* and Sruti-Srmriti. In case of trial over residential devotees the *Sattradhikar* leads the entire process with the general body of the *Sattra.* The *Sattradhikar* as the head of the religious community naturally commands respect and obedience. Moreover, as the spiritual guide and guardian, he is placed almost on an equal footing with the deity. As the *Adhikar* is invariably the Guru also he is, therefore, regarded as the representative of God.

Conclusion

The original structure of *sattra* is bureaucratic in nature. But informal relations prevail among the role occupants associated with the various units of *sattra* organization. The position of *Sattradhikar* lies at the apex of the *sattra* hierarchy. The *Sat-man-bhogia* occupies special positions and status among the *Bhakatas*. On the other hand, the advisory council is a strong body in *sattra* management. In *sattras* belonging to Brahma Samhati like Auniati, Dakhinpat and Garamur, most of the roles are confined within higher classes. The trial always is to forge cooperation among various caste and ethnic

groups. *Sattras* try to ensure that each caste and group has full right to maintain their fundamental characteristics. When a particular village cannot reach a unanimous decision on any socio-religious problem, the Sattra come forwarded with a suitable solution for the society. Here, the Satradhikar plays a vital role for integrating the society. The sattra institution of Assam is the outcome of the Neo-Vaishnavite movement initiated by Sri Sri Sankardeva and Madhabdeva and Damodardeva towards the end of the 15th century. Among nearly six hundred *sattras* of Assam, only twelve are found to be monastic. Six of those principal monastic *sattras* are located in Majuli. The above discussion brings to the fore that the structure and administration of the monastic *sattras* are very unique and systematic. It is that sheer discipline and stringency that distinguishes the monastic *sattras* from their other counterparts. With a profound influence on the masses they are playing a vital role in molding and shaping the heterogonous Assamese society.

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Traditional Techniques of Gold Jewellery: A Case Study of Devakottai, Tamil Nadu.

Chittoor Megaliths - A Unique Megalithic Cultural Tradition in Rayalaseema Region-Andhra Pradesh

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Chittoor District, falling in the southeastern part of Andhra Pradesh, is a region of cultural fusion. It shares borders with Tamil Nadu on the South and Karnataka on the Southwest. The previous archaeological investigations have yielded evidence of all the cultural stages, except the Chalcolithic phase. The study of megalithic culture in this region has a beginning way back in 1851, when Captain Newbold excavated few cists near Chittoor (New bold, Captain 1851: 90-95). Later Branfill made an elaborate study of the monuments at Iralabanda, and published descriptive articles along with good illustrations (Branfill 1881: 97-100)).

The megalithic monuments found in this region can be classified into the following categories.

1. Dolmens
2. Dolmenoid-cists
3. Pit-burials
4. Cist burials
5. Stone circles
6. Cairn burials
7. Slab circles
8. Menhirs
9. Anthropomorphic statues

Megalithic monuments usually show some characteristics which are specific to a particular region. This regional influence brings in a large variety in the constructional features of the monument. Thus, the megalithic monuments from Chittoor district also reveal features, which are local in nature, apart from the usual known varieties.

In the 80s Rao (Rao 1988: 13-14) has explored the Chittoor district and brought to light a few important megalithic sites. Amongst them, Midimalla is interesting as it presented the first evidence of anthropomorphic statues from this district. In the 90s recent explorations by the present author with Rao have resulted in the discovery of a unique megalithic complex Eguvakantala cheruvu in Chittoor district (Rao and Ramabrahmam)

Slab circles

Thin slabs are arranged around a dolmen in spiraled or concentric circle. The circle slabs have either round or flat cutting at the top. Arrangement of round and flat topped slabs in alternating manner is more common, though we also come across some monuments which have only flat topped slabs for their circles.

Anthropomorphic Statues

The anthropomorphic statues are noticed in association with the megalithic monuments. Though these statues are meant to represent human form, many times they are very simple and abstract in nature. We do not notice features like the limbs, facial features, etc. In some cases a half anthropomorphic statues are also noticed in this district. Usually, they are cut out of thin granite slabs

1. Kadiriraya cheruvu

A group of megalithic monuments were noticed near Kadiriraya cheruvu on a small hillock known as "Mallela banda" meaning 'stone of jasmines.' The site is located about 2 Km South-east of the village. A total of 13 monuments were noticed, of which 11 are dolmens, and two are slab circles. Of these monuments, one slab circle and five dolmens were destroyed in the recent past.

In the early seventies, this site was visited by Krishna murthy. However, he identified them as dolmenoid-cists, though they are actually dolmens. He also failed to notice the anthropomorphic statue.

The cap-stone of the monument is elevated on four orthostats. The cap-stone measures 2.58 m. E-W; 2.67 m. N-S, with a thickness of 10 cm. Seven slab circles arranged in concentric fashion encircle the dolmen. Interestingly, the outer circle contains smaller slabs than its next inner circle. Thus, the size of the slabs increases, as we go to the inner most circles. The anthropomorphic statue is planted close to the monument.

The anthropomorphic statue is carved in a different manner, as it is not reported from elsewhere. The statue looks like a human seated with the face in profile. Below the head and on both sides, shoulders are depicted. The body and the lower limbs are suggested by triangular projection. The height of the statue is 2.50 m. with a width of 2.10 m. at the shoulder region.

One of the dolmens encircled with seven rows of slab circles has the cap-stone elevated on four orthostats measuring 2.58 m. East-West, 2.67 m. North-South, with a thickness of 10 cm. According to the size of the slabs outer circle consists of smaller slabs, while the size increases as we go to the inner circle. Villagers called this monument as "Educhutlakota" (Fort of seven circles). In front of this monument a slab circle encircle a

dolmen was noticed. An anthropomorphic statue is placed close to the monument. The anthropomorphic statue has features not noticed elsewhere. The statue looks like a human being seated with a face in profile. Below the head on both sides, shoulders are provided. The body and the lower limbs are suggested by triangular projection. The height of the statue is 2.50 m. with a width of 2.10 m. at the shoulder region (Ramabrahmam 2001: 40-41).

An interesting and unique found in association with some of the megalithic monuments is the anthropomorphic statues. Such statues are reported at few but scattered places in the state of Andhra Pradesh, Tamil Nadu and Karnataka. The existence of these anthropomorphic statues signifies certain interesting features of the megalithic communities, like their behavioral attitudes and belief in their customs connecting the post- death life (Rao 1993: 664 – 671).

2. Edu chutla kota

A megalithic dolmen was noticed near Edu chutla Kota village by the side of V. Kota - Gudiyatham route, in V. Kota Mandal. The monument is in anti-clock-wise pattern. Seven circles, hence known as "Edu chutla Kota" meaning 'fort with seven circles' encircles the dolmen. The cap-stone is raised on three orthostats, measuring 1.96 m. x 1.89 m. with a thickness of about 26 cm. Villagers call this monument also as "Pandavula kota." The dominant caste in the village is Oddi (Ramabrahmam 2003: 32-35).

3. Sogadaballa

A megalithic cairn burial was noticed near Sogadaballa village, located 1 Km North-east of the village in Santipuram Mandal. The stones are arranged in seven circles one after the other like a puzzle, (Fort of seven circles). The burial measures 6.50 m. Southeast-Northwest, 5.20 m. Southwest-Northeast respectively. Villagers call this monument as "Edu chutla kota." Near this monument, five stone circles with a diameter ranging from 5 - 6 m. were noticed (Ramabrahmam 2001: 70).

Chronology

It is unfortunate that we are unable to work out precise chronology for these remarkable slab circles found in this region. From the description of the sarcophagi, pottery and iron objects in different sources, we can infer that these monuments also can be assigned equal antiquity on par with other megalithic monuments of South India. We may be justified in provisionally assigning dates between 500 B.C. to A.D. 200 (Rao 1991: 31).

Understanding Megalithic unknown facts

Though the nearly two centuries of academic attention has resolved many questions about megalithic monuments, the societies that built them and the lifestyles and belief systems of their builders, several issues still remain unresolved. Apart from the very fundamental problem of chronology, there remain other important problems like the purpose of erection of the megaliths that did not serve as burials or memorials, a proper understanding of the knowledge-systems of the megalith builders, possible continuation and relationship with monumental architecture of the preceding and succeeding cultural phases etc.

The knowledge systems of the megalith-builders pose another difficult challenge to unravel. Judging by the knowledge of geometry and engineering skills evident in construction of a wide variety of forms using large and heavy blocks of stones in many cases, it is highly likely that megalithic man had an advanced level of philosophical thought and views about the world. Since these megalith-building societies were pre-literate, their material culture holds the only key to understand their knowledge- as well as belief systems, apart from their rock art (Srikumar. M. Menon 2012).

Mudumal megalithic site also has several menhirs and alignments. There are about 80 tall menhirs measuring 10 to 14 feet tall, and several thousands of smaller alignment stones. The tall menhirs as well as the shorter alignment stones are arranged in rows facing different directions (Rao 2006:428-29). Study of these rows over a period of time has revealed that some of the alignments synchronise with the rising and setting sun on the days of summer and winter solstice. It appears that the whole megalithic complex at Mudumal is planned like an ancient observatory where we have the depiction of a star constellation and the alignments that synchronise with the movements of the Sun.

In Kadirirayacheruvu two slab circles are noticed out of which the first monument encircles with seven circles, in Telugu called it as Educhutla kota (Fort of seven circles), the outer slabs are smaller in size and the adjacent inner slabs are bigger in size. The second monument encircle with four slab circles. The front side of the monument noticed anthropomorphic statue. In Educhutlakota site, the monument is in anti-clock-wise pattern. Here also Seven circles, named as "Edu chutla Kota" meaning 'fort with seven circles' encircle the dolmen.

The third site Sogadaballa bears cairn circle, stones are arranged in seven circles on the site resembles like a puzzle, here also the monument named as Educhutla kota. These sites are named as Pandavagullu, Pandava banda etc., The relation of seven circles to these megalithic monuments could not be find out, the puzzle regarding the seven circles is yet to be find out by the expert team of the archaeologists.

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Preservation of Films as Cultural Heritage of a Nation
(Special Reference to Sri Lankan Film Industry)

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Abstract

Film is a collective art form. In other words the cinema is highly synthesized art. It is incorporated with music, dancing, drama, poetry, literature, sculpting, interior designing, painting, martial arts and many other different expressions of human totality. And it communicates through visuals and sounds. In this case the visual is dominant and the sound comes secondly. What are these visuals and what are these sounds? That's nothing else, these are the visuals of what we see in our day today lives and what we here every day or these are something we dream, imagine. Films have documented this world for more than one hundred and twenty years. Filmmakers have captured how generations of people have lived, worked, and dreamed. Then the cinema is seemed to be a modern electronic chronicle which is successfully recorded all the complexities, paradoxes, lineal developments or downfalls of country's human being. By preserving these films, we can save the history. This paper attempt to explore the Sri Lankan film preservation journey and address few authentic situations regarded to the film preservation in Sri Lanka.

Keywords: Preservation, Film Preservation, Intangible Cultural Heritage, Sri Lankan Film Industry

Introduction

Film is considered the most powerful visual medium of 21st century. Film is actually an art form which is basically to entertain people through visual storytelling. On the other hand it's a business (an industry) as well. However, through these stories, filmmakers aspire to imitate reality or create a utopian or dystopian imagination of reality or capture the reality without changing or adding anything else.

What is Film Preservation?

Film preservation is a relatively new activity for libraries, museums, and archives. For many years around the world, in practice and in casual discussion, the term preservation was synonymous with duplication. People just thought film preservation is copying an old film on to new and making a duplication of it.

But as mentioned below, the book "The Film Preservation guide" published by National Film Preservation Foundation - California, clearly explains the word 'Preservation' as follows:

"Over the last decade, however, a broader definition of preservation has gained acceptance. Increasingly it is understood as the full continuum of activities necessary to protect the film and share the content with the public. Film preservation now embraces the concepts of film handling, duplication, storage, and access." (The Film Preservation guide, 2004)

The book also says that film preservation is not a onetime operation but an ongoing process. Because the techniques and standards keep changing according to the time and we have to repeat duplication. Like any other things films also needs continuing care to extend its useful life.

According to this film preservation guide, the language of film preservation can be explained under below mentioned areas. Since the words "preserved" and "restored" sometimes appear to be used interchangeably, it is important to define these terms before going further.

Conservation –
"Conservation is the protection of the original film artifact." (ibid, 2004)
Since the film has value as an object and as a carrier of information it is important to protect the original copies of films while making duplications. The film original can be stored under conditions that slow physical decay and it can be used when it is truly necessary.

Duplication –
"Duplication is the making of a surrogate copy." (ibid, 2004)
When making a copy from the original film, preservationists generally try to work from the material that most closely represents the film as it was originally shown. Because it is very important to keep the similarity as much as possible. "Preservationists consider film fully safeguarded only when it is both viewable in a form that faithfully replicates it's visual and aural content and protected for the future by preservation masters from which subsequent viewing copies can be created." (ibid, Pg.4)

Restoration –
Restoration is doing something more than making copies from original film. It goes beyond reconstructing a specific version of a film.

"Ideally this involves comparing all known surviving source materials, piecing together footage from these disparate sources into the order suggested by production records and exhibition history, and in some cases, enhancing image and sound to compensate for past damage." (ibid, 2004)

Access –

Access is the process through which film content is shared with the public. Depending on the institution, access embraces a range of activities, from support of on-site research to exhibition on the Internet. In museums, libraries, and archives, the most common access media at this time are film and video. (ibid, Pg.4)

Why Preserve Films?

Films have documented this world for more than one hundred and twenty years. Since Thomas Edison introduced the movie camera in 19th Century (1890 s), amateur and professional filmmakers have used motion pictures to tell stories, record communities, explain the work of business and government, and illustrate current events. They captured, with the immediacy unique to the moving image, how generations of people have lived, worked, and dreamed.

In other words, films reflect the intangible cultural heritage of a nation.
The term cultural heritage encompasses two main categories of heritage:

- **Tangible** cultural heritage:
  a) movable cultural heritage (paintings, sculptures, coins, manuscripts)
  b) immovable cultural heritage (monuments, archaeological sites, and so on)
  c) underwater cultural heritage (shipwrecks, underwater ruins and cities)
- **Intangible** cultural heritage:

The expression "intangible cultural heritage" was widely implemented in the early 21st century with the programme 'The Proclamation of Masterpieces of the Oral and Intangible Heritage of Humanity', in 2001.

The 'UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage' from 2003 defines Intangible Cultural Heritage as,
"the practices, representations, expressions, knowledge, skills – as well as the instruments, objects, artifacts and cultural spaces associated therewith – that communities, groups and, in some cases, individuals recognize as part of their cultural heritage" (UNESCO, Convention for the Safeguarding of the Intangible Cultural Heritage, Article 2/1).

It manifests itself in the following five domains: oral traditions and expressions, including language; performing arts; social practices, rituals and festive events; knowledge and practices concerning nature and the universe; and traditional craftsmanship (ibid, Article 2/2). Intangible Cultural Heritage is essentially living heritage, "transmitted from generation to generation" and also "constantly recreated by communities and groups in response to their environment, their interaction with nature and their history" (ibid, Article 2/1).

So, by preserving these films, we can save a century of history.

Veteran Sri Lankan film-maker Sumitra Peries once said, "Cinematic history is essentially an integral part of a nation's history. Clothes worn, linen used - all of this reflects a way of life in a particular era in history. Thanks to the movies, we know how Cleopatra did her eyes! Similarly, the future generation would be curious to know what Galle Face or Pettah looked like 50 years previously, just as the present generation is privy to images of these landmarks 50 years ago thanks to the local cinema. Today cinematic history is taken very seriously in many countries which, alas, doesn't happen here,"

Unfortunately, movies are not made to last. Created on perishable plastic, film decays within years if not properly stored. Already the losses are high in all over the word.

What reflects the culture more? Fiction Films or Nonfiction Films

Global Filmmakers inquire film using two basic modes. That is "Fiction Film and Nonfiction Film." In general, **fiction** refers to plot, settings, and characters created from the imagination, while **nonfiction** refers to factual stories focused on actual events and people. Documentary Film comes under nonfiction mode. And also there are different categories of documentary film. Those are,

- Primitive non-fiction
- Travel/Adventure Doc.
- Camera as Observer
- Didactic/Teaching Doc. ("propaganda")
- Television doc. / Internet – Webcasting

When we talk about preservation film as cultural heritage, it is important to mention the debate between fiction films and nonfiction films. Senior Prof. Ariyarathna Athugala (Department of Mass Communication, University of Kelaniya) argues that nonfiction films like documentaries are more close to reality than fiction films. "It's not ok to think that this is the way people talked or this is the way people ate, considering the time which the film is made. And also when we are considering a historical movie like 'Abha' or 'Kusa Paba', it's not ok to think this is the exact nature of that era since no one has seen the things before. Though we research before making a periodical stuff, that's not the exact truth. It's a combination of some real facts and imagination. I'm not telling that's bad. We have to do this in order to make the film more aesthetic." says Senior Prof. Ariyarathna Athugala. (Athugala, 2018)

John Corner has mentioned in his book titled 'Documentary and Mass media', that Documentary film is a social format and enacting of social dimensions is the main objective of a Documentary Film. Corner emphasize that though we can accept the aesthetic and artistic approach for a documentary, we cannot change the truth and authenticity. It should come naturally from the truth and authenticity of the plot.

Sanjukta Ray Pahari argues telling that films are collective dreams of society and it is a cultural heritage of a nation. "Much of what a man is pertains to his imagination. Indeed, imaginary are his hopes, his intentions, and his ideas of himself. People dream of their lives and live on their dreams. The dividing line between living and dreaming is not always clear. Films are collective dream of society. They provide society with mythologies or patterns of behavior. However, the mass appeal of the movies is a clear indication that most people today respond in one way or another to the dream like fantasies projected on the screen." (Pahari, 2009)

Problem Discussion

Documentaries, newsreels, avant-garde and independent works, home movies, industrial films, political advertisements, scientific footage, anthropological records, travelogues, and fictional narratives stand as the collective memory of this world. By saving and sharing these works, we can illuminate our common heritage with the power and immediacy unique to film. For many years the value of these varied film types was not widely recognized. We associated filmmaking with Hollywood, Bollywood and knew little about films. But there are lots of one-of-a-kind works. They often lay untouched. Now, thanks to preservation work over the past two decades, these films are beginning to be seen. A more inclusive picture of world filmmaking is emerging to enrich our understanding of cultural history.

In 1938, International Federation of Film Archives (FIAF) was formed in US to exchange information and promote standards for professional practice. By the late 1970s there were five large "nitrate" archives in the United States: George Eastman House, the Library of Congress, the Museum of Modern Art, the UCLA Film and Television Archive, and the National Archives and Records Administration (the official repository of U.S. government film production).

This is 2018 and Sri Lanka still does not have at least one proper film archive. But Sri Lanka is acclaimed for generating internationally demarcated film makers and their awarded films. On the other hand, Sri Lankan has a long standard film history, a rare and historical documentary film history, renowned film directors including Dr. Lester James Peries, Asoka Handagama, Prasanna Vithanage etc. different genres of film making, very strong young film makers, local and internationally prestige film festivals, regional film festivals, National film corporation, Government Film Unit, film academy and film studies as an academic discipline in the University level and ultimately a very inspired film goers. Though the number of produced film is minor when it compares with world, Sri Lanka has produced around more than 1310 main stream films & huge amount of documentaries and news reels.

And when it comes to the Government Film Unit (GFU) which was inaugurated on 5th September 1948 is one of the prominent places where we can find films, news reels, footages about Sri Lanka. The unit was entrusted with the task to produce documentary

and news coverage on events with national importance. These documentaries were used for public education in different parts of the country. The Film Archive is one of the valuable resources of the Department. They say that all documentaries produced by the GFU are preserved by converting into DVDs. But this statement should be examined by well-tuned research eye.

Surprisingly forming a film archive is still an unsolved problem in Sri Lanka. We have already lost some landmarks in the world cinema and many landmarks in the Sri Lankan cinema. This paper tries to discover what happened in Sri Lanka related to this theme and contemporary situation of film Preservation in Sri Lanka.

Objectives

- Emphasize the importance of film preservation for a country as their nation heritage.
- Investigate the existing film preservation practice in Sri Lanka.

Methodology

This research was conducted as a desk study, which is sometimes called a systematic inquiry (Management Study Guide, 2012; UNESCO, 2012b). This paper has articulated plenty of secondary data such as Books, published research articles, film commission reports, articles on journals and some national newspaper articles. These materials have sufficiently been utilized for the paper. Not only that, bot preliminary data have also been gathered by using personal interviews and did one case study in order to cover some important areas of the research.

Limitations

Most of the time, the researcher had to depend on newspaper articles, since the widely recorded evidences are gathered through newspaper based articles.

Analysis and Discussion

Cinema captures the cultural heritage of a country and presents as a form of entertainment. They are vital in showcasing the history, art, culture, and lifestyles of many generations. Cinemas basically represent the culture and civilization unique to its people, varying from generation to generation.

"Film is history. With every foot of film that is lost, we lose a link to our culture, to the world around us, to each other, and to ourselves" This statement had been made by veteran film maker Martin Scorsese to the official web page of National Film Preservation Foundation. (Senevirathne, 2017)

This is clearly reflected in the movies which are being restored to pristine condition. A number of classic films produced in early decades have been lost due to acts of nature and the rest are slowly degrading due to different factors on the environment like high humidity, moisture and poor storage conditions and neglect. We are also losing the quality of the negatives of such in part or as a whole and their maintenance as a library is becoming more difficult.

The film produced in the celluloid mode was the major version in almost 20th century and it was classified in to eras of Celluloid, Nitrate and Polyester. At the beginning of 21st century all the film productions were transformed in to a Digital film scenario and negative tapes were discontinued. Whatever the materials or forms those all creations should be preserved well enough for the future. Some films might be old, faded or being decayed, but a country cannot lose the grip of having consideration on them. Because of a very clear and unbiased picture of that country has been mirrored on those celluloid footages.

Film Archiving Journey in Sri Lanka

The *Rekhawa* (1956) was the first film which turned reasonably the path of Sri Lankan cinema in cinematic and realistic style and then there were many significant films and rapid developments penetrated the industry.

We are emphasizing the need of having a film archive after losing a significant amount of Sri Lankan films. But late Dr. Lester James Peries brought up this topic 61 years ago.

According to the Sunday Times newspaper article published on 11th March 2018, the chairman of National Film Corporation Mr. Sithendra Senarathna also acknowledged that "A project to restore and preserve Sri Lankan films was a repeated request and appeal by non-other than country's pioneering filmmaker, Dr. Lester James Peries."

Late Dr. Lester James Peries was a visionary rather than a film director, screenwriter, and film producer. He has written an article titled "The need for a national film archive" in 1957 to 'Arts Magazine'. This article is considered the first written document by Dr. Peries regarding the idea of forming a national film archive in Sri Lanka. The way he starts the article revels even at that time Sri Lanka has not taken this necessity seriously.

"Even those who are genuinely interested in the welfare and development of the Sinhalese film will consider the setting up of a national film archive a trifle premature." (Peries, 1957)

Legitimizing the need of setting up a film archive, Lester James Peries has mentioned, as time went by it is fine to judge the films which were made years and years ago. But whether the films are good or bad, funny or serious, it is important to archive all of them since each and every film reveal something about our society.

"Quite conceivably we might look back on our ten years of Sinhalese film production and shudder at the appalling rubbish that has passed for cinema in our country. We might, with justification consider the acting in our films terribly old fashioned and stilted, our stories puerile, our music excruciating, our comedy vulgar and even our make-up hideous. But who knows, there may be a scene here, a piece of acting there, some refinement in technique which has pushed our national film a step forward on its way to better things. There may be scenes, perfectly poor dramaturgically but more revealing as a record of the life and thought and attitudes of our people than any newsreels." (ibid, 1957)

He has argued from different aspects to prove the worth having a film archive. Historical perspective is one of them and he has given an example from our neighbor country India to explain what will happen if we don't preserve films. "Some time ago the Indian film industry celebrated the twenty-five years of sound film in India. But their very first film was missing. There were no copies anywhere. A countrywide search drew a blank and this commemorative programme had to be content with experts taken from a disintegrating old copy which was unearthed at the very last moment." (Peries, 1957)

In the introduction, it was questioned what types of films should be preserved, Fiction or Non-fiction. When it comes to the reflecting national heritage through films, highly accepted idea is, non-fictions are more realistic and authentic than fictions. In Dr. Lester James Peries's article he has used the same point to make his argument acceptable. "Let us assume for a moment that there is little or nothing in the Sinhalese feature film worth preserving. What then of the documentary stuff, the newsreels, even the screptics, I am sure, will agree that some of these can be priceless." (Peries, 1957)

Another aspect which is highlighted by Dr. Peries is that a film archive is not only national; it is international. Generally film archive is not just a collection of preserved country's films but a repository of the great cinema-master-pieces of the world.

Even though Dr. Peries acknowledges that setting a film archive is costly, he has believed that organizations like the art council or UNESCO can take the initiatives. He has concluded the article mentioning if this is accepted by those who are genuinely desirous to improve the film industry, might at least explore the possibility of setting up a National Film Archive in Sri Lanka.

After this eye opening contribution, he has requested repeatedly and Sri Lankan journalistic sphere has recognized it as 'the Dream of Dr. Lester.'

When we consider about the film archiving journey in Sri Lanka, we can notice film inquiry commissions has been appointed in order to rehabilitate and develop the Sri Lankan film Industry. First so called commission report published in 1965 says, "we recommend to set up a National Film Institute in order to maintain a national film archive and museum, to publish film related books and magazines, to support the film

industry and to improve the taste of public about films." (The film committee report, 1965) By this recommendation we can decide the need for a National film institute and archive has been recognized since the 1965 film commission.

Next, the AJ Gunawardhane Committee (1983) had published their report in 1985 and concretely mentioned the archive matter among other 76 recommendations. The most weakest and in-famed inquiry committee was titled as 'V. Ambalavaner Committee' and they never recommended an archive for films. (Senevirathne, 2017)

The third presidential level interference, Professor Senaka Bandaaranayake Committee was appointed in the 1990s and a report was published titled 'Report of the presidential committee on the rehabilitation and development of the film industry in Sri Lanka' (15th January 1997) clearly mentions that though the need for a National Film Institute and Archive had been emphasized since 1965, no attempt has been made so far to establish either the institute or the archive. When it comes to the year 1997, more than 30 years had passed from the first film commission in 1965 and 40 years were wasted from the year 1957 where Dr. Lester James Peries talked about this issue. Senaka Bandaaranayake did chair the committee and Cyril Gunapala and Gamini Weragama were there as committee members. They have recommended setting up a film archive incorporated with National Film Institute. They say that the component units of the institute should include the National Film Archive with a film conservation laboratory in association with the Government Film Unit (GFU), Rupavahini, other TV networks and private collectors.

Except those film commissions, "another step of so called 'plead' for government attention was the manifesto prepared in 1970 by four major film movements comprised by *Swadesheeya Chithrapata Arakshaka Mandalaya, Swadeena Chithrapata Shilpeenge Sangamaya, Desheeya Chithrapata Narambannange Sangamaya and Kalapela Sanskruthika Sangamaya* in and presented it to the Minister of Information and Radio Affairs. These manifesto also insisted the necessity of a film archive (The Manifesto, 1970). Then the State Film Corporation was legalized on 03.11.1972 under the Act of 1971, no 47. This act had explained their general objectives very broadly but it was not included the purpose of establishing a film archive which was crucially hard and hot topic at the moment even. Again the act of Film Corporation was amended in 1980 and the name of the institution was transformed to 'National Film Corporation' but the film archiving chapter was absolutely neglected." (Senevirathne, 2017)

Case Study

The year 2018 is a benchmark of the film preservation journey in Sri Lanka. The National Film Corporation in association with International Federation of Film Archives (FIAF), the Film Heritage Foundation of India, the Gamini Fonseka Foundation and the Lester James Peiris Foundation had organized a five-day (from 11th march 2018 to 15th

march 2018) programme on film preservation, restoration, and archiving. Below mentioned three renowned experts have arrived in Sri Lanka to share their knowledge.

- David Walsh - Digital Preservation Consultant, IWM Training and Outreach Coordinator of FIAF.
- Mick Newnham - former Manager of Conservation Service at the National Film and Sound Archive of Australia (NFSA).
- Shivendra Singh Dungapur - Founder Director of Film Heritage Foundation and Director, Producer of Dungarpur Films.

As it was reported by media the government had allocated Rs.20 million for this project. After arriving in Sri Lanka these three experts had visited all the film storage spaces: the National Film Cooperation headquarters, the National Archives, the government film archive and the National Film Cooperation Film Archive at the Sarasavi Studio. They had found a collection of about 30,000 film reels that were in a poor condition. However they had started the rescue mission from Sarasavi Studio and the idea was to provide basic training to the volunteers for the rescue mission and to teach them how to identify and segregate the films into sections of films that could be saved and those that would have to be disposed of. After two days the rescue mission had moved to the film warehouse at National Film Cooperation headquarters where the same procedure had been followed by the team for two days and they had extended the mission for another day as they were so keen to keep the movement going forward fruitfully.

Five-day (from 11th march 2018 to 15th march 2018) programme on film preservation, restoration, and archiving in Sri Lanka.

This was the summery of the five days mission, constructed after analyzing the news reported by media. Below mentioned facts are the key points which were found after studying this case.

1. Dammith Fonseka, son of the legendary Sri Lankan actor Gamini Fonseka has done a huge part of this mission. Having the thought of saving his father's legacy and with the knowledge on film preservation and restoration gained from workshops done by film heritage foundation in India, he has begun talking to the Sri Lankan government about building new film vaults to preserve the Sri Lankan film heritage.

2. In July 2017, the Gamini Fonseka Foundation and the Dr. Lester James Peries Foundation has invited the director of film heritage foundation Shivendra Singh Dungarpur to visit the National Film Corporation's (NFC) film storage facility at their headquarters in Colombo.

3. According to his observation the condition of the NFC Archive was shocking. "The room was filthy and filled with rusted film cans haphazardly stacked in storage racks. There was no temperature or humidity control – the air-conditioning had stopped working months ago. There were old posters and lobby cards lying discarded in corners." (http://filmheritagefoundation.co.in) In December 2017, Shivendra has visited the second film archive of the NFC at the Sarasavi Studio premises in Colombo, which was in an abysmal condition too.

4. After that Shivendra has spoken to Administrators of film heritage foundation, about the dire conditions of the films in Sri Lanka and discussed getting expert help from them. After several months of discussion, the NFC managed to get the funding and requisite sanctions from the government to invite experts from outside the country.

5. By the end of the five days mission they have understood that though it is possible to save a film for 100-200 years in European countries where there is cold weather condition, due to the hot weather condition and humidity prevailing in Sri Lanka, films could not be archived in a normal way.

6. And they have affirmed that we have already lost 90% of our film heritage.

End results of this five days film preservation and restoration mission gives a clear picture of the contemporary situation in Sri Lanka. Though the need of archiving films was identified from 1965, nobody took it seriously. The film "NIDANAYA" a film by Dr. Lester James Peries is the best example for one of the lost cinematic landmarks of our history. "NIDANAYA" put Sri Lanka on the world map and when the French showed their interest in restoring and archiving the film, it was revealed that the original negative was burnt. The so called reason was the negative has been caught by bugs and the rot has started spreading all over. In order to protect other negatives they have destroyed the rotted film. At last "NIDANAYA" was lost to the country of its birth.

Current Situation

Now it is very clear that Sri Lanka still does not have a proper film archive or museum. Sri Lankan government has created the vacuum and some people have started their own private film archives.

- Hemapriya Kandambi,
- Tissa Nagodavithana,
- Gordon Silva,
- Susil Dharmapala, are some people who are maintaining their own film archives.

But the intention of doing this is different from person to person and sometimes it's really complicated to distinguish their objectives. 'Most of those collectors have the opportunity to hire their resources to the television channels to telecast. This is the main revenue path of this business, but it is relatively not a simple avenue.' (Senevirathne, 2017)

But none of this is film preservation at any extent.

Gordon de Silva is the country's first 3D animator and Senior Graphic and Animation artist at Sri Lanka Rupavahini Corporation (SLRC), He is also a film lover but he has earned some kind of technical knowledge of film archiving and he is enthusiastic film related artifact collector at all. Gordon believes that film remains the best archiving and documenting material in the world. "Sometimes films would be 10 or 20 years old to be eligible for archiving, but the content never gets old. That is our heritage" he has mentioned.

Gordon identifies that during the time Sri Lanka was using black-and-white films people had done various chemical changes to those films. "As a result of those chemical changes people had found silver as an end product and they started to destroy black-and-white copies to gain silver," (Perera, 2018)

Conclusion

Sri Lanka has rich cultural value and films do mirror these cultural things in different ways. But the country does not have a state controlled technically organized system for film preservation. Government is continuously escaping from establishing the National Film Archive to the country.

Though the Government film Unit and National Film Corporation had a certain film collection, they did not have a strong avenue to preserve them. Since the country does not have a national film archive, this entity has been recognized as a lucrative commercial zone by the private entrepreneurship. Initially they were film enthusiastic

people and film collectors who did not have a correct knowledge or the technology for preservation.

Among those private entrepreneurs, Hemapriya Kandambi has been recognized by this desk study as a person who is committed to this endeavour with good enough knowledge and as the real film protector with film museum. The rest of the entrepreneurs are doing business for the sake of film preservation as a national duty which was neglected by the government. Undisputedly we have to admit that the archiving and restoration is an expensive part.

Gordon Silva has mentioned, "Approximately Rs.2.5 million would have to be allocated to restore a film and in a country like Sri Lanka there was no system to grant such money to restore a film,"

But we cannot neglect this issue telling that it is expensive. The hope is that the National Film Cooperation (NFC), the government film unit (GFU), the government film archives and the National Archives with support from the Gamini Fonseka Foundation and the Dr. Lester James Peries Foundation will take the movement forward to save Sri Lanka's film as a cultural heritage.

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Therīgāthā: A Masterpiece of Women's Perspectives in Buddhism

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While analyzing the development of human history, we come across the fact that a major section of it has been only recorded by the males, thereby lacking any women perspective. Women were presented as those hampering growth and progress instead of being looked upon as contributors. Because of this andocentric history there is an absence of any account of almost half of the population of the world which in reality accelerated its growth. As a consequence of this a similar site is visible in the domains of literature, arts, religion which tend to ignore and devaluate any role played with the women in society.

Buddhism has always shown a reformative indication in a radical manner with respect to modern tendencies such as freedom, equality, social justice, democratic values, ecological concerns and so on. This is why the Buddhist tenets are so relevant even in the contemporary times. Despite all the insights in the text on various contexts, there is little detail available about the women in those times. Neither did the monks write about the nuns, their position, role played in the dhamma nor did the nuns take any initiative to reveal their problems. It is for this reason that *Therīgāthā* becomes an extremely important text for us in the Indian context to study as it is written by the nuns themselves which is an expression to their own enlightenment and experiences in and outside the dhamma. (Skilling: 2001; 246)

Since in the entire canonical literature *Therīgāthā* is the only book authored by the bhikkhuṇīs (elder nuns) it is quite evident that it has always enjoyed attention from scholars. It is the ninth book of Khuuddaka Nikaya and a collection of 522 verses, in which early Buddhist nuns recount their struggles and accomplishments in the path of emancipation. The unique quality of the text is that despite being written by women, it does not underline any subaltern undertones. It voices women liberation and addresses all the issues, spiritual women had to go through along the road to arhatship just because of their womanhood.

Most of the scholars are focusing on gynocentric studies now a days so this text becomes all the more valuable in terms of women liberation. The most interesting feature of *Therīgāthā* is its *itthibhāva* (strībhāva) which has been expressed well in its verses and the authors of the text, therīs, are very conscious and proud of their womanhood. In all the circumstances whether it is identifying the challenges, responding to them and victory over those challenges by achieving arhatship, this womanhood seems to play a dominating role throughout the text. Much before the modern concept of feminism this

book has been written and it took a long span of 300 years for its compilation. (Norman: 1991; 31) Initially these gāthās were circulated orally to successive generations before being scripted in first century BCE. Due to its preservation in the oral form for a long period, possibilities of interpolation cannot be denied. We also get a commentary on *Therīgāthā* in Pāli written by Dhammpala with the biographical sketches of the nuns with their verses. The first translation of *Therīgāthā* came in 1909 followed by another one 1971 by K.R. Norman. It has also been questioned by scholars including Norman that whether this text was actually authored by the bhikkhuṇīs who are credited for it or not. (Bhattacharya: 2000; 142-143, Winternitz: 1963; 99-100) In the context of such controversies it is worth remembering that though Buddhists were equalitarian in principle (Vats & Mudgal: 1999; 185) but the denigrating portrayal of women's potential throughout the thervādī literature proves that the Buddhist monks were not friendly and sensitive towards nuns. Even Gotam Buddha was reluctant on the issue of women's ordination (Rhys Davids & Oldenberg: 1996; 320, Hare:2006;181) and after giving sanction to open bhikkhuṇī saṁgha, expressed his doubt that the saṁgha would be weakened by the presence of women in it and Buddhist teaching (dhamma) which would have endured for 1000 years, would last only 500. (Rhys Davids & Oldenberg: 1996; 576) Acquisitions were brought against Ānanda for honouring and favouring women in the first Buddhist council (Rhys Davids & Oldenberg: 1996; 626). The songs of *Therīgāthā* strongly represent a female perspective, and as Winternitz points out, sung from the very heart of women (Winternitz: 1963; 99-100). We cannot expect monks, having a misogynist mindset that they would credit the women with something they have not composed, if an incontestable tradition had not pointed in this direction (Winternitz: 1963; 99-100)

There lies no doubt about the fact that the Buddhist nuns were highly educated, greatly intellectual and dexterous in art work. These verses are a testimony of their high level of competence in expressing their sentiments through poetry. Traditionally each verse is related to a therī in which she has expressed her joy of liberation. Few of these depict Buddha and his disciples encouraging them for a spiritual life ahead.

Challenges to Womanhood

One of these references is from Mahāparinibbānasutta in which Buddha is reported to have given a reply to a question put before him by Ānanda.

"How are we to conduct ourselves (asked Ānanda) with regard to womankind?
As not seeing them,
But if should see them,
What are we to do?
No talking, Ānanda.
But if they should speak to us,
Lord, what are we to do?
Keep wide awake Ānanda" (Rhys Davids:2007;154)

The very obvious conclusion that we can draw out of it that Buddha's attitude towards women was not positive. His advice to Ānanda and presumably to other monks also, to stay away from women can be cited as his own views regarding womenfolk. His hesitancy in permitting women to renounce (Rhys Davids & Oldenberg: 1996; 570-573), the subservience he required as a condition for their admission into the order (Rhys Davids & Oldenberg: 1996; 73-75, Hare: 2006; 183-184) and his doubt after the establishment of the bhikkhuṇī saṁgha that dhamma would be weakened by the presence of women in it (Rhys Davids & Oldenberg: 1996; 576) supports the same conclusion. He ends his statement with his justification for the aṭṭha gurudhammas (eight special rules) imposed on the nuns of the order by saying-"And just, Ānanda, as a man would in anticipation build an embankment to a great reservoir, beyond which the water should not overpass; just even so, Ānanda have I in anticipation laid down these Eight Chief Rules for the bhikkhuṇīs, their lifelong not to be over passed".(Rhys Davids & Oldenberg: 1996;577) In a reference addressing to Ānanda he says- "Womenfolk are uncontrolled, Ānanda Womenfolk are envious, Ānanda, Womenfolk are greedy, Ānanda, Womenfolk are weak in wisdom." (Falk: 1973; 75) In another instance Buddha tells a wider audience of monks in general – "Monks, a woman enslaves a man in eight ways. What eight? A woman enslaves a man by appearance, by laughter, by speech, by song, by tears, by attire, by garlands from the forest and by touch". (Hare: 1935; 135 16) Akin to this, at several other places he can be found putting women's seriousness at questionable position in his statement. The verses of *Therīgāthā* are also an expression of the challenging experiences of the therīs and discriminatory attitude of the society which gives a clear picture of patriarchy generally prevalent in Indian culture.

At times, when being born in feminine gender was a grief, as expressed in *Therīgāthā* (Rhys Davids: 2018; 108, Shastri: 2003; 274) it was even more difficult to strive for equality when compared to the present times. Nuns such as Abhirūpanandā, (Rhys Davids: 2018;23, Shastri:2003;238-239) Khemā, (Rhys Davids:2018;83, Shastri:2003;261) Sundarīnandā, (Rhys Davids:2018;56, Shastri:2003;251) Paṭācārā,(Rhys Davids:2018;73, Shastri:2003;255-256) Kisāgotamī, (Rhys Davids:2018;108-110, Shastri:2003;273-275) Ambapālī, (Rhys Davids:2018;121-125, Shastri:2003;280-283) Gotamī,(Rhys Davids:2018;89, Shastri:2003;263-264) Subhā,(Rhys Davids:2018;142-146, Shastri:2003; 293-297) Sumedhā, (Rhys Davids:2018;165-109, Shastri:2003;309-320) Sīhā, (Rhys Davids:2018;54, Shastri:2003;250-251) Ubbirī, (Rhys Davids:2018;39-40, Shastri:2003;245) Sāmā, (Rhys Davids 2018; 32-33, Shastri:2003;242) Cittā, (Rhys Davids:2018;27, Shastri:2003;240) Isidāsī (Rhys Davids:2018; 157-163, Shastri:2003;303-309) etc. have provided accounts of their struggle in the social sphere. Amongst the various social challenges in the historical construct which females had to face quite often, they primarily portray their difficult journey before attaining arhatship. The tales of Sundarī,(Rhys Davids:2018;138-141, Shastri:2003;289-293) Subhakammardhītā, (Rhys Davids:2018;143-146, Shastri:2003; 293-297) Isidāsī (Rhys Davids:2018; 157-163, Shastri:2003; 303-309) and Sumedhā (Rhys Davids:2018;165-178, Shastri:2003; 309-320) are a testimony to the potentially oppressing society and portray their previous life

as just opposite to the life after emancipation. The long narration by Sundari (Rhys Davids: 2018; Shastri: 2003; 138-141,289-293 36) reflects the entire social construct before us containing all the aspects of worldly life. Through her experiences of previous births Isidasi (Rhys Davids: 2018; 157-163, Shastri: 2003; 303-309) provides an even more detailed account of women's engagement in the domestic space. Kisāgotamī (Rhys Davids: 2018; 108-110, Shastri: 2003; 273-275) presents the grief of the women's world in its totality, which include the difficult aspects such as child birth, having co-wives, widowhood, money crisis etc. Vāsiṭṭhī, (Rhys Davids: 2018; 80, Shastri: 2003; 260) through her verse conveys the grief and anxiety arising out of son's loss. All these sensitive personal experiences of women are very much woman centric and give a glimpse of the gender stereotypes of their cultural milieu. Women were more engaged and involved in worldly relations and affairs and that is why freedom from the worldly affairs and freedom in spiritual terms stands on equal footage for them. The combined effect of social disrespect and enforced subordination in the dhamma is reflected in the therīs' conception of liberation as struggle.

Response to challenges and Role of Buddhism in women upliftment

The beauty of the verses of *Therīgāthā* lies in the fact that they not only voice the difficulties faced by the *therīs* in path to salvation but also give us an account of their triumph. Its primary focus is the belief of these *theris* in their abilities, i.e. high selfhood and their audacity to be assertive in the male dominated society. They pay their gratitude to Buddha and dhamma in this regard. In an era when women looked down upon by the men and had to face a lot of discrimination, Buddha took a revolutionary step by providing them admission to the saṁgha (Rhys Davids & Oldenberg:1996;322-324) and simultaneously declaring them as capable enough to attain the highest spiritual goal of life. (Rhys Davids & Oldenberg: 1996; 322) Though their status was lower to that of monks they had more freedom, more respect and better living conditions in the saṁgha than anywhere else in the society. Due to these reason women from various social groups joined the dhamma, saṁgha and attained nibbāna.

Women of various social groups in the saṁgha
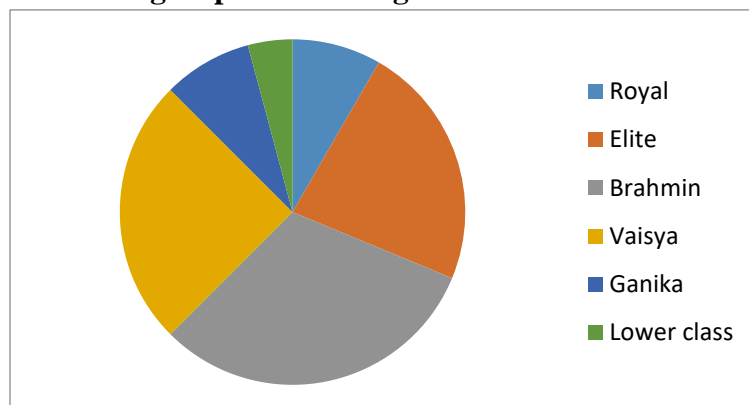
Contrary to the misogynistic theravādī text, *Therīgāthā* presents Buddha as their well wisher and Buddhism as a religion providing equal opportunity to people of both the sexes. Buddha, who talks about not to look at women and engaging with any sort of conversation with them, can be seen in *Therīgāthā* as enlightening them and motivating them for spiritual progress.(Rhys Davids:2018; 38-39,80,85,86-87,89,97-98, Shastri:2003;254-255, 260, 261-262, 262-263, 263, 268-269) Bhaddā Kundalkesā,(Rhys Davids:2018;67-68, Shastri:2003;54-55) Patācārā (Rhys Davids:2018;72-73, Shastri:2003;55-56) and Vāsiṭṭhī's (Rhys Davids:2018;80, Shastri:2003;260) narrations stand as proof to validate this fact. Visākhā went to listen to Buddha's discourse in the presence of monks. (Hare: 2006; 174, Horner: 2005; 302-303, 353-355) Mahāpajāpati Gotamī's gāthā pays homage to the Buddha as the 'best of all creatures'. (Rhys Davids: 2018; 89, Shastri: 2003; 263) *Therīgāthā* presents numerous references of Buddha's interaction with women which goes in sharp contrast to the narrations of canonical literature presenting women as obstacles or weak in wisdom. Such interactions prove that he did not look down upon women because if that had been the case neither could he be seen exchanging words with them without hoping any ill consequences of it nor would he take active measures for the progress of women in the society. So far as the Buddha's statement about the shortened time span of Buddhism due to admission of women in the saṁgha and other such statements in which women are much more frequently presented as less capable than man are concerned, scholars suggest that it as an interpolation into the tradition by later more conservative monks. Kajiyama Yuichi dates it to the time when early Buddhism was challenged by the rise of Mahāyāna. (Yuichi: 1982; 53-70) He also argues that the conclusion that a woman cannot be a Buddha or attain any of the five stations cannot be earlier than the first century BCE. (Yuichi: 1982; 53-70) According to Falk the situation of women at the time of Buddha was relatively good compared with other patriarchal societies. (Falk: 1974;105-106) The attitude towards women changed slowly and by the end of early period of Buddhism. The *Jātaka tales* and *Mahāvastu* do not mention any references to female birth of Buddha. To deny the enlightenment potential of women would be seriously at odds with the central idea of Buddhism, which believes in liberation of all sentient beings without any exception. Perhaps a misogynist slant crept in centuries later when the teachings came to be written down and a negative picture of women was presented frequently in order to revert to conventional practices and attitudes.

In Buddhism, both man and woman have been seen as hindering the spiritual progress of one another and due to this reason they were asked to stay away from each other. But the greatest obstacle to Nibbāna, who bars the way of both men and women, is personified as a man named Māra (Malalaseker: 2002; 611) in Buddhist literature. The verses of *Therīgāthā* present him as tempting many therīs but they successfully handled him and attained nibbāna. It happened in the case of bhikkhuṇī Khemā (Rhys Davids:2018;83-84,Shastri:2003;261), Subhā (Rhys Davids:2018;142-146, Shastri:2003; 293-297) and Anopamā (Rhys Davids:2018;86-87, Shastri:2003;262-263), who faced the challenges put before them with courage and determination. In *Therīgāthā* (Rhys Davids: 2018; 36, 136, Shastri: 2003; 244, 293) at least two nuns proclaim themselves as 'daughter of the

Buddha'. Somā seems to be so confident regarding spiritual ends of women that while conversing with Māra she said that all distinctions are irrelevant to the attainment of salvation and that the maleness and femaleness has nothing to do with the enlightenment. (Rhys Davids: 2018; 45, Shastri: 2003; 247)

Women who are considered weak in wisdom and incapable of attaining higher fruits of religious life in some references of Buddhist literature are surely not weak in wisdom and wit in *Therīgāthā*. While arguing in the context of conversion or confrontation they make it clear how intelligent and wise they are. Puṇṇā (Rhys Davids: 2018; 117-119, Shastri: 2003; 278-279) condemns the religious practice of the Brahman. Subhā Kammārdhīta (Rhys Davids: 2018; 143-146, Shastri: 2003; 293-297) refers to the fools who are attracted to the sensual pleasures as part of her efforts ato convince her relatives to support her renunciation. Similarly Sumedhā's argument with her parents and fiancé over her decision to renounce involves her invocation of fools, who bemused by sensual pleasures will continue on in saṁsāra. (Rhys Davids: 2018; 165-178, Shastri: 2003; 309-320) In order to convince others of the efficacy of the Buddhist path, the therīs explain the consequences of the foolish decision not to follow the dhamma. We hear of young girls from noble families of matrons in advanced age of a mother of ten children, who enlightened either by Buddha himself or by a reverend nun seeking the path to nibbāna and find it. The detailed survey of the *Therīgāthā* makes it clear that the attitude of Buddha towards women was quite different from what we learn from the instances of the other old Pāli texts.

Buddha had full faith in the capacities of women and this is the reason that he did not present them as victims. To identify women as victims would have incapacitated them. Instead of doing so he had acknowledged their capacities and given them strength and courage to overcome their difficulties. Buddhist order is perhaps the first where women were treated as a separate cadre and granted autonomy as well. Gotmī questioned Buddha a number of times and challenged male dominance in the saṁgha. (Rhys Davids & Oldenberg: 1996; 578-579, Wadekar: 1939;9) It shows that women were free to put their sincere opinion strongly which was not possible outside the saṁgha. She 'functions as a leader' of women who parallels Buddha's leadership of bhikkhus. For the therīs liberation is an internalized experience, a great conquest which they could make after successfully facing many challenges of worldly life(Rhys Davids:2018;38,39-40,41-42,44,45-46,113,141,142-146,153-154, Shastri:2003; 244-245, 245, 245-246, 246, 246-247, 276, 292-293, 293-297, 301) This struggle is reflected in the gāthās of the nuns. For the monks freedom lies in escaping the world while the nuns take a stronger stand and they speak from their lived experience, of the challenges they faced in their day to day life and also how they combat them (Rhys Davids:2018;15,25,26-29,39-40,62-63,75-76,77-79,80,108-109,112-113, Shastri:2003; 236, 239, 240-241, 245, 254, 257-258, 259-260, 260, 274, 275-276, 290, 303-309).

Therīs' Activism in the socio-spiritual sphere

The various verses of the *Therīgāthā* shed light on the active participation of women in the social upliftment and spiritual advancement of women. In the theravādī literature as well as in *Therīgāthā* we get various references of the ordination of the bhikkhuṇīs by the bhikkhuṇīs. Initially the ordination of nuns was conducted by the monks but with the passage of time conditions changed and among the monks, resentment and reluctance for the nuns grew. In due course Bhikkhṇī saṁgha also got organized and settled due to which autonomy and freedom was granted to nuns gradually. They not only strengthened themselves in the spiritual life but motivated other women to join the dhamma and saṁgha. But at the same time it should also be kept in mind that their spiritual perfection does not reflect the arhant status of the therīs. (Findly: 1999, 61)

There are instances where not only women but also men were inspired and initiated by nuns. They have been referred as showing their reverence to their preacher bhikkuṇī. Uttamā (Rhys Davids:2018;37, Shastri:2003;243), Soṇā (Rhys Davids:2018;62-63, Shastri:2003;254), Vijayā (Rhys Davids:2018;92-93, Shastri:2003; 265-266) and certain unknown bhikkhuṇī (Rhys Davids:2018;50-51, Shastri:2003;249) have credited their emancipation to a bhikkhuṇī whose name was not mentioned. Thirty bhikkhuṇīs. (Rhys Davids: 2018; 73-75, Shastri: 2003; 256-257) Candā (Rhys Davids:2018;75-76, Shastri:2003;257-258) and Uttamā (Rhys Davids:2018;94-95, Shastri:2003;267) acknowledge Paṭācārā as their instructor and Subhā Kammārdhītā (Rhys Davids:2018;142-146, Shastri:2003;293-297) and Isidāsī (Rhys Davids:2018;157-163, Shastri:2003; 303-309) claim Uppalavaṇṇā and Ārya Jindattā as their preacher respectively. Perhaps the best example of this gratitude is found in a conversation between Sundarī and the bhikkhuṇī who ordained her. Vaḍḍhamātā was the teacher and spiritual guide of her son Vaḍḍha (Rhys Davids: 2018;.103-105, Shastri:2003; 272-273).

List of women and men got initiated by Bhikkhuṇīs from *Therīgāthā*

Sr. No.	Name of the ordinated Nun or Monk	Acaryabhikkhuṇī	Verse No.
1	Uttamā	Sthavirbhikkhuṇi	42-44
2	another bhikkhuṇi	Sthavirbhikkhuṇi	69-71
3	Soṇā	Sthavirbhikkhuṇi	102-103
4	30 Bhikkhuṇi's	Patācārā	117-121
5	Candā	Patācārā	122-126
6	Vijayā	Sthavirbhikkhuṇi	169-174
7	Uttamā	Patācārā	175-181
8	Vaḍḍha	Vaḍḍhamātā	204-212
9	Subhākammāradhitā	Uppalavaṇṇā Stavir bhikhuṇi	365-366
10	Isidāsī	Ārya Jindattā	429-431

Instead of being content with the role allotted to them by the society, they chose to follow the path of spiritualism by joining the saṁgha. Strengthening the equalitarian and progressive outlook of Buddha the various nuns of the *Therīgāthā* have rejected the inequities women have to suffer on account of their sex. Somā boldly states that attaining arhatship has nothing to do with the gender and thus the attainment of spiritual goals is possible only by self-purification and determination irrespective of their sex. (Rhys Davids:2018;45, Shastri:2003;247) In fact, in her conversation with Māra, she glorifies womanhood and discards gender based biases of the society.

Despite not being aware of the idea of feminism and women empowerment, these nuns were courageous, enlightened and empowered enough to bring a ray of hope for womenfolk. They initiated a gradual process of ensuring social justice and equality to women. They liberated themselves from all the worries and secular responsibilities which gave them immense joy and confidence. The verses of Muttā (Rhys Davids: 2018; 15, Shastri: 2003; 233) and Sumangalamātā (Rhys Davids: 2018; 25, Shastri: 2003; 239) are a testimony to this. Sumangalamātā expresses her freedom from worries and blissful state of mind in a wonderful way by saying-
"O free, indeed! O gloriously free
Am I in freedom from three crooked things:-
From quern, from mortar,
from my crookbacke'd lord!" (Rhys Davids: 2018; 15, Shastri: 2003; 239)

In terms of gynocentric studies, making policies, holding discussions and movements we have come a long way and are much advanced even beyond the third wave of feminism but the charm of *Therīgāthā* leaves a lasting impact on its readers. Freedom from all the bindings, worldly and otherwise, is the core idea of the verses. They tend to seek attainment of spiritual advancement by breaking shackles that binds them from within. Its message touches our hearts and brings before us a capable, confident and courageous image of women, which is a result of their sensitive heart and strong will power.

Though the courage and confidence of these Buddhist nuns could not bring out a visible change in their social and spiritual life, at least they stepped forward on their path. They expressed their ideas gracefully and strongly before the society. The gāthās of the therīs disapproves the idea of dissimilarity and can be seen as a challenge to any society and Buddhist society as well which perceives women as incapable or subordinated to men.

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Land Cover Changes Occurred in Sinharaja Buffer Zone during the Period of 1986-2016
(A Spatial and Socio Economic Analysis: Based on Kudawa Village)

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Abstract

Sinharaja reserve, which is located southwest of Sri Lanka at 60 21-26' N and 800 21-34' E in the southern part of the wet zone.it, is a natural asset to sustain environment as well as a UNESCO world heritage. Acknowledgement of spatial and temporal changes is needed to a well-planned conservation of a particular natural and fragile heritage site and based on that significant point this study examined about land use and land cover changes for thirty years (1986-2016) and explored why that particular changes occurred. Those research questions are the main and specific objectives of this study respectively. Both a spatial analysis and a socio economic survey had been implemented to achieve the objectives. Digital land use data of 1986 and 2016 published by the Survey Department of Sri Lanka and Land use and Policy planning Department of Sri Lanka is used here with the reserve boundary delineation from published digital boundaries of heritage sites by the UNESCO. Here both natural and manmade (economic) land covers as Forest (include sub types as open forest and dense forest), Scrubs, Tea, Rubber, Chena, Home gardens were examined. The socio economic survey directed to the factor analysis and found factors as after the factor analysis new factors were identified. There are Economic Factors (EF), Agricultural Production Factors (APF), Human Behaviour (HBF), Political & Government Influence (PGI), Social Factors (SF) and Natural & Climate Factors (CF). The spatial analysis tool in this study is Arc Map 10.1, geo processing tools were applied, extents were calculated and overlaying techniques were used. The paroral socio economic data analysis was done using SPSS 22. Considerable economic land cover expansion was found with declining natural land cover, improper land uses and their results, complex reasons for land use changes occurred due to above-

mentioned factors are main outputs. Synthesized conclusion is given with concern modern concepts as liberation ecologies and political ecologies with paying attention to a balanced implementation on both the environment concerned and the cultural land uses.

Introduction

Tropical forests are energetic with heavy biodiversity and mostly expressed as biological hotspots. In the local level, Sri Lanka (SL) has a good biodiversity comparing the size of the land. Among that biodiversity the wet zone forestland possesses a majority of the country's biodiversity (In Sinhala: Perera, 2006) around 90% out of total biodiversity. Sinharaja reserve, which is located southwest of Sri Lanka at 60 21-26' N and 800 21-34' E in the southern part of the wet zone (Conservation, Project, Of, & Development, n.d.) and the whole forest complex of Sinharaja is currently considered as an UNESCO World Heritage Site (WHS) (IUCN 1987, UNESCO, 1990). In addition, it is conserved under International Man and Biosphere (MAB) program.

This paper examined the land cover and land use changes of the buffer zone of Sinharaja forest within twenty years (1986-2016). Buffer zones play a part of biosphere reserves (Calandra, Mauro, Cutugno, & Martino, 2016). The buffer zone has a special value to forestland because anthropocentric activities concentrate the buffer zone (In Sinhala: Perera, 2006) the buffer zone allows domicile to traditional human activities and non-destructive researches In ancient period this called *"This Bambaya"*[20] and its purpose was to protect a forest area, reducing conflicts with the forest and villages (In Sinhala: Perera,2006). In the past very few families lived in the Sinharaja buffer zone with traditional primary activities but nowadays settlement density has become increased due the promotion of lowland tea cultivation and development of infrastructure facilities, specially roads (Lanka, 2003).

Sinharaja reserve and the buffer area

Sinharaja reserve (SR) is categorized under tropical rain forest located in the wet zone of in SL with more than 2000 mm annual rainfall. It has encompassed with 11,185 ha and it represented 43% of wet zone tropical forest coverage. The forest is Sri Lanka's last remnant of virgin tropical rainforest (Lanka, 2003) and three districts administratively bordering, namely Galle, Mathara and Rathnapura plus a small area for Kalutara District. The bio diversity value of the forest is remarkable and 13 plants out of 25 endemic plants of SL are located in Sinharaja (In Sinhala: Perera, 2006) More than 60% of the trees are endemic and many of them are considered rare and have a good t[21] (In Sinhala:

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[20] In Sinhala it is තිස් බඹය and alternatively represent as a forest patch which is located between a village and a Tank (*Wewa*) of ancient village (http://www.divaina.com/2010/01/03/siya01.html) බඹය ("Bambaya" is a traditional measurement unit of SL as use distance measuring)

[21] Sinharaja has ideal view of four layers, which have shown in tropical forests. The layers are Emergent Layer, Canopy layer, Understory and Forest Floor respectively the height level of the tree. (In Sinhala: Amarasekara, 2006)

Amarasekara, 2006) to create several inhabit places to flora and fauna. The forest provides a home to over 50% of Sri Lanka's endemic species of mammals and butterflies, as well as many kinds of insects, reptiles and rare amphibians (Sinharaja Forest Reserve). Typically the altitude of the area spreads to 900-1200m (Forest Department. 2002) and some peaks as *Moulawella* (759.87m?) are found (Gunawardene, Majer, & Edirisinghe, 2010) near the study area.

Sinharaja buffer zone borders with a 3km width (Wijesooriya & Gunatilleke, 2003) but in some literatures it is a 1km wide area (In Sinhala: Perera,2006). Buffer zones are part of biosphere reserves (Wijesooriya & Gunatilleke, 2003). When concerning the Sinharaja buffer zone, it has 27 villages around the forest. Additionally, a majority of villagers (about 48%) depend on tea cultivation and 37% depend on working as labours in agriculture sector (Forest Department, n.d.). Buffer zone is a dynamic area with several human induced activities as economic activities (Bandaratillake, 2003). Several management approaches have been taken in buffer zones (Forest Department, n.d.). Land use changes of buffer zone is a challenge for land management with people's thoughts and less awareness level of where they are living (Ogogo, Nchor, & Jacob, 2012).

Kudawa Village – Briefing about their day-to-day activities

Kudawa village which is located in the buffer zone of SR near to the reserve boundary and the relevant administrative boundaries of the village in Kalawana DSD, Rathnapura District and Sabaragamuwa province. It is encompassed with five GNDs () but here only three GNDs were examined out of those five as Kudawa, Weddagala (West) Weddagala (East). The three GNDs which were examined have a population of 2835. (Department of Census & Statistics, 2012) and the highest population represented was Weddagala (west) GND. Kudawa GND has a land area inside the Sinharaja reserve.

Most of the people are engaged in primary economic activities with the majority of small tea holders (37% out of total economic activities) (In Sinhala: Perera, 2006). Paddy lands, Minor exporting plantations are other primary activities and (Field visit) Kudawa is one of the main entrance point to the Sinharaja forest. When consider the pattern of entering the forest by villagers there is a less proportion of entering in a daily basis. (18%) Most of the people (44%) never enter or rarely enter the forest (In Sinhala: Perera, 2006). In this socio economic background, there are several land uses occurring in the village.

Research Problem explanation

The above description has exposed the value of Sinharaja forest and the buffer zone characteristics. It revealed that buffer zone dynamics embed with land use changes and the nearest area changes of the main forest, which affect the existence of the forestland. In that situation a conservation process has been implemented to that particular forest

area to find out the status of the buffer zone. Especially better land use practices should be implemented to the majority of primary economic activities.

The Literature review has revealed that there were paroral analysis about land cover changes of Sinharaja, for example there was paroral analysis about land cover changes of the Sinharaja forest in both outbound (buffer zone) and inbound forest area referenced years of 1993-2005 (Madurapperuma & Kuruppuarachchi, 2014). It has been found that some land changes are bound both with the forest area and the buffer zone with land use practices. One study was done about land use management of the buffer zone in Sinharaja forest and find out solutions to the best land use practices (Wijesooriya & Gunatilleke, 2003). As a whole, the main research problem of this research is *what are the land cover changes occurred in Sinharaja buffer zone in Kudawa during the period of 1986-2016*. A paroral study has been used to get an overall explanation of Sinharaja forest area and that study concerned in 1993-2005. And another study which took place in 2002 summarized the socio-economic status of the area. Here, this research has focused on a micro level area of land to examine and with a time expansion of thirty years from 1986 -2016. The time and space changes implanted deeply express the socio economic status of the area with a better statistical approach.

Methodology of the study

The key objective of this study is to find out what are the land cover changes occurred in 1986-2016. To achieve the objective spatial analysis methods were applied. The data collection of the study has been accomplished with both primary and secondary data. The spatial analysis based with land use digital data of 1986-2016 from the Survey Department (SD), Land use and Policy Planning Department (LUPPD) of SL and Sinharaja reserve boundary digital data by UNESCO. Both 50k and 10k base maps also had been used. From the land uses special reference was given to **Home gardens (HG), Forest land (FL) with their categories (explain in the discussion) Scrublands (SCL) Chena (CH), Tea (T) and Rubber (R).** In addition includes a slope analysis was included to delineate land cover distribution on slope gradients. Then particular land covers were comparatively examined with extent calculations of each land cover and the spatial analysis tool for this study is Arc Map 10.

The specific objective of this study is to find out relevant factors, which affect the land cover changes. The researcher used the deductive approach and the researcher collected primary data to the statistical explanation through a questionnaire. The answers also were used for collect some verifications done at the spatial analysis.

Researcher used stratified random sampling method to select a sample from the target population. This method supported to collect data from the villagers. But researcher intentionally took 200 respondents from the random sample. In addition, the researcher used the Five point Liker scale to identify responses of the villagers'. Data was collected, organized and coded into the SPSS program factor analysis. Then, through

implementation of relevant methodology the study is going to extract the relevant factors, which are **Agricultural production Factors (APF), Economic Factors (EF), Human behaviour (HBF), Political & Government Influence (PGI), Social (SF) and Natural and climate factors (NC) ([22])**

For more clarification, secondary data were collected from the sources such as textbooks, journals, publications and World Wide Web.

Figure 1 The Study Site

Source: Developed by author based on digital data
From SD, LUPPD and UNESCO
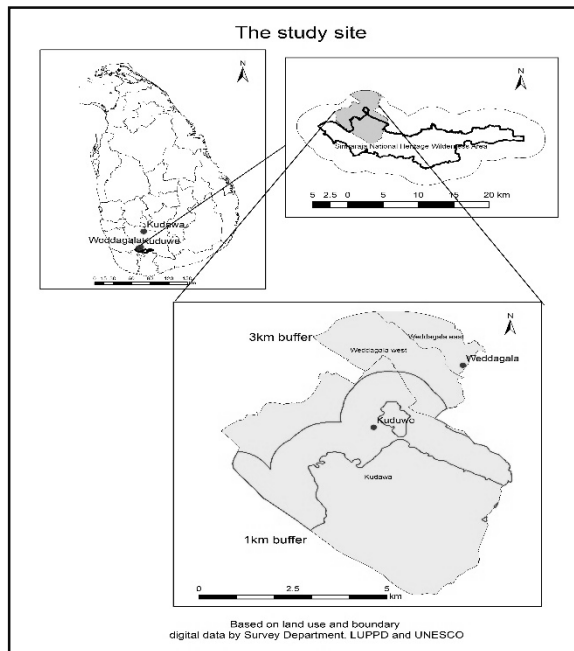
This study is based on Sinharaja forest reserve buffer zone and the study area "Kudawa" was selected from that particular buffer area and as the micro level study site (Figure1). There are about 27 villages inside the buffer zone (Forest Department, n.d.) In addition, Kudawa is located near the reserve and is one the tourist entrances to the reserve. The buffer zone boundary is considered as the study area boundary and it has been demarcated with 3km distance from the reserve boundary. There is an argument for the buffer zone width (1km or 3km) hence, both were concerned in the study (Figure1).

Results and discussion

The findings of this research include both spatial and ground level explorations. The overall area had land cover changes during the period of 1986-2016, which influence several factors.

There are contrasting changes and land cover also has temporarily changed (Map) with complex land covers found from 2016 map in contrast to the map of 1986 with some expansions and contractions. *(Figure 2)*

In paroral, the factors, which are mentioned above are shown in the table with several indicators *(Table1)*

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[22] Based on Imai, Furukawa, Tsujino, & Kitamura, 2018, Region, Farajollahi, Asgari, Ownagh, & Reza, 2017, Development, 1989, Study & Areas, 2015, Region et al., 2017, and Melese Worku, 2018. Moderated to suitable for this study.

Figure 2 Land covers of the study area 1986 - 2016
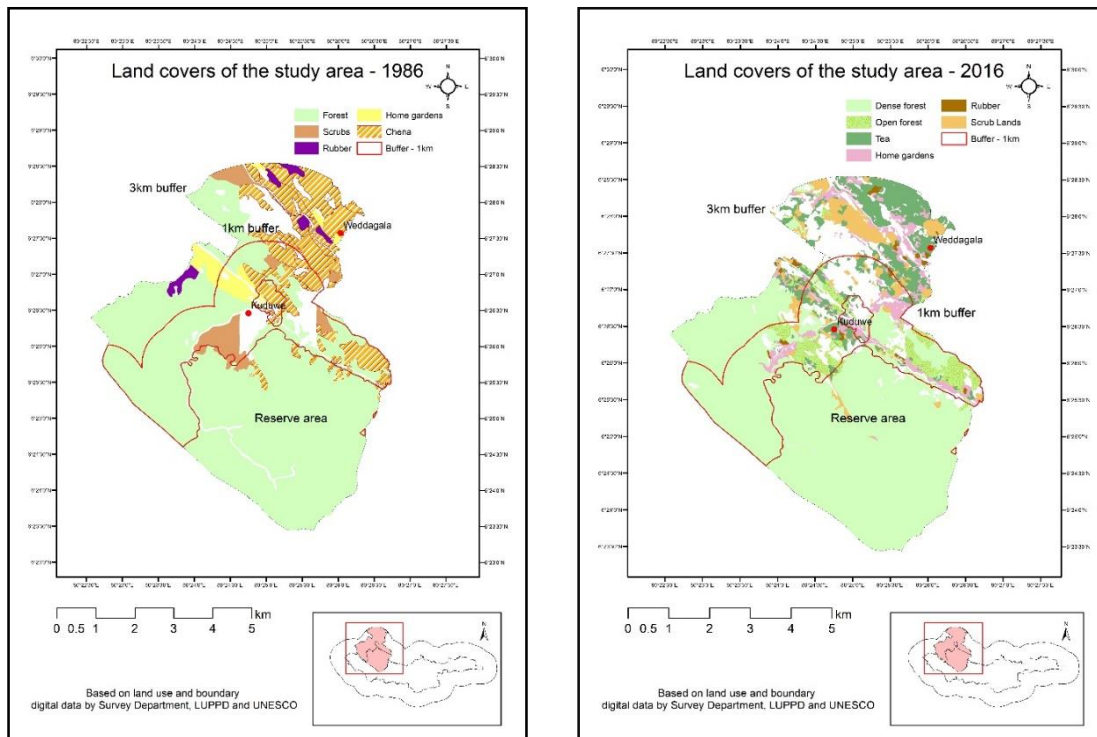
Source : Developed by author based on digital data From SD, LUPPD and UNESCO

The sample size of this study is 200 and The Cronbach's should be > = 0.7 and if less than then items, it should be > 0.5, this research questioner' all of items Cronbach's alpha α =.782.

A principal component analysis (PCA) was conducted on the 28 items with orthogonal rotation (varimax). The Kaiser–Meyer–Olkin measure verified the sampling adequacy for the analysis, KMO = 0. 642, and all KMO values for individual items were > .89, which is well above the acceptable limit of .5 .(FIELD, 2009) Looking at the table below, the KMO measure is 0. 642, which is close of 0.5 and therefore can be barely accepted. Bartlett's test of sphericity χ^2 (253) = 7583.087, p < .000, indicated that correlations between items were sufficiently large for PCA. That is, significance is less than 0.05. In fact, it is actually 0.000, i.e. the significance level is small enough to reject the null hypothesis. This means that correlation matrix is not an identity matrix. After factor analysis identified to new factors, there are Economic Factors (EF), Agricultural Production Factors (APF), Human Behavior (HBF), Political & Government Influence (PGI), Social Factors (SF), Natural & Climate Factors (CF). It is this research objective. There were two indicators rejected of the rotated component matric. They are the land use for the cereal yield, development and growth tourism industry, which were included APF and EF.

Table 1 After Factor Analysis and Reliability Test of Land cover changes occurred in Sinharaja buffer zone during the period of 1986-2016

Factors affected to Land cover changes occurred in Sinharaja buffer zone	Component					
	01	02	03	04	05	06
Industry development like tea factory.	.902					
Per capita area required for wood production	.889					
Per capita area required for stimulants production.	.889					
Development and growth tourism industry.	.873					
Unemployment in the areas	.866					
The high cost of living.	.768					
Forest buffers use for the infrastructure development.	.742					
Per capita area required for tea production		.927				
Per capita area required for Kitul Trees production.		.886				
Lack of the agricultural lands		.880				
Increase the number of farmers		.830				
Forest buffers use to the permanent agricultural land.		.760				
Insecticides use for the agricultural production.			.819			
Environmental pollution.			.801			
Timber cutting for the human needs.			.795			
Awareness raising and dissemination of laws and regulations.				.895		
Concerned agencies have not been fully effective.				.875		
Laws are not strictly enforced.				.831		
Irregular Government policies.				.806		
Population density.					.907	
Total annual population growth in this area.					.862	
Land acquisition by the people.					.821	
Villagers use wood for their needs.					.799	

Heavy Rainfall.					.774
Destroy the Soil.					-.750
Soil erosion.					-.688
Reliability	**.970**	.**884**	**.794**	**.770**	**.777**	**-.520**
Eigen value	**25.214**	**8.455**	**4.23**	**3.508**	**2.842**	**1.204**
% of variance	**52.529**	**17.614**	**8.814**	**7.309**	**5.917**	**4.187**
Cumulative % of variance	**52.529**	**70.144**	**78.957**	**86.266**	**92.183**	**96.37**

Source: Field Survey Data, 26.11.2017 SPSS output

As the *Table 2 shows* there are some important changes of several land covers, which are prominent with agriculture based land covers and it is a common source of income in such areas. (Imai, Furukawa, Tsujino, & Kitamura, 2018).

Table 2 Land cover changes between 1986-2016

Land cover	1986 (ha)	2016(ha)	Different(ha)	Different (%)
Tea	-	405.20	405.2	100
Rubber	54.51	27.10	-27.41	-101.14
Home Garden	114.09	220.34	106.25	48.22
Chena	647.22	-	647.22	0
Scrubs	163.91	206.66	42.75	20.68
Open forest	-	221.37	221.37	100
Forest	2875.6	-	2875.6	0
Dense forest	-	2600.47	2600.47	100

Source: Calculated by author based on Figure 2 spatial data.

Tea lands, which were not there in 1986, are visible only in 2016 and had become a prominent land cover spreading to every nook and corner of the land. According to the KID (2018) tea is the most popular land cover of the area having the best market value *(Table..)* and is a useful extra source of income and a solution for the high cost of living.at the same time it provides a main income to some people due to unemployment issues. *(Table 1)*. In this situation people try to increase per capita area required for tea production *(Table 1)* and sometimes try to encroach the state lands.

Table 3 Tea and Rubber price change

| Year	Tea (kg/LKR)	Rubber (kg/LKR)
1980	33.41	21.42
2006	198.87	204.70
2014	459.01	362.83
2015	401.46	342.03

Sources-
Central Bank (1980) Annual Report, Colombo, Central Bank
Central Bank (2016) Economic and Social Statistics of Sri Lanka, Colombo, Department of Statistics, Central Bank, Sri Lanka

In a contemporary study it was found that the 42% of the population of the area have encroached upon state lands (Chaminda, 2017). The reasons caused the Rubber land extent to drop and most rubber lands were converted to other beneficial land uses as tea. Moreover, Kithul and stimulants industries which are ongoing in the area make more agricultural and economic benefits. Among those things, the buffer area is considered as a layer of established economic land cover *(Table 2)* with a base of agriculture productions and economic factors. Due to the prominent tea lands, the tea industry had positive impacts, which benefited the wellbeing of the tea famers as they were able to do their cultivation more efficiently and thus gain a good price for their product *(Table 1)*.

Graph 1 Population of the study area (2001-2011
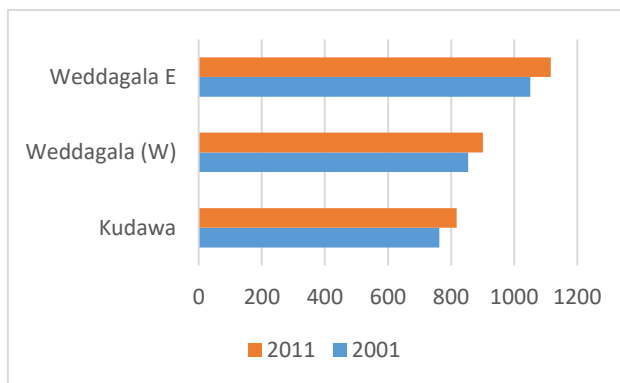
Source :
http://www.statistics.gov.lk/PopHouSat/CPH2011/Pages/
Activities/Reports/FinalReport_GN/population/P2.pdf
and KID with authorized officer of Kalwana DSD office.

Only the highlighted land covers were there on both years (1986-2016). Recent population changes (Graph 1) are denoted from the area and simultaneously increase of home gardens and home garden based agriculture patterns (i.e. Tea)23. The map shows the population. Some home gardens expansion are occurring near the reserve boundary.

Scrublands are one of the results of land use changes and some scrublands are situated in the primary forest reserve. Scrublands have replaced previous Chena land use. Most of the economic land covers have increased and clearance of natural forest was caused to meet the demand for new agriculture land (Imai et al., 2018) and people's needs. Ground survey has found some forest clearing done for wood and timber *(Table 1)*.

2. There is a secondary forest in the primary forestland with less tree density

The village is located near the existing reserve and virgin forestland. Nevertheless, there were "Chena" lands (Shifting agriculture) in the buffer zone and some were even located in the reserve area (Figure 3). According to the ground level verification Chena lands, were there even in 1970. KID revealed this Chena started as a result of agriculture revolution in the 70s. Even today, a small scale non plantation agriculture could be seen where the previous shifting agriculture lands changed to other natural land cover types as Open forest and Scrubs (Map). A secondary forestland grown through the primary forest deviates the formal structure of the primary forest. (I.e. layering and tree density)

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23 Some small tea land patches or tea nurseries established in home gardens (Field visit 20/11/2017)

Figure 3 Converted land covers - 2016
Source: Developed by author based on digital data from SD, LUPPD and UNESCO
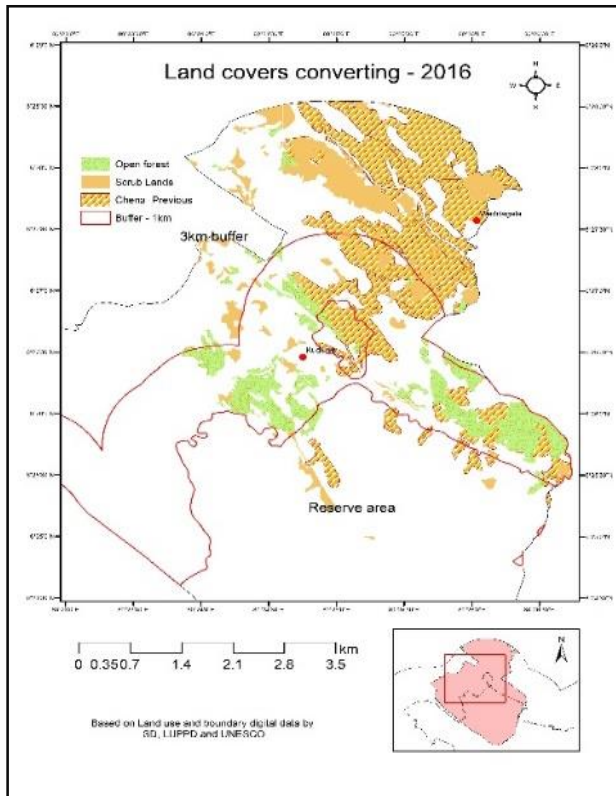
3. Slope management is needed
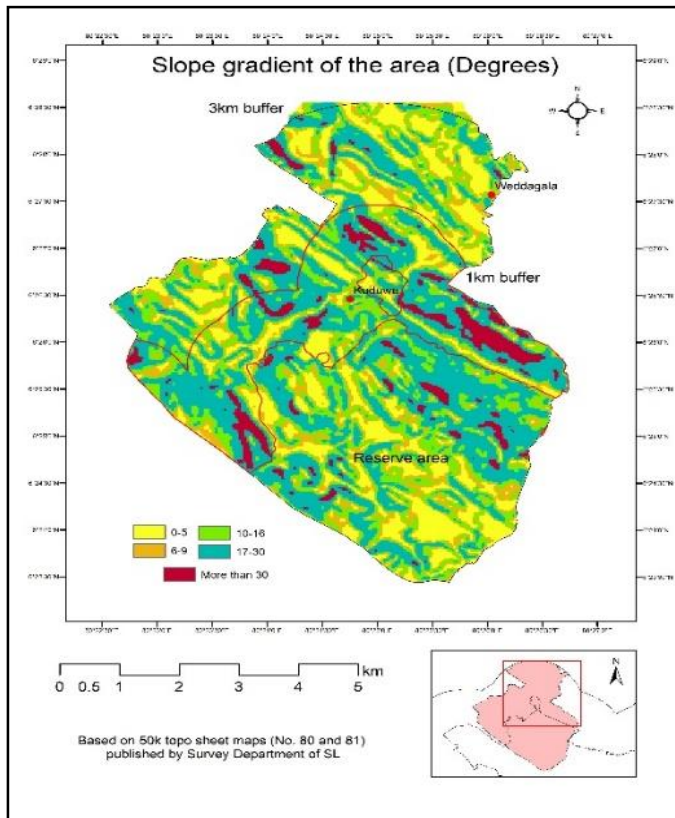
Figure 4 Slope gradient of the area (Degrees)Source: Developed by author based on digital data from SD, LUPPD and UNESCO

The area consists of plain land with low slope gradient. (Figure 4). For the sustainable land use, it is recommended to apply land protection methods as mechanical soil conservation methods i.e. Lock and Spill drains, Stone Bunds to 17-60% slope gradient (Approx.9^0-30^0) (LUPPD).

There are 235.30ha tea lands in 2016 (58.07% out of total tea lands in 2016) in this 17-60% slope gradient. Home gardens also play the same scenario as 107.31 ha and 48.70% out of total home gardens in 2016

is located in the same slope gradient. Nevertheless, there is a lack of applying suitable soil conservation methods. Most people concern only on economic benefits and are less

concerned about land protection applications. Most people thought the buffer zone is a

suitable place for living and to develop facilities without any concern towards the land structure. And a limited land area is not enough to the increased number of the farmers thus they tend to access the land from the reserve. (Table 1) Soil erosion occurring in some land covers has been found and it is increasing with the high rainfall in the area. This erosion could affect the land with less soil nutrition and finally with degraded soil.

Anyway, the steep slope tea growth of the area is relatively low as 5.2 ha (1.28% out of total tea lands in 2016) and it is the same as home gardens.

Figure 5 Steep slope forest cover -1986 and 2016
Source: Source: Developed by author based on digital data
From SD, LUPPD and UNESCO

In steep slope management process, a proper vegetation cover is needed and when examined it was found out how the extent of slopes have encompassed the forest cover (Figure 5). In 1986 it was 176.38 ha and 2016 it was 152.09. There was a slight difference of the steep slope forest cover in 1986. In 2016, 72.29 ha has been exposed without dense forest (may have another land cover) and it is 29.63% out of the total steep slope forest cover of the relevant year. (Steep slope extent – 250.67ha). Most of the steep slopes are located in a 1km buffer area and the dense forest clearing is located within the 1km buffer zone (Figure 5). There have Forest plants consist with *Pinus caribaea*[24] but it has a problem with the suitability to the country. (Field visit 20/11/2017)[25]

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[24] Wijesooriya, W. A. D. A., & Gunatilleke, C. V. S. (2003)
[25] Not have done deep examine in this research

The practical ways of authorized state bodies influence is confusing

There is a legitimate process to establish land conservation in the country (Ex: 1951 No 25 Soil Conservation act) and as a world heritage, special regulations were implemented to this site. People in the area are aware of the legitimate process but they believe in practical issues to their livelihood. As an example most of the people depend on primary economic activities and as it is highly related to the environment they need more instructions and practical activities from relevant institutional bodies to keep both fragile environment and day-to-day livelihood in par. They argue about law enforcement for major level economic activities of SR buffer zone as tourist lodge establishment. (Social survey, 05/04/2018) The less efficiency of authorized bodies is causing the land misuse as land encroachments. Getting the relevant legal documents is delayed in "land Kacheheries" and people try to bypass that way and it is rather easy for them encroach. (Social survey, 05/04/2018 and Chaminda, 2017)

Conclusion

The buffer zone area of Kudawa in the SR had significant land cover changes during 1986 -2016. Moreover, most of the economic land expansions with prominence given to Tea. Global and local market decide what people grow or reject in economic oriented vegetation. That factor influences the natural vegetation of the primary forest and degrade the essentials of the formal tropical forest and it will affect the biodiversity and sustainability of the particular forest. Economic factors implemented to those changes and land acquisition with either formal way or encroaching is the way of acquisition, which is proved through both spatial and ground survey. Some of the liberation ecologies and ideas plugged to the natural ecology system and the land cover changing has occurred the people thoughts of "a private ecological property" of the relevant people. Thus, more effective governing and monitoring systems are needed to keep attention to use recommended land use methods. (More strong administrative monitoring is needed) with updated and practical legitimate process. In this considered period, a few extreme steep slopes agriculture existed. However, when examining the spatial and socio economic background, they may be affected to the fragile areas as steep slopes with natural vegetation (Natural forest) in the future. Especially most steep slopes are located within 1km buffer area and near to the reserve.

It is considered that the strict social decisions and policies about environment taken by the government puts pressure on the villagers who depend on primary economic activities. Coercion of the government internalize individuals and social groups. People violate the existing legal system due to those factors if it did not match their day-to-day life role (Robbins, 2011).

As a whole, the buffer zone management process of the SR is multi-dimensional and has to be designed carefully and in a well-planned manner concerning the complex and deep rooted socio-economic culture as well as the environment.

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Field visit to the study area on 20/11/2017

Traditional Grains Storage Practices of Chettiar Community in Tamil Nadu with Special Reference to Sivaganga District

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Abstract

The study was conducted at the village and the town of Sivagangai, Karikudi and Devakottai and of Tamil Nadu with an aim to document the storage practices adopted by Chettiar community. The study has been done by author through direct communication and gone through the materials which is used for storage purpose. In this paper the information gathered by caste of Chettiar community in Sivaganga district. The main purpose was to understand the storage practices through the generation of community and advantage of storage and to know how the storage practices balance their environment and stay long years.

Keywords: Traditional, Karikudi, Chettiar community

Introduction

The traditional knowledge of grains storage practices was evolved through generation to generation by oral and practical knowledge. The traditional storage practices still continue because of their social culture and environment. Certain practices are unique to a given culture of society and vary between countries, region, village and even community (Karthikeyan C, 2009). Basically the Chettiar community is high in social-economic statues. They are also known as trades, they do export and import business of grains, vegetables, gold, etc. most of storage materials are in metals and wooden. This community used to store in their home for safe. Chettiar community buys grains from farmers in a large-scale and they store. Proper storage of food grains is necessary to prevent spoilage, increasing keeping quality and for monetary reasons. The practices of using natural source for storage of various household items go back to the early period of known history (Karthikeyan C, 2009). The storage knowledge refers to the unique tradition, local knowledge existing within and developed around a particular geographic area (Karthikeyan C, 2006). The main purpose for storage practices to against the attack of insect, safe and steady supply of high quality of food. Certain practices are unique to a given culture of a particular society. The main purpose for storage practices to against the attack of insect, safe and steady supply of high quality of food. (Karthikeyan C, 2009, Shobha Nagnur, 2006). At present, the residue analysis gives information of products stored in a storage container. Hence the present study was undertaken to document the storage practices adopted by the Chettiar community in Tamil Nadu.

Introduction of Chettiyar community

There is information about trade and commerce during early period in Tamil Nadu. There is evidence in literary and archaeological, which has thrown a light on trade in early period of Tamil Nadu. The literary source of trading community in early Tamil Nadu is found in ancient text *Pattinapalai* (Jayasurya.R, 2008)

Archaeological evidence gives information about the trade practices in Tamil Nadu in excavation in Korkai, Arikkmedu. There is information about the forging trade between Tamil country and Rome. Numismatic evidence from Arikkmedu gives information of Tamil Nadu plays an important role in trade and commerce. In the early period of Tamil Nadu trader communities were the most organized on powerful guilds and corporative. Trader community was called as Chetti or Chettiar. In ancient Tamil literary *Silapaddilarm* they were called as *Aratter* or *Cheet* (Jayasurya.R, 2008)

Basically the Chettiar community traded with grains, Jewelers with Rome and local people. They still continue the trading practices which were their family business. In Tamil Nadu they knew trading from beginning. The caste name *"chetti"* particularly applied to the trader or merchant class is sought to be derived from Sanskrit word, *sreshti* or vice versa, the term *chetti* occurs as far as first time in *Manimekalai*. It might have emerged from Tamil word Chetti meaning trade, as is shown from the fact that the Chettiar community is described in registered document even today as belonging to the Chetti community (Jayasurya.R, 2008). Chettiar had thrown a light of their trade in Burma and also international finance.

Study Area

The study was conducted in Chettiar community of Tamil Nadu. A survey was done in Karakudi and Devakottai in Sivaganga district of Tamil Nadu. In Sivaganga district the population of Chettiar community high in Tamil Nadu this community based on trade and they does trade of exports and import of grains from ancient times. In Sivaganga the chattier communities is high in economic statues. They construct the storage container in their houses (Fig. 1).

Methodology

The present study was undertaken to know the ancient storage practices of chattier community. The study has documented the materials has used for storage system. The study has gone through direct interviews of more than ten houses of each village of Chettiar community. The photography was done of materials of storage practices and library work was also done.

Aims and objects

The main aim of the study was to understand tradition knowledge of storage practices through over generation to generation of Chettiar community, to enclose the materials of storage structure made from what is locally available and to understand the container made out of materials and to understand the shapes and size of grains storage container and to know the container of storage are made depends upon climate and the rainfall. The study aims to understand the scientific approach of storage practices and to know the mixture of natural source of grains to safe the grains from insect and climate condition and to know the storage container are available locally and transport. The present study encloses the major aspects of traditional storage grains practices of Chettiar community.

Grains storage structure

The main purpose of making storage structures is to save the grains from insects and climate condition. The storage structures are always built according to the climate condition and the materials which are used for storage structures are mostly made out of what is locally available. The storage structures always build near or inside their houses and there will be scientific reasons behind the structure. The Chettiar community is well-known for making storage structures. The storage structure is easy and friendly.

Kanajal/Paddy storage

Basically *Kanajal* type of storage made out of bamboo and shape of *kanajal* is cylindrical. The height always varies according to quantity of storage paddy. The *Kanajal* is plastered with red mud and cow dung mixture to prevent spillage and pilferage of grains (Shobha Nagnur, 2006). The top of the *Kanajal* is plastered with red mud and cow dung. The main purpose is to store the paddy which should not be affected from insects and to keep paddy for a long time for trade or house purpose. In top of *Kanajal* there will be an opening to take out the paddy whenever their required.

Kothi

It is a room constructed with large door for pouring grains. *Kothi* is mainly made for rice and paddy. This is made up of brick and it's plastered with cow dung. A small outlet is kept for taking out the grains, when they are required. This kind of storage can be seen in all Chettiar houses. This is built from large quantities of grains which are grown and used for trade purposes. This *Kothi* is always structured near kitchen.

Anjarapettai

These are made up of wooden or brass, this storage container are unique all Chettiar houses. It is basically made for house purposes which can store small quantity of grains for weekly cooking purpose. Its round shape looks like a recent tiffin box and inside the

box there will be five small bowls in which the grains can be stored. Each bowl contains around 100 grams of grains. In Tamil language "Anjaru" means five, so it is called Anjarapettai. The main purpose is to store grains in Anjarapettai. It is friendly for cooking women and it is easier to remember. Anjarapettai is made artistically.

Kudam

Basically kudam means water storage, but it is also used for grains and it is made up of copper or brass, the weight of copper Kudam more than five kg. Kudam is in a bigger size so it can store a large quantity of grains. Kudam storage can be seen in all Chettiar houses. Kudam is used for storing rice for household purposes. (Fig. 2).

Hagevu

This is an underground structure which is used for storage purposes. It is a simple, dug out pit lined with straw ropes to prevent damage due to moisture. Basically Hagevu is constructed using bricks but sometimes it is also built with stone as an indoor structure. (Shobha Nagnur, 2006). After filling the grains to its capacity on top of Hagevu, it is sealed with red mud plaster and the top there will be a small opening structure like square or circular to take out grains whenever required. The advance of this kind of structure that grains can be stored without damage from insects and moulds for a longer period and it saves space for storage. (Shobha Nagnur, 2006). At same time not suitable for seeds. This kind of storage structure is suitable for dry agro climatic.

Utrani

These are pots used for storing small quantity of grains (Shobha Nagnur, 2006). Utrani are made up of mud pot which available in locally. There are different shapes and size, they are basically round in shapes and size differ according to grains storage. Sometimes utrani used arrange from size basically big size of utrani used to keep in platform from that it start began small. The thickness of the pot is very strong and a single person cannot lift it. This is basically used to protect grains from insect and rats. Utrani has always been kept in the corner of a wall (Fig: 3).

Traditional storage practices

Storage practices began at domestic level and many people at domestic level use natural sources for storage purpose. (Shobha Nagnur, 2006). The storage practices evolved with an error and fallers. Storage practices began with farmers and it continuous with the traders. The main reason is to continue storage practices is that it is an ecofriendly method.

Pulse storage

There are a few methods to prevent Pulses from insects and climate condition, the first method is the storage of pluses with Naithulasi (*ocimum sp*.) and chili (*capsicum annuum Linn.*) After harvesting, a pulse has to be dried in the sun for two days and then it has to be packed new jute gunny bag with Naithulasi and chili. (Karthikeyan C, 2006). The strong odour of Naithulasi and strong smell of chili, the pulses are safe from insects. Nearly, 65% Chettiar in sivaganga, karikudi and devakottai had adopted this method. This method is cheap and effective to prevent and self-life of the stored pulse grains increased up to two years. (Karthikeyan C, 2006).

The next method is that pulses are stored in an earthen mud pot for the safe storage of grains and seeds were filled in earthen pot to its 3/4th volume and then remaining 1/4th top was covered with ash (wood, cow dung ash) and by this way, a wide range of storage pests like pulse battles and fig moth were kept under control for a period of 6-8 month. After 6 months, it has to be exposed to sun and then the ash was spread above the grains surface and kept for storage (Karthikeyan C, 2009). A recent method of storage pulses practices is that Neem leaves mix with the pulses in gunny bags while storage. Nearly 40% traders of Chettiar in sivaganga, karikudi and devakottai had adopted this method. There is another method such as storage of pulses with sand, mixing of pulses with coconut oil before storage, frying of pulses grains. Basically these methods done with locally available materials and there are cheaper and more effective to prevent the grains from insect and climatic condition.

Paddy storage

The farmers and traders face a lot of problems to save grains against rodents, pest's disease and insects. In the case of paddy and rice, they face several problems. Basically traders stored the paddy grains in earth pots and placed paddy husk in top layer (5cm) above it (Karthikeyan C, 2009).

First they made mud pots of different size, shape and capacity with red clay mixture of river sand, the clay always taken from the river bed which is fine quality. Before the storage of grains in mud pot, the grains have dried in sun light for two days. Before the storage of grains the pot has been cleaned properly and there should be liquid such as oil and water. The mud pot placed a circular ring like structure locally called *"Pirimanai"* made of paddy Straw on the floor (Karthikeyan C, 2009). Above that ring they placed the pot filled with grains. The pot was arranged one above the other and the top most pot was closed with a lid. Basically the mud pot kept a corner place which gives support to pot. The seed or grains materials stored in the mud pot were kept safe away from wide range of storage pets for nearly 6months, after six the grains have taken from mud pot it has to be dried in sun. (Karthikeyan C, 2009).

Cereals Storage

This method was being practiced for more than 40-50 years in Chettiar community and also local famers. The storing grains with sweet flag (*Acorus Calamus*) (Karthikeyan C, 2009). In this method, sweet flag has to be in power and mixed with the grains and cereals, and oil seeds. In this method 1kg of grains, about 10grms of sweet flag powered has to mix. The grains could be stored effectively for 6-7 month without any pest attack. (Karthikeyan C, 2009). Another method was adopted by traders, the cereal has to be mix with the neem leaves and cow dung ash, stored in gunny bags.

Rice Storage

From the Ancient times the rice played a major role among grains storage. But will be affected very soon due to rain and insects. Traders always store rice in *kothi* because the quantity is high. At the same time, for house purposes, the rice was stored in *Utrani.* Basically after harvesting the rice, it has to be died for two days in sun light. After that rice has to be mixed with neem leaves or salt which will not affect the rice. Another method is the turmeric and garlic has to be mixed with the rice grains.

Basically neem leaves give a more effective smell to attack insect and accordingly scientific turmeric is anti-biotic medicine.

Dhal

In the case of Dhal, it has to dry in sun light for two days and then it has to be roasted, cooled and stored in air tight boxes. Dhal are put in cotton bags and kept in large storage structure like bamboo structure, where large quantities of grains are stored (Shobha Nagnur, 2006).

Observation

As per author, the study of the traditional knowledge was known to Chettiar community from generation to generation. The traditional knowledge used by Chettiar community to make the grains living in a particular environment and in a valuable resource for scientific development to introduce the storage system to increase a storage loss, as these varieties are usually susceptible to insect damage. Most of the grains storage used for house hold and trade purpose. Ancestors adopted the different storage of grains in different container according to their suitable form. Mix the natural source with the grains for prevents the grains.

Basically they used locally available materials to storage such red mud, grass, cow dung to plaster. They used materials which use a scientific approach and it gives evidence for archaeological record, which help to know the past practices of storage knowledge. Chettiar community uses grains container in copper, brass and pots in different shapes

and size according to the quantity of grains, through this concussed, can identify that Chettiar community play an important economic role.

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Traditional Techniques of Gold Jewellery: A Case Study of Devakottai, Tamil Nadu

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Abstract

Amongst the several metallurgical accomplishments of India, the traditional gold jewellery making techniques and jewellery designs of Tamil Nadu rank as marvelous examples of art and metallurgical excellence. Gold jewellery has been an important and continuing legacy of ancient India. There is rich archaeological and historical evidence for gold jewellery going back to the Harappan period. Devakottai town is located in the Sivagange district of Tamil Nadu (9°56´38.20″N and 78°49´18.84″E). This paper undertakes preliminary documentation of the techniques of gold jewellery making in Devakottai and the socio-cultural aspects of local communities. An attempt is also made observe whether some new designs are being incorporated currently which are not native to the region; perhaps due to the concept of the 'global village' and also probably due to inter-community marriage.

Keywords: *Traditional gold jewellery, Manga-malai, Casting, Harappan civilization*

Introduction

There are numerous literary reference to the use of gold in Indian antiquity going back to the Rig Veda and Samhita Veda. In all the sacrificial rites golden vessels were said to have been used. The Arthasatra refers to gold having "the colour of lotus, soft, lustrous and not producing any type of sound" (Krishna 1992). Several gold objects are found at sites of the Harappan civilization such as Mohenjo-Daro. Some analyses reported an admixture of gold with silver which might suggest that this gold originated in Kolar in Karanataka (Srinivasan. 2010, 2016), Silppadikaram, the Tamil Classic by the prince IlangoAdigal, dated to the early Christian era is an epic that follows the twists of fate due the theft of golden anklets belonging to the heroine, Kannagi (Srinivasan 2012).

The traditional jewellery of South India can be divided into two main categories: the so-called sacred "temple jewellery" and secular jewellery used by the rural and urban laity. Temple jewellery can be defined as any jewellery used as an ornament on the image of a

deity installed in a Hindu temple, or as ornament by person who officially participated in the temple rituals. Especially in Tamil Nadu, there is a rich tradition of temple jewellery being use to embellish the icons in the shrine and those taken out in procession. Due to various reasons which may include re-cycling of metal, not many examples of early sacred ornaments survive not for that matter of a significant number of secular ornaments.

In various societies, ornaments also had symbolic value pertaining to the rank status of the wearer, and could also have certain associations of magical power. Thus, the purpose of ornamentation was not only to satisfy an instinctive desire to decorate the body but, it was also invested with symbolic significance. This aspect is clearly expressed in the form of amulets which are often carried by several people in India inscribed with prayers to protect the wearer from evil influences.

Choice of Devakottai as Study Area

Devakottai town is located in the Sivagange district of Tamil Nadu (9°56´38.20″N and 78°49´18.84″E). It is one of the major cities which come under the Chettinadu region, also known for its rich culture with various metal technologies. Tamil Sangam potery (*c* 3rd century BCE to 3rd century CE) alludes to the rich jewellery tradition of the Tamil region (Fig. 1).

This paper explores the techniques of gold jewellery making in the study area and also discusses the manufacturing processes used in the making of the head dress, forehead jewellery, nose ring and manga-malai, a distinctive jewellery of this area.

It may be noted that traditional practices of gold jewellery making are rapidly declining in the area due to machine cutting and mechanized industries making it all the more important to document the surviving practices. During the course of field work, we had interviewed and surveyed the gold smith workshop of Mr. Pandi Acharya, Mr. Chandran Acharya and Mr. Balu Acharya. This field work has given a better understanding of the systemic method and materials which they have used for making the jewellery.

Overview of traditional jewellery

Every region in India has a distinct style of jewellery with differences occurring even as one goes from one village to another. Despite the variety in jewellery patterns across different parts of the country, there are nevertheless also striking similarities at times in designs.

Head and forehead ornaments

In many parts of India, *tikka*, a rounded pendent at the end of a long chain which falls on the forehead is worn along the parting of the hair. The *Shringarpatti* which frames the

face and often connects with the *tikkaon* the top along with earrings widely. The ornament worn all over India has variations ranging from the simple *lavanf*, clove, to *phuli*, the elaborately worked stud, or *nath*, the nose-ring worn in the right nostril, and the *bulli*, the nose ring worn in the centre just over the lips. In early times men wore the *Kalgi*, a plumed jewel, on top of the turban.

In Tamil Nadu, a more popular variation is the *tala saamana*, a jewellery piece which frames the face with pendant at the parting of the hair, the *maatal*, and also lining the parting of the hair. This style of head and forehead jewellery is retained by performers of classical South Indian Bharata Natyam dance drawing from the Sadir dance tradition of Tamil Nadu (Fig. 2).

Manga-malai (Mango necklace for women)

A variety of neck ornaments are popularly worn by Indian women. Often, the traditional neck ornaments were made of silver and very heavy in weight. Nowadays these ornaments are more lightweight in gold while modern designs have replaced traditional shapes. The manga-malai is made up of either beads or mango-shaped pieces of gold and is a popular ornament in the Devakottai area. The manga malai necklace is most often worn by women from chettiar (business) and viswakarma (craftspeople) communities (Fig. 3).

Ear ornaments

Ear ornaments form an important constituent of the female attire. An extraordinary range and variety of forms and designs of ear ornaments are found to be worn by the women in the Devakottai area. There are also differences between ornaments worn by elderly women and young girls in this area (Fig. 4). To married women, the ear ornament is auspicious, whereas bare earlobes signaled widowhood (Hari Chauhan 2005).

Ornaments for finger (Ring)

Like the ornaments elsewhere on the body, the finger ornaments are also an equally important part of the attire of women. Women in the Devakottai area are very fond of the finger ornaments and many women sport multiple rings. Apart from more complex shapes, the simple ring is not ignored amidst the vast array of large ornament forms. It is a common ornament worn by both men and women. The rings worn by men are heavier and large than that worn by women. It is either made of simple designs or provided with ornamental designs. Sometimes, the rings are fitted with precious stones and jewels (Fig. 5).

Traditional Techniques of Gold Jewellery

Jewellery manufacturing is a creative field. After conceiving of the design in the imagination, then a blue print of that design is drawn on a paper. Moreover, it is a skilled and delicate activity involving assembly and joining of various small parts such as gold leaves, small balls, wires and such like etc. The process of manufacturing jewellery passes through various interlinked sub-processes starting from the melting of gold and ending with the polishing of Jewellery. In the present day jewellery industry, two main processes of manufacturing are popular, i.e. traditional method, which is largely handmade and the modern method of manufacturing, whereby the considerable use of machines is made.

In Devakottai the manufacturing of jewellery could be categorized under these major manufacturing terms:
1. Handmade
2. Cast
3. Die Struck
4. Gold Filled and Rolled Gold Plate
5. Gold Electroplate

1.Handmade: In this process the jewellery is made by hand, without the aid of mechanical device other than ordinary hand tools. The major components, includes joints, settings, etc., are handmade from plate, bar or wire.

2.Cast: This is a method by which metals are poured or forced into molds which have cavities in the shape or form of the articles to be produced. Of the various casting processes, lost-wax casting is the one most commonly used.

3.Die struck: This is method by which metals are mechanically hammered onto hardened steel dies to produce definite impressions. This process is used for the production of signet rings.

4.Gold filled & Rolled-Gold Plate: In this technique, continuous plates of metal are covered mechanically by means such as soldering, brazing or welding. The purity of gold used is at least 10 carat fine, and this gold covering can be applied to one or more surface of the base metal.

5.Gold electroplate: Electroplate is the process of affixing a plate or layer of fine gold on a base of metal by an electrolytic process using electricity and chemical means.

Jewellery Manufacturing Processes

Jewellery manufacturing processes include most advanced technologies and dedicated research. Jewellery making is a very composite process undergoing a long and slow procedure making it complicated from the initial point to the finishing point. Jewellery manufacturing process may be exhibited with the help the following chart.

CHART SHOWING THE JEWELLERY MANUFACTURING PROCESS ⇨ **DESIGN MAKING** ⇨ **MOLDING** ⇨ **CASTING** ⇨ **POLISHING**

Following is a brief description of all the processes involved in the manufacturing chain. *Design Making*: In order to produce a unique piece, the very initial step is to create a design. This is a point from where the imagination plays a role. Each piece of jewellery starts off with a concept. A concept is basically a rough design in the mind of the designer.

Molding: Once the master pieces of jewellery are complete, they are used to make a high technology mold, which in turn is used to make wax reproductions of the jewellery.

Casting: Casting is very complex process and requires utmost skill and experienced casters for the desired final product.

Polishing: Every part must be polished while the mount is being made. The entire mount is carefully made clean and polished to the highest degree of smoothness so that each and every part looks attractive (Fig. 6).

Tools for Making Gold Jewellery

A tool is any instrument or simple piece of equipment that is held in the hand and used to do a particular kind of work. Tools played as very important role from the prehistory to the present day. Without the tools noting is possible for every activity, creativity and art etc., It was found that in the Devakottai area there were more than 300 tools available for use traditionally (Personal Communication with Mr. Pandi (Gold smith). Here author has given major tools in gold jewellery making.

Hammer: Hammers are the most basic of the metal smith's tools. Most hammers have two faces that are differently sized or shaped; whereas mallets have identical faces. Most hammers have straight shafts; the exception of which is the chasing hammer. Most hammers can be used for several functions; while others are more specialized. The fundamental differences are that there are hammers for striking metal and separate hammers for striking tools for refining their shapes (Fig. 7).

Anvils: The bench block anvils are common in jewellery making, most often a 3-4" square, circular and rectangle by 1" thick block of stainless steel for striking, hammering and forming. Mandrels are specialized jewellery anvils. They are usually tapered, but may have flat surface that are stepped down along the length of the taper. They may have different cross-sectional shapes, depending on the use (round, oval, square, hexagonal, etc). They are usually made of steel or cast iron and also; may be made of wood to prevent damage to metal surface. The sizes and shapes are specialized for rings, bracelets neckpieces, or bezels (Fig. 8).

Dapping Block: Dapping block is a polished steel cube with up to five depressions of various sizes per size, used to form domes or half rounds. It is also available as a plate with depressions all on one side. It is used with dapping punches. It may be made of hardwood or bull horn, with only one depression per side (Fig. 9).

Dapping Punches: These are cylindrical tools with one nearly round edge matching the depressions in a dapping block. A metal disk is placed over the depression in the block with, an appropriately sized punch placed over the disk, and then the punch is struck with a hammer to form a dome (Fig. 10).

Drawplate: This is a steel plate with graduate, tapering holes, used to reduce the diameter of precious metal wire by drawing through the plate from the larger side to the smaller one. Holes in the drawplate may contain tungsten carbide inserts for less friction and wear. It allows you to keep fewer gauges of wore stock on hand, or to use up short pieces of heavy gauge wire (Fig. 11).

Some observations

This is a preliminary study to understand the technology of ancient gold jewellery making techniques in the area of Devakottai study area. The definition of crafts specialization given by (Ottaway 2001) seems most appropriate to understand this present research: as 'the consistent production of things by some people for other (Ottaway 2001). There are several components in this definition. First, production involves acquired skill. Secondly, the aspects of production, apart from having their own role or function, may also carry their own message for instance, as part of the operational chain. Thirdly, the commodities exchanged by others to obtain the produce may be of social or economic value (Ottaway 2001). The production of jewellery is a very tough and lengthy process and demands expertise and skill. As in gold and diamond jewellery, manufacturing at high cost is involved, so that no experimental risk can be taken at any level.

This paper has focused on tools and techniques of the goldsmith. Firstly, tools play very important role in all craft production. Concerning gold smithy techniques, most of the tools are made up of wood. Such wooden tools would not be expected to be found in an archaeological assemblage related to gold smith techniques. It is interesting that here were more than 300 tools found in the Devakottai in the workshop of Mr. Pandi (gold smith) related to traditional gold smithy. However, and at present only a few tools are being using to make gold jewellery, the reason behind for this is that machinery has become common in gold smithy.

During fieldwork it was observed that the traditional gold smithing techniques were going into decline, with the main reason being the machine cutting of gold jewellery, the entry of corporate and companies. The present generations of gold smith are shifting into other professions due to less salary and lack of work. It is indeed, saddening that at

present day the gold smiths say that are doing only repair work, which is final statement indicated that gold smith has declined. Ways have to be found to help this traditional craft to revive. In future research attempts would be further made to fully document the tool types and to understand their traditional functions.

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Human-Elephant Relationship in Ancient Sri Lanka from Anuradhapura Period to Kandy Period

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Abstract

The relationship between man and elephant in Sri Lanka has a unique history. The Asian elephant has been closely associated with man in ancient Sri Lanka and the elephant has played a central role in the country's economy, conflicts, religion and culture for many millennia. Characterization of elephants such as the division into castes and the management of captive elephants has been the subject of many ancient treatises. In Sri Lankan culture, the elephant has been considered an auspicious animal and signified good fortune. There are a number of archaeological evidence and references in early writings to the use of elephants by Sri Lankans. Elephant motifs have been widely used in Sri Lankan art and architecture since ancient times. They are a prominent feature of stone and wooden carvings, many fine examples of which can be found in the ancient cities of Sri Lanka such as Anuradhapura, Polonnaruwa and Kandy as well as contemporary places of worship.

Keywords: Asian Elephant, Human-elephant relationship, Ancient Sri Lanka

Introduction

The elephant is the largest living land animal in the world. There are two broad species of elephants named Asian elephant (*Elephas maximus*) and African elephant (*Loxodonta africana*). The Sri Lankan elephant (*Elephas maximus maximus*) is the largest of the four sub species of Asian elephants. Historical accounts show that an extensive wild population inhabited in Sri Lanka for many centuries and there is a well established culture of domestication (Sukumar, 1989). The origins of the elephant can be traced back to Africa, to the Eocene period, some 55 million years ago. Furthermore, the present day elephant's closest living relatives are the small, rabbit-like hyraxes or conies (Order Sirenia), the only marine mammals that are completely herbivorous. Elephants, Hyraxes and Sirenians despite their superficial dissimilarity to one another in fact share some anatomical features indicating that they are related and originating from a common ancestor (Jayewardene, 1994).

The objective of this paper is identifying the human-elephant relationship in Ancient Sri Lanka from Anuradhapura period to Kandy period based on literary and archaeological sources. This paper, first briefly outlines the history, evolution, nature and their distribution of the Asian elephant while providing some details on the status of *Elephas maximus* in Sri Lanka. Next, it reviews the human-elephant relationship in ancient Sri Lanka under three subtitles given below.

    (I)   Use of Elephants for Royal Purposes in Ancient Sri Lanka

(II)   Use of Elephants for Economic Purposes in Ancient Sri Lanka

(III)   Use of Elephants for Religious and Auspicious Purposes in Ancient Sri Lanka

The Asian Elephant

The Asian elephant is divided into three subspecies. The Sri Lankan subspecies (*Elephas maximus maximus*) has the darkest skin, the Asian mainland subspecies (*Elephas maximus indicus*) has medium darkness of skin and the Sumatran subspecies (*Elephas maximus sumatranus*) has the lightest skin color and least depigmentation (patches on the skin). The Asian elephant is slightly smaller in size than the African elephant. It can grow to 2 – 3.5 metres in length. It is tallest at the arch of the back. It weighs between 3000 – 5000 kilograms. Only the males have tusks and these are smaller than those of the African elephant and are not present in all males. The ears are small and do not cover the shoulders. The forehead has two humps and the trunk has a single lobe at its tip. The front feet have five toes while the back feet have four (WWF, 2002).

The Asian elephant lives in a variety of habitats, mainly forests but also grasslands, marshes, lakeshores and transitional zones between forests and open habitats. Most of an adult's activities involve searching for and eating food. They eat in the morning, evening and at night but rest during the hottest part of the day. The Asian elephants can reach speeds of 40 kilometers per hour while running and 6.4 kilometers per hour while walking. On average, this species of wildlife consumes about 300 kilograms of vegetation and drinks about 200 liters of water a day but only about 44 percent of what is consumed is actually digested. Moreover, they rarely forage in one area for more than a few days in a row and inhabit home ranges of more than 200 square kilometers. They are an oddity among mammals because they grow until they die which is usually around the age of sixty. Furthermore, they live in herds based on breeding groups of 3 to 40 females and young (US Fish and Wildlife Service, 2002).

Geographical Distribution of Asian Elephant

According to the geographical distribution, Asian elephants inhabit in Asian countries in the world. The largest population of Asian elephants totaling between 25000 – 27000 are found in India (Sukumar, 1998). Myanmar comes next with an estimated population of between 4300 – 4800 wild elephants followed by Sri Lanka with between 3500 – 4500 elephants (De Silva, 1998). Sumatra (Indonesia) too has sizeable numbers estimated at over 3800 but these are widely scattered in fragmented habitats and are also being captured in large numbers (Kemf and Santiapilla, 2000). The island of Borneo is believed to have around 1000 elephants in the states of Sabah (Malaysia) and Kalimantan (Indonesia), but much of the range, especially in Sabah, is being designated for other forms of land-use. The estimated population of about 1000 elephants in Peninsular, Malaysia is stable, but the situation is not the same in Thailand, where the populations is believed to be on the decline (Srikrachang and Jaisomkom, 1998). Laos and Cambodia are believed to have under 1000 and 500 elephants, respectively, while

neighboring Vietnam may hold less than 150 elephants (AERCC, 2003). Similarly, the minor range states have few elephants, about 250 in the Yunnan province of China, similar numbers in Bangladesh and Bhutan, and fewer than 100 elephants in Nepal (Sukumar, 1998).

During the last half of the 20th century, the wild Asian elephant population declined significantly (Kemf and Santiapillai, 2000). At present, only some 35000 to 50000 elephants remain in the wild and are distributed in thirteen Asian countries (WWF 2002). As a result, since 1973, this species of wildlife has been listed as endangered in Appendix one of the convention on International Trade in Endangered Species of Wild Fauna and Flora / CITES (IUCN, 2000). At present, about 16000 elephants are found in captivity, mostly in Myanmar, Thailand and India are mostly used in the timber industry (Kemf and Santiapillai, 2000). However, domesticated elephants are also used as tourist attraction in India, Thailand and Sri Lanka. Despite this long-standing association with human race, the Asian elephant is now facing extinction in the wild. It is thought that more than 100000 elephants may have existed at the start of the 20th century.

The elephant population in Sri Lanka has been decreasing since the early 1800s despite some conflicting earlier evidence (Norris, 1959; McKay, 1973; Schultz, 1984). Desai establishes three phases of the decrease in the elephant population of Sri Lanka by reviewing the literature on the economic history of Sri Lanka under the British (Desai, 1998). The first phase was the domestication of the elephant for export in the early to third quarter of the 1800s. The second phase of the decrease in Sri Lanka's elephant population occurred with the expansion of the plantation industry in Sri Lanka between the 1870s and 1940s. The third phase covers the current post-independence period. During this period, the largely undeveloped dry zone area in the east of Sri Lanka was targeted for development. Jayewardene has given a concise and clear picture of the development of the dry zone area (including the North West region), its impact on elephants and the actions adopted for controlling elephants (Jayewardene, 1994).

Around the 13th century AD, the ancient civilization collapsed and the dry zone was largely abandoned. Prior to this human presence, the wet zone was sparse and it would have been converted to mature forest. Around 15th century AD, the civilization in the dry zone of the country declined and the center of civilization shifted to the wet zone. Elephants would have inhabited the entire area but at low densities. Shortly thereafter, the country came under colonial rule and during this period the wet zone became densely populated and settled. Large scale land use changes through growing of cash crops and the systematic killing of elephants by shooting, practically eliminated elephants from the wet zone during this period. This biggest change in elephant distribution and numbers in the history of Sri Lanka probably occurred during the colonial period from the 1505 to 1948 AD. During this period the wet zone became heavily settled and converted to commercial agriculture of coffee, tea, rubber and coconut. Elephants were declared vermin and many thousands were shot (Jayewardene 1994), eliminating them from the

wet zone. During this period, elephant densities and numbers would have increased in the dry zone due to the regenerating habitats and innumerable abandoned reservoirs.

However, the secondary forests in the abandoned dry zone of the country, together with the countless artificial freshwater reservoirs that were constructed during the height of the ancient civilization, now presented ideal elephant habitat and would have offered important refuge for elephants. The low – intensity slash and burn agriculture practiced by remaining inhabitants of the dry zone would have maintained the habitat in an ideal condition for elephants and helped to support high elephant densities. During this period, while the wet zone elephant populations were exterminated, the populations in the dry zone are likely to have undergone resurgence and the total elephant population would have risen to unprecedented heights. Assuming elephants inhabited two – thirds of the land area at a density similar to that observed by McKay in his study area, of 0.19 elephants per sq. km., the total elephant population in this period could have been as high as 8000 (McKay, 1973).

Human-elephant Relationship in Prehistoric Period of Sri Lanka

The elephant has been associated with the inhabitants of Sri Lanka from prehistoric times. During this period the island was sparsely populated by hunter gatherers. There is no clear evidence for hunting elephants by these people. But sometimes, hunter gathers would have consumed the flesh of elephants. Deraniyagala found a few fossil bone fragments of elephants in the caves occupied by the Stone Age man, and also described some rock paintings of elephants by prehistoric man in Sri Lanka. These rock paintings were found in widely separated locations in the south-east, north-west and central parts of the island. This indicates that man and elephant were widespread in Sri Lanka during prehistoric times (Deraniyagala, 1955).

During the prehistoric period of Sri Lanka, elephants would have inhabited the entire island and have had a stable population. The elephant under natural conditions is a low density species and ecologically it is an 'edge species' and a 'pioneer species'. The Wet and Dry Zone climax forests that would have clothed the island in the prehistoric era would not have supported high elephant densities. Given the extremely low densities of elephants reported from primary forest areas (McKay, 1973; Eisenberg, 1981) the total number of elephants is likely to have been comparatively low. The density of elephants in Wilpattu, which has a large extent of mature forest, has been estimated as 0.12 elephants per sq. km. (Eisenberg and Lokhart, 1972). As the entire island was likely to have been under primary forest cover, the average density of the elephants in Sri Lanka during the prehistoric period can be assumed to have been around 0.1 per sq. km. If elephants inhabited 90% of the island, the total elephant population would have been around 5000.

Was the elephant flesh a food in ancient Sri Lanka?

The flesh of elephants was consumed at least occasionally during prehistoric times and even in civilizations like Harappa (Sukumar, 2011). However with the development of civilization this practice may have become disreputable. The Buddha exhorted the monks, who were his followers, to abstain from consuming elephant flesh and stated that if one does, he commits an offence, as mentioned in the Mahavagga Pali, Vinaya Pitaka (Rhys Davids and Oldenberg, 1882).

Domestication of Asian Elephant in Sri Lanka

In 5th century BC, people from the ancient civilization in India colonized Sri Lanka and founded an agro-based civilization in the dry zone of the country. Prior to human presence, most of the country was covered in mature forest and elephants probably inhabited the entire island. Elephant densities were likely in the range of 0.1 – 0.2 elephants / km^2 with a total of around 6000 – 12000 elephants. The advent of people and especially the rise of a hydraulic civilization based on irrigated agriculture in the dry zone around 2500 years ago caused significant environmental changes and likely impacted elephant numbers and distribution profoundly. The civilized people constructed countless numbers of freshwater reservoirs by damming rivers and tributaries and converted large extents of land in the dry zone to irrigated agriculture. The hydraulic civilization that prospered as a result used elephants extensively in cultural events, wars, pageants and as work animals. While the agricultural land use patterns no doubt excluded elephants from the centers of civilization, their capture for domestication would have depleted elephant populations in surrounding areas. (Jayewardene, 1994).

In the centers of civilization conversion of natural habitat to permanent cultivation and settlements would have excluded elephants entirely. However, shifting cultivation and the construction of innumerable freshwater reservoirs for irrigated agriculture would have enriched the habitat for elephants, allowing higher densities in fringe areas. Large numbers of elephants were captured and domesticated for local use and export. With the rise and fall of kingdoms and shifting of centres of civilization, elephant populations would have alternately become locally extirpated and abundant.

Deraniyagala believes that the Asian elephant (*Elephas maximus)* has a long history of association with humans which goes back to at least 4000 years (Deraniyagala, 1955). Exactly how elephants came to the island is a matter of some debate. Some claim that the creatures evolved on the island. Others state that the elephants came across from India. Whatever the case, over the millennia, the Sri Lankan elephants developed into a unique sub-species of the Asian elephant, and are known as *Elephas maximus maximus.* Throughout history the Sri Lankan elephants have been particularly prized for their strength and intelligence. For over 2,000 years they have been captured, tamed and employed for sport and for battle (Cannon and Davis, 1995). The first reference to Sri

Lankan domesticated elephants was during the time of King Devanampiya Tissa (300 BC), in the Mahavamsa. The Mahavamsa refers to a chief elephant of the king's stable. Therefore, even earlier kings must have possessed domesticated elephants. The epic Mahabharathaya makes many references to war elephants in India. Since there was communication between Sri Lanka and India at all times, it is quite likely that elephants were domesticated in Sri Lanka too from the very early times. The first description of the capture of elephants in 40 AD is by Pliny. Here, the information that he gathered was from the Sinhalese ambassador to the court of the Emperor Claudius. Elephants were used on all important ceremonial occasions, especially where pomp and pageantry were required.

The variations in physical appearance amongst elephants were noticed and recorded in ancient Sinhala manuscripts in Sri Lanka. There are ten such groups or castes. The first record of the association between man and elephant in Sri Lanka was recorded in the first century BC, on an inscription at Navalar Kulam in Panama Pattu in the Eastern Province, of a religious benefaction by a prince who was designated Ath Arcaria or Master of the Elephant Establishment. The Elephant Establishment was called the Ath Panthiya. The ruins of the ancient cities in Sri Lanka abound with carvings of elephants in many forms, attesting to the close association between man and elephant. In ancient Sri Lanka, elephant lore found in the "Maha Gaja Lakshana Sangrahaya" (The great thesis of elephant's characteristics). According to that great thesis, there are ten castes of elephants as given below (Deraniyagala, 1955).

i. Kalawaka / Kalathu
ii. Gangeiya
iii. Tambala
iv. Pingala
v. Uposatha
vi. Pandara
vii. Gandara
viii. Mangala
ix. Hema
x. Chaddantha

(I) Use of Elephants for Royal Purposes in Ancient Sri Lanka
The ancient elephant has been considered an auspicious animal and signify good fortune, amidst being used as one of the four – fold armies (chariots, elephants, cavalry and infantry), a beast of burden and a trade item throughout history. In addition to this, "Elephants are an attribute of royalty" (Rhys Davids and Oldenberg, 1882). During the time of the Sinhala kings the elephant was afforded complete protection by royal decree. The penalty for killing an elephant was death. Ancient Sinhalese kings captured and tamed elephants that used to abound in the country. Gradually the number of elephants captured increased. All elephants were kept by the king in his stables. The methods of capture were refined and modified as time went on. Sinhala literature of the 3rd century

BC indicates that the state elephant or 'Mangalahasti' was the elephant on which the king road. This elephant was always a tusker which had a special stable called 'Hattisala'. The post to which it was tethered was called 'Alheka' (Seneviratne, 1973). The Mahawamsa details many such instances, especially that of 'Kandula' the elephant on which King Dutugamunu (200 BC) rode to war. One of the most famous instance recorded in our history is the war between two great kings, Dutugemunu of Sri Lanka and the invading Indian king Elara. The both had their armies and each a special elephant. King Dutugemunu's elephant was called Kandula or Kadol Atha and Parwatha was Elara's elephant. Also the Sinhala kings always rode on an elephant, called as Magul Atha, which was from the highest elephant caste known as Chaddantha.

A 12th century inscription on a stone seat at Polonnaruwa records that King Nissankamalla sat upon it while watching elephant fights. These fights were staged for the entertainment of nobles. A rock sculpture of an elephant on the banks of the Mahaweli, the longest river in Sri Lanka is described by archaeologist H.C.P Bell: "This piece of animal sculpture is probably unique in Ceylon. Cut in full round from a rock, life-size are the head and shoulders of an elephant feet the river washed when low. The elephant stands in the water, looking slightly upstream, as though hesitating to cross. At present the river in semi-flood reaches it eves. There are signs of seats for some building's foundations on a boulder adjoining, but no ruins or inscriptions are known likely to afford a clue to the object of this solitary 'tour de force' of a skilful sculptor" (Bell & Bell, 1993). Unfortunately, this rock sculpture no longer exists having been blasted probably by fishermen dynamiting for fish.

Portuguese, Dutch and British reports and books record several instances of elephant capture, their use by the Sinhala kings in their armies, elephant fights and the execution of criminals by elephants. In certain instances, the strength of a king or potentate was judged by the number of elephants he used in war. D'Oyly writes of the elephant establishment of the Sinhala king, the laws designed to protect these animals, elephant fights organized as a sport and the capture of elephants. He states that "All elephants are considered the property of the crown and they are employed in the king's service, for his recreation at public festivals. Hence the slaughters of them, especially of tusked and large elephants are amongst heinous offences" (D'Oyly, 1809).

The King of Kandy maintained an especial unit that dealt with all matters concerning elephants including their capture, training, conservation and export. This unit was under a chief officer known as the 'Gajanayake Nilame'. The Gajanayake Nilame was of a high caste and received many favors, including land from the king. The elephant catchers and keepers were from the lower castes. They were the Kuruwe people from Kegalle. Training elephants caught from the wild, for both traditional purposes and war, was the responsibility of these people. Even person (mahouts) who looked after the elephants after their training, were trained by the Kuruwe people. A brass model of an elephant with a number of movable joints was used in the training of the mahouts. During the times of the Sinhala kings, even though there were tens of thousands of

elephants in all parts of the country, this animal was afforded complete protection by royal decree. Accordingly, no elephant could be captured, killed or maimed without the king's authority. All offenders were punished by death. The cultivators of that time could not plead that the elephants were harmed in the protection of their crops. Any depredation or damage to crops by wild elephants had to be prevented by stout fencing together with organized and effective watching by the farmers. It is interesting to note that there were many more elephants then than now, but still Sri Lanka was considered the granary of the East.

The King's Elephant Unit continued to operate within the Kandyan kingdom even after the Portuguese occupation of the Maritime Provinces in Sri Lanka in 1505 AD. The Portuguese conquered the coastal areas and made Colombo their capital and main seaport. Subsequently, the function of the King's Elephant Unit was only to supply the King's army with elephants. This is because with the development of cannons and musketry, the elephant was both frightened and vulnerable. Export demand for it as an instrument of war greatly reduced. However, with Portuguese occupation of the Maritime Provinces the export trade in elephants began to flourish. The Portuguese maintained an annual demand of 37 elephants for export from two kraals. The Dutch, who captured the Maritime Provinces of the country from the Portuguese in 1658 AD, held them until 1796 AD. During their occupation of the country, the Dutch too, continued and even expanded the elephant hunt in order to increase their revenue through the number of elephants were caught in kraals, both by the Portuguese and the Dutch in the Southern Province, especially the Matara Dissawa areas and Udawalawe (Woolf, 1997).

The British took over the coastal areas from the Dutch in 1796 AD and ruled the entire island with the capture of the Kandyan kingdom in 1815 AD from the last Sri Lankan king (Knox, 1981). The period of British colonial rule was perhaps the worst time for the elephant. When the British captured Sri Lanka, they continued the capture of elephants for sometime but on a low – priority basis. The British, however, indulged in the shooting of elephants as a form of sport. As the elephant was a threat to the agricultural activities of the rural population, he British provided guns freely to villagers to keep away the marauding elephants from their cultivations. However, when the coffee and tea plantations were being opened up in 1830 AD, elephants were used for a number of tasks. Uprooting the jungle was one of its first tasks. Drawing logs for the construction of buildings, stones and rocks for bridges, culverts, walls etc., were other tasks that elephants were engaged in. Later elephants were used to draw heavy machinery for plantation factories. Most plantations employed elephants on a rate determined daily on the type of work they performed.

(II) Use of Elephants for Economic Purposes in Ancient Sri Lanka
There had been a significant demand for Sri Lankan elephants from other countries from the earliest times. Aelian quoted by Tennent says that the export of elephants from Ceylon to India had been going on without interruption from the period of the First

Punic War (Tennent, 1859). India wanted them for use as war elephants, Myanmar as a tribute from ancient kings and Egypt probably for both war and ceremonial occasions. The elephants from Sri Lanka were found to be more easily adapted for war and considered better than those from the mainland. Their excellent qualities were well known to the Greeks even as far back as the 3rd century BC, in the time of Alexander the Great. An admiral of the Fleet of Alexander the Great and probably the first European to describe the trained elephants of Ceylon has stated that the elephants from Taprobane (later Ceylon and then Sri Lanka) "Are bigger, more fierce and furious for war service than those of India." (Pliny, 1855). Greek writers like Megasthenes (circa 300 BC) and Aelian (44 AD) corroborate this. The sixth century writer Cosmos Indicopleustes said that Sri Lankan elephants were highly prized in India for their excellence in war. Elephants from Sri Lanka were exported to Kalinga by especial boats, from about 200 BC, from the port of Mantai the present day Mannar. Such exports are also recorded by Ptolemy in 175 AD.

Ancient Sri Lanka was famed as a center of elephant commerce, both exporting and importing elephant to and from the mainland. As gifts and in trade, there were exchanges of elephants between Sri Lanka and India (and other countries in the region). Sri Lanka was exporting a large number of elephants in the 5th and 6th centuries BC; a number of elephants were also imported into the country after the 4th century BC. This is apart from the gifts that the ruling monarchs of India and Myanmar (then Burma), sent from time to time. The Culavamsa records that during the reign of King Parakramabahu (1153 – 1186 AD), King Ramana of Myanmar decreed that the practice of selling elephants from his kingdom for export should henceforth are stopped. "Moreover with evil intent, the king also set a high price on the beasts, commanding that the elephants which were sold in former times for a hundred nikkhalas of silver, or a thousand, should now be sold for two thousand or three thousand, and likewise he put an end to the ancient custom of giving an elephant to every ship that bore presents to the king of Sri Lanka."

There are a number of references in early writings to man's association with and his use of elephants. The chronicle goes on to say that King Parakramabahu made war on the King of Burma and subdued him. Later, the Burmese relented and said "Take henceforth from us as yearly tribute, as many elephants as are necessary." Records of the 12th century AD again show that elephants continued, to be imported from Burma. The export of elephants too continued and this is confirmed from time to time by writers on Ceylon – Sinhala Chronicles (15th century), Athanasius Nikitin the Russian traveler (1470 AD). Add-er-Razzak (1442 AD) refers to the trade in elephants between Calicut and Ceylon. Duarte Barbosa refers to the Royal monopoly of elephants – a good elephant fetched 1500 ducats on the Malabar Coast at that time (Barbosa, 1518). Ribeiro states that "As the Ceylon elephant was superior, traders were prepared to them, compared to elephants from other countries" (Ribeiro, 1847).

There had been large number of war elephants and others in the possession of the kings up to about the period of invasion by the colonial forces (1505 AD onwards) who

brought with them cannon and musket, against which elephants were no match. When the Portuguese captured the maritime provinces of Sri Lanka they found a flourishing export trade in elephants. They too, quickly got involved in the elephant export trade, and at first obtained their elephants as tribute from the Sinhala people through their leaders. Thereafter they captured animals on their own (Jayewardene, 1994). The Portuguese also set up a revenue-gathering unit, similar to the king's organization, known as the Elephant Hunt. The Portuguese maintained an annual demand of 37 elephants for export from two kraals. These were valued at 9250 rid dollars which was equal to 15% of the total revenue of the state (Abeysinghe, 1966). In 1507 the Viceroy of India sent a gift of a small elephant, imported from Ceylon, to King Manuel of Portugal. After seven years in Lisbon this elephant, named Annone, was presented to Pope Leo X and moved to Rome. Annone lived in Rome for three years but died after developing stomach trouble due to the variety of food given to it by visitors and admirers. There is a memorial in Rome to Annone the first elephant in the Vatican (Hulugalle, 1969).

The Dutch laid siege on the Fort of Colombo held by the Portuguese in 1656 AD. Ribeiro, the Portuguese soldier and historian, records that all the elephants in the Fort excepting one, were eaten by the defenders as they ran short of food after a time. Only one elephant was spared, because it was needed to carry timber to repair the defenses that were being damaged by the attackers (Ribeiro, 1847). Robert Knox, a Scotsman, who was a prisoner in the Kandyan Kingdom for nearly 20 years, writing in the 17th century AD, stated that the King makes use of elephants as executioners: they will run their teeth (tusks) through the body, and then tear it in pieces, and throw it limb for limb. They have a sharp iron with a socket with three edges, which they put on their teeth at such times; for the elephants that are kept have all the ends of their teeth cut, to make them grow better, and they do grow out again." Sirr also says that elephants were used as executioners of criminals, by training them to crush the victim's limbs, and by placing one of its legs on the man's body, tears off the limbs. Fortunately, the use of the mild tempered elephants for such gruesome executions has long been stopped (Sirr, 1850). Pybus states that the Dutch had to obtain permission from the king of Kandy to capture elephants which were within his domain. The king generally agreed to the Dutch capturing 20 to 30 animals each year, but the Dutch constantly exceeded this figure, capturing around 150 each year and 200 in one year. They continued to use the elephant stables at Matara referred to earlier. Elephants were also exported by the Dutch from Karativu Island. The elephants were driven into the Jaffna peninsula by a shallow ford that separated it from the mainland. This ford has now been bridged and given the name Elephant Pass (Pybus, 1762).

The export of elephants to the mainland could be explained in terms of the higher value placed on Sri Lankan elephants for use in work and war. The need for importing elephants into the country is more difficult to understand, especially given the effort that must have been entailed in transporting elephants between the mainland and Sri Lanka in that period. The only logical reason to import elephants from the mainland would have

been that they were different to those in Sri Lanka in some manner, the most obvious possibility being that they were tuskers. At present less than 7% of Sri Lankan males have tusks, whereas the incidence of tuskers varies between 45% in north India to almost 95% in south India (Sukumar, 1989).

Culturally, tuskers are highly prized and held in high esteem and even today, they are imported from the mainland by prominent Sri Lankan temples. While it has been suggested that the paucity of tuskers in Sri Lanka is human induced (Kurt et. al., 1995), it could also have been a genetic cause such as a 'founder effect' or the greater impact of genetic drift in a smaller Sri Lankan population. A cause pre-dating the ancient civilization, therefore of genetic origin, is supported by the historical import of elephants, even during the early periods of the ancient civilization. While the land use changes and capture for domestication by people of the ancient civilization is likely to have depleted elephant populations in the dry zone during this period, the sparsely settled wet zone and the central hills would have served as a refuge for elephants. The total elephant population is likely to have reached a low level as elephants would have been largely limited to the low carrying capacity wet zone forests. Assuming a density of around 0.1 per sq. km. and that elephants inhabited one – third of the island, the total population at this time could have been around 2000.

(III) Use of Elephants for Religious and Auspicious Purposes in Ancient Sri Lanka
The elephant is considered a symbol of physical and mental strength, intelligence, responsibility, good luck and prosperity. Elephants hold a central position in Sri Lankan culture bound with the Buddhism. The association of elephants with Buddhism dates back to the beginning of Buddhism in 6th to 5th century BC. Elephants are associated with stories of the life of Buddha such as the conception of prince Siddhartha (who became Buddha later) and featured in a number of Jataka tales (the stories related to previous births of the Buddha), in which the Buddha himself took the form of an elephant a few times. Sukumar provides a descriptive account of a number of such examples and suggests that the sacredness of the elephant was firmly established by early Buddhist times (Sukumar, 2011).

Elephants were used on all important ceremonial occasions especially were pomp and pageantry were required. Elephants are kept in a number of temples and feature prominently in annual pageants named 'Perahera'. The origin of the use of elephants in Buddhist processions and festivals in Sri Lanka dates back to the period of the introduction of Buddhism to the country by the Buddhist monk arhat Mahinda, during the reign of King Devanampiyatissa, in 3rd century BC. According to Mahavamsa, the first recorded instance of elephant use in a religious procession took place when King Devanampiyatissa (250 – 210 BC) wanted the relics of the Buddha to be placed in the stupa he built, the Thuparama in Anuradhapura. When the king asked samanera Sumana, a fellow monk who came with arhat Mahinda, from where to get the relics, the monk replied "O Ruler of men, having had the city and the road decorated, observe uposatha along with the retinue, mount the state elephant and, bearing the white parasol and

attended by musicians, go to the Mahanaga park in the evening. You will get, O king, the relics of the Buddha" (Geiger, 1950; Guruge, 1989). The king acted accordingly and obtained the relic casket, which was placed on his head and then "Placed it on the back of the elephant. Overjoyed the elephant trumpeted" (Geiger, 1950; Guruge, 1989).

A similar description of this event is given in Thupavamsa, the 13th century Pali chronicle of the stupa, but mentions that the king placed the casket of relics on the elephant's frontal globe, top of the forehead (Jayawickrama, 1971). Then the procession commenced and is described as follows: "Then the elephant, accompanied by the theras, the troops and chariots, turned back and entered the fair city by the eastern gate. Then leaving it again by the southern gate, he went to the compound of the great sacrifice, established behind the site for the Thuparama stupa" (Guruge, 1989). It is further mentioned that the elephant disliked taking down the relics from his own back was made of dry clay brought from Abhaya tank and the relic was placed there. The elephant is mentioned as having guarded the relics until the stupa was built and carried the relic during the daytime, while the construction work was carried out (Geiger, 1950; Guruge, 1989). This is an example of the religious procession, and the first occasion was an elephant was used in a procession to carry a relic. This same event seems to be repeated in chapter 20 of Mahavamsa (Geiger, 1950; Guruge, 1989).

Elephants were also used for the festival of enshrining of the relics in the relic chamber of Mahathupa (Ruvanveliseya) of Anuradhapura during the reign of King Dutugemunu (167 – 137 BC). This is described as a procession in Mahavamsa where it mentions that in the afternoon there were a great host of troops and elephants, cavalry and vehicles. "Surrounded by soldiers bearing arms, dancers, flag bearers etc, the king mounted a beautiful vehicle drawn by four beautiful sindhu – horses. He stood there holding a golden casket (to receive the relics) under the white parasol. In front of him was the bedecked noble elephant Kandula." The procession then proceeded to Mahameghawana (Geiger, 1950; Guruge, 1989). This incident is also mentioned in the Thupavamsa (Jayawickrama, 1971). Misinterpreting this incident as 'Kandula holding the golden casket', Sukumar points that, this event seems to be the forerunner of the annual Kandy perahera (Sukumar, 2011). However, the procession related to Thuparama were the elephant held the casket with relics mentioned above was held about a century prior to this event.

King Mahadatika Mahanaga was the first king to donate an elephant to a temple, according to the available records. It is said that he "Even though dissuaded by the sangha (monks), gave away to the sangha himself, the queen, the two sons and the state elephant and horse" (Geiger, 1950; Guruge, 1989). The king is said to have "Carried out without neglecting any, all the meritorious action decreed by previous kings and likewise by his brother" (Geiger,1950; Guruge, 1989), thus possibly indicating that the donation of the royal elephant followed an established tradition. Such donations represented a system where the king devoted himself, close relatives and his valuables to the monks

and subsequently redeemed by offering the monks suitable materials of a similar or higher value.

The annual perahera (Pageant) in Kandy, which dates back nearly 220 years, brings together over a hundred elephant that parade the streets during the nights on certain predetermined days in August each year. The most famous Kandy perahera held in the city of Kandy, which features up to a hundred richly caparisoned elephants festooned with lights, together with thousands of drummers, musicians, dancers, torch bearers etc. The highpoint of the Kandy perahera is the ceremonial exposition of the tooth relic of the Lord Buddha carried on the back of a majestic tusker of the highest caste. The tooth relic of the Buddha was brought to Sri Lanka during the ninth year of the reign of King Kitsirimevan (303 – 328 AD), around 309 AD, and was accepted with great veneration. The king ordered to convey the relic to Abhayagiri temple and to hold the same celebration in honour of it annually (Geiger, 1953). This indicates the origin of the perahera tradition for the Tooth Relic. Fa-hein, the Chinese monk who visited Sri Lanka in 5th century AD described the procession of the Tooth Relic. According to him, a man who can speak distinctly was mounted on a grandly caparisoned large elephant and sent to make a proclamation of the procession related to the festival of the 'Tooth of the Buddha' which is to be held after ten days' time. There is no mention of the use of elephants in the procession, which is described very briefly (Legge, 1991).

During the reign of King Parakramabahu I, the Tooth and Bowl Relics of the Buddha were returned to Polonnaruwa from the southern region of the country and the king mounted on 'his favourite beautiful elephant', went forward to accept those relics. Other elephants as well as horses were also part of this event (Geiger, 1953). Meanwhile, after the restoration of Mahatupa (Ruvanveliseya in Anuradhapura the former capital) the king organized a procession to celebrate the festival for the placement of the crowning ornament. The order of the procession is given in Culavamsa as; "In front of him (the king) went the ladies of the court many hundreds in numbers, and there followed him numbers of distinguished officers." This procession included elephants illuminated with lamps – "With the mass of the elephants and horses, doing reverence to cetiya (stupa) with a gift of lamps distributed over their bodies" and Geiger comments that the lamps were probably fastened to the bodies of the animals (Geiger, 1953). A procession with elephants was held during the reign of King Parakramabahu II, who reigned in Dambadeniya. According to Culavamsa, the king held a seven-day festival for the Tooth Relic, for which he used 'divers elephants and steeds' (Geiger, 1953). This is one of the festivals he held for the relic. The 13th century Sinhala book on the history of Buddhist religious offerings titled Pujavaliya was taken in procession on the back of the royal elephant as veneration by order of the king who was attracted by the contents of the book (Gnanawimala, 1986).

King Vijayabahu IV who reigned in Dambadeniya organized a procession to transfer the Tooth and Bowl relics of the Buddha from Dambadeniya to Polonnaruwa. The relics were taken on a chariot while "The festival was surrounded by rows of elephants

excellent ornaments by which they were overspread" (Geiger, 1953). Dalada Siritha, the early 14th century Sinhala prose compiled during the time of King Parakramabahu IV, contains a manual of the traditions and festivals of the Tooth Relic. Among the rules is a description of the procedure to be followed at a procession held during public displays of the Tooth Relic. The relic was enshrined in a casket and taken out and placed on a decorated chariot, pulled by a tusked elephant with auspicious marks yoked to it (Soratha, 1950). This is of importance as it provides strong evidence of the use of elephant to draw the Tooth Relic in processions. Also, this record mentions the use Tooth Relic, which is different from the present method. It has been pointed that these rules many have been in existence even before and included in Dalada Siritha. During the reign of King Parakramabahu IV, the offering of elephants to the Tooth and Bowl Relics is recorded as "With villages and fields, women slaves and men slaves, with elephant, cattle, buffaloes and other gifts he celebrated a sacrificial festival for the relics" (Geiger, 1953). King Viravikkrama of Kandy who was famous for his donations to the temples, "Offered sixty and two elephants and horses and four hundred and fifty heads of cattle and buffaloes to temples" (Geiger, 1953). Men riding on elephants are depicted in a number of artistic works of this period such as a number of ivory caskets (De Silva, 1975) and on a guard stone belonging to this period from Kotte (Deraniyagala, 1938).

From 1593 to 1815 AD, when the coastal regions were under colonial rule, Kandy was the capital of Sri Lanka. Elephants were used for religious purposes including donations to temples and the Esala Perahera of Kandy commenced in this period. According to Culavamsa, elephants were among the offerings to temples by King Vijaya Rajasingha at least twice and once offered an elephant and a horse during sacrificial festival to the Tooth Relic (Geiger, 1953). King Kirti Sri Rajasingha venerated the Bodhi tree and the stupas of Anuradhapura by offering elephants, horses, gold, silver etc. and offered elephants and many other items to the Tooth Relic (Geiger, 1953). King Kirti Sri Rajasingha ordered that a procession of the Tooth Relic (Dalada Perahera) be held ahead of other items of the ongoing annual Esala Maha Perahera festival to honour the Buddha. The use of elephants is mentioned in the vivid description of the procession in Culavams, "The king had a canopy fastened on the back of the royal elephant beautifully ornamented with gold embroidery." Then he had the elephant whose tusk was as the bright moon, decorated with ornaments and then surrounded by (other) elephants whose riders held their hand silver umbrellas and fly whisks. "The king placed the splendid sparking casket of gold in which the bodily relic of the Buddha was contained carefully under the canopy" (Geiger, 1953). Although some believe this as the origin of Dalada Perahera, historical evidence support to assume that it is a continuation of a long tradition.

Elephants have been used by man in his wars, in Europe and Asia. They have assisted him in his logging operations and construction works. In Sri Lanka too, elephants have fought in wars and featured in various sports and combat, during Sinhala celebrations. Elephants were associated with the art and architecture of the temple of the Tooth Relic since the early periods. For instance, the somewhat miraculous story related to King

Mittasena (428 – 429 AD) reveals that there was a figure of an elephant made of stucco at the temple of the Tooth Relic (Geiger, 1950). A painting of a caparisoned elephant with a mahout on an old plaster layer of the temple of the Tooth Relic probably belonging to the period of King Narendrasingha, who built the present shrine, was discovered recently (Prematilleke & Colombage, 2000). It may portray a scene of a Dalada Perahera, and if so, could be taken as archaeological evidence to support the use of elephants in the procession of the Tooth Relic prior to King Kirti Sri Rajasingha's time. New Year festivities in Sri Lanka feature elephants in various sports in early times and was called 'Gaja Keliya'. Being built like a tank, elephants were used in war not only as a means of transport but also as an instrument of defense and offence. They were used to ram barricades and, as ivers points out "In time of war, they now and then fix a heavy iron chain to the end of their trunks, which they whirl around with such agility, as to make it impossible for an enemy to approach that at that time" (Ivers, 1899). With the advent of British, elephant protection was withdrawn. Under the guise of sport, large numbers of elephants were killed by British. Not only did the British government encourage and condone killings as a sport, but it also paid a bounty for each elephant killed, deeming the elephant an agricultural pest.

Conclusion

Human-elephant relationship dates back to the pre-historic period of Sri Lanka. However, there are more evidences for human-elephant relationship in ancient period than pre-historic and proto-historic periods of Sri Lanka. There are a number of examples in early writings for the human-elephant relationship from Anuradhapura period to Kandy period. Both historical and archaeological records describe the human-elephant relationship well. Mainly humans used elephants for royal purposes, economic purposes, religious purposes and auspicious purposes. Today, the elephants are a living heritage in Sri Lanka.

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Beads, Words and Rituals: A New Perspective on Prehistoric Ornaments of Sri Lanka

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Abstract

Emergence and practice of personal ornamentation in a prehistoric period are often considered as evidence for symbolic behaviour. Although prehistory of Sri Lanka had dated back to more than 125,000 years ago, prehistoric ornaments and rituals come from Mesolithic period onwards (notably after 38,000 BP). Sri Lanka is bestowed with earliest and comparatively vast assemblage of prehistoric ornaments which are made of a variety of material such as freshwater or marine shells and shark teeth and vertebrae. In here, we propose that these personal adornments of Sri Lanka could be considered not as mere art but implicate usage of symbolic language which facilitates long-distance trade, social relationships, language and communication. Further, we suggest that these shell beads also indicate ritualistic behaviour.
Keywords: ornaments, language, ritual, prehistory, Sri Lanka

Introduction

An ornament could be defined as a thing used or serving to make something more attractive, but usually having no practical purpose, especially a small object such as a figurine (Oxford Dictionaries, 2018). In the early years of prehistoric research, ornaments used by prehistoric man attracted archaeologists and anthropologists merely

as an indicator of the social life of modern humans, *Homo sapiens*, mere artistic pieces or since the emergence of Out of Africa theory in the early 2000s. The distribution of ornaments was widely used as an indicator of migration routes which were taken by modern humans when they left the African continent (Mellars, 2006). Nevertheless, under the influence of cognitive archaeology, usage and emergence of prehistoric ornaments or personal ornamentation were considered as an indicator of cognitive evolution or behavioural modernity of Anatomically Modern Humans (AMH) (d'Errico et al., 2009b; Zilhão, 2007). Especially, the exercise of personal ornamentation; wearing particular objects which do not serve a utilitarian purpose, could be considered as the origin of symbolic behaviour which gives clues about abilities such as beginning of language, methods of communication and long-distance trade and network which places the *Homo* genus apart from other extinct and extant hominids (d'Errico & Vanhaeren, 2009).

To explain the origin of this cultural modernity, three models of scenarios have been suggested (d'Errico et al., 2009a). The first one is that modern cognition is unique to *Homo sapiens* and it is the final result of the consequences of a genetic mutation that took place in 50,000 years ago in Africa among AMH. The second one postulate that the cultural modernity emerged gradually in Africa around 200,000 years ago and is directly linked to the origin of *Homo sapiens* on that continent. The third scenario, states that these innovations indicate of modern cognition are not restricted to *Homo sapiens* and appear and disappear in Africa, Europe and the Near East between 20,000 to 40, 000 years ago before becoming fully consolidated (d'Errico et al., 2009a).

Until recently it was believed that the invention of personal ornaments began concurrently with the colonization of Europe by AMH, some 40,000 years ago. Nevertheless, it is widely accepted that marine shells were used as beads in the Near East, North Africa and Sub-Saharan Africa, at least around 35,000 years earlier (d'Errico et al., 2009b). The earliest evidence for bead use comes from the 90,000 years old Mousterian levels at Quafzeh cave in Israel (d'Errico et al., 2009b). Other than this particular site, there are four other sites, Skhul in Israel, Oued Djebbanna in Algeria, Taforat in Morrocco dated 82,000 years and Blombos cave in South Africa dated 75,000 years (Bouzouggar et al., 2007; d'Errico, Henshilwood, Vanhaeren, & van Niekerk, 2005; Mayer, E., Vandermeersch, & Bar-Yosef, 2009; Vanhaeren et al., 2006). The oldest personal ornaments from Eurasia is associated with AMH which are generally used to support the first model. These include perforated teeth from Bacho Kiro in Bulgaria dated 43,000 years (Kozlowski, 2000) and marine shell beads from Üçağzli in Turkey (Kuhn, Stiner, Reese, & Güleç, 2001). In western Europe, the oldest evidence for personal ornamentation is generally associated with the Neanderthals. The earliest Aurignacian sites from the Swabian Jura and the associated beads are dated 36,000 BP (Zilhão & d'Errico, 2003). Evidence which suggests that Neanderthals produced and wore a variety of personal ornaments supporting the fourth model has been reported from various sites in Greece, Italy and France (d'Errico et al., 2009b; Zilhão, 2007).

Regarding the Indian context, the earliest evidence of the beads had been recovered from Patne, the site had dated as 25,000 BP., the beads had made by modifying ostrich and estuarine shells (Bednarik, 1993). Also, the pendants made of teeth at Billa Surgam, bone pendants at Bhimbetka IIIA -28, bone beads at Bagor have been ascribed as the evidence for the emergence of personal ornamentation in the Indian context. However, the earliest evidence for personal adornments in South Asia is marked by the discovery of a shell bead in Batadomba lena in Sri Lanka dated to 36,000 BP. (H. N. Perera, 2010).

Prehistoric ornaments of Sri Lanka

Prehistory of Sri Lanka could be dated back to 125,000 B.P. or maybe even 500,000 years or 2 million years (Deraniyagala, 1992; Manamendra-Arachchi & Adikari, 2012; H. N. Perera, 2010). It is assumed that stone tools were made by *Homo erectus,* 600,000 – 1, 160, 000 years ago, according to the hand axes found from Wadamarachchi in Jaffna peninsula back in 2011 (Manamendra-Arachchi & Adikari, 2012). According to crude stone implements which were found along with the extinct Pleistocene fauna in Ratnapura alluvial deposits could be dated back to more than 500,000 years. Although the aforementioned discoveries are not conclusively dated, excavations did in Pathirajawela in Bundala which was dated using thermo-luminance dating method revealed a date around 125,000 BP (Deraniyagala, 1992). However, archaeologists have not been able to find skeletal remains of contemporaneous human populations, remnants of fauna hunted by them or any indication of personal adornment. This evidence might have deteriorated due to harsh environmental conditions. Therefore, evidence of personal ornamentation is scarce and most of them are reported after 38,000 BP according to the radiocarbon dating methods. Believed to be made by Balangoda man, *Homo sapiens*, in the Mesolithic, the majority of these personal ornaments are recovered from caves and rock shelters situated low country wet zone, North-western Sri Lanka. Prehistoric ornaments found in Sri Lanka could be divided into two categories.
1. Beads made of fresh-water and marine shells and shark vertebrae
2. Ornaments (or pendants?) made of shark teeth

### *Beads made by freshwater and marine shells and shark vertebrae*

The key point for recognizing evidence of personal ornamentation in prehistory is, recognizing objects which indicate its utilization, such as beads. There are several criteria to determine an object as a bead. Human agency in their I) selection, transport and accumulation, II) manufacturing and/or use wear, III) absence of contamination from the succeeding technological or chronological phases (d'Errico et al., 2005). In previous studies, various scholars have reported that perforated Acavus, Oligospira and Paludomus gastropod shells which occur frequently in cultural layers, as beads, because of the perforation on the body whorl of the shell. These species are reported frequently in cultural layers of prehistoric sites such as Batadomba lena, Beli lena and Alu lena in Attanagoda. Based on the ethnological observations on Veddas, some archaeologists have speculated that this perforation was used to put a line through it and to wear them

around the neck as ornaments (Deraniyagala, 1992). But according to the criteria, it is hard to assume that theses gastropods were selected, accumulated and transported, intentionally. Even today, these gastropods live abundantly in the surroundings of these prehistoric sites. Therefore, it is safe to assume that they were more widespread in prehistoric times. According to the crushed and burned shell pieces which could be found in cultural layers, it is clear that these gastropods were consumed as a part of the prehistoric diet. Also, when perforations on these shells were examined under a microscope to observe use wear patterns which could have made by the chafing of vines against the surface of the shell, researchers have failed to observe such (Manamendra-Arachchi & Adikari, 2012). Considering these facts, it is not hard to conclude that these perforated Acavus, Oligospira and Paludomus shells cannot be recognized as prehistoric beads.

Recovered perforated shells which could be considered as beads made by Homo sapiens in the Mesolithic era of Sri Lanka are rare, considering that all together they are a little over three dozen. The oldest bead (ornament) found in Sri Lanka is the marine shell bead found from Batadomba lena which has been dated to 38,000 B.P. (H. N. Perera, 2010). Additionally, researchers have been able to recover marine shell beads from Fa-Hien cave and Alavala Potgul-Lena cave (Manamendra-Arachchi & Adikari, 2012). Even though aforementioned caves and rock shelters are situated in the inland rainforest region, prehistoric people who lived in those caves and shelters might have to travel to coastal areas to fulfil various requirements, particularly salt. In these occasions, they might have brought various marine shells which caught their eyes and perforated them with sharp stone implements. Both bivalves and gastropods were equally utilized as a material for manufacturing ornaments (Figures 1-9).
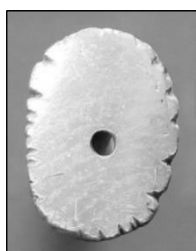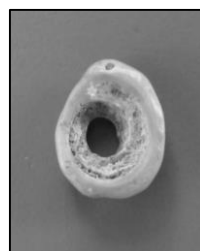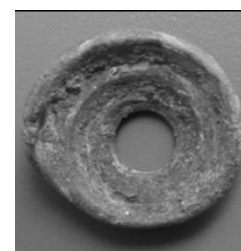

| **Figure 1** | **Figure 2** | **Figure 3** | **Figure 4** |

Figure 1: BD 16 2 NEW 5/D5. Made from freshwater bivalve. Discovered from the 5th cultural layer of Batadomba lena older than 17,000 BP (Image: K. Manamendra-Arachchi)

Figure 2: BD 15 5 NEW 6/15 – 30cm. Made from a part of the shell of a bivalve (may be a fresh water), Dated back to 20,000 BP this bead was discovered from the 6th cultural layer of Batadomba lena (Image: K. Manamendra-Arachchi)

Figure 3: BD 15 J NEW 6/15 – 30cm D4. Made from the apex portion of the shell of a marine gastropod (genus *Conus*). Perforated in the middle. Found from the 6th cultural layer of Batadomba lena, dated back to 20,000 BP. (Image: K. Manamendra-Arachchi)

Figure 4: BD 16 K 7C/15-30 cm. Made from the apex part of a marine gastropod (*Conus sp.*) This bead has been found the 7th cultural layer of Batadomba lena, dating back to 38,000 BP. The oldest bead found from Sri Lanka (Image: K. Manamendra-Arachchi)

In addition to the aforementioned beads, there is an assemblage of beads made from complete shells of marine gastropods, that has been recovered from Potgul lena, Alavala (Manamendra-Arachchi & Adikari, 2012). Body whorl of these small gastropods was perforated and was exploited as beads or in a broad sense, ornaments. These beads have

a similar origin as original shells of beads found from Fa-Hien cave and Batadomba lena cave, which is marine, indicating that marine gastropods and bivalves were widely used as materials for manufacturing beads or ornaments by the prehistoric man of Sri Lanka.
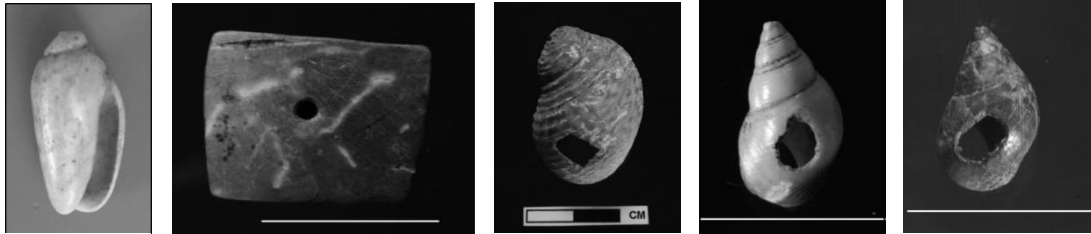

| Figure 5 | Figure 6 | Figure 7 | Figure 8 | Figure 9 |

Figure 5: YF B 0-7 2 Made by perforating the upper part of a full shell of a marine gastropod, *Oliva*. Discovered from Fa-Hien cave in Bulatsinhala. Exact date could not be determined (Image: K. Manamendra-Arachchi)

Figure 6: AP NW A6, layer 04, context 20.
Discovered from Potgul lena situated in Alavala)20/03/2009(. Made from a freshwater bivalve (Image courtesy: Postgraduate Institute of Archaeology)

Figure 7: AP NW A7, layer 04, context 14. Distinct from other shell beads found from Potgul lena. Made from a shell of a freshwater bivalve (*Paludomos* genus). Have a deliberately made rectangularly shaped perforation on the body whorl (Image courtesy: Postgraduate Institute of Archaeology)

Figure 8: AP NW B7, Context 08. From Potgul lena. Made from a marine shell (Image courtesy: Postgraduate Institute of Archaeology)

Figure 9: AP NW B6 context 30. From Potgul lena. Made from marine shell (Image courtesy: Postgraduate Institute of Archaeology)

Ornaments (or pendants?) made of shark teeth and vertebrae

Among the prehistoric ornaments found from Sri Lanka, researchers have been able to recover two ornaments made from shark teeth, which are made by perforating the root. These ornaments are recovered from mixed context layers of Fa-Hien cave and Potgul lena prehistoric sites. Furthermore, unperforated shark teeth have been found from prehistoric sites such as Fa-Hien cave, Batadombalena, Potana and an open-air habitat site, Bellan-bendi Palassa. Also, a bead made from shark vertebrae has been reported from Fa-Hien Cave and Mantai, which could be dated back to respectively, 38, 000 B.P. and 3800 B.P. (Deraniyagala, 1992; H. N. Perera, 2010). These occurrences of shark teeth which has a marine origin but found from ashore prehistoric sites indicate that prehistoric people had a special interest in shark teeth. Aforementioned shark teeth ornaments found from Potgul lena and Fa-Hien cave are perforated carefully (Figure 10). A common characteristic which could be seen in both of these ornaments is that this perforation was made by penetrating the surface with a triangularly inclined sharp implement from both sides. As a result of that, the diameter of the inner circle of these perforations is greater than the diameter of outer circles. Perforation technique utilized in manufacturing these ornaments is quite similar to the technique which was utilized for the 25,000 BP old shark teeth found from Sahul, Australia (Manamendra-Arachchi & Adikari, 2012).
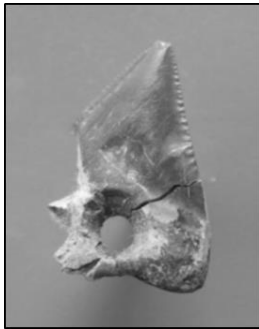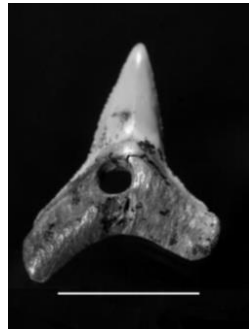
Figure 10 & 11: Prehistoric ornament / Shark teeth

Figure 10: YF 10 From Fa-Hien Cave (Image: K. Manamendra- Arachchi)
Figure 11: NWA 9, context 01, X 31, Y 74, 99/45 From Potgul lena made from a Shark tooth belongs to *Carcharhinus brevipinna*, or a Spiner shark (Image courtesy – Postgraduate Institute of Archaeology)

Figure 10   Figure 11

Implications for usage of symbolic language and long-distance connections

Prehistoric ornaments of Sri Lanka give an impression about the social connections and long-distance trade of the Mesolithic era. Particularly, it is well known that most of the ornaments reported from Sri Lanka have a marine origin. Among the ornaments described above, three individual marine gastropod beads recovered from Batadomba lena and Fa-Hien cave, miniature-sized marine gastropod bead assemblage recovered from Potgul lena, Alavala, shark teeth ornaments discovered from Fa-Hien cave and Potgul lena, clearly signifies that there were connections between the inland population and the coastal population in the prehistoric period. It is known that prehistoric inland populations had travelled to the coastal area to collect salt and it is possible that these visits were not purely utilitarian but, there was a communal purpose, as well. It is questionable to think that accumulation of these shells and teeth were a pure coincidence because there are reports of assemblages of marine shells which were not modified as ornaments [Example:(Wijepala, 1997)]. Therefore, selection of these particular marine shells and shark vertebrae must have had a socio-symbolic meaning behind them. This assumption is also strengthened by ethnoarchaeological observations. For an example, according to Malinowski (1920,1922) 's account of Kula, inhabitants of the island groups of Eastern Papua, still practice the ceremonial ritual of exchanging specially made pieces of ornaments (B Malinowski, 1920; Bronislaw Malinowski, 1922). The pieces of ornaments, long necklaces of pink *Spondylus* shells (known as *soulava)* or bracelets of white shells (known as *mwali*) were kept by a Kula partners for only a few weeks or months, before being passed on with great ceremony to the next partner and the giver of a necklace then received a bracelet in return (B Malinowski, 1920; Bronislaw Malinowski, 1922). In this case, ornaments were a precious material symbol used to preserve an external man's social cohesion.

Considering the modest geographical area of Sri Lanka, it is questioning that if prehistoric people lived as isolated groups. Most of the inland prehistoric settlements in Sri Lanka are situated at a distance of merely a day or two from the coastal area. Fa-Hien cave, Potgul lena, and Batandomba lena are situated either near rivers which flow directly to the sea or streams which are connected to the rivers which flow to the sea (Deraniyagala, 1992). Therefore, it is obvious that inland and coastal living prehistoric groups encountered often in their seasonal migrations. There is a possibility that these

groups had some kind of identification or symbolic objects which would guarantee safety and hospitality as with *Kula*s. Therefore, there is a possibility that prehistoric ornaments of Sri Lanka were not utilized merely for decorative purposes.

The occurrence of the oldest shell ornaments found in Sri Lanka in the cultural layer 7c (dated ca. 37, 000 B.P.- ca. 32, 000 B.P.) coincides with the occurrence of most advanced microliths in South Asia (H. N. Perera, 2010; N. Perera et al., 2011; Roberts, Boivin, & Petraglia, 2015). Furthermore, Batadomba lena record provides the longest and most highly-resolved Pleistocene temporal sequence of bone tool technologies anywhere in South Asia and it is observed that the form of osseous technologies remains relatively stable from 36,000 cal. BP to c. 12,000 cal. BP (N. Perera, Roberts, & Petraglia, 2016). This incident is important, considering the importance of bone tools possess as one of the main components of the behaviourally modern package (Mcbrearty & Brooks, 2000). This interrelationship with the ornaments and technological advancement could not be dismissed as mere instances for interactions between coastal and inland inhabitants. Rather, it could be interpreted in two different scenarios: 1). indications for behavioural modernity which resulted in the technological progression and 2). indications of the existence of a common communication system or a language which aided the cultural exchange and transmission, which in turn caused the technological progression.

Because of the symbolic nature of prehistoric ornaments, they could be considered not just as decorative objects, but adequate evidence which could open a window for language and rituals and beliefs during Mesolithic period in Sri Lanka. Personal ornaments represent a technology specific to humans that signal their ability to project a meaning on to the members of the same or neighbouring groups by means of a shared symbolic language (d'Errico & Vanhaeren, 2009). Only a communication system like human language or equivalent to it can unambiguously transmit the symbolic meaning of signs as well as the structured links between them. d'Errico and Vanhaeren (2009) argue that symbolic items with no utilitarian purpose, created for visual display on the body, and the meaning of which is permanently shared by the members of a community, represent a quintessential archaeological proxy for the use of language or, at least, of an equally complex communication system (d'Errico & Vanhaeren, 2009). Symbols applied to the physical body ascribe arbitrary social status to the wearers that can be understood by other members of the group only if the latter share the complex codes that establish a link between the worn items, the place and way they are displayed on the body, the social categorization they signal, and the symbolic meaning carried by the objects. Therefore, no ''institutionalised'' symbolic meaning can be transmitted without language abilities (d'Errico & Vanhaeren, 2009; Knight, 2009).

Most of these ornaments, particularly perforated shells, display distinct use wear patterns as evident by smoothened edges of the perforations. Wear patterns on the shells and perforated shark teeth and vertebra from the thread and also from repeated contact with the human skin imply that these ornaments were worn for considerable periods of time,

probably, more than a year (Henshilwood & Dubreuil, 2009). Though marine shell beads assemblage recovered from Alavala Potgul lena display a variety of colours, they display a similar size, shade, use wear pattern and type of perforation. Therefore, it is possible that this cluster represents beads coming from same beadwork item, lost or disposed during a single event. This information clearly indicated that wearing beads at Potgul lena was not as an idiosyncratic act by one person but rather a shared behaviour with symbolic meaning within the group.

Furthermore, while proposing a framework for the origin of syntactic language in Middle Palaeolithic through the symbolic nature of the earliest personal ornaments, Henshilwood & Dubreuil (2009) suggest that archaeological material could be linked to specific cognitive abilities. They argue that the capacity to represent how an object appears to another person (level-2 perspective-taking) enables the invention of symbolic artefacts like beads and engraved ochres, but also of other artefacts whose symbolic component remains contentious, such as bone tools, bifacial points, and engraved ostrich eggshells (Henshilwood & Dubreuil, 2009). Of course, this framework was presented aiming to explain the origin of the syntactic language in the Middle Palaeolithic and undoubtedly, AMH's communication skills and ability to interpret symbols have advanced by the time of the Mesolithic. Nevertheless, the importance of this framework is that this clearly indicates that personal ornaments have a symbolic meaning and they are indeed evidence for use of language. Therefore, it will not be incorrect assume that Balangoda man was capable of attributing and comprehending a symbolic meaning to these shell beads and perforated shark teeth ornaments and, communicate with other groups using those symbolic meanings.

As mentioned above, it is certain that prehistoric regional groups, for instance, inland people or coastal people had connections. In addition, homogeneity and uniformity of microlithic tools found from the different climate and geographical regions of Sri Lanka have been emphasized. Therefore, there must have been some kind of method to communicate with each other. The variety of the personal ornaments found at Mesolithic of Sri Lanka in their morphology, colour, raw material, perforation and shaping techniques, as well as their geographic variability and associations, point towards that they reflect complex codes and were conceived to project a meaning to the members of the same or neighbouring groups by means of a shared symbolic language. Therefore, this proves that personal ornaments are, in fact, a valuable repository of information on language and communication of the Mesolithic period.

Personal ornaments as evidence of prehistoric rituals of Sri Lanka

As discussed above, shark teeth and shell prehistoric ornaments found from Sri Lanka show evidence of the advanced symbolic behaviour of Mesolithic Balangoda man. As symbolic behaviour indicates clues about cognitive evolution, social relationships, networks, long-distance trading, technical advancement and language, it also indicative of ritualistic behaviour (Henshilwood, 2009). Since the written records are not available,

indicators of symbolic behaviour have been considered as the evidence for the concept of religion in the prehistoric era such cave art, engravings, ritualistic burial of the dead and non-utilitarian tools. Similar to the Mesolithic period of Europe and rest of South Asia the contemporaneous inhabitants of Sri Lanka also had practised a diverse range of complex rituals which are mainly associated with mortuary customs. For instance, red ochre coated fractional burials which has been observed in Beli lena Kitulgala (Saldin & Manamendra-Arachchi, 2010), Fa-hien cave (Deraniyagala, 1992; H. N. Perera, 2010) and Potgul – lena (Gamini Adikari & Manamendra-Arachchi, 2012), flexed burials observed in Bellan-bendi Palassa (Deraniyagala, 1992), Potana (G. Adikari, 1998) and Mini-Athiliya (Kulatilake, Perera, Deraniyagala, & Perera, 2014), paired burials, fractional interments and ritualistic perforation of the skull fragments which have observed in frontal bone excavated from Rawana-ella (Deraniyagala, 1992) can be mentioned. It has been observed that religion and symbolism are closely related. Without symbolism, there could arguably be no link to supernatural agency, a key feature, as some believe, of most religious concepts. Only when religious ideas translated into material artefacts can religion become possible (Mithen, 1996). One of the most important features in religion is 'gift-giving'. Imbued with value due to rarity or fine craftsmanship, gift items may acquire intrinsic symbolic or spiritual meaning (Henshilwood, 2009). If we take evidence of prehistoric adornment in Sri Lanka, there is only a handful of shell and shark teeth ornaments have been reported. The materials which have been utilized in manufacturing these ornaments, particularly, marine shells, shark teeth and shark vertebrae are rare. Furthermore, according to the aforementioned descriptions, it is clear that these ornaments were finely made. Especially, shark teeth 'pendants' discovered from Fa-Hien cave and Potgul lena demonstrate skilful craftsmanship which is as advanced as perforated shark teeth found from Sahul, Australia (Manamendra-Arachchi & Adikari, 2012). Thus, the rarity of the ornaments, the rarity of the material used, and skilful artistry prove that prehistoric personal ornaments were utilized as religious symbols, in turn, the ritualistic behaviour of contemporary *Homo sapiens*.

This question of if there was a ritualistic background behind prehistoric ornaments of Sri Lanka, what would that be, can be answered from ethnoarchaeological observations. In Australia, Aborigines use personal ornaments as a religious symbol. The spiritual background of the considerable amount of the ornaments of these people is the cult of the totem. During ceremonial feasts which involved the totem animal, especially the so-called fertility and initial ceremonies, the movement and characters are mimicked in the dances and the songs (Kuntzch, 1981). Native American tribes such as Siouan, Algonquians and Iroquoians who lived in Northern Woodland period, referred beads made of shell, crystal and native copper as 'magic beads'. These artefacts were considered as metaphors for a host of symbolic meanings. Native Americans consider sea as magnificent display power of their chief deity, and therefore it was quite natural for them to regard the shell which rolled-up from its depths to bear a part of the mysterious power of this deity. Pearce (2003) states that Wintembery (1908) asserted that one of the reasons shells had been used so widely by native people for ornaments

and charms was because shells were "invested with mystic and protective powers" (Pearce, 2003).

According to Radcliffe-Brown's (1933) account on Andamanese, ornaments made of human or animal bones had worn primarily for their protective powers. Contrasting to native Americans, marine shells bore a ceremonial value rather than ritualistic, as evident by the act of wearing *Dentalium* shells in social ceremonies such as initiation ceremonies or wedding ceremonies to express the value of the individual to the society. In contrast, human or animal bones were worn to cure illnesses or protect themselves from spirits, which had signified a sense of security (Radcliffe-Brown, 1933)

Mount ford and Alison Harvey (1938) mentions the ritualistic aspect of the shell ornaments worn by various Aboriginal groups in the Australian continent. According to them, 'malignantly-disposed' individuals in aboriginal groups in South-western Queensland had used pearl shell ornaments as objects of evil magic although it was generally considered a public ornament which is worn in joyous occasions. In Central Australia, pearl oyster shells had held a magical value. In Oolda, they were used in rain-making rituals. In Central Australia, it was believed that the ornament named *Lonka-lonka* which is also made of pearl shells, bear healing qualities. Dieri tribe and Urubunna and Wongkanguru tribes of the Peakt district had used shell ornaments in connection with initiation ceremonies. Furthermore, the Baler shells were used as objects of evil magic by Dieri (Mountford & Harvey, 1938)

Considering prehistoric ornaments as evidence for prehistoric rituals of Sri Lanka is supported by the assemblage of animal teeth and vertebrae 'ornaments' or 'beads' discovered from Jetavana stupa which belongs to the historic period. Built in 3rd century AD by King Mahāsena (AD 274 – 301) Jetavana monastery was one of the main three Buddhist institutions of Anuradhapura Period and was closely affiliated with Mahayanist doctrine (de Silva, 2005). Most of the recovered beads or ornaments were made by perforating the root. A total of 51 teeth and shark vertebrae were there. Taxonomic identification of beads: ten *Crocodile* sp., one marine mammal, six mongoose (*Herpestes* sp.), ten dog (*Canis familiaris)*, two fishing cat (*Prionailurus viverrinus)*, one sloth bear (*Melursus ursinus)*, one leopard (*Panthera pardus)*, one porcupine (*Hystrix indica*), ten shark vertebrae and seven perforated unidentified tooth fragments. This assemblage was recovered from the *Ayaka* on *Salapathala maluwa* of the stupa. Among the recovered 51 beads or ornaments, all of them were found near the northern *Ayaka*, except for the seven shark vertebrae which was found near eastern *Ayaka*. This unusual assemblage makes us wonder whether these beads or ornaments were remnants of an ancient ritual, custom or belief which was incorporated to the Buddhism, as other native worships. This speculation is reinforced by the fact that such offering contrasts with the ideology of Buddhism. Therefore, the only way to explain this occurrence is that this was accepted as another way of worshipping the Buddha. If there was a ritual or native belief which was related to beads or ornaments made from faunal remains when Buddhism was introduced to Sri Lanka in the 3rd century BC, it is not that incorrect to assume that, this

particular ritual was descended from a ritual which existed in the prehistoric time. Even though the continuation of prehistoric hunter-gatherer societies to the latter part of the history in Sri Lanka still being debated [see (Hawkey, 2002)], there is evidence of continuation and incorporation of native ritualistic and shamanistic beliefs of hunter-gatherer groups to systematic and organized religions in Sri Lanka as well as around the world (Manamendra-Arachchi, 2009). Therefore, there is a possibility that prehistoric ornaments of shell and shark teeth in Sri Lanka are in fact the remnants of a long-lost ritual which was practised in the Mesolithic.

Figure 12: Perforated animal teeth excavated near northern Ayaka of Jethawana stupa (Image: K. Manamendra-Arachchi)

Figure 12

Conclusion

Prehistory of Sri Lanka could be dated back to more than 50,000 or arguably 100,000 years ago. Even though the stone tools of Sri Lanka come from 125,000 BP, prehistoric ornaments and rituals come from the Mesolithic onwards. Prehistoric ornaments of Sri Lanka could be categorized into two groups according to their production material, as ornaments made from freshwater or marine shells or 'pendants' made from shark teeth and vertebrae. Modification techniques of these beads and pendants clearly state that prehistoric ornaments were not just mere decorations. Considering the ethnoarchaeological and material evidence, it is certain that prehistoric ornaments of Sri Lanka indicate long-distance trade, social relationships, language and communication and most importantly symbolic behaviour of the prehistoric people. Furthermore, burial of systematically perforated animal teeth near Buddhist monuments gives a hint about the ritualistic meaning of these adornments. Therefore, more studies should be conducted to recognize and identify the personal ornaments hidden in unearthed archaeological assemblages giving special attention as they possess immeasurable value as evidence for the symbolic behaviour of Mesolithic inhabitants of Sri Lanka.

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Administration of the Udugampola Sub- Kingdom: A Historical and Archaeological Legacy

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Abstract

This paper aims to bring forward a new perspective on the remaining factors concerning the historical and archaeological backdrop of Udugampola sub Kingdom of the Kotte kingdom existent in the history of Sri Lanka. A trail of provincial administrations ruled by deputies under the guidance of the king can be observed at certain periods in the history of Sri Lanka. Such administrative divisions were called an Upa Rajadhani or Sub- kingdoms. Udugampola at the Gampaha District is one of such sub-Kingdoms of the Kotte Kingdom. The available historical sources such as the battle of Alakeshwara in Rajaawaliya provide proof for the fact that king SakalakalaWallakabahu, the son of Veeraparakramabahu VIII of Kotte had ruled this region, during the Kotte period. The palace of the king of Udugampola was at the premises of present Uttararama temple, where a pond and remnants of a moat is still being identified. However, this legacy is diminishing with each passing day. In the spotlight cast over prominent ancient kingdoms such as Anuradhapura and Polonnaruwa, the value and importance of ancient sub- kingdoms like these with archaeological significance stands diminished. With very limited discussion about these sites, the possibility to be forgotten over time threatens the existence of their evidence.

Introduction

It becomes evident that the Gampaha District is a collection of important heritage sights when exploring the many archaeological remains scattered over the entire district. The *Maligagodella Uttararama PuranaVihara* of Udugampola holds a special place among these, since many archaeological remains and features of the kingdom are still to be found in and around this site. The area of this vihara which currently falls under the Minuwangoda Division in the Gampaha District was called Dasiya Paththu of Uthuru Aluthkuru Korala in the past. This Vihara becomes an important historical site due to evidence found in ancient texts of Rajavaliya and AlakeshwaraYuddhaya that cite a sub kingdom which was reigned by King Sakalakalawallabha, son of King Veera Parakramabahu.

The location where the Vihara stands today was historically the location of the Royal Palace of this sub kingdom. Remains of the royal pond and protective moat can still be found around the vihara. Names depicting various tasks and services attached to the royal palace are still found from surrounding areas. Maligagodella was where the Royal

Palace stood. Apart from that, Kehelbaddara was where kehelibandirala (royal flag bearer) used to live. Udugampola was where prince Utthiya stopped, having travelled upstream of (UdugamBala) the river. Veediyawatta was the promenade where the annual royal parade of Sakalakalawallabha took place. A place where a small stream fed into the royal water garden is Dolaagatha. (Dola – small stream) and a place where the king rested twice a day is Devalapola. The place where the highest granaries of the king's treasury stood is called Maabodala (MahaBudalaya – Great Treasury). The most important fact is that these place names are used to date.

Two places at close proximity to Maaligagodella are Maabodala and Aswana. A rivulet off of Maabodala tank was crossed with a Dam (Wana) at Kalawana and the exit Dam was named Aswana (Exit Dam – As wana) Maabodala, Maligagodella and Aswana are said to have had royal palaces and the royal pond is said to have been fed by the Aswana Dam. Remains of this Dam can be found to date. The queen of King Sakalakalawallabha is said to have committed suicide by jumping into the Aswana Dam. The place where the queen's jewels (mini ruwan) were found is Minuwangoda and her head was found at Galoluva (Oluva - head) while remains of her innards were found at bokkamulla (Bokka – Intestines/innards). These place names stand relevant to date. The royal goldsmiths and jewel makers were said to have lived in Hendimahara. A place where many fish of the variety called 'pethiya' in Sinhalese were said to have been found -as the result of a flood in KudaOya- is named Pethiyagoda. Relatives of the royals are said to have lived at the city entrance in Doranagoda and reptiles for the royal family were bred at Naiwala. The King's flower garden is said to have been at 'Pitakotuwa' and farmers who cultivated paddy for the king are said to have lived at Govigama. (Govi - Farmer)

Therefore it is evident that Udugampola and surrounding areas hold great historical value and attest to a well-established and successful sub kingdom. The style of reign in the kotte era was to divide the kingdom into parts, allowing the royal princes to reign over a particular area. During the 16th century, the Kingdom of Kotte was divided into 5 areas. The area including Kotte and Colombo was ruled by the King VeeraParakramabhahu VIII. Specified tasks and professions were divided among various clans. The King's Parasol carriers were called Muthkudawijesuriya. Warriors were called Ranatunga. Accountants were called HettiPathirana and advisories were called Bamunuarachchi. These were assigned by the King. Pottery, Jewelmaking, Astrology, Drumming were all assigned to various clans, displaying clear stratification. Due to the symbiosis of these tasks and relevant clans, the sub kingdom used to be a self-sufficient entity. However, these traditional enterprises are on the decline at present, due to challenges brought about by many changes in the economic and social structures. The area originally belonging to the royal palace has receded into 2 acres approximately from a square mile, giving way to new development projects, housing and various political needs etc.

Geographical Background

Sri Lanka is an island in the Indian Ocean having a central location and in close proximity to india. Its land area is about 65610 sq. k.m. Western province includes three districts. Gampaha, Colombo and Kaluthara.
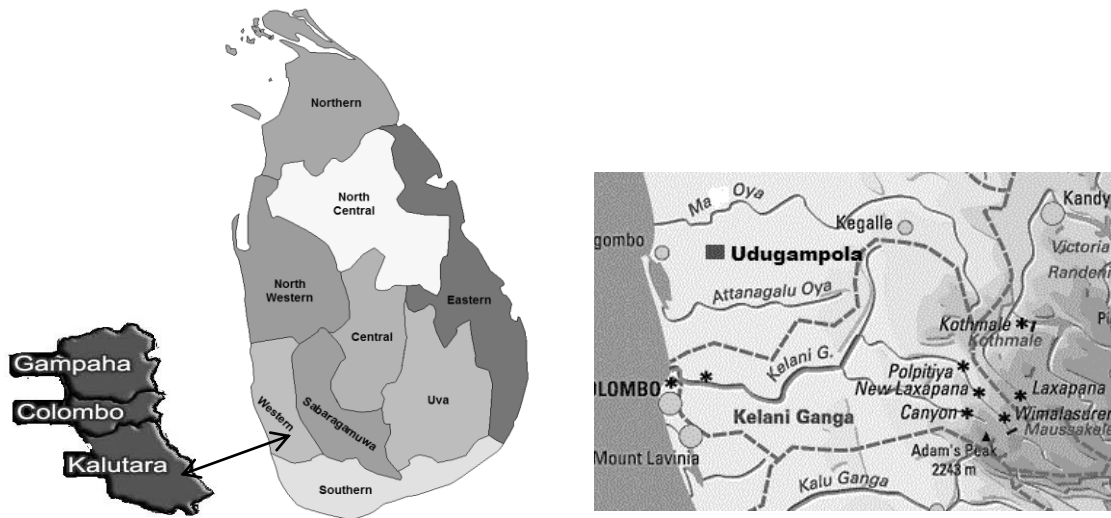
The geographical boundaries are as follows
>   Ma Oya by North
>   Kalani River by South
>   Indian ocean by West
>   Highland cliffs of Western Sabaragamuwa by East

Historical Background

Although Udugampola is more of a rural nature at present it can be proved to have been a developed and well established sub kingdom surrounding the Capital of Kotte, with a substantial spread. The spread of this sub kingdom can be defined as follows, taking into consideration historical geographic factors; Bound by Kelani river from the North, Ma oya from the South, Indian Ocean from the West, The Mountain range bordering Sabaragamuwa and western provinces from the East. These being the four boundaries, the palace is believed to have been built at the center, where present day Maligagodella is located.

When exploring the historical context of the Udugampola sub kingdom, texts dating beyond the kotte era are yet to be found. However, as evident by the discovery of 1048 gold coins with the sun and moon signs used in the Anuradhapura era in an area called 'Korasa' in close proximity to Udugampola, it can be argued that perhaps a civilization that used coins etc. have been in the area from before the Kotte era.
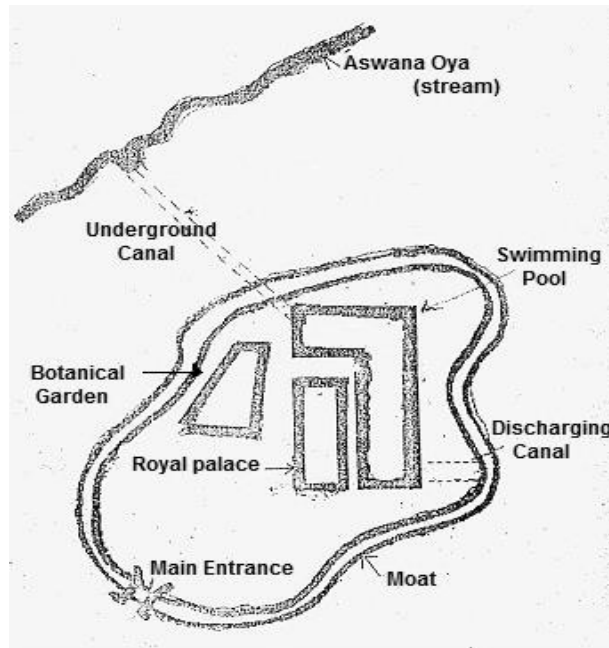
The ground plan of Udugampola sub-kingdom (Hewapathirathna, 2000)

However, the first written evidence on Udugampola and its sub kingdom therein is found in a text called 'AlakeshwaraYuddhaya' a sub text of 'Rajavaliya' (Suraweera; 1965). It has clear evidence of Udugampola Sub Kingdom. 'Thereafter the eldest of the great king was coroneted as the king Dharma Parakramabhahu. Another reigned in Katupitimadampe as Thaniyaan Walla. Another reigned as Sakalakalawallabha in Udugampola' Thus the evidence of a kingdom and the ruling order can be identified. Udugampola can be identified as a sub kingdom surrounding the central Kingdom of Kotte (Suraweera;1965, Suraweer;1977).

The text Rajavaliya also has written evidence of the king Sukalakalawallabha of Udugampola sub kingdom and his younger brother. According to the text, the brothers had defeated a foreign threat in the form of Dravidian pearl diver named 'Adhiraasaraayan Mudaliyar' who had operated illegally in Halawatha and claimed elephants by the power of his illegally amassed wealth. 'Name of Mudaliyar who was pearl diving illegally, claimed many elephants to his name, having sailed with many to Halawatha. King Sakalakalawallabha, having heard of this, departed from Udugampola….. Having won the war, alighted upon Jayawardhana Kotte in attendance to the king Dharma Parakramabhahu, were given many accolades and arrived upon his own city' The author of the AlakeshwaraYuddhaya states that it is King Sakalakalawallabha who was sent to defeat the coup which arose from SatharaKoralaya against the king.' Upon hearing that the king of Udarata has given rise to many complications throughout satharakoralaya, King Dharma parakramabhahu sent for his brother King Sakalakalawallabha… visited King Dharma parakramabhahu and alighted upon Udugampola with many praises and accolades' It is also written in Rajavaliya that it was Sakalakalawallabha who assisted and stood by the King of Kotte when Portuguese arrived in Sri Lanka. He was selected to investigate the nature of Portuguese and report

to the king 'King Chakrayudha, I shall go and see from my own eyes how they are….' It is evident that the king undertook this mission with the addition of a name 'Chakrayudha' referring to the same person, as he was instrumental in the protection of the King of Kotte in many instances (Suraweera; 1965, Suraweer; 1977). Hence the special name 'Chakrayudha' (protective weapon). This can be confirmed through records of the historian Valentines well. A tablet discovered near Negombo, in Kadirana also attests to the handing of benefits by the new royal palace in Udugampola in which now reigns a Sri Vijayabhahu whose predecessor was a Lord Chakrayudha. '….eight years following Sri SanghaboChakravarthi in Aluthkuru Korala Udugampola…' Evidence especially that of written text can be a state to prove of the sub division system of the kingdom and the existence of a Sub Kingdom in Udugampola(Suraweera;1965, Suraweer;1977).

However, the end of the King Sakalakalawallabha seems unclear as recorded evidence cannot be found of this fact. As evidenced in the Alakeshwara Yuddhaya, Dharmaparakramabhahu calls upon Sakalakalawallabha to rule the kingdom of Kotte, which he does not accept (Maduluwawe 2004). It further states that the King Sakalakalawallabha passed the throne to his younger brother and departed to Udugampola once more. ' Having considered few factors, called upon his younger brother to reign and upon carbonating him as Vijayabhahu and handing over the armies and the kingdom to him, alighted upon Udugampola City' It is proven that the Udugampola mentioned here is the same place.

Reasons for the king to not accept the throne can be perceived as follows;
1. As stated in the Rajavaliya, the king being born of a sister of the queen who was brought in from Keerwella.
2. The king not having married from a royal lineage.
3. The king being of old age at the time. (Maduluwawe 2004).

Though further posthumous evidence of King Sakalakalawallabha are not to be found, the existing evidence indicate a well-structured and successful reign. As historic texts attest, King Sakalakalawallabha was instrumental in safeguarding the Kingdom of Kotte. The remains of the protective moat and royal bath pond indicate the king safeguarded his own sub kingdom as well. The king's bath is the largest of the kind to be used by a king. The dam that brought fed the pond is still to be found near the Aswana temple though not in working condition due to blockages in underground waterways.

Pathaha (swimming pool or bathing pond)

Two sons of king attempted to kill him by setting up pointed wooden stick under the bathing pond. But king saved his life. Today it is a barren land.

Toilet Base

The Resting Stone for Bathing

The royals of ancient times considered it a priority to safeguard and provide for the kingdom before engaging in warfare. King Sakalakalawallabha too was responsible in developing several tanks such as the KoraseWewa, NagahaWewa, GodaWewaaccording to legend. Though historical evidence to the end of King Sakalakalawallabha's reign are not found, it can be assumed that the general calamity towards the end of the Kotte Era affected the Udugampola sub kingdom as well.

Aswana Dam

With the onset of development and modernization, the heritage of Sub Kingdom of Udugampola which is believed to have been founded in the 1400's has come to be challenged in many ways. Weaknesses in heritage management has led to further deterioration of this national heritage that should be secured for the benefit of future generations.

Conclusion

History is not fiction. It is a record of activities of human beings, based on acceptable factors. According to the all type of evidences Udugampola sub-kingdom also had been playing an important role in the Sri Lankan history. The time has come to preserve and look after our inheritance for the future generation. It is the duty of country people and more over the relevant authorities. Sri Lankan heritage is the heritage of world as well.

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A Book Review: Dasabodhisattuppattikathā Aṭṭhakathā

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C-a	*Cariyāpiṭaka-aṭṭhakathā*
D-a	*Dīghanikāya- aṭṭhakathā*
Dbk	*Dasabodhisattuppattikathā*
Dbk-a	*Dasabodhisattuppattikathā aṭṭhakathā*
Dbu	*Dasabodhistta uddesa*
D-ṭ	*Dīghanikāya- ṭīkā*
M-a	*Majjhimanikāya- aṭṭhakathā*

The book entitled "*Dasabodhisattuppattikathā Aṭṭhakathā*" (Dbk-a) is of one hundred and thirty six (136) pages. The author of the above work, Ven. Medagampitiye Wijithadhamma, professor in Pali at the University of Sri Jayewardenepura, himself introduces that it is a Pail commentary. The Dbk-a was published by S. Godage and Brothers (PVT) LTD, Colombo 10, Sri Lanka in 2017 in two scripts; Sinhalese and Romanized.

The introduction and the back cover of the book assert that the author's expectation, by writing this commentary, was to prolong the existence of the Pali language and commentarial tradition. To the best of my knowledge, Prof. Wijithadhamma has written a large number of papers in Pali and presented papers in a number of conferences conducted in the Pali language. In brief, he is a well-known Pali scholar in Sri Lanka today. However, his recent book, the Dbk-a is deserved for both negative and positive critiques.

Honestly speaking, it is indisputable that the Dbk-a will receive high esteem as a pure Pali work in the current world though it accommodates a number of deficiencies. Writing in Pali, definitely motivates the newcomers, who are interested in learning this language in the higher educational institutes. In that perspective, this work should be highly appreciated to be a tool that encourages the beginners in the field of Pali studies. Also, the author's practice of referring to the existing commentaries and citing the definitions to comment on the elected terms in the Dbk upgrades the worth and the fidelity of the Dbk-a.

Title

On the negative side, my first disagreement is with its given title. It sounds that the author is not aware of how the *Nettippakaraṇa ṭīkā* defines the term "*aṭṭhakathā*" and consequently how the commentaries to the non-Tipitaka texts are excluded.

[*dhammasaṅgāhakehi tepiṭakaṃ buddhavacanaṃ saṅgāyitvā tassa atthasaṃvaṇṇanānurūpena vācanāmaggaṃ āropitattā ācariyavādo nāma. Tena vuttaṃ ''ācariyavādo nāma aṭṭhakathā''. Tissopi saṅgītiyo āruḷho eva hi buddhavacanassa atthasaṃvaṇṇanābhūto kathāmaggo pacchā tambapaṇṇiyehi mahātherehi sīhaḷabhāsāya ṭhapito*]. Since the Dbk is not a text or a part of the text of the Tipitaka, there is no rationale to title this to be "aṭṭhakathā". (More details are coming in my forthcoming article "The Historicity of the Nettippakaraṇa"). The second weakness is the author's failure to remark his own observations on the historicity of the Dbk and borrowing all the viewpoints which only Ven. Hammalawa Saddhatissa had made. I suppose that the author should have given a perfect introduction to the Dbk as a commentator who comprehended profoundly the internal facts like the content and language (syntaxes) of the Dbk. To my current studies, the Dbk was a later composition for the *Dasabodhisatta-uddesa* (Dbu), which could be considered as a work completed in Cambodia and gravely influenced by the Mahayana concepts. Because, H. Saddhatissathera had ignored or missed the work (Dbu) of par François Martini in his edition, it is unjustifiable referring to his notes only. Further, herein, another fact I negatively noted was that the author of the Dbk-a has not gone through at least the short records of Prof. Hinüber in this regard.

Language

The author is mindful to keep the grammatical accuracy in his work except a few errors like "*ciraṭṭhitatthaṃ*" (135), but, he seriously fails to use punctuations properly throughout the text. For instance, it is enough to read only the first paragraph to understand the aforementioned weakness and it continues even in the pages 26, 27, 28, 29, 31, etc. In a further inquiry, it is evident that the writing style of the Dbk-a has been badly Sinhalized. Accordingly, the south-west direction is called to be "*neruttadisā*" (115), which could probably be affected by "*niritadisā*" in the Sinhalese language. Further, interpreting the term "*piḷato*" he uses the term "*piḍito*" (107). In addition to that, Sinhalese syntaxes are also applied herein. "*Adhunā tassa Dhammarājassa bhagavatobuddhalakkhaṇāni desetuṃ kālo sampatto*" (85). This is an ordinary syntax in the informal Sinhalese language. Under this circumstance, it is clear that though the author was mindful of grammar, the syntaxes he used herein are out of the original way of Pali. This continuously appears not only in the proses but also in the verses like "*mayhaṃ dhammācariyassa-vihārevuttakālamhi| āraddhesā aṭṭhakathā-niṭṭhapitā mayā sammā*" (135). This Sinhalization negatively affects the Pali readers, who are not familiarized with the Sinhalese language. In brief, particularly, the form of the author's own compositions is more equal to the form of the verses in the *Dīpavaṃsa*. The serious language issues are related to the colophon of the Dbk-a. He has started the colophon verses in the third person, but, in the middle, he has lost the accord and mixed it up with the first person. "*aṭṭhakathā nayaṃ sammā-anugantvā yathā balaṃ | sāramādāya tesañca-yathārahaṃ kathaṃ idha.*" Except these, the considerable deficiency is the incorrect metric system used herein. Especially, the following lines, as the independent writings of the author, violate the meters; "*karuṇāya yuttassa*" (135), "*pāli-Sogata*

ajjhayana" (135). And, the verses inside the text, from wherever that had been quoted, exceed the meters thusly; "*tasmā hi bhonto dadantu dānaṃ*" (95) "*ye te katābhinīhārānaṃ-bodhisattānam*" (46) "*daspāramī tayā dhīra*", *kathaṃ upapāramī puṇṇā*" (28).

Misinterpretations

Moreover, in a careful reading, some other serious negative signs are also found. They are non-other than misinterpretations and misinformation. Describing ten perfections, Prof. Wijithadhamma says that certain people who introduced six perfections were Mahayanists. Apparently, this attests that he is not aware of six-numbered perfections in the Pali commentarial literature, particularly, that are coming in the Cp-a. Again, in the page number 66, he defines "*hattha*" as "gem". This is completely a misunderstanding and misinterpretation. I presume that he understands the interpretation that comes across in the D-ṭ "*maṇibandhato*" as "gem" and applied it in the Dbk-a. In fact, "*maṇibandhato*" means "from the wrist" but not "gem". It is obvious that his interpretation is misleading. Repeatedly, he has made another misinterpretation when the clans of the elephants were interpreted. As the author of the Dbk-a, he should have known how this was detailed in the M-a (*Sīhanāda-sutta-vaṇṇanā*) as ten before referring to the lexicon '*Abhidhānappadīpikā*' in which it is defined to be eight (8) groups. Additionally, the information given in the Dbk-a about the committing of suicide of a Buddhist monk in Sri Lanka two years back was not a result of politics. Hence, it is doubtless that such misinformation affects negatively the trustworthiness of the text. And, the author's incapability to refer to the original source leads to some more misinterpretations. For instance, he, describing Rāhu, has traced a verse in the D-ṭ that contains four lines only. Nevertheless, the original verse in the *Mahāsamaya-sutta* of the *Dīghanikāya* has six lines. As the author of the Dbk-a refers to the D-ṭ in this regard, consequently he also misses the last two lines as same as the D-ṭ.

Apart from the quoted illustrations for the selected terms of the Dbk, the only contribution from the author to the Dbk-a is grammatical explanations. However, it is to be noted that certain grammatical explanations are also irrelevant and they do not add worth to the work; "*imasmiṃyevāti*" (77), "*tatthevāti*"(84), "*tatthāsīti*"(99), "*idānāhanti*"(125) "*athekadivasanti*" (19), "*etadavocāti*"(20), "*anekāti*"(25). The traditional commentators made this sort of grammatical explanations to describe the true contexts of *tattha*, *ettha,* etc. Nonetheless, I do not see any rationale behind such terms coming in the Dbk-a.

Plagiarism

The Dbk-a uses Sanskrit texts, Chronicles, existing commentaries of Buddhadatta, Buddhaghosa and Dhammapala and the present social contexts too. This practice suggests that the author had not had a premeditated mind which sources he should use for his work and which school or commentarial tradition should be followed. The other

serious issue found herein is plagiarism. There is no doubt that a commentator is allowed to use any relevant and existing sources to comment on the original text. Nevertheless, mostly, the commentators were honest to mention the reference of their quotations by using "the ancestors said thus, ancestors are saying thusly, as how this or that commentary has recorded." A weakness of the Dbk-a is that it has included a number of citations without citing them properly. While there are varied possible methods available to indicate the quotation by using at least the inverted commas (punctuations), the author of the Dbk-a is dishonest not to practice it in a number of places throughout the work. I would daringly say that it is plagiarism. For instance, author's contribution for 11,12,13,14 pages is with around 5-8 lines only. The rest of the content is from the D-a 1-32. A similar drawback is apparent on page14 and the citation is from the M-a 1-59. On the 16th page, three verses are quoted from the *Anāgatavaṃsa*, but the author does not record the source. The most interesting fact therein is the prose passage included after these three verses is also based on the content (re-write as a prose) of the *Anāgatavaṃsa*, but the author intentionally indicates it as his own writing. After the 19th page, a few pages continue the amplifications that were cited from the D-a 2-484 in the form of plagiarized work. Under such circumstances, I am reluctant to admit this work as true commentary.