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**Cover image:** Ram Avatar, Rani-Ki-Vav, Gujarat (courtesy: Rajalakshmi Karakulam

**Inner Cover image (History and Archaeology):** Excavation at Purana Qila, Delhi (courtesy: Aprajita Sharma)

**Inner Cover image (Conservation of Cultural Heritage):** Central Pillar of Diwan-i-khas, Fatehpur Sikri (Courtesy: Gurpreet Singh)

**Inner Cover image (Heritage and Culture):** Sculpture on Pillar, Sun Temple of Modhera, Gujarat (courtesy: Rajalakshmi Karakulam)

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# EDITORIAL

In the next three years, we can start expecting a better developed, cleaner and well organised heritage cities of India as the Modi Government has launched a new flagship project called Heritage City Development and Augmentation Yojana (HRIDAY). It aims at providing a lively, skill oriented, safe and secure environment for tourists and visitors by bringing Urban Planning, Heritage Conservation and Economic growth together. Initially, we can expect heritage sites having properly laid roads, without hawkers blocking the way, and well-lit surroundings. Under this project, the seven heritage cities - Amritsar, Ajmer, Gaya, Kanchipuram, Mathura, Varanasi and Vellankani have been taken into consideration.

All these years, re-development of heritage structures was taken-up as isolated cases but a need was felt to link the heritage development projects with the overall planned development of the localities. Installation of CCTV cameras and provision of Wi-Fi zones will also be a focus area. Developing proper parking space and hawkers zones are also integral part of rejuvenating such cities. There will also be provisions for heritage walks, digital information kiosks, pedestrianisation, and solar/battery operated vehicles for tourist areas.

Under this plan, each of these identified cities will prepare the heritage management plan (HMP) outlining the heritage resources and development guidelines. There are proposals to have documentation of all heritage sites, conservation of areas, more facilities for women, senior citizens and differently abled citizens besides improved connectivity, access to tourist, and attractions focusing on the improvement of last-mile connectivity.

This initiative will fill all the gaps, which have been in-existence for many decades and had been a huge barrier in development of cities as a whole. The success of HRIDAY will lay down examples and models, which can be implemented in other cities with minor changes as per requirement. Moreover, it is also going to provide jobs and employment to a large number of young brigade including archaeologists, heritage managers, architects, conservators, engineers, etc. Though besides this, we all have to come forward to make this dream come true. A collective effort is required from us as a society and this would only be possible if we all come together to start small awareness projects around us.

*Gurpreet Singh*

# History and Archaeology

# West Asian Influence on Lion Motifs in Mauryan Art

[1]Vinay Kumar

## Introduction

There are many art motifs in Mauryan art which are taken as evidence of foreign influence on Indian art but amongst those the most enigmatic is the lion motif which is traced to West Asian sources. Undoubtedly it is West Asian in origin, as Coomaraswamy, Ray and Irwin have rightly pointed out, but it underwent great formal changes on the soil of India, and that too from the very beginning, as if it was deliberate, pre-planned and well thought of (Coomaraswamy 1972: 11).

## Lion Motif in Mauryan Art

The magnificent capitals of the Mauryan pillars consisting mainly of lion as their crowning feature, in form, shape and appearance represent an unprecedented and unique category in the Indian art history creating splendid aesthetic effect and meaning to the total form of the pillars. The depth of meaning that goes with the symbolism of these lion capitals is unique in the entire field of Indian art activity and to which there is hardly a parallel in world art (Agrawala 1965: 96). Lion as the crowning animal of Mauryan pillars have been found from several places such as, lion capital at Bakhira, lion capital of Lauriyā Nandangarh, Rāmpurvā Lion Capital, Sārnāth Lion capital, Sāñchī Lion capital. Besides these, lion capital has been found at Masadh village in Arrah district of Bihar.Allahabad pillar was also surmounted by a lion but the lion must have disappeared many centuries ago when the pillar was re-erected by Jahangir it was crowned by globe surmounted by a cone (*Journal of Asiatic Society of Bengal:* 127).

A lion capital at collectorate Ghat Patna has been discovered in 2008 by the officials of Patna Circle of Archaeological Survey of India (ASI), which has got very little polish and is with open eyes. The sculpture has a crown on the top and the moustache of the sculpture is very prominent. The face of the lion has human look and its tongue is



protruding out. The teeth are visible along with the canines. The most striking feature of this sculpture is that it has got the impression of a royal figure. On the top of the head a fort like design can be seen. The top contains beaded design within two parallel lines with the depiction of fort thereon. The expression of the eyes of the above said sculpture gives a sense of satisfaction. According to the author, this sculpture can be correlated with the lost capital of Mauryan palace.

The lion available in sculpture is more in number than the bull and the elephant. In Buddhist art the lion symbolises the Buddha *Śākyamuni*, known as "The Lion of Śākyas", *śākyasimha*. The addorsed lions of Sārnāth pillar, which seem to be of West Asian in origin, are intended to be caryatids to bear *Dharamachakras*. The lion's role as caryatids appear earlier in Assyrian art. The aesthetic vision and imagination and the conventional style and fixed expression are most evident in the crowning lions. Compared with later figural sculptures in the round, of *yaksas* and their female counterparts on the reliefs of Bhārhūt, Sāñchī and Bodhgayā, the art represented by the crowning lions belongs to an altogether different world of conception and execution of style and technique, altogether much more complex urban and sophisticated. The impetus and inspiration of this art must have come from outside (Ray 1975: 32).

It is somewhat curious that the lions in Mauryan art are always and invariably done in a manner, which seems already to have been fixed by convention. Their formal pose and appearance, the rendering of their volume, bold and vigorous but stylised treatment, their plastic conception and the sense of form as revealed in them are on the whole the same and pre-determined. The trend of the style is already evident in the Basārh-Bakhira lion and it is within the limit of the given trend that the style evolves and advances in treatment and execution. The aesthetic vision and imagination, the attitude and outlook of the artist do not show any definite change. This is partly true as well of the lion, the horse and the bull on the Sārnāth abacus. It raises the presumption that this style and convention, which has no earlier history in India, came from outside where they had already been fixed and well established (Carotti 1908: 218).

Did it come from the Achaemenian West? This seems to be very doubtful for the modeling of these sculptures have nothing in common with that of the Achaemenian ones nor the powerful feeling for volume and preference for stagnant, compact forms have anything in



common with Achaemenian Iran. Moreover West Asian art especially Iranian art during the Achaemenian period came heavily under the influence of Hellenistic art; further, “the few attempts made in Iran in the domain of free plastic art bear an entirely different stamp in their preference for angular forms”(Bachhofar 1923:7).

The crowning lions of the early phases, namely the Basārh-Bakhirā and Lauriyā-Nandangarh examples, are also works perhaps of Indian artists but tutored in the style and tradition of contemporary West Asian art; this is marked in the grappling with the problem of form arid its precise execution which are so evident in these sculptures. There is decided advance in the Rāmpurvā, Sārnāth and Sāñchī specimens; this may have been achieved by the same Indian artists working increasingly in the direction of contemporary West Asian art or by colonial artists of the Hellenistic Orient imported by the Mauryan court. In any case, there are in these specimens, a strong and undeniable Irano-Hellenistic stamps that may not have been imprinted by traditional Indian hands (Ray 1975: 35).

When we analyse the art creations during the reign of Aśoka, we find that the idea of lion as the crowning animal was adopted from West Asia. But it was not a slavish copy of the motif. It was adopted from West Asia whatever suited our cultural ethos and in forms which was again modified according to the Indian taste and requirements. This is called the transformation of the form and idea (Gupta 1982: 339). Lions in India don’t have mane on the belly as compared to the lions in West Asia. While practically all lions in the West Asian art look ferocious and monstrous, none of the Mauryan lions look like that. Lions in West Asia adorn the gateways of palaces or parapet walls of the fortifications, but in Mauryan India they crowned the pillars of piety, *dhammastaibhas* and roared the triumph of *dharma* all over the Mauryan Empire. This was the metamorphosis of a decorative element used by West Asian king and rejection of the details, which did not suite to Indian taste. Thus the Mauryan lions are no carbon copy of any particular West Asian or Greek model.

The surviving Mauryan crowning animals-single and addorsed lions are apparently selected from a repertoire which anticipated Aśokan sculptures. In effect, details in the treatment of Aśokan animals reveal as many similarities with the Persepolitan proteomes. To illustrate this point we may note for example that the treatment of the eyes and the



mane of the Sārnāth lion that is in accordance with conventions widely apparent in Assyrian, Iranian and Hellenistic sculpture (Herzfeld 1941: 242). A.U. Pope attributes the four quadrupeds circulating the abacus of the Sārnāth capital to that of the similar animals depicted circulating the rims of plates or the outsides of bowls of West Asian origin. According to Irwin, Assyria was the home for Aśokan Lions (Pope 1960).

Irwin admits that the lions of Aśoka's monuments clearly represent a heraldic beast of foreign pedigree embodying nothing of the intuitive character of Indian animal art through ages. The open mouth, protruding tongue of West Asian lion sculptures at least from the second millennium BCE and more was widely represented in fourth millennium BCE in Mesopotamia. Other West Asian countries included this animal in their art only in subsequent periods. "Careful examination of the anatomy of the beasts on the Sārnāth and Sāñchī capitals (especially the detailed treatment of the forelimbs) leaves no doubt that the masons who carved them had been working from already stylised models, and without first hand knowledge of the animals itself, which cannot be said of the artists who carved the bull and elephant capitals." Irwin admits: *"If we look for its (Vaiśālī lion's) closest parallels in Western Asia, we are taken back to Achaemenid art of the fifth and fourth centuries B.C. in particular to the so-called 'applied art', represented by gold rhyton or drinking cup which Ghirshman attributes to about 500 B.C."* (fig. 1a-b). According to Ghirsman *"The closest parallel of lion of Vaiśālī pillar may be traced back to Achaemenid*

fig.1a-b Hamadan: A gold rhyton with winged lion, 5th century BCE

*drinking cup of 500 B*
*to suppose that porta*
*by the Indian rulers d*
*the two centuries bef*

With the ancient Egy
Sechenet, both of wh
1982: 324). Leo, the
decorations of pitche
the lion guardian ov
guardian over spring
water gushed out of a
head decorating the



arts, the lion, typical of strength, was used by the ancient Greeks and Romans as a form of support (legs, etc.) for chairs, benches and tables (fig. 2).

Lion head is also used as spouts. The Greek mainland, however, borrowed it in first millennium BCE. It was absorbed in court art of West Asia and it became the king's favourite. Thus, the lion found place not only in royal palaces, tombs, hunting and war scenes but also in glyptic art and terracotta. But the representation was not natural but stylised one. Slowly and gradually each country of West Asia evolved its own style of depicting this motif. Hence it can easily be distinguished from one another. The characteristic feature of the Aśokan lion lies in the actual modelling with its emphasis on flesh surface, and its indifference to the real anatomy and bone-structure of the animal. Assyrian lion depicted in hunting scenes acted as the model for Mauryan lions but the Assyrian lions are elongated with its locks of mane reaching down to the belly and patches of muscles are shown in geometric forms. Besides this, the body proportions of

fig. 2 Lion in West Asian art

the Aśokan lions are entirely different from that of Assyrian lion. The frontal part occupies practically half of the body, while in the Indian examples it is rarely more than one third. The facial expression in the two examples is also different. The reason behind it was



that Aśoka's exploitation of this animal motif in art was for an entirely different purpose than the one to which the West Asian countries employed it. The open mouth posture of the Aśokan lion represents the heraldic aspect not of the king as an earthly ruler but that of the *Dhamma*, which the king upheld merely as a lay disciple. The majestic aspect of the lion is, therefore, not of terrestrial character. The Aśokan lions, in other words, were never expected to rouse fear in the minds of the onlookers while their West Asian lions were invariably meant to inspire awe and fear. The Aśokan lions were in fact expected to stir a positive response in the minds of the people; respect for the *Dhamm*a. In West Asia the lion served the king, enhanced the valour of his personality and terrorised his subjects; in India it served the *Dhamma,* established its supremacy and inspired the masses. It was also meant to inspire the Buddhist monks and the officials to march ahead, spread and broadcast in every corner of the world the message of the *Dhamma*. Therefore, there was absolutely no need to follow any of the West Asian idioms, and in fact it was totally eschewed by Aśoka. Therefore, in West Asia the lion was ferocious; in India it was comparatively gentle. This is the basic conceptual difference at the execution of the lions in West Asia and India.

Possibly, the best example is the one on top of the Lauriyā-Nandangarh pillar; best in the sense, that although it is formal and conventional, the distinct air of naturalness around it is not found in any specimen from West Asia. The trunk is comparatively long, slim and perfectly proportionate. The legs are thin. The back is full; the tail-end is short; the emphasis is obviously on flesh. One volume subtly rolls into the other and the viewer likes to touch it and feel it without any sense of fear. It is indeed so very gentle. The Achaemenian examples, on the other hand, are extremely terse and full of raised veins and muscles. They create awe. They are often monstrous. We may now consider the foreparts. The legs are somewhat thin and clumsy. The face is heralding, the whiskers are linear, and the locks of hair are short, combed and arranged; schematically. Sitting on its haunches like a dog, it is extremely formal and sophisticated. There is an apparent similarity in both of them as far as sitting posture is concerned (fig. 3). But there is a vast difference in the posture and the posture adopted by sitting lion on Aśokan pillars such as the one on VaiśālÍ pillar and the Lauriyā-Nandangarh pillar. It is, however, neither monstrous nor ferocious like the Achaemenian examples (fig. 4 and 5).



## Lion in Mauryan Art and West Asian Art

fig. 3 Persepolis: Seated dog(?)

Like many West Asian and Greek examples, th
tongue protruding; the posture is called heraldi
the mouth is open either too little or too large; in
the tongue is completely inside the mouth, whil
mouth prominently. Sometimes the tongue in W
lion, in contrast, has only moderately open mout
the tip with its base is really out of the mouth. As
on the face of the 'Aśokan' lions are also not mu

In the West Asian examples, by and large eac
arranged like inverted commas with thick ends
but naturalistic. This highly conventional style is
whiskers in 'Aśokan' lion have linear treatmer
thickness throughout its length.

In the West Asian examples, eyes are wide op
eye balls were made of some precious stones and then fixed in the sockets both in West Asia and India. The outline of the eyes in the Asokan lions is distinctly marked by

fig. 4 Vaiśālī: Lion capital

fig. 5 Lauriyā-Nandangarh: Lion capital, 5th-4th century BCE



necessary for depicting a strongly built body with fully developed muscles. The feet are planted firmly on the ground with sharp nails and raised bones of fingers. In the monumental examples of Assyria the legs are marked with roundels and ovals to indicate the muscular growth. Because of this the lions are highly stylised. The Persian lions are marked by cobweb of veins, sometimes mixed up with bones. Such lions are also very stylised.

There is one fragmentary lion head from Masarh, District Bhojpur, Bihar. It is carved out of Chunar sandstone and it also bears the typical Mauryan polish. But it is undoubtedly based on the Achaemenian idiom. The tubular or wick-like whiskers and highly decorated

fig. 6 Open mouth of the Lion in West Asian art

fig. 7 Open mouth of the Lion in Mauryan art

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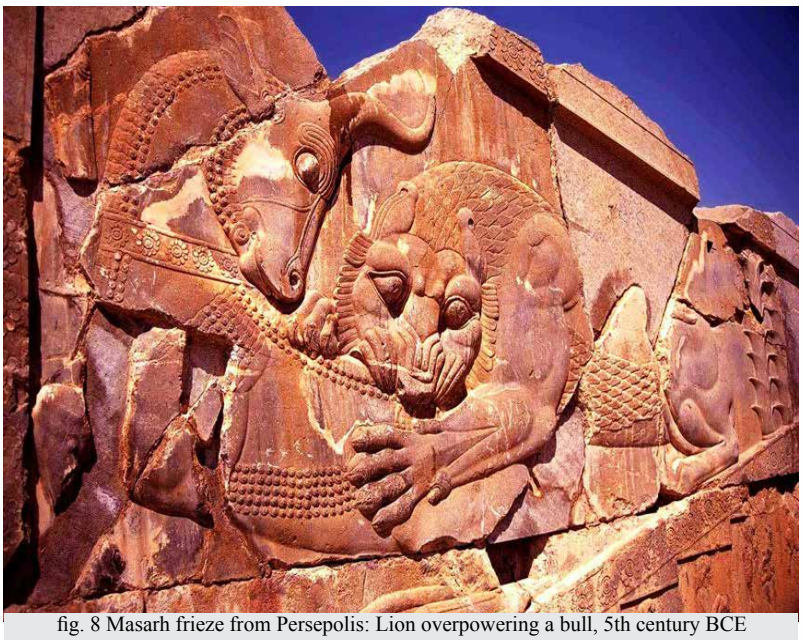

fig. 8 Masarh frieze from Persepolis: Lion overpowering a bull, 5th century BCE



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# Veerasan - Temple Remains of Kalchuri Period: A New Finding

[1]Manish Rai

## Introduction

Veerasan (23º22'48"N; 80º24'44"E) is situated 90 km south of Katni, 70 km north-east of Jabalpur Railway station, 44 km north-west of Sihora and 15 km south-west of Dheemarkheda in Madhya Pradesh. The site is located in the bank of a seasonal River Datala, a tributary of River Hiran.

The area is rich in archaeological vestiges from the Mesolithic times. During the explorations by the present author in 2001, microlithic tools, both geometric and non-geometric were reported from Ghughara (*Navbharat* 2001: 1). The other important sites are also situated very close to this area such as Rupnath with Ashokan minor rock edict, Tigwa Kankalidevi temple or the earliest Gupta temple where Ganga and Yamuna along with their vahana have been depicted, Chushathyogini temple at Bheraghat, Group of temples at Amarakantak, Karitalai temple at Karitalai, Harah temple at Bilahari and also from Satdhara and Majhagaon (Choube 1993: 312-321)

The present paper is ar
members of Veerasan

fig. 9 Veerasanadevi Temple: Google imagery

### Architectural Membe

The architectural fragr
part of the temple frag
or square in shape wh
are plain; sometime th
low relief sculptures ha

The *amlaka* or the c
(fig. 10) with sq



respective places are also noticed along with members of sub-shrines (fig. 11-12).

Many loose sculptural fragments in the form of god and goddesses, male and female torso, head, legs, etc. were also noticed (fig. 13). Some of the important sculptures in this group were of a Mahishasuramardini measuring 1.30 m in length and 1.10 m in width in Veerasana (heroic posture) along with the lion. Mahishasur (buffalo demon) is depicted as body without head and head appears to be cut-down also shown on the panel. On the top, f

The other is a st
*karnakundala*, *kada*
His right hand touc
*mekhala, kada* and
touches the chest c
characters can be c
slow and unconcern
the left side a flying

fig. 10 Veerasanadevi Temple: Amlaka

**Well**

In the year 2010, a
circular well, perenn
dressed wedge sha

fig. 11 Veerasanadevi Temple: Various fragments

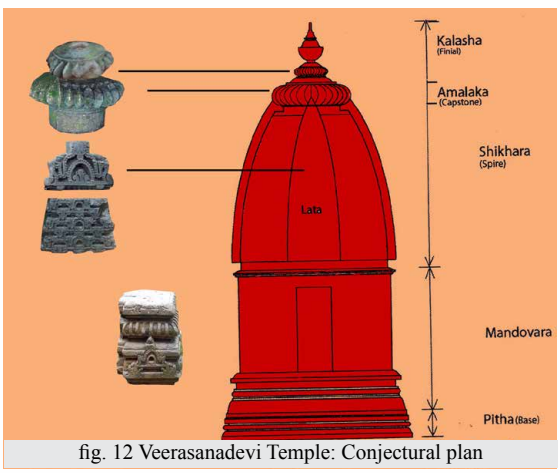


fig. 12 Veerasanadevi Temple: Conjectural plan



0.12 to 0.36 m wide and having the depth of about 0.
some loose sculptures and architectural fragments
(fig. 16). It is pertinent to mention here that the w
potential which includes antiquities like pottery and c

fig. 13 Veerasanadevi Temple: Architectural remains

## Structural Remains

### Brick Structures

On the right side of the road and south of the present
noticed. The structure, rectangular in shape measur
width. Near to this, a small brick mound was notice
area.

fig. 14 Veerasanadevi Temple: Beautiful sculpture

cture of dressed stones was noticed.
scertain due to the thick vegetations

the teakwood around 1970's in and
ptures have been noticed. Of them,
rthy to mention and presently under
now.

tectural remains and partly exposed
x belongs to 10th-12th century CE
huri kings, this temple can be rightly

stant Archaeologist, Archaeological



Survey of India, Excavation Branch - V, Vadodara, for meticulously checking the manuscript.

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fig. 15a-b Veerasanadevi Temple: Circular well of dressed stones

STELLA, Kramrisch (1986) *The Hindu Temple,* Motilal Banarsidas, Bunglow Road, Jawahar Nagar, New Delhi, pp. 177-286.

fig. 16 Veerasanadevi Temple: Archaeological fragments found during the clearance of a well



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Mr. Manish Rai is working as an Assistant Archaeologist at Archaeological Survey of India. His current place of posting is Mumbai Circle. He has done his post graduate diploma in Archaeology from the Institute of Archaeology, Delhi. He has authored a number of research papers on different aspects of archaeology.

# Forts and Fortifications in Early Historic Gujarat

[1] R.N. Kumaran and [2] M. Saranya

## Introduction

Forts and fortifications were the integral part of Harappan civilisation, where most of the sites were secured with formidable walls with gateways. The Chalcolithic and even some Early Historic sites have reported mud/ mud brick rampart; some were secured with burnt bricks surrounding their settlement.

The Early Historic Gujarat has revealed various types of defense architecture around the settlement. They were in the form of rampart, moat, forts raised on the top of the hills and fortifications.

The material vestiges of Early Historic Gujarat collected from 1011 sites (fig. 17) of which nearly 47 excavated sites have been subjected to in-depth study. The ceramic tradition is considered as m[illegible] cultural phases as viz., Ph[illegible] and associated finds (databl[illegible] Polished Ware (RPW) and a[illegible] CE).

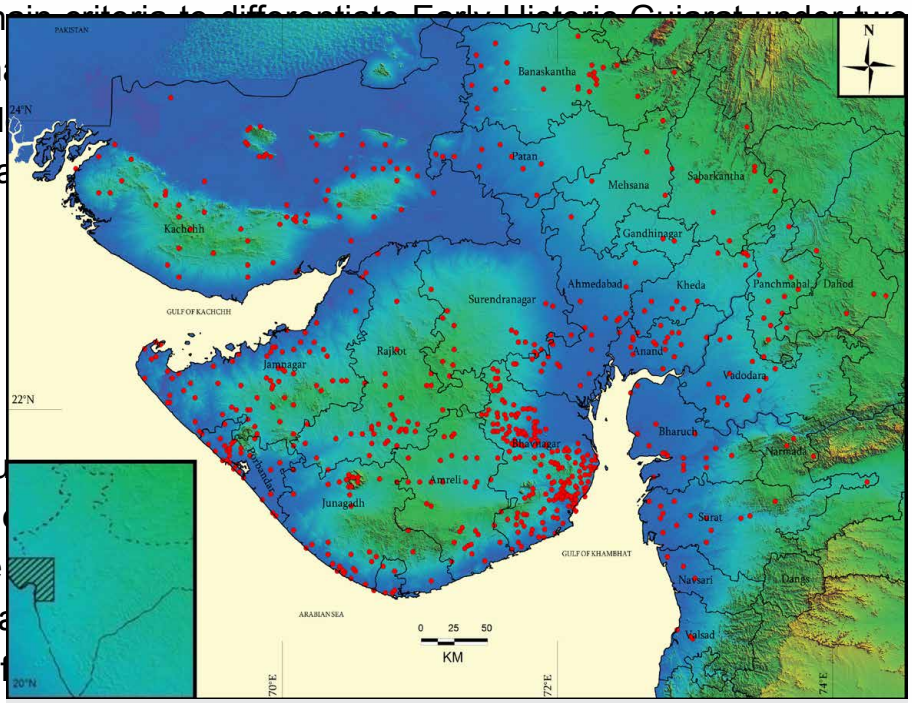

fig. 17 Map showing the explored Early Historic sites in Gujarat

## Phase I

### Gujarat Mainland

The earliest evidence of mu[illegible] BCE. During this period, th[illegible] breadth mud rampart made [illegible] were noticed in the Taranga[illegible] and another one lies west of [illegible] in breadth and more than 5 m in height with a rectangular bastion on west measuring



6.25 x 4.30 m with flight of steps on both sides. The fort was raised with large boulders with dry masonry in the lower level and with burnt bricks on the upper levels. Further a battlement parapet was provided on the outer upper edge with varied breadth according to the contour of the hill. Small drains are also provided to drain out the rain water. The ceramics of pre-Kshatrapa period along with bricks indicate that the fortification was possibly built around 3rd century BCE.

The second one was secured by hills on three sides with an opening through a narrow valley. It consists of ruined terraced settlements on the slopes linked with natural shelters, by constructing walls of boul
varies from 5 to 30 m, widt
terrace at the lower levels is
vertical walls of the slope ha
was also noticed in the hill li

fig. 18 Taranga Hills: Structural fort on the top of hillock (source: Rawat, 2010)

Shamalaji (Mehta and Pat
(fig. 19). At Naleshwar (Sor
about 100 x 50 m on the top
noticed. Added to the above
wall on the sides of the K
the field'.

**Saurashtra Peninsula**

Hathab (Pramanik 2004: 133-140) is the only site that has yielded the evidences in the form of mud rampart surrounded by a moat along with bottomless soakage jars outside the periphery suggesting some sort of drainage system (fig. 20).

The defense architecture of phase I, i.e. from 6th to 3rd century BCE was not reported from the Kachchh.

**Phase II**

**Gujarat Mainland**

During phase II, Vadnagar has showed the development in the form of relaying the



whole settlement on the
with burnt brick fortifica
and residential area wa
the street was narrowed
residential area, the wid
maintained. Even the a
seven phases of constr
152) has revealed a for
5 m breadth was built
fortification with 2m bre

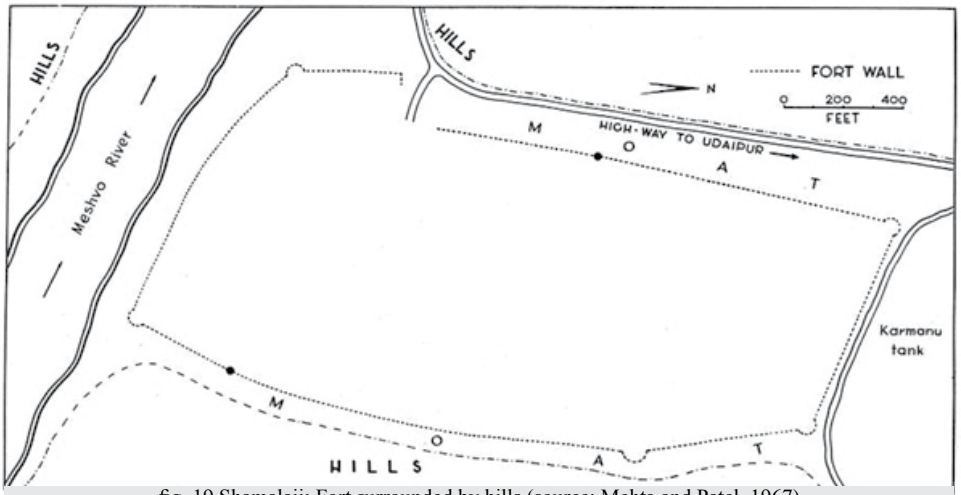


fig. 19 Shamalaji: Fort surrounded by hills (source: Mehta and Patel, 1967)

at Shamalaji (Mehta and Patel 1967: 42) has revealed three phases of repairing and rebuilding. A mud rampart with a deep ditch provided with heavy brick revetment on outer side (fig. 21) was noticed at Bharuch (*IAR* 1959-60:19). Evidence of protective defense ditch on the inner side against the erosion of the river is a notable feature at Nagal (*IAR* 1961-62:11-12).

fig. 20 Hathab: Bottomless soakage jars (Source: Pramanik, 2004)

**Saurashtra Peninsula**

The moat along with a mud rampart of the e
140) was reconstructed in two phases. In th
raised up to 4.20 m and capped by flat stone
of 2.10 m was further added. At Amreli (Ra
provided on the north of the settlement whe
protection (fig. 22). In the later phase, the
raised as anti-flood measures. At Prabhas
citadel with bastions, built of dressed stones set in mud mortar was noticed.

**The Kachchh**

The Early Historic people have reoccupied the Harappan fortified sites. The evidence in he form of reinforced bastions of the former was noticed at Desalpar (*IAR* 1966-67: 10-12), while no such evidence was noticed at Pabumath and Dholavira (Bisht: Personal Communication) although they were utilised by the latter. At Kanmer (Kharakwal et. al



2012: 314), 'it is likely that the northern arm of the
until the historical people occupied the mound'.

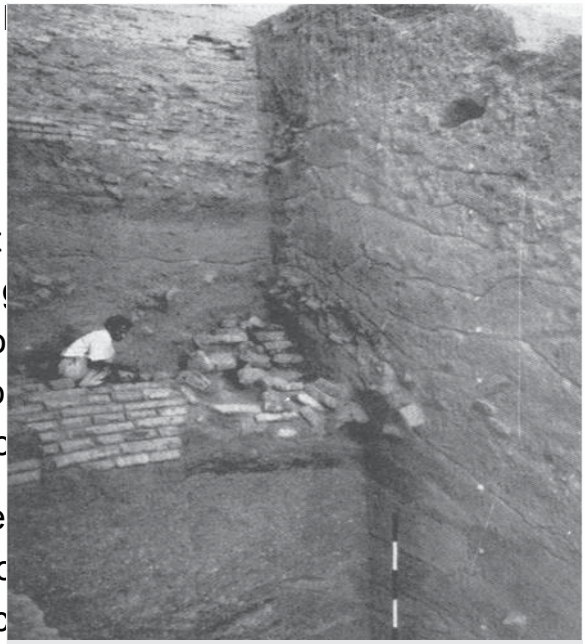

fig. 21 Bharuch: Mud Rampart with brick revetment (source: Soundararajan, 1959-60)

## Discussions

Architecture is embodiment of several things. It
traditional knowledge. The artisans of different
monument for a public/ private cause. Each mo
political, religion and technological status of a co
mud and mortar but it is epitome of the aspiration c

The Early Historic Gujarat has revealed defense
moat, forts and fortification. At Taranga hills, the fo
contour of the hill with stone topped with burnt bric
bricks. Mud rampart with brick revetment, brick fo
noticed, while in the Saurashtra peninsula, mud rampart surrounded by a moat was noticed and also fort with corner bastions, whereas in the Kachchh, the Early Historic people who occupied the Harappan settlements have reused the bastions of the former with reinforcing the same.

The existence of different type of defense architecture suggests the existence of different type of threat perception both nature and human. The fort and fortifications raised on the top of the Taranga hills without well established se
might have used as watch tower. At Hathab an
meander. The settlers of these two sites built the fo
so that the natural landscape itself served as a mo
watch tower, etc. is an indicative of external aggre
on trade routes is suggestive of two things. The
and trade goods from the external adversaries a
prosperity indirectly.

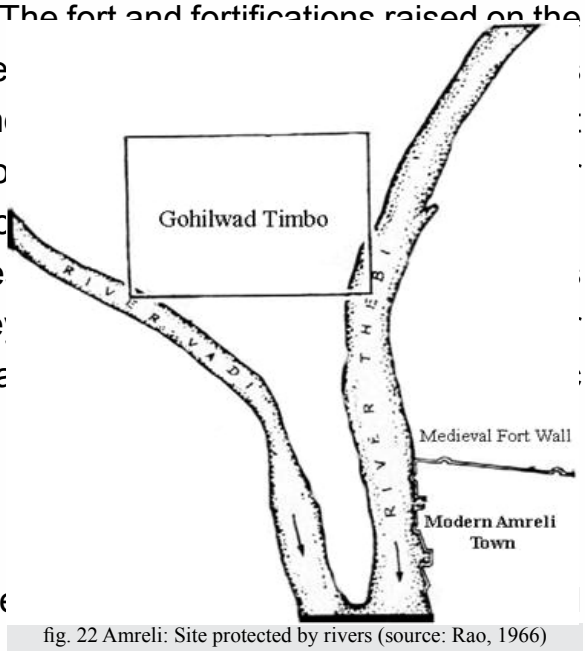


fig. 22 Amreli: Site protected by rivers (source: Rao, 1966)

## Acknowledgments

The authors are thankful to Sh. Y.S. Rawat, Dire



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# Architecture of the Rock-Cut Temples of Masroor

[1] **Nisar Khan**

Rock-cut Architecture is a testimony of human persistence in constructing magnificent structures by sculpting and cutting entire hills. Rock-cut temples in India present a different perspective on the building prowess of the past generations. The earliest rock-cut architecture exists in the form of caves carved out of hills. Barabar caves located in modern Bihar dates back to 3rd century BCE are considered as the earliest example of rock-cut architecture. These caves with arched opening and two chambers are associated with Buddhism during Asoka reign. The scale of the rock-cut architecture increases many times with Ajanta-Ellora caves sculpted during 5th-7th century CE. Other significant examples are Badami caves and Elephanta caves dating to 5th-8th century CE.

The first significant example of rock-cut monolithic temple complex (which is not a cave) is located in Mahabalipuram (Tamil Nadu). Attributed to the King Mahendravarman-I in late 7th century CE, the complex comprise of five chariot form structures carved from single monolithic granite rock.

However, in North India rock-cut architecture is not commonly found. North Indian temples are based on the *Nagara* style. The *Nagara* style is distinct from the Cave temples and Dravidian style with respect to the spatial layout, form and construction. The *Nagara* temples are mostly masonry construction in bricks or stone.

Masroor temples present an exception to the monolithic rock-cut temple architecture. Located in the Dhauladhar range of lower Himalayan region, Masoor temples are the only example of monolithic rock-cut temples in the sub-Himalayan region. More significantly, they are the only example of *Nagara* style temple built as the rock-cut construction. Since *Nagara* style of temples are mostly built as masonry construction while rock-cut temples are mostly cave temples, Masroor temples are a unique permutation of form and construction method.



Masroor is located in the district Kangra of Himachal Pradesh, far away from the plains of North India. Traditionally, temple architecture in the Himachal region is Pagoda type, which is derived from Kashmir and constructed by the masonry of stone and timber. They have a square plan with a Pagoda roof. On the other hand, Masroor temples are distinct specimen of the Nagara style which came in the region after 10th century CE.

**History**

The temple complex was not discovered until 1875 CE when it is recorded in the objects of antiquarian interest in the Punjab and its dependencies. Further in 1914 CE, Masroor temples were taken up by the Archaeological Survey of India for its conservation. The temple complex suffered major damage during the earthquake of 1905 CE.

Masroor temple is a riddle for historians and archaeologists as its date of construction cannot be established from any credible source. There is no inscriptional mention of the patronage or period of the construction on the temple itself. Also, it has not been found in any historical account as to when this temple was constructed.

As per local legend the temple was constructed by Pandavas during their exile. The temple complex is now also known as Thakurwada, a term for Vaishnavite temples. The idols of Rama, Lakshmana and Sita are placed inside main sanctum-sanctorum. However, the temple was originally a Shiva temple as evident from the figure of Shiva on the lintel of the main door and other parts of the structure. It seems that the temple was converted into a Vaishnava temple in recent history.

The imposing scale of the Masroor temples doesn't leave any doubt that the construction was enjoying the patronage of some imperial ruler. Presence of caves and ruins in the surrounding also suggest an inhabited settlement of significance around the temple.

The scholars in history however attribute this temple to some unknown rulers of ancient Jalandhara kingdom in the plains of modern Punjab. Although the *Nagara* style was certainly brought to hills from plains, still the association with the Jalandhara kingdom is deficient of credible information.



Since the temple is a unique example in the entire region w.r.t. to its style and construction, establishing the history becomes further puzzling. There is some similarity existing in terms of architectural style with some of the early structures in the Kangra Fort located some 50 km. However, this similarity is inadequate to establish any historical account or indicate the regional expanse of the kingdom.

Stylistically, the temple is considered to belong to the period of Gupta classicism and placed in the 8th century CE.

Another intriguing aspect of Masroor temple is its striking similarity with the temple of Angkor Wat in Cambodia. Angkor Wat is built in 12th century CE, much later than the assumed date of Masroor temples (Tadgell 1998). Although, it is much larger in scale and evolved in its plan layout, the similarity in the forms of the two temple structure is prominent. It is a matter of further historical research to determine any regional interdependencies or cultural exchange as a catalyst in the construction of both the temple complexes.

**Site Planning**

The temple complex is located on the highest point of a local hill signifying its erstwhile importance. The temples complex appears to be part of a settlement as evident from the caves and ruins of
a settlement around t
towards the eastern si

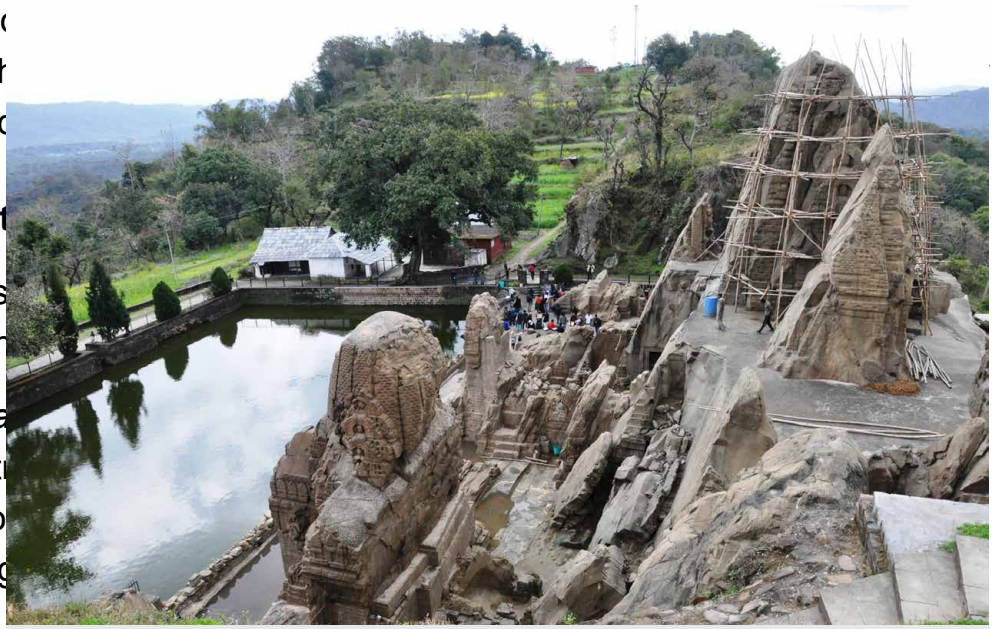
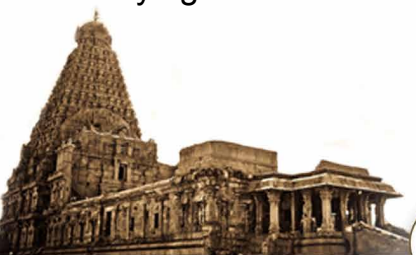


fig. 23 View from north showing temple with shikhara and adjoining water tank

**Built Form and Archit**

The temple complex is
spaces are arranged i

There are nine *shikhara*
in the centre. The centr
a prominent *amalaka* o
lying in the surrounding





The form of the temple with an ensemble of *shikharas* arranged in symmetry is unique to India and is similar to Angkor Wat temple albeit on a smaller scale (fig. 24).

**Spaces**

The *garbhgriha* is located in the centre of the temple by sculpting a square space in the monolithic rock. The *garbhgriha* has raised platform for placing the deity surrounded by the circumambulatory space around it (fig. 25).

The *garbhgriha* is accessible through antarala from *mandapa* and *mukha mandapa*. There are staircases located on the either side of the *mandapa* leading to the roof of the

fig. 24 View from east showing main shikhara with scaffolding



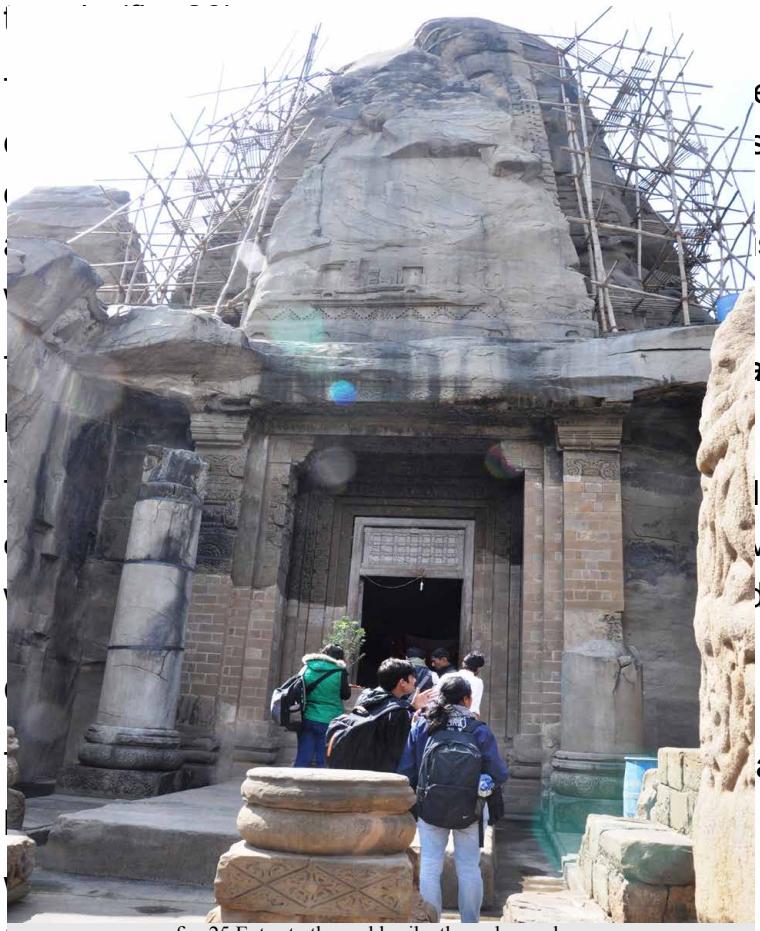


fig. 25 Entry to the garbhgriha through mandapa

e of the temple in the North and South
s were subsidiary sanctum-sanctorum
also treated with an entry vestibule in
s highly possible that these chambers

a. This open space must be used for

located on the eastern side facing the
ve been a ritualistic component along
d the temple.

arving the monolithic rock forming the

temple, two *shikharas* are segregated
the shrines on the either side of the

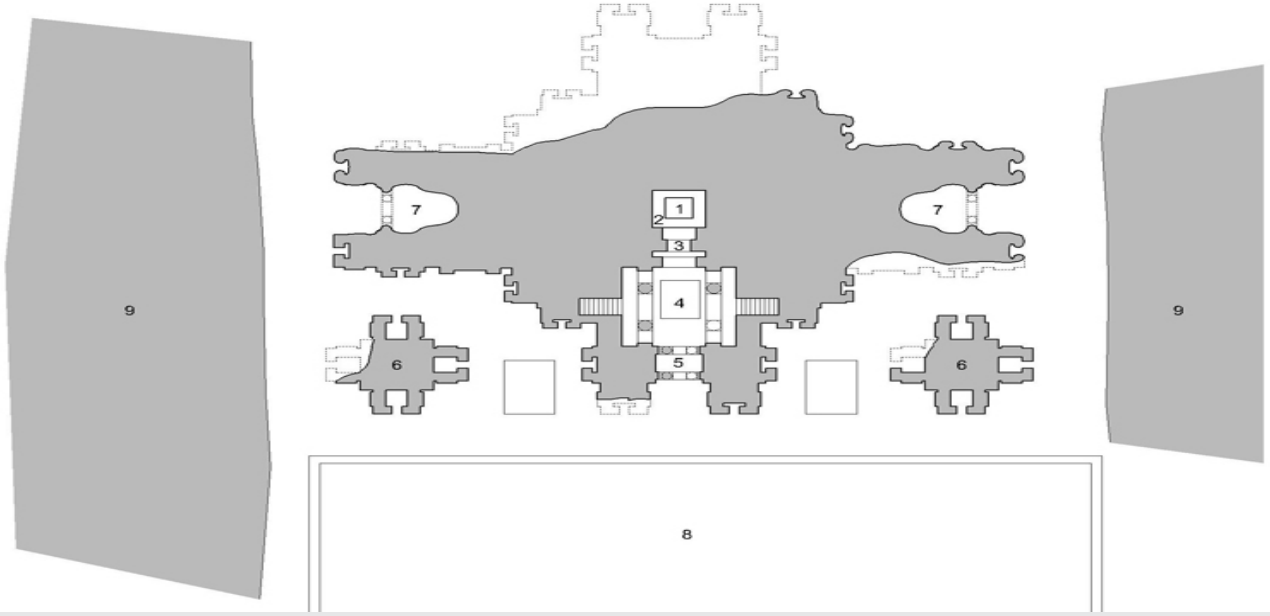



fig. 26 Plan of the temple (Dotted lines show conjectural reconstruction of damaged portion). 1 Garbhgriha, 2 Circumambulatory path, 3 Antrala, 4 Mandapa, 5 Mukha mandapa, 6 Separate shrine from main structure, 7 Subsidiary shrines on North and South, 8 Water Tank, 9 Hill



Lintels and jambs of the main entrance of the *garbhgriha* are constructed by using single piece stone slab.

Flooring of the temple is done by sculpting a plain surface on the bed of the rock. This is however covered in places with plaster during some recent restoration work.

fig. 27 Subsidiary shrines on the southern side

**Defects**

The temple complex suffered dam
portion of the temple is in ruin s
(fig. 33).

The rock is sandstone type with
the rock is not uniform, the strengt
stratification of the rock is not horiz
strength of the temple. As a result c
could not withstand the forces and
the rock stratification and lying on th

fig. 28 Detached shrine on either side of mandapa

**Challenges/ Proposals**



The Masroor temple is a remarkable specimen of architecture in the country. It is unfortunate that it not widely known among visitors or scholars. The temple complex becomes a history puzzle but also throws new light on the architectural and archaeological knowledge of rock-cut temples in India.

It is important that further in-depth researches are conducted to reveal more about the history, epigraphy, art and architecture of the Masroor temples. Archaeological investigations should be conducted in the surroundings of the temple to ascertain the expanse of the settlement around it.

The temple complex is in much dilapidated state de
structural integrity of the temple is not sound and furt
time. Some previous restoration interventions have
and stone masonry, which is not compatible materia

Appropriate conservation interventions should be ca
and strengthen the structure. Also, cement patches
with lime or other compatible mortar.

The fragments of fallen portions of the temple shou
work or for display in a site museum. The fragments
value.

Initiatives should be taken towards promoting the vis
it for its salient aspects.

fig. 29 Columns of mandapa

**Further reading**

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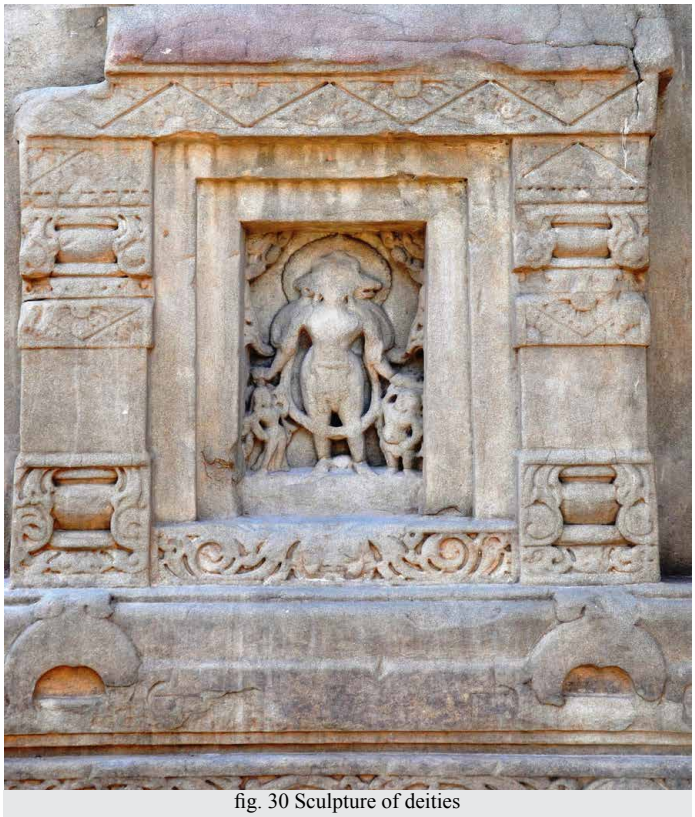

fig. 30 Sculpture of deities

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fig. 31 Elaborate carvings on the lintel freeze on the South shrine

fig. 32 Lotus motif on the ceiling of the garbhgriha

fig. 33 Fragments of architectural members



fig. 34 Fallen portion of shikhara

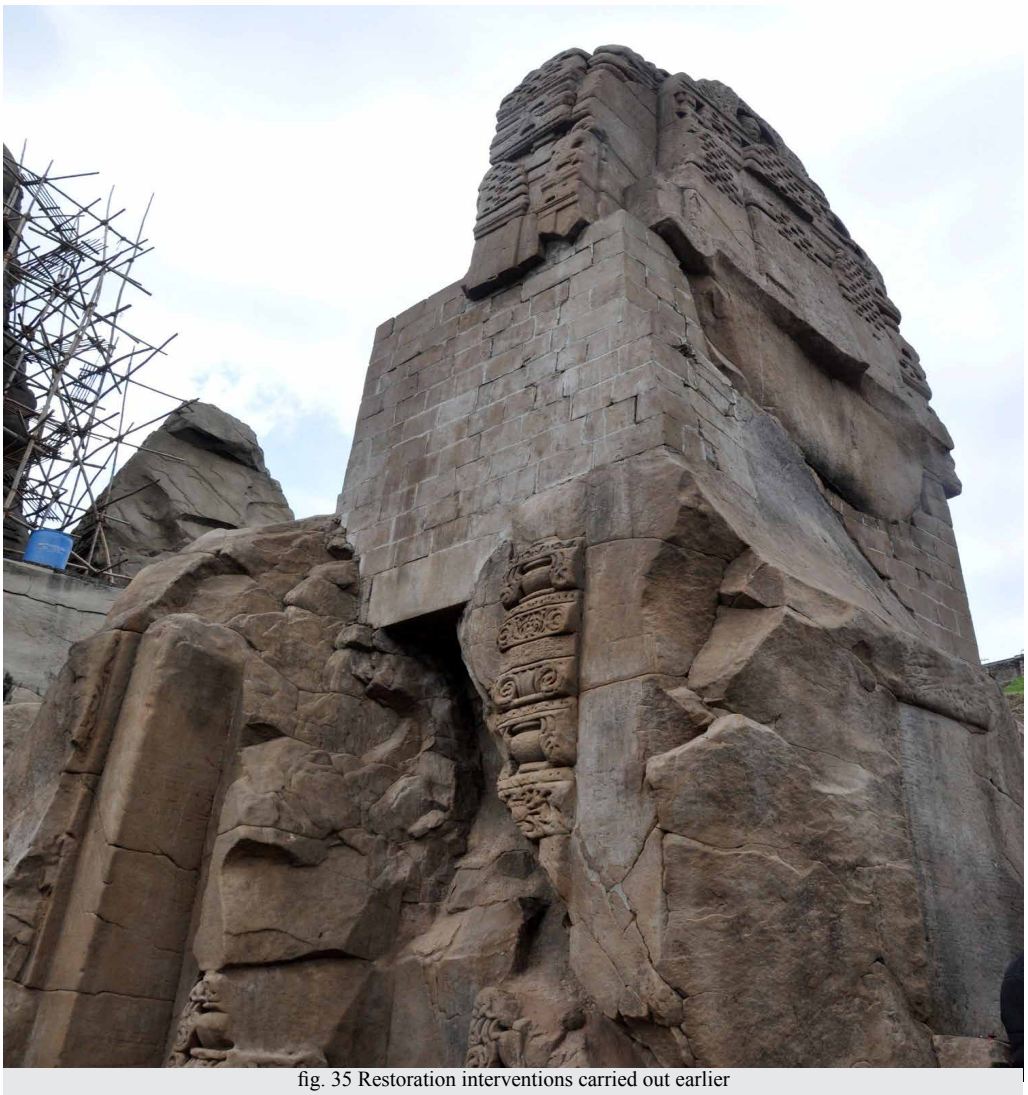

fig. 35 Restoration interventions carried out earlier



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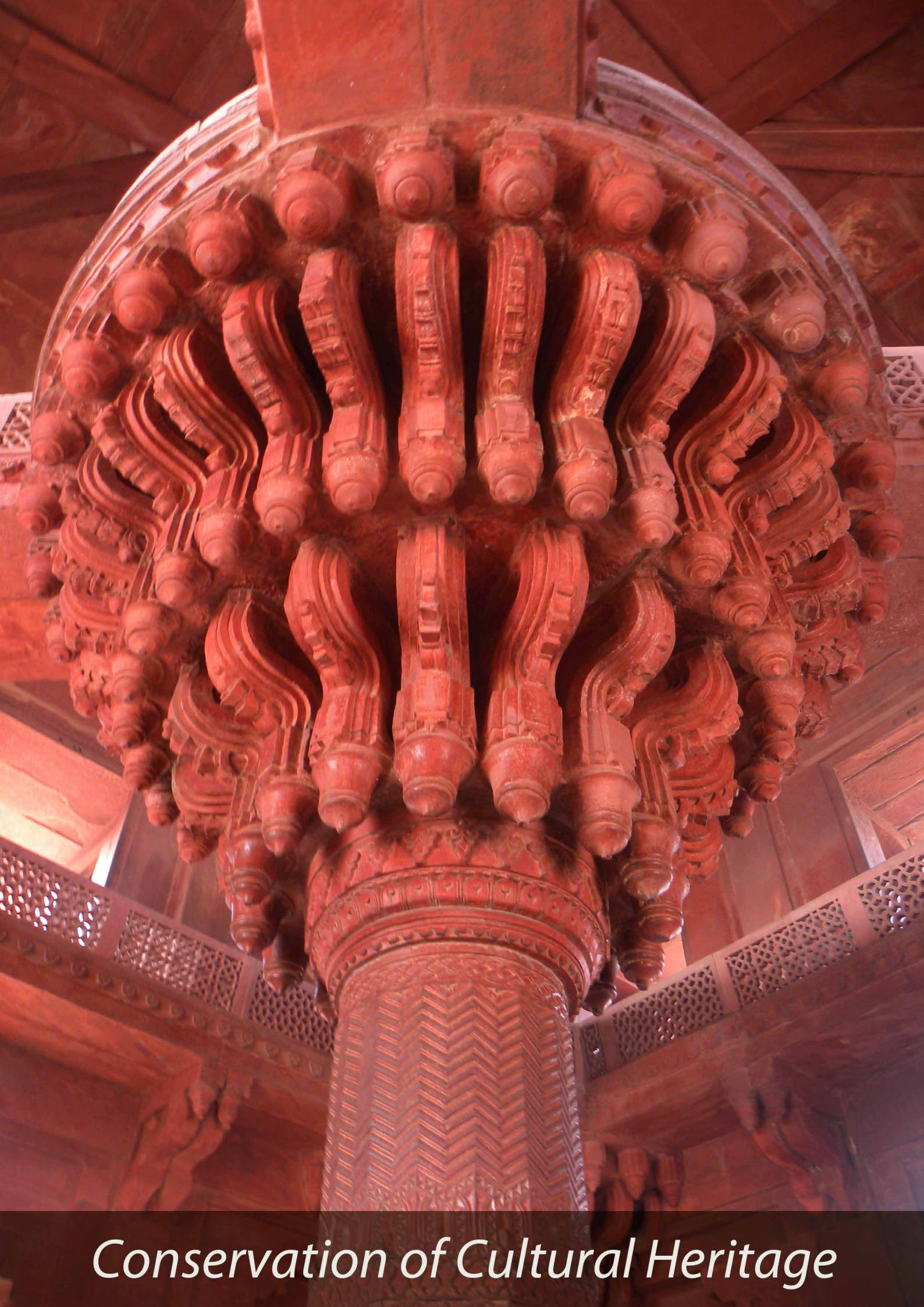

# Conservation of Cultural Heritage

# A Challenge in Scientific Conservation of Santiniketan Murals

[1] S. Vinodh Kumar and [2] Manager Rajdeo Singh

## Introduction

Santiniketan is a small town near Bolpur (district Birbhum) of West Bengal, approximately 180 km north of Kolkata. It was made by the famous Nobel Laureate Rabindranath Tagore, whose vision became what is now a university town (Visva-Bharati University) (Pearson 1916). The *Daily Star, English Daily of Bangladesh* notes *"Using the money he received with his Nobel Prize for Literature in 1913, the school was expanded and renamed Visva-Bharati University. The name of Visva-Bharati, was defined by Tagore as - Where the world makes a home in a nest."* The open-air education opposed to being cloistered in the four walls of a classroom became a reality here. Eminent people from all over the world came to Visva-Bharati during its peak period. Visva-Bharati became a Central University in 1951. Leaves of the *Chhatim (Saptaparni* or 7-leaf sprigs) trees are given to graduating students at the annual convocation. Many world famous teachers have been associated with it over the years. It grew to become one of India's most renowned places of higher learning, with a list of alumni which included former Prime Minister, Indira Gandhi; globally renowned filmmaker, Satyajit Ray; Nobel winning economist, Amartya Sen; and the country's leading art historian, R. Siva Kumar and many others. The Prime Minister of India had been the Chancellor of the University.

Main attractions of Santiniketan are Prayer Hall, Dehali, China Bhavana, Black House, Santiniketan Griha, Kala Bhavan, Uttarayan Complex, Bichitra, Sangeet Bhavan, Chhatimtala, Kankalitala and Visva-Bharati Central Library. Kala Bhavana is the art college of Santiniketan, which is still considered to be one of the best art colleges in the world. Each of the buildings has various panels of murals on their walls and ceiling. Santiniketan is adorned by splendid sculptures, frescoes, murals and paintings of Rabindranath, Nandalal Bose, Ramkinkar, Binod Bihari Mukhopadhaya and others.



Santiniketan Griha is the oldest building of Shantiniketan built by Late Sh. Debendranath Tagore, father of Rabindranath Tagore. The Nobel Laureate Rabindranath Tagore stayed in this building during his childhood days.

**Santiniketan Griha Murals**

The Santiniketan Griha (fig. 36) ha
m in area. South wall panel depict
depicts "*Santal* women with *kama*
and west wall panel *(Baul)* depicts
1958).

fig. 36 Santiniketan Griha: A general view

**Painting Technique**

Microscopic observation followed
of murals ("*Santal* women with *kar*
musical instruments") were made
pigments and rice starch as bindi
use of pigment ground in the form of water-miscible medium (Doerner 1946) such as egg, glue, honey, water, milk (in the form of casein) and a variety of plant gums. The word "tempera" originally came from the verb "temper" - "to bring to a desired consistency". Dry pigments are made usable by tempering them with a binding and adhesive vehicle. Tempera painting starts with placing a small amount of the powdered pigment onto a palette, dish or bowl and adding about an equal volume of the binder and mixing. Some pigments require a little more amount of binder, some require a little less. A few drops of distilled water are added; then the binder (egg emulsion) is added in small increments to the desired transparency. The more egg emulsion, the more transparent the paint.

The other one panel of "Sunflowers" is made with the technique of fresco. Fresco is a technique of mural painting executed upon freshly-laid or wet lime plaster. Water is used as the vehicle for the pigment to merge with the plaster, and with the setting of the plaster, the painting becomes an integral part of the wall.

**Conservation Problems**



The major conservation issues were the deposition of lime splashes on the murals along with dust, dirt and other superficial accretions. Gaps and lacunas were noticed within the murals due to termite activity. Missing of paint layer and flaking was also noticed in some places (fig. 37).

**Scientific Conservation of Murals**

The scientific conservation of murals was carried out as follows:

Removal of dust and dirt and other superficial accretions by brushing with sable hair brushes,

1. Chemical cleaning

fig. 37 Condition of Mural (Baul) before scientific conservation



same anti-termite treatment. The gaps and voids were filled with the mixture of hydraulic lime and mud in the ratio of 1:3 in addition with the mixture of vegetable gum. Mud had been selected in same grade as original. Jute fibers and rice husks were also added to enhance the performance of the plaster. After filling the gaps, multiple layers of lime were applied and minimal colour re-integration was carried out using poster colours with the surrounding. Finally, 1% Polyvinyl acetate (PVA) had been applied as preservative. Figure 38, 39 and 40 are showing the conditions of the three murals before, during and after scientific conservation.

## Conclusions

The removal of lime splashes was a challenging task and filling of big voids with the combative materials was also interesting but the restoration work was carried out successfully. Now the murals are in good state of preservation.

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fig. 38 Panel namely Baul: Before (left) and after scientific conservation (right)

fig. 39 Panel namely Sunflower: Before (above) and after scientific conservation (below)

fig. 40 Panel namely Santal Women: Before (left) and after scientific conservation (right)



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# Tambekarwada - Painting Restoration Project

[1] Juhi Kyal

## Historical Background

Bhau Tambekarwada is situated in the heart of Baroda, on Pratap road near the clock tower. A typical Maratha mansion, Tambekarwada was the residence of Bhau Tambekar (Vithal Khanderao), a *Diwan* of Baroda state to Maharaja Ganpatrao Gaekwad between 1849 and 1854.

As the ruler was weak and poorly educated, the administration of the state was entirely in the hands of the Diwan. During the 17th and 18th centuries, Fresco painting received a stimulus in Gujarat and its echo has been felt in the Bhau Tambekarwada of 19th century.

## Architectural Details

Tambekarwada is a spacious building with four floors and constructed in an oblong fashion. It is a brick and mortar structure and the partitions within it are of wood. It is raised over a stone plinth, its brick walls are built into timber framework. The back portion, built around a chowk or inner courtyard is two storeyed. The three storeyed eastern or front portions now under protection of Archaeological Survey of India (ASI) contains paintings on wall of first and second floors, entry to which is through wooden staircase near north eastern corner.

## Details of Paintings and their Conservation Treatment

Only a part of Tambekarwada is protected, which houses the paintings. The chemical treatment done by the Science Branch of the ASI, in the past has revealed some of the paintings on the doors of the first and second floor which were unexpected; hence, it is quite possible that the doors of the ground floor might equally have some paintings. The



wall paintings are typical of the age and represent scenes from the Ramayana, Krishna Lila and few other non-religious scenes in the life of the people including some of those of the westerns. They are fairly realistic and the depth and distance is represented as in close association.

The first floor has a hall with galleries on front and back sides. Near southern end of the hall is a wooden *jaali*, making a passage. The lime plastered walls and doors have paintings showing Ramayana and Mahabharata scenes, gods and goddess of Brahmanical temple, secular and battle scenes showing Indian and European soldiers, officials and dignitaries, floral and faunal motifs, etc. Some paintings done in European style seem to be copied.

Also, this floor contains a war scene between the Marathas and English, Krishnalila scenes such as Kaliyanaag Mardan, and other exploits of Krishna, Samudramanthana and scenes of Mathura. The central portion of the hall depicts Europeans, Palace scenes, and the smaller panels show the influence of the western and Rajasthan and Mughal Schools, respectively. The paintings in the first room of this floor depict Gajendramoksha, Raskrida, Gopikavastra Patharana, Markandeya episode, etc. The Draupadi Vastrapaharana scene lacks balance in proportion where the saree delivered by Krishna are just hanging. It is interesting to note in a painting where Krishna is standing in between his wives which suggest Panduranga Vithal of Pandharpur. In the Samudramanthan panel, the unsuitable rifle hunting is interesting.

The second floor has a large room with galleries on front and back side and two smaller rooms. The room near entrance originally had paintings now covered with whitewash. The adjoining room has Mahabharata scenes, Brahmanical gods and Goddess, Maratha-British battle scene, devotee Bodhana who is said to have brought original Krishna image from Dwarka to Dakore, copies of European paintings, hunting scenes, Parsi couple, etc.

This floor also contains paintings of Krishna Tulabhaara, Krishna as Gitacharya, Sudama episode, *Sheshashayi* Vishnu, Trimurti's, Krishna leaving Gokula while *gopis* are in grief, the scenes of the household of Bali and Sugriva, war, etc. The lower panels contains Bachal scenes and English paintings but in different fashion. The doors of the



first floor generally have mother and child, pots and foliage motifs while those of the second have intimate love scenes particularly in its antechamber. The entire wall, door and wooden *jaali* partitions are covered with paintings in the above mentioned halls and antechambers. The red, blue, yellow and green colours predominate and much of it is erased in the first floor hall.

Wall paintings of Tambekarwada are within building and well secured by some of the natural decaying agents. These paintings belong to 19th century CE but deterioration observed in it is severe one, they are coated with PVAC.

**Deterioration**

**Damage Caused due to Sunlight**

This building has a plenty of doors at its eastern and western side. Therefore plenty of sunlight enters the building. Therefore somewhere the paintings suffer fading effect. At some places intensity of light is more than actually what is required, due to which content of UV rays is also more.

In a discussion with the chemical assistant of the chemical branch regarding this factor revealed that staff has taken this factor with less serious issue. According to them sunlight will not cause any harm to paintings as it is within the tolerable limit. They did confess that they have never measured intensity or UV content of light though.

**Damage Due to Water**

Another major problem of deterioration is flaking of paint layer. This is due to the presence of Relative Humidity, inside the building. The building is having a wooden structure and in monsoon season rain water enters the building. Due to loss of adhesion power of binding medium, flaking occurs in paintings. At some places wood is also found affected by termite. The conservation staff changed the damage wood by replacing it with a fresh wood and made efforts to stop the seepage of water. Some water marks are still visible on the decorative textile fixed at the ceiling. Some of the floral designs made on textile and fixed on the wooden beams have become fragile and started detaching from the ceiling.



On the second floor flaking of lime plaster is observed due to profuse seepage by rain water.

**Damage Caused Due to Constant Touching**

Paintings are also damaged due to human vandalism or one may say human contact by touching. Conditions of upper panel paintings are far better than lower panel paintings because visitors are used to touch the paintings and marks are clearly visible on the surface of the paintings.

**Damage Caused Due to Dust and Dirt**

Due to deposition of dust and dirt and due to constant human touching, there are some stains seen on the wall paintings. Moreover as this monument is situated on the main road, due to heavy traffic a lot of dust particles gets deposited on paintings, which affects their aesthetic value.

**Steps taken for Conservation and Restoration of damage affected painting areas**

At many places paintings are dar
thing which can be done is the clea
paintings. A preservative coating c
protect them from the effect of env
within few years and hence periodic
essential. After removal of PVAC
(fig. 41a-b). Instead of using ethyl al
distilled H2O was made to remove du

fig. 41a-b Conservation and restoration treatment of painting: Before (left) and after (right)

Wooden beams which are infected
like Dieldrine or 2% Termiseal solutic
to kill termite. Deposition of dirt has b
of paint was fixed by using 1-3% sol
The lacunae after being filled up by
they are painted with natural colours.
the aesthetic values and age of these
process due care has been taken to apply appropriate shade/tone of colors that do not



give an impression of totally new look.

The conservation process is done in parts, as the partially visible paintings are being restored first, in order to protect them before extensive damage takes place, defacing its remaining portions (fig. 42a-b).

Proper photographic documentation is also being done side by side in order to maintain records before and after conservation process. This will enable to compare the present and forth coming state of wall paintings aiding in knowing the effect of conservation and techniques used in this project for coming years.

Work is still in process such as treatment of voids and air pockets, retouching at significant places and consolidation.

**Acknowledgements**

Presently working with ASI, Mandvi Branch, Vadodara, I would like to thank Dr Shivananda

fig. 42a-b Conservation and restoration treatment of painting: Before (left) and after (right)

V. Rao and Mr. Rajesh Johri who have given me opportunity to work in this project and provided all possible support that is required during this project.

## About the author

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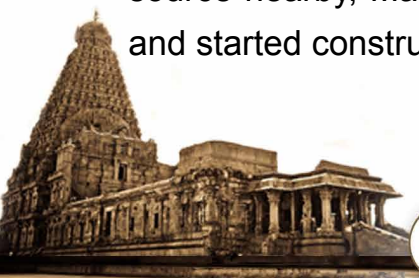
# Heritage and Culture

# Exploring Traditional Water Supply System of Aurangabad (Maharashtra)

[1] Tejaswini J. Aphale

The city of Aurangabad is located in the central region of Marathwada in the state of Maharashtra. The region has semi-arid type of environment, which is resultant of its position as a rain shower. Region of Sahyadri ranges. Monsoon period is June to September with average rainfall of 80-100 mm. Other than the monsoon, the region experiences few spells of rain shadow. Irregular average of rain-fall leads to occasional droughts and famines. Various historical sources also mention short and long term famines throughout the history of this region which were responsible for tremendous socio-cultural impact in the region. Due to consistent water scarcity, creating a water system became necessity rather than just for personal, ritualistic or aesthetic purposes.

The region is dotted with remnants of settlements starting from pre-historic period, but the recorded history of ancient 'Aurangabad' is relatively unknown except for few scholarly resources suggesting existence of a village on the trade route going towards Paithan. Other than the excavation of caves (now known as Aurangabad caves), historical sources are silent about possibility of any large scale human activity in the area till late Nizamshahi period. The existing city was founded by Malik Amber, an able General in Nizamshahi rulers in early 16th century. The city was then known as *Khirki*. The location chosen for the establishment of the city was on the plains between two hill-ranges, now called Aurangabad hills on the North and Mahadeo Hills in the South, both ranges are west-east running offshoots of Sahyadri. Few rivers including Kham, Harsul, Savangi, Sukhna, Barudgar nalah and Bayan Khan nalah which are part of Godavari river valley system, originate in surrounding hills. These rivers being non-perennial rivers carry water only during monsoon period. Recognising the absence of any perennial water source nearby, Malik Amber conceptualised the city with its own water supply system and started construction of *Nahar-i-Amberi*.





After the fall of Nizamshahi dynasty, the region became Mughal *subha* (province) under the vice royalty of Aurangzeb. *Khirki* was made capital of the Deccan *Subha*. Later, Aurangzeb returned to *Khirki* as Mughal emperor with the aim of destroying Adilshahi, Qutbshahi and Maratha powers. He renamed the city (earlier *Khirki* and Fateh Nagar) as Aurangabad. During Mughal period, it was also called as *Khujista-e-Buniyad*. He constructed a palatial complex for himself and his retinue in 1692 CE. He is also credited with the expansion of Jama Masjid which was earlier built by Malik Amber. Mughal general Chin Quilich Khan or Asaf Jah established Asaf Jahi dynasty. It is also known as Nizams of Hyderabad since in late 18th century, they transferred their capital to Hyderabad. Aurangabad remained provincial capital under Nizams till their fall in 1948.

This article presents a small part of an extensive survey done during the 'Aurangabad Heritage Listing Exercise' which was commissioned by INTACH Aurangabad Chapter in 2012. Various components of traditional water system that were spotted during this survey have been described. *Nahar* is the only component in traditional water system of Aurangabad which has been and is being studied in recent times. The aim of this article is to bring to notice the other variety of components in this water system.

For the better understanding, these components can be categorised based on their functions, i.e. Source, Supply, End Components and Stationary Sources. The 'Source' components include water reservoirs and sources for *Nahar*. 'Supply' components comprise majorly of *Nahars* (water channels), collection chambers, and sub-surface water vents called *Bamba. Hauz* (for public, religious or residential usage), fountains, *Char-Bagh* and *Hamams* form the 'End Components'. 'Stationary Sources' include *Baolis* (step-wells) and dug-wells. Once initiated by Malik Amber, the water system in the city only got expanded with the rising needs to cater increasing population.

**Source**

**Water Reservoirs**

1. As per *Aurangabad Gazetteer* of Nizam Dominion published in 1884 (805-877), a large water body was located to the northern fortification of Aurangzeb's palace



Quila-e-Ark. It had created large marshy land which was proving unhealthy. Aurangzeb ordered to fill up a part of the water body and converted it into fields. The remnant of the water body was called *Khizri Talao* which still exists as Dr Salim Ali Lake just outside the Delhi Gate. Today, the lake receives flocks of migratory birds and is a favourite recreational spot for local people.

2. Harsul Lake is a large water reservoir created after dam making on the River Harsul. Existing *bund* (Hindi word) wall of Harsul Lake was built during Asaf Jahi period. The submerged remnants of another two *bund* walls suggest the possibility of a reservoir prior to the existing lake. Harsul Lake still caters to many parts of the city.

3. Another water body was *Kanval* or *Loti Talao*, fed by a spring. As per Gazetteer records, it was situated between Quila-e-Ark and Mecca Gate. The Gazetteer also mentions that the *bund* of this *talao* was purposely destroyed to save the town being flooded. The suggested location points towards the depression in front of Jama Masjid. As per local senior people, up till 60 years back, the place gathered water turning into a temporary water body during monsoon. Today, it has been filled up and converted into play ground.

4. As per the records of Gazetteer, a reservoir was created in Osmanpura during late Mughal-Asaf Jahi period. This reservoir has disappeared over the years without a trace.

**Source of Water for *Nahar***

Apart from man-made reservoirs, water springs in nearby hills as well as underground water springs, were tapped as a source for continuous water supply through channels. Understanding the functioning of *Thatte Nahar* system has been discussed in detail in a separate article. Similar, in-depth study is necessary for understanding of other *Nahars* also.



## Supply

### *Nahar* or Underground Water Canals

*Nahars* are the only elements of water system in Aurangabad which has been studied so far. The Gazettee (1884: 805-877) mentions that there were altogether 14 *Nahars* supplying water to the various parts of the city, which are:

1. *Nahar-i-Ambri (Shah gunj)*
2. *Phuti Nahar (Bhadkal Gate)*
3. *Nahar-i-Panchakki*
4. *Begumpura Nahar (Thatte Nahar)*
5. *Palsi Nahar (went upto Baijipura)*
6. *Latchman Doss Bairagi's Nahar (near Baijipura)*
7. *Shah Ali Nahar, (Deolgaon)*
8. *Lall Munkirar's Nahar*
9. *Dul Baduls Nahar*
10. *Devlalli Nahar (near Satara Hills)*
11. *Nahar-i- Lal Mahal*
12. *Nahar-i-dargah Hazrat Noor Hashmi*
13. *Nahar-i-Kiradpura*
14. *Nahar-i-Nasarullah*

Art historian Dr Dulari Qureshi in her book, *Tourism Potential of Aurangabad* (1999), describes that how Malik Amber had to face stiff resistance for his idea of continuously running water supply system based on the principle of gravity when he started building *Nahar*. Nizamshahi *vazir* (court official) Mullah Mohammad described it as "imaginary and preposterous" as well as impractical. Malik Amber went ahead with his concept of constructing a water supply system. *Nahar-i-Ambri (Khair-i-Jari)* was completed within fifteen months and with cost of two and half lakh rupees.

*Nahar-i-Panchakki* ensures continuous water supply for smooth running of the *Panchakki* (a flour wheel running on the force of water). Further, the Gazetteer mentions that *Phuti Nahar* is a branch of *Khair-i-Jari*. Few of the *Nahars* originate in Mahadeo hills (located on the southern edge of the city) for supplying water to the settlements located on the



south of the city, while some of them provided water to the parts of the old city such as Baijipura. Existence of these *Nahars* can be traced through the water vents that are visible all over the city. In the Chelipura area, the remains of aqueducts carrying the water of one of the *Nahars* (through terracotta pipes) over the *nalah* can be spotted (fig. 43). Today, many of these *Nahars* have been silted, disappeared or on the verge of disappearance due to various reasons including negligence and unplanned urbanisation.

fig. 43 Chelipura: A viaduct on the Nalah (source: Smita Geedh for Aurangabad Heritage Listing Project commissioned by INTACH Aurangabad Chapter, 2012)

## End Components

### *Haud* or *Hauz* or water tanks

*Thatte Haud* (fig. 44) is one of the most prominent examples of *Haud* or a water tank created for storage as well as public usage. *Thatte Haud* which is located in Begumpura belongs to Thatte family. A
in 1804 CE) which still exi
*Sahukar* (money lender) na
Thatte family). The tanks se
*Nahar*. It was the main sou
in use.

The same *Nahar* also suppl
temple in Begumpura (fig. 4
of Harsiddhi Mata Mandir in Harsul.

fig. 44 Begumpura: Thatte Haud (source: Smita Geedh for Aurangabad Heritage Listing Project commissioned by INTACH Aurangabad Chapter, 2012)



*Wazoo Khana* is a pond inside the mosque where worshippers wash their hands and feet before offering prayers. As per the local senior people, *Wazoo Khana* of City Chowk Mosque, Badi Masjid in Shahganj, Jama Masjid, Nawab Masjid near *Rangeen Darwazaa* and many mosques in old city which were built during Mughal and Asaf Jahi period were once provided water through the *Nahars*. Today, all these *Wazoo Khanas* get water from modern water supply system set up by the Municipa

During the survey for Aurangabad Heritage Listing, spotted which must have been a part of residentia (fig. 46). The detailed study is necessary to establish bodies.

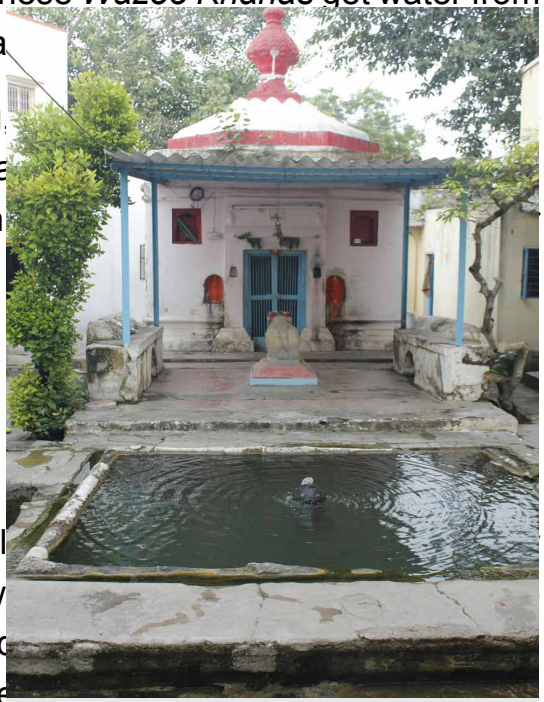


fig. 45 Amruteshwar Mandir, Begumpura: A small water tank getting water from Begumpura Nahar (source: Smita Geedh for Aurangabad Heritage Listing Project commissioned by INTACH Aurangabad Chapter, 2012)

### *Char Bagh*

As a major city in Mughal Empire, especially with years, Aurangabad witnessed massive construction Typical to Mughal establishments, *Char Baghs* were were part of the structural complexes while there w for leisurely activities. Out of them, only Bibi-ka-Mac Ruins of few other *Char Bagh* pattern can also be se

Bibi-ka-Maqbara is a famous tomb structure dedicate made by her son Azam Shah. Unlike, Taj Mahal in Agra, Bibi-ka-Maqbara tomb stands at the centre of a well laid out *Ch* four cardinal directions of the *E* divisions. An enclosing wall of the *Char Bagh*. The water ch suggest planned water supply tomb also gets water supply th

fig. 46 Panchakki: A large Hauz used for wazoo (source: Smita Geedh for Aurangabad Heritage Listing Project commissioned by INTACH Aurangabad Chapter, 2012)

Himayat *Bagh* was laid out beginning of 18th century by court. It was laid out on the re land near Aurangzeb's palace



Marathwada Agricultural University'. Modern fruit plantations have disturbed the original layout. Only standing remains are water channels, central octagonal platform, *baradaris* on two sides on the water channel, enclosing wall and entrance gate. All these remains are in deteriorated condition and are in the need of urgent intervention. Shakkar *bavadi (baoli)* located just outside the enclosure wall of Himayat *Bagh* was used for water supply in the garden. Remains of a stone built water reservoir can also be located near this garden.

Water channel running through the stepped platform with several aesthetically appealing features suggest existence of a beautiful garden that once formed the part of Gulshan Mahal area. Today, it is completely destroyed under a haphazardly planted modern nursery within the premises of District Commissioner's office. Only a part of the channel can still be seen in the premises of District Commissioner's residence.

***Hamam***

The location of the *Hamam* near Navkhanda Palace suggests that it may have been served as a part of Royal palace (fig. 47). Only a small part of it is still extant of the once lavishly decorated *Hamam*, which is now located in the vicinity of Government Hospital. Terracotta water supply pipes can be seen inside the *Hamam*. Stucco work in the interiors points towards once beautifully decorated structure.

**Stationary Sources**

***Baoli* or *Bavadi* or Step-well**

By the end of 17th century, the Mughal army was dominated by the rulers not only from larger kingdoms of Jaipur, Jodhpur, Bikaner, Mewar, Bundelkhand but also from several smaller principalities in present day Rajasthan and Central India. Raja Jaisingh, Raja Jaswant Singh, Raja Karnasingh of Bikaner, Bundela Raja Pahadsingh, Ranmast khan held important positions in Mughal Army during Aurangzeb's rule. Aurangzeb who was fourth Mughal emperor, stayed here, earlier as a Viceroy of Deccan, later as a Mughal emperor. As an emperor, he came to Deccan in order to destroy Maratha, Adilshahi and



Qutbshahi powers.

He stayed in the city for 30 years until his death. Rajput nobles, who were part of Mughal army, came not only with their soldiers but also with all kinds of people supporting their camps. This also included traders and travellers. Many of these people stayed back in the city even whe
thrived into villages a
for example, Karna
Pahadsinghpura an
association remainin
unavailability of pere
traders to construct
historical sources ar
water resources.

During the survey fo
areas are dotted wit
Today, most of the st

Few of the most sign
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has been converted i
steps lead to the ma
*kund* at the end of the staircase and an arched bridge over the *kund* separates water body from the enclosed stair. Enclosure wall comprises of few small rooms, one of which has been converted into a Devi temple. Rear wall of the circular shaft continues above the surface and is supported by a brick vault. Remains of stucco work can still be seen on this rear wall. History of this well is unknown. Possibility of association of nearby gate (with stucco details) and the step well cannot be ruled out.

fig. 47. Gulshan Mahal, District Collectorate: Water channel running through the garden (source: Smita Geedh for Aurangabad Heritage Listing Project commissioned by INTACH Aurangabad Chapter, 2012)

Another *step-well* in the area (Nandanvan Colony), locally known as Ganga *Bavadi* has stone stairs leading to the main water body. A stone arch is still standing which may have been once part of a separating wall. Though water is being used for local use, the area is filled with plastic waste and debris (fig. 48).



A step-well in Kesarsinghpura is located in the complex of Renuka mata temple. The step-well remains include stone stairs leading to the water body, an arched brick wall separating main well and the stairs and a square well shaft. The entire structure is in *lakhori* bricks. The well is completely silted and filled with debris and waste.

An interesting step-well is located in CIDCO N-6. The area was earlier known as Jaswantpura. The step-well is now completely filled with garbage though the well still has water even during the summer days. The well has stone steps leading to the main water body. It seems to be carved out of the hard rock as the walls of the well are not built but carved. A rear side of the well is an arched wall built/carved in stone. Thick vegetation prohibits the access to other parts of the well except entrance steps.

A very few step-well are still being used by the local people for general water consumption. Due to negligence, the water quality has been degraded. As part of Heritage Listing Exercise of Aurangabad city, many of these step-well and dug-wells have been recorded and listed as Grade I structures for their significance as traditional water system of the city.

**Dug Wells**

Simple circular or sometimes even square wells can be seen all over the city. Many of the wells are part of *math* or temple complexes for example in Tukangiri Maharaj Math (Pushpa Nagari), Renuka Mata Temple complex (Kesarsinghpura) and Sham-Sajjan Math (University area). It was observed during the survey that often at least one dug-well can be seen in close proximity to the *Baoli* or a step-well. The fact has been corroborated with the existence of dug-wells in the premises of above mentioned step-well (fig. 49).

As mentioned earlier, along with the Mughal army, traders and businessmen adopted the city as their homeland, and it has been observed that many of the families in older part of the city are staying since many generations. These people built their large residential complexes to accommodate their increasing families. These family houses or *wada* was built focused on a central courtyard. A dug-well is a prominent feature of these *wadas*. In some of the *wada*, the well is located in the courtyard. The dug-well in some of the *wadas* is located inside the building, possibly to avoid intervention by invaders.



These dug-wells made the houses self-sufficient. Some of these wells are still in use for example; a well in house near Amruteshwar temple (Aurangpura), also a well inside the

fig. 48 Ghati Area: A barely recognizable Hamam near Cardiac Department (source: Smita Geedh for Aurangabad Heritage Listing Project commissioned by INTACH Aurangabad Chapter, 2012)

harvesting technology still in existence).

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fig. 49. University area: A baoli or step-well near Lala Hardaul Samadhi (source: Smita Geedh for Aurangabad Heritage Listing Project commissioned by INTACH Aurangabad Chapter, 2012)





## About the author

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Ms. Tejaswini Aphale is working as a Consultant with Archaeological Survey of India. She has completed her masters in Ancient Indian History and Archaeology from Deccan College, Pune and MS in Historic Preservation from the University of Pennsylvania. Ms. Aphale was involved in a number of projects carried out by the INTACH, Aurangabad.

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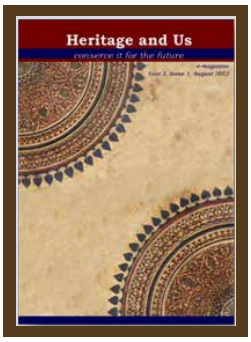

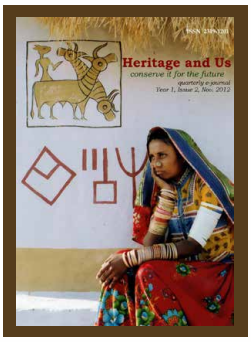

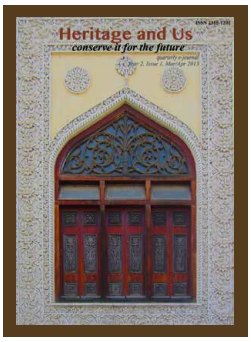

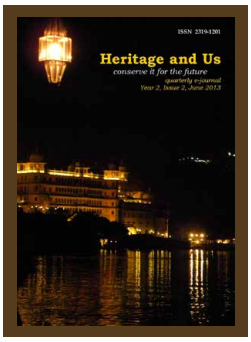

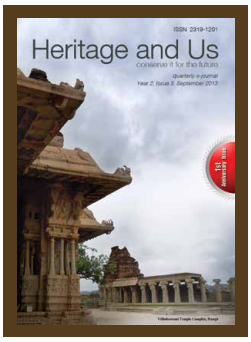

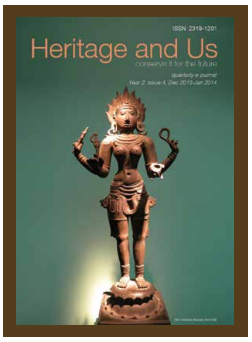

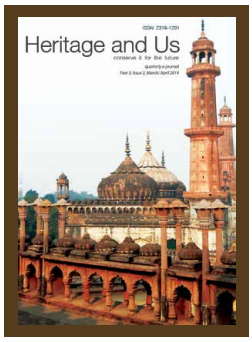

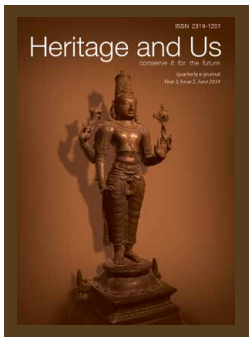

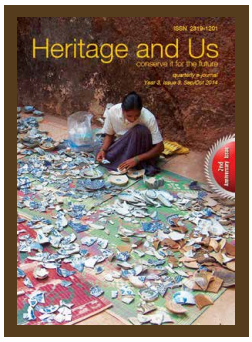

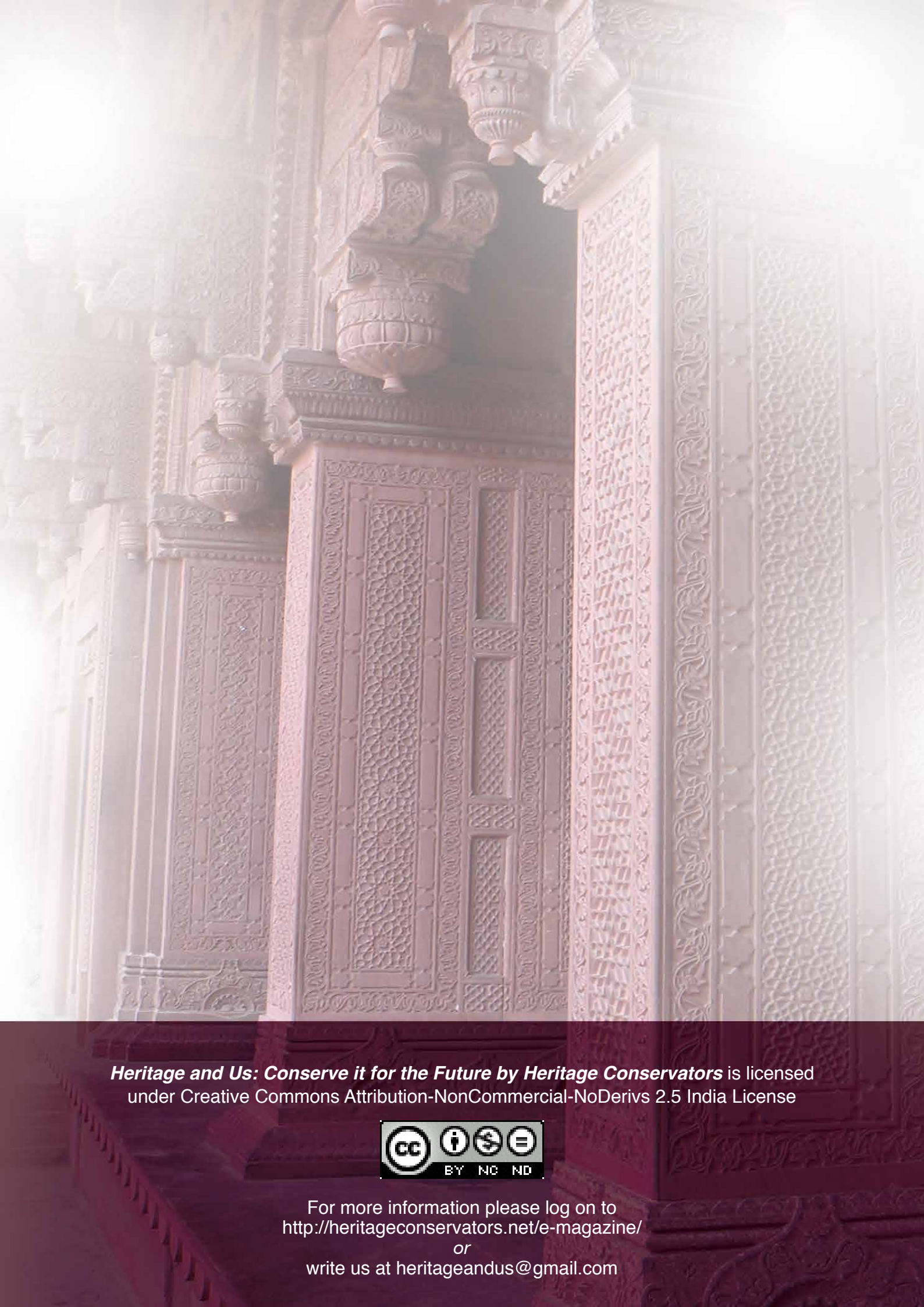



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