

JOURNAL OF THE DEPARTMENT OF MUSEOLOGY

VOLUME 11 & 12



UNIVERSITY OF CALCUTTA

2016

ISSN-2278-9685

**JOURNAL OF THE
DEPARTMENT OF MUSEOLOGY**

Volume 11 & 12

2016

Editor

SUPREO CHANDA



Department of Museology
UNIVERSITY OF CALCUTTA
Kolkata

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PUBLISHED BY THE REGISTRAR, UNIVERSITY OF CALCUTTA
87/1, COLLEGE STREET, KOLKATA - 700 073

AND

PRINTED BY DR. APARESH DAS
SUPERINTENDENT, CALCUTTA UNIVERSITY PRESS
48, HAZRA ROAD, KOLKATA - 700 019.

Price : Rs. 500/-

Reg No. 2764B

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Editorial

Journal of the Department of Museology, University of Calcutta, is a refereed journal. Papers published here have been duly peer-reviewed (double-blind) by the internationally reputed reviewers. The Journal has achieved a set standard within a short period of its existence by publishing academically credible papers from India and abroad. The current issue too contains a number of original research papers contributed by accomplished scholars. In this issue, thirty three papers are selected beside an introduction to a book by the author himself. Subjects vary from art, archaeology, anthropology, botany, conservation, craft, communication, ethnography, exhibition, iconography, heritage, history, science & society, zoology, etc., all relevant to museology. Contributors, from Australia, Brazil, France, Russia, Slovakia and United Kingdom beside India, comprise senior academics, senior museum professionals, middle and junior level academics and professionals, research fellows and scholars. 2016 being the golden jubilee year of introducing Mobile Science Exhibition (MSE) in India, a special paper has been included on the history & development of mobile science exhibition.

It was a tough job this time; altogether forty four papers received out of which eleven unfortunately could not pass the stringent review process. Few more did not get very favourable comments from the reviewers, but considering the apparent relevance/ importance of the topics, it was decided to include those papers. Editorial policy emphasised on maintaining uniformity in language, grammar, expression and reference system. It would be unfair to claim that the excellence has been achieved, but, for sure, it can be said that utmost care has been taken to exclude gross mistakes and controversial statements; nevertheless the freedom of expression has not been tampered with – after all the ultimate responsibility of the illustrated facts and figures lies with the contributors. The contributors of the papers need to share the responsibilities too; many of the papers received much later than the last date announced, some of the papers did not conform to the instructions given; few papers did not include either abstract or keywords or both; referencing systems adopted by few authors grossly differed from what was expected, leaving limited scope for review and minute editing. Due to some unavoidable circumstances beyond control, the Journal could not be processed for publishing within 2015. To compensate, two volumes, viz., Volumes 11 and 12 are combined together. Despite all limitations, it is sincerely hoped that this issue of the Journal would be able to meet the expectations of all to a satisfactorily level. Constructive suggestions, even scathing criticisms are welcome for the betterment of the future issues of the Journal.

I must express my gratitude to Professor Sugata Marjit, Honourable Vice Chancellor; Professor Swagata Sen, Pro-Vice Chancellor (Academic Affairs);

Professor Sonali Chakravarti Banerjee, Pro-Vice Chancellor (Business Affairs & Finance); and Professor Samir Kumar Das, Dean (Arts Faculty) of the University of Calcutta for providing unstinted support. I convey my regards to the members of the Editorial Board for advice and cooperation. I must thank the Director General of the National Council of Science Museums (NCSM), India, for providing photographs of the mobile science exhibition buses that are used on the front and back covers.

At the last I would like to put on record my acknowledgement and active cooperation in editing and making the publication possible to all the anonymous (!) referees; the Head of the Department of Museology, Dr Indrani Bhattacharya; my colleagues in the Department, Dr Mahua Chakrabarti, Mr Sanjit Jotder, Dr Dhriti Ray and Dr Piyasi Bharasa; and the contributors of the papers. My sincere thanks are due to Professor Soma Bandyopadhyay, Registrar, CU, for kindly publishing it and Dr Aparesh Das, Superintendent, CU Press, for meticulously printing the Journal.

Supreo Chanda
Editor

The views expressed in the papers published in this issue of the Journal are not necessarily those of the Editor. Responsibilities of facts, figures, illustrations, photographs, etc., and authenticity rest with the Contributors.

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Wood Carving of Eastern India

ATUL CHANDRA BHOWMICK

Sutradhara is the artisan caste of Bengal. Regarding the genesis of Sutradhara the tenth section of *Brahmakhanda* of the *Brahmavaibarta Purana*, written probably in the middle of the 13 AD mentions clearly that God *Visvakarma*, the celestial architect in disguise of a Brahman begot the first ancestor of Sutradhara's upon the celestial *apsara* (nymph) Ghritachi, who was then disguised as a Gopa (milkmaid) girl by Indra's curse. But the *Brihadharma Purana* tells us the origin of Sutradhara was born of non-backward Karana father and a non-backward Vaisya mother. Both these refer Sutradhara as a caste of mixed origin. Karana is the writer caste now in Odisha. Some of them claimed to be originally Kayastha, migrated from Bengal, Because they did not submit to Ballal Sen's (1158-1179 AD) social discipline. According to the *Skanda Purana*, *Visvakarma's* sons were Manu, Mayu, Tvstr, Silpin and Taksaka, collectively termed the Rathakara. Tathakara descended from a Ksatriya father and a Vaisya mother (Sengupta, 1953: 34) and did not perhaps include the Sutradhara. Sutradharas now claimed to be Rathakaras of ancient times. These Rathakaras had the privilege of Upanayana with the sacred thread. The *Anusasana Parva* of the Mahabharata Sutradhara is termed as Taksana (carver). In the Vedic literature words like Kasha, Rathakara, Thathagrtsa, Rathajuti, Rathanvi, Rathanvahana have been mentioned (Ray, 1998: 71).

The hymn of the *Rigveda* "*kim svidanam ka u sha vriksha asa yato dyavaprithivi nishtatakshuh*" (X.81.4) once asked, 'which was the forest and what was the tree out of whose wood the heaven and earth were carved?' (Dasgupta 1990: 1). Among the materials out of which *Visvakarma* could have created the Universe was wood that first came to the mind of the Vedic sage for its easy availability locally and ready tractability. Sutradharas are technically architects by profession. The *Manasara Silpa Sastra* identifies the Sutradharas as master-builder (chief architect – *sthapati*), the technical designation of the craft-workers. The crafts pursued by them are individual dwellings (*abash*) for human beings (*manusyalaya*), palaces, temples, architectural decorations, free-standing religious idols (*deva bigrahas*). The other wood activities catered to the demands of the population are chariot, litter, throne, dolls and toys for *sishu monoranjan* (children's entertainment), boat, musical instruments, *krishi* (agricultural) implements, like plough, ladder, and domestic articles. They have performed multifarious activities.

In the remote past the occupation of them was the building of curvilinear roofed wooden huts and cottages of *ek-chala* (one-thatched roof), *do-chala* (double-roofed), *chau-chala* (four-roofed) and *at-chala* (eight-roofed), structural varieties. Surprisingly enough these huts are indigenous and truly unique on the geological feature of Bengal to drain out quickly heavy rain water.

The manifold activities of Sutradharas begun to dwindle out and they were reduced only to carpentry and the title of Sutradhara (*Sutra* in Sanskrit means thread and *dhara* means to hold) literally means thread-holder with which the course of the saw is marked. They gradually changed into, rather vulgar and contemptuous calling of *chhutor*, the carpenter class of Bengal, principally employed in all wood workings. The narrowly coined term *chhutor* is a corrupt form to mean a mere carpenter alone and by and large professionally they are ultimately confined to household carpentry, as many of us generally assume. This term forbids us to grasp the real scope of their other activities. For livelihood nowadays they have to depend mainly on making of household articles like door, window, chair, dressing table, bedstead, couch, etc., for domestic use and even hut and cottage for rural community.

Carpentry is their traditional and characteristic profession. Besides this much of their caste-craft in other media lie unreclaimed and wiped out. These are *pasan* (stone), *mrittika* (clay) and *chitra* (painting), in addition to the professional material, *kastha* (wood). They carve stone images of gods and goddesses, prepare terracotta temple, decorate frieze, brick temple, dolls and toys and paint on wooden *rathas*, images, *patas* (book-covers) and *dasavatara tash* (playing cards). The wood carvers have an undisputed authority even to carve on horns, ivory and metal. They show skill even in these materials when employed. In Noakhali in Bangladesh, some Sutradharas work as goldsmiths. The influence of wood carvings is noticed in stone carving. The sculptural figures of wooden bracket bear a striking similarity to the ancient stone bracket figures. But the wood carvings of sufficient antiquity do not demonstrate how carving in wood was transferred to stone in ancient times. Yet the parallel is too close. Designs were transferred from wooden prototypes to stone in a very happy manner. E B Havell's statement indicates to this end. He says, "the technique of Bharhut reliefs suggests that they were the work of skilled wood carvers attempting their first time to use stone instead of wood" (1980: 93). Wood was the chief building material until the knowledge of stone working. Wood works applied in the framing at the entrance of the *chaitya* cave of Karle, Maharashtra and use of wooden beams in the rock-cut caves of western India, *stupa* railings, all point to the primacy of wood in early India. The art of the carpenter (*vaddhaki*) (Roy, 1998: 104) had attained a considerable advanced specialized profession and perfection to a great extent during the Buddhist period. It is further indicated that the Bengalee sutradharas are also known to have constructed the unique curvilinear *gor-Bangla*

(twin-huts), *pancharatna* (five-pinnacle), *navaratna* (nine pinnacle) brick temples and terracotta reliefs on their friezes in the past and the name of some of them have come down to us from the temple inscriptions. And they reached the height of excellence for superbly execution and workmanship in the districts of Bankura, Birbhum, Burdwan, Hooghly, Nadia, Murshidabad and Jessore in Bangladesh; their carvings are unique for its rich pictorial quality, widely appreciated not only for their value and they received high recognition, which they so deserve.

Carpentry thrived as an important craft in Bengal. The *Lalita-vistara* and the *Mahavastu* furnish us references to carpenters. The Jain *Angavijja* refers to *asandana* (chair), *ianaka* (car), *gholi* (palanquin), made of timber. The same text also mentions different kinds of boats, such as *nava*, *pota*, *kottimba*, *salika*, *tapaka*, *plava*, *ponika*, *kandevlu*, *dati*, etc., made of wood indicating a highly developed carpentry. The Periplus of the Erythraean sea also refers to *tappage* and *cutyamba* boats, which compare well with *tapaka* and *kottimba* of the *Angavijja* (Ray, 1998: 142). These were the principal vehicles of transportation. Vatsyayana (c. 4 AD) in his book *Kamasutra* mentioned *taksan* as one of the sixty-four arts (I.III.16,23; Ray, 1998:160.)

The Pali texts in Jain canon refer to wood workers, who produced very precious wooden sandals, studded with costly stones, chariots, images. Panini in his grammar *Astadhyayi* (300 BC) mentions *tanukarana* (III.1.76; Ray, 1998: 104) and *Bdharki*, *Rathakara* for Sutradhara. Carpenters were known as *taksas* in Sanskrit, *taktam* in Greek and *tosen* in Zend. *Taksan* is mentioned in the *Rigveda* (4.16.20; 10.39.14) and in the *Atharvaveda* (x.63; Ray, 1987: 71). In the *Manusamhita* (3:91;8:250) and *Naradsanati* (5:16:21) wood carving is mentioned.

Bihar

In eastern India the earliest wood carving has been found at Patliputra/ Kumrahar (modern Patna). Megasthenes, the Greek ambassador to the court of Chandragupta Maurya (324-300 BC) refers to the seven large wooden pillars, each of which was clasped around with vines embossed in gold and ornamented with design of birds and foliage in gold and silver in the specious halls of the imperial residence at Pataliputra (Mazumdar, 1960: 223-224, 262). Hiuen-tsang, the well-known Chinese traveller in the early seventh century, alludes to a sandalwood image of *Avalakitesvara* housed in a temple on a hill, near the pigeon monastery in Magadha. A sandalwood image of *Jivantasvami* (*Mahavira*), carved in his life-time and presumably worshipped by his followers and a wooden image of *Yaksha Moggarapani* in a shrine, outside the city of Rajagriha (modern Rajgir), Bihar may be recalled.

Odisha

Odisha conjures up an old tradition of *rath-yatra*, annual car festival of popular divine trinity of *Jagannath*, *Balaram / Balabhadra* and *Subhadra*. Wooden image of the temple of Puri (12 AD) in *nandighosh*, *taldvaj* and *darpadalan*, three separate processional cars respectively, decorated with carved figures of men, women in dancing posture, horses, bulls, elephants. The image are represented in a pillar-like cylindrical form with facial and bodily features, round eyes, but no full arms and legs. More strikingly, these Hindu cults seem to be originally of tribal deity. Identical cult images are found in *maths* (temples) at Gunpur in Koraput district. There is a *Radha-Krishna* pair in the *Radhakanta* temple at Digapahandi and in the *Gopinath* temple at Behampur in Ganjam district and a *Dasavatara* (ten incarnations of *Vishnu*) panel in the *Jagannatha* temple at Belagunta, Ganjam district, Odisha. Among the *avatars* the *Narasimha avatara*, carved in the round, seated on a lotus with all his *ayudhas* (emblems) *sankha* (conch), *chakra* (wheel), *gada* (club) and *padma* (lotus). The usual attributes are highly acclaimed by the Odishans, as evident to all from the lines of poet Jagannath Das (16 AD) -

"Namai Nrusimha Charana

Anadi Prathama Karama."

- (Dasgupta, 1990: 93)

Sometimes *Narasimha* is shown in company of *Lakshmi*, when called *Lakshmi-Narashima*, *Kalki* in door-jamds, traditional *nayikas* (the female gallents), essentially decorative and have a languid charm and grace of their own. Secular buildings in Odisha have carvings, often painted in different colours, executed with clarity and precision, sometimes retains their brilliance for long times even these are left uncared for. Such *nayikas* are also used as decorations in wooden palanquins.

Assam

In the Brahmaputra valley in Assam carpenters, locally known as *Khanikars*, employed their talents to decorate religious shrines, designated as *satras*, meant for congregational prayers by the *Vaishnavas*. Elegant reliefs depicting *Vishnu* and other *Vaishnavite* deities are encountered on the wooden structure, called *simhasana* (lion-throne), which is placed at *manikut* (sanctum), opposite to the main entrance, while a number of panels illustrating mythological scene and divine, human, animal figures, floral and vegetal motifs are found, stuck on the walls of the *Kirtanghar / namghar* (prayer hall) of the *satras* at Kamalabari (1673 AD); Barpeta (middle 17 AD) in Jorhat district, Garmur (1715-1744 AD), Dakhapat and Auniati in Majuli island. In the famous *Natun* (new)

Kamalabari *satra*, there is a *Surya* (sun-god) portrayed in iconographic prescription and the god rides on a seven-horse chariot, now only three are visible, drawn by *Aruna* with his face placed in a symbolic rayed disc and a theriomorphic sharp-beaked bird (cf. Vedic *Grautman*) perching on one of the horses and human face. In delineation the artist adopted a realistic style. The treatment of the human and particularly the divine figures is largely in frontal and the latter are, in general, somewhat static in appearance. The stiffen of their facial and other physiognomic features and angularity. Another portrayal is the four-handed elephant-headed god *Ganesa* under a cinquefoil arch with his trunk to right touched by his upper right hand, the remaining hands of the deity hold a *ladduka* (ball of sweetmeat) in his lower right, a *pasa* (noose) in the upper left and a snake in the lower left. He has less corpulent abdomen and has a rat-mount, shown prominently on pedestal. Both the *manikut* and *kirtanghar* of any *satra* are noteworthy for the wealth of wood carvings, often painted, traces of paint being visible in many extant specimens, as exemplified by the Kamalabari and Barpeta *satras*. In the *manikut* one sees wooden sculptures of *Vishnu*, usually four-handed and his incarnatory forms, like *Balarama*, *Kalki* and *Hayagriva*, his mount semi-divine mythical *Garuda* as well as *Hanuman*. Near the *simhasana* is found a carved decorated wooden standing tray (*thagī*) as book-rest. Occasionally called *asana* (seat) for keeping the holy scripture the *Bhagavata* of the time of prayer. The corners of the *simhasana* have tiers of lion-on-elephant (*gaja-simha*). Lions, covered with silver sheets, and their necks bejewelled with gold strips, peacock, resting on tortoise as supporters and *simhasana* faces bear carving of human beings, birds, floral and vegetal motifs in both high and low reliefs. The largest and elegant of the *simhasanas* is encountered in the Kamalabari *satra*; it has seven tiers, the lowermost one, being the largest, is about ten feet square. The door-panels of the *satras* with floral scrolls on them are designated as *phuli-tetelikata* and the carvings of lion as *simhaduar* (portal). The Barpeta *Kirtanghar* carries carvings. Mostly in high relief, artistically superior to many others elsewhere and they show the continuity of the tradition of wood carvings art. The pillars (*khutas*) of the *kirtanghar* of the Dakshinpat *satra* and some others sometimes chamfered or fluted into circular or polygonal shapes and crowned by carved capital resembling lotus or *Kamranga* (*Averrhoa carambola* Linn.) fruit, locally called *kardoi-tenga*. Two wooden images hanged inside the *kirtanghar* of the Garmur *satra* are outstanding. In the *satras* *daba* (big drum), *khol* (drum), *negera* (kettle drum), *kariya* (a wooden cylindrical pot used in milking cows) and *sarai* (platter – a large flat dish) in the Dakshinpat *satra* are most significant. The rich array of *satra* carvings owe their inspiration to the epic *Ramayana* and *Puranic* lore.

The furniture articles of devout *Vaishnavas* of Manipur include *paleng* (cf. Bengal *palanka*), with its carved legs and ornamented with scroll pattern, *korpal* (stool) with a beaded border and supported by two stylized dragons, seated back to back, with their tails crossing each other, *korpani* (trunk), its legs adorned with figure of parrot, *thagi*, its base tiered turtle, elephant and lion successively upwards, *khadam* (wooden sandal), with ornamental borders, *pankha* (big fan drawn manually by rope) pole, with *Makara* (crocodile) motif and walking sticks, with dog or deer head.

Tribal

Tribal wood art is more magico-religious than aesthetic appeal. A group of temple musicians carved by the Khamti artist of Tirap district, Arunachal Pradesh, painted brick-red, blue, green and yellow, all the figures are lively and expressive, each having his own individuality. The Monpas of Kameng district, Arunachal Pradesh have to their credit some animal, floral and geometric forms. Most of the carvings are in low relief and although linear in character. They are aesthetically pleasant for the sense of balance and rhythm they exhibit. The Monpas can endow objects of day-to-day use, such as cups, dishes and fruit bowls, with beauty and good taste. The Khamtis evidence great skill and fecundity of invention in carving in high relief. Wooden masks for ceremonial dance and pantomimes, carved by the Khamtis and Monpas are admirable art objects. The mortuary wooden upright poles (megalithic menhirs; men=stone, hir=long), fashioned by the Konyaks of Nagaland are believed fetishistically to be the resting place of the souls of the deceased persons. The abbreviated representation of human head (totem), prominently carved on the pillars of the *morung* (bachelor's dormitory) of the Angami - and - Ao-Nagas of Nagaland have oval eyes with beads serving as their pupils, broad nose without nostrils, ears show as conventional rectangles with holes for wearing ornaments and mouth as slit with teeth, shown vertically without lips, yet very splendid. They carve figures, often holding guns and mother-and-child figures are interesting. These are common artistic examples of the Nagas. Their familiarity with the animal world is attested by the naturalistic *mithan* (locally called short-legged bison), buffalo, elephant, tiger, dog, deer, hylobate gibbon, macaque monkey, boar, lizard, frog, python and hornbill. The elephant and hornbill are *mithan* and buffalo are signs of affluence. By and large, the wood carvings of Manipur display a good sense of balance and proportion in the figural reliefs and floral designs. Some of the tribal carvings are graceful and technically well executed.

The majority of the wood carvings of Assam, both non-tribal and tribal are predominantly with a popular indigenous idiom, which is folkish, naïve, forceful and fully alive, yet some are, however, crude.

Bengal

Bengal has bequeathed to us a rich corpus of wood carvings. *Rathas* (chariot), *Chandi mandapas* (mandap=arbour) and *at-chala-mandapas* speak, eloquently the Bengali wood carvers' skill. Wood carving here in Bengal has reached a very high level, shows a characteristic distinction, even from stone sculptures and becomes an important part of architectural decoration. Wooden structural pillars, generally have square bases and an octagonal shafts interspersed with square panels, carved with traditional swan and dancer motifs, rendered most realistically. Even the carved wooden posts, with their capitals bear a great variety of pattern. Beams are also carved and even the beam-ends are finished with scroll pattern. But the brackets, door-panels and friezes have the most masterly dexterity examples. Brackets are carved with drooping lotus or blossoms and these become a universal use to decorate the *mandapas* externally. Door-panels of the *Chandi mandapa* are normally decorated profusely with interlaced and convoluted floral patterns or with human figure, carved in low relief.

All these are very substantial wooden structures, carved beautifully by the Bengali *Sutradharas* skilfully and deftly into all kinds of artistic motifs, being distinctly local familiar folk arts, perpetuate the traditional style without any trace of imitation from outside world. Wood carvings in *mandapas*, temples exhibit foliated and tasselled designs, mixed with animal forms. The friezes are worked out in relief, depicting *Ramlila*, *Krishnalila*, the *Mahabharata* scenes, figures of *Durga*, *Dasavataras*, etc.; the thatched houses of Bengal are also decorated with carved pillars and brackets. Carved very skilfully, the handiworks of *Sutradharas*. A few such extant examples are now preserved in the Asutosh Museum of Indian Art, Calcutta University, Indian Museum, Kolkata, Gurusaday Museum, Thakurpukur, Joka, South 24 Parganas, Ananda Niketan Kirtisala, Bagnan, Howrah, Amulya Pratnasala, Rajbalhat, Hooghly and Jogesh Chandra Purakriti Bhavan, Bishnupur, Bankura. *Sutradharas* carved gods and goddesses of the Brahmanical, Buddhist and Jaina pantheons in wood.

Sculpture

The oldest example includes a pair of figures of corpulent *Vishnu*. A few admirable carved wooden objects, viz., a capital with a four-armed seated *Vishnu*. One of them, figured at the centre of a wooden brackets, depicts a four-handed god as seated on a lotus pedestal in *yogasana* with his hands disposed in *yoga-mudra* (contemplation gesture). He sits under a trefoil arch supported on pillars and the arch is flanked on either side by two flying figures. Another image (12-13 AD) came from Krishnapur in Comilla, Bangladesh and represents him on a raised double-petalled lotus holding a *sankha* and

a *padma* in his lower right and left hands and a *gada* and a *chakra* in the upper right and left hands respectively, at the bottom is seen his mount *Garuda*, flanked by two dancing figures and a corpulent person sitting cross-legged, probably a sage or the donor of the image on the right corner of the pedestal and at the top is a *kirtimukha/rahumukha* with twin *vidyadharas* on his two sides, flying in clouds holding garlands in their hands for adoration and praying the god with folded hands. An effigy of *Garuda* with folded hands and nimbus by his out-spread locks of hair, recovered from Raghurampur and a goddess in all probable, *Durga* fighting with a demon with a *khadga* (falchion) in her right hand, depicted on a pillar, salvaged from a tank at Rampal, near Dhaka are unique examples. The door-frame engraved with *Vishnu* in meditative posture and found from Sonarang under Tangibari of Munshiganj district, Bangladesh, is an important illustration of Bengal woodworks. Much of its elegance was lost for having been immersed in water for a long time. The image of *Loknatha* also found from Tangibari is another memento of woodwork worth mentioning. An exquisitely beautiful girl, probably the mythical *surasundari* (Divine damsel), found in a pond, was being dug out in Kazikasba village is another delicate relic. She stands in a tribhanga pose with legs crossed. Betel-leaf (*Piper betel* Linn.) face, large eyes, sharp nose, well-rounded breasts, attenuated waist, charming smiling face, with a parrot is perched on her right hand and her languid look seems to typify the ideal feminine beauty. Masterly carved in high relief, it may be ascribed to the 12-13 AD, and now on display in the National Museum, Dhaka, Bangladesh. Wooden *Tirthankara*, found from Faridpur, Bangladesh, now preserved in Asutosh Museum of Indian Art, to be of 10-11 AD. Dinesh Chandra Sen in his book *Brihat Vanga* has mentioned about the decorated woodworks of a temple (c.14 AD) of Satkhira district, Bangladesh. Almost all the earliest wood carvings have been found in Bangladesh and stylistically all of them belong to the Pala-Sena school of art, chronologically speaking ranging from the 11-13AD and all of which bear testimony to the perfection reached by the wood carvers of Bengal of bygone days.

An old Jaina image, assigned to be the 18 AD is now in the Asutosh Museum of Indian Art. The famous wooden colossal cult of *Balarama*, as the tutelary deity of Bodo village, Burdwan carries different attributes including the most characteristic *hala* (plough) standing under a multi-hooded canopy of the primeval serpent *Ananta Naga*. An image of eight-armed *simhavashini* (lion-mount) *Durga* in a temple at Nikbalia, Howrah portrays the goddess seated on a highly stylised lion, showing *abhaya* (fearless) and *vara* (boon) - mudras and holding *khadga*, *khetaka* (shield), etc. A pair of image of Sri Chaitnya Mahaprabhu, originally installed in a shrine at Tejpal, Bankura, in

978 Malla era (1672 AD) by Malla king Virasimha, affords six-handed (*sadabhuja*), playing a *murali* (flute) by two hands, carries a *dhanu* (bow) and a *sara* (arrow) in the lower right and left hands respectively. This form of divinity is described in the *Chaitanya-Bhagavata* by Brindabanadasa (105-1589 AD) and the *Chaitnya-Charitamitra* by Krishnadasa Kabiraja (c.1530-1616 AD playing on a flute now missing), hailing from Kansat village, Malda, exhibited in the Asutosh Museum of Indian Art. It is unmatched in its magnificence and dimensions. It had toured to Burlington House exhibition in 1948 and famous sculptors Epstein and Dobson were amazed for its pliable rounded body, sensuous flexion and gliding linearism. Some temples at Khardah, North 24 Parganas, Guptipara, Balagarh Police Station, Hoogly have wooden icons. In Kolkata two *Jagannatha* temples, both located under the Muchipara Police Station enshrine the deity along with the idol of *Gaur* and *Nitai*.

The imagination of Bengali wood carvers found a more free expression in the narrative life of *Krishna*. A fair number of panel scenes connected with *Krishna's* boyhood exploits, youthful dalliances with *gopis*, the chief of whom is *Radha*, in conformity with the Bengali tradition from Jayadeva (12-13 AD) of the *Gita-Govinda* are portrayed on walls of temples, *rathas*, doors (usually 6'-8' high), shrines, *at-chala mandapas* and *Chandi mandapas*.

Panel carved on Mahespur pillar and carved door of a temple at Baradabar, Howrah depicting the episodes of *Yasoda's* sucking the *Krishna*, sensitively articulating the eternal motherly love and affectionately being her naughty child with a rope, seated *Yasoda* with baby *Krishna* on her lap, young *Krishna* engaged in killing the demons *putana* with his mother rushing towards him with great anxiety. The episodes of the grazing of cows (*goshthalila*) of the *Krishna* mythology was also chosen by the wood carvers in the past and a few corner-profiles of *rathas* depicting the theme. *Krishna* with nine *gopis*, the latter acrobatically forming the figure of an elephant (*navanari-kunjara*) is a delectable panel. A contemporary panel depicts *Radha* as *Rairaja*, seated on a throne, now in the Gurusaday Museum. The Ramachandra temple, built between 1822 and 1829, at Guptipara, houses wooden sculpture of *Rama*, *Sita* and *Lakshmana* as well as their animal attendant devotee *Hanuman*. A representation of *Rama*, found in the vicinity of Comilla depicts him with his characteristic weapons, bow and arrow, but as wearing a *dhoti* in a typical Bengali style, now in the Gurusaday Museum. A unique life-sized *Vaishnava* saint Srichaitanya (1485-1533) and his compeer Nityananda (1473), modelled in the 20th century in neem-wood is worshipped in the *Gaudiya math* at Ghoshpara road at Barrackpore, North 24 Parganas. The figures are standing in *sampadashanaka* pose on a pedestal with each two hands outstretched upwards.

The other deities of the Brahmanical pantheon *Siva*, *Parvati*, now on view in the sanctum of the Burosiva temple at Nimabalia, Howrah; *Mahishamardini* in her terrific form; another architectural fragment from Baliguri, Birbhum, datable to the early 19 AD and preserved in the Gurusaday Museum, portrays *Siva* as on his bull mount, called *Nandi*, a conceptually and plastically more folkish than hieratic; notable folk-tribal deities are *Manasa*, a snake-goddess, same as Buddhist *Janguli* and Jaina *Padmavati*, from Purulpara, Howrah, *Visalakshi*, standing with her one leg on the chest of *Kala-Bhairava* and the other on the head *Vatuka-Bhairava Sitala*, deity of small-pox, rides on a donkey charring a broomstick in her right hand, a pitcher on her left waist by left hand and has a winnowing fan above her head, *Olai-chandi*, mother-goddess of cholera, Panchanan, godling of ghosts, seated on the back of a horse having an angry look and looks after ailing children. The icono-plastic expression of the latter two is naive and primitive.

In the Gorakshanatha temple near Nagerbazar, Dumdum, North 24 Parganas a painted standing wooden cult of *Goakhnatha*, with a flower in his right hand hanging downwards, left hand placed on chest with his two attendants on either side. *Gorakhnatha*, the chief disciple of *Matsyendranatha* (11 or 12 AD) founded *Nathism* cult for attaining deliverance from the fetters of mortal sufferings through *Yoga*.

A lively portrait relief of saga *Naroda*, a divine singer on a Maheshpur pillar and semi-divine beings, like *gandharvas*, *kinnaras* and *vidyadharas* are predicted as decorative motifs, independent status of *Garuda* and *Hanuman* as attendants of *Vishnu* and *Rama* are seen respectively in the temple (constructed around 1810) and the Ramachandra temple at Guptipara.

Panel

A panel of the Mehar *ratha* in Comilla shows a humour and banter scene portraying a henpecked husband carrying his graceful and youthful wife on his shoulder, coquettish wife holds a bird sitting on a perch and gripping a tuft of hair of her old mother in one of his hands. In another relief an erotic scene showing the natural bashfulness of the women indicated by her side-turned face. Both reliefs are now in the State Museum, Agartala, Tripura. The Bawali *ratha* shows a jackfruit seller and a woman with a pitcher on her waist and the Guptipara car statuettes show fish-cutters and drummers, mostly rendered under European realism. Milk-suckling calf and cow are in *goshtalila* scene. The corner inclined pilasters, locally termed *varsa*, known also as *sivasena* war or *kalisena* war or *sanhar srinkhal* (chain of death) or *mritulata* (chain of death) depict *gaja-simah*, horses in profile in the round, all are vibrant with vigour and energy and winged fairies or female dancers surmounting the tops of the corner towers and *garuda* on the top of the central tower. They all

transformed into a three dimensional sequence and form an isocephalic relief on either side of the pilaster. But the figure of lion in the art of Bengal is more idealistic than realistic and often more stylised and decorative and figurative than naturalistic, thus indicating the lack of direct knowledge of the artist. The brackets of the *chandi mandapas* and *at-chala mandapas* are shaped like an elephant trunk, locally called *suro* (Bengali word *sur* = trunk). The epic and *puranic* subjects deer, monkey, a pair of intertwined cobras with upraised hoods, peacock, parrot, swan, owl, are favourite motifs for carving in low relief on lintel.

Repeated patterns of flowers, naturalistic or stylised, geometric designs and more from everyday life were chosen by the carvers for enhancing the decorative value of their sculptural compositions or to demarcate areas of narrative panels. Notable among them are the remnants from Antpur, Hooghly, Ula-Birnagar, Nadia, Uchkaran, Birbhum, which are characterised by a pleasing rhythm and mellifluous linearism, floral decorative designs become beautiful plastic creations in their own right. The doors of the Dharmaraj temple at Berhampur have wealth of carvings with impeccable floral and vegetal designs. The most striking piece of wooden sculpture is the inimitable work depicting the shaving of the *pundit* (erudite) and the application of *alta* (lac-dye) on his wife's feet by the barber's wife. The characteristic figure, attitude and pose of everyone, including the *pundit's* servant bringing the *hooka* (hubble-bubble) and the *kolkey*—terra-cotta bowl holding *chillum* (prepared tobacco) for the master to smoke, while being shaved and blowing the *chillum* with his mouth, have been executed with exquisite skill and the left foot of the *pundit's* wife is executed in completest detail.

The massive door-frame of Balijuri, Birbhum elaborately carved in a variety of floral, decorative and figure designs. Incarnation of *Vishnu* and incident from the life of *Krishna* in the two upright jambs, goddess *Durga* and her attendants and the battle scene of *Indra*, the vanguard of the divine army, against the demon *Virtra* in the two top lintels. The panel shows the gods in battle-march in various stages with *Siva* as the drummer and trumpeter, riding a bull and accompanied by his two ghostly attendants. *Siva* is depicted as the central connecting figure between these two groups with their head turned back, right arm extended forward and beating the *damaru* (drum) and blowing the horn in his left hand to hearten and calling several other gods, who have yet to come up front and to join in the battle against the forces of evil. Here *Siva* is young, eager, agile and unconventional and belongs essentially to the domain of the rural tradition of Bengal. Mythological subjects like, the *Dasavataras* are executed mostly on door-jambs of temples in relief, but in full details and display their inimitable skill in delicate execution.

Style

The wood carvings of Bengal are of two styles – (1) in the round and (2) on relief when on architectural background. Summarily it is viewed that the wood carvings are essentially Bengali in spirit and expression, articulating age-old local traditions and the content will eloquently reflect the ingenuity and technical mastery over wood carvings of the artisans. In French language it has been spoken of as the Chef-D' Oeuvre of the surasundaris of Bengal wood carvings exudes the grace, charm and well-defined tenderly modelled physical form with a smooth gliding contour. The bountiful harvest of the 18th and 19th centuries garnered from the *rathas* and architectural buildings, regardless of the themes they depict, are permeated with a predominantly local idiom. In the portrayal of deities the artists had per se followed the iconographic formulae, but in regard to the depiction of humans they were free to follow their own way and to endow their figures with characteristically local flavour, taste and outlook. This is best illustrated by the motifs of *Rai-rajá*, fisher-woman cutting fish, ease-loving *zaminder* and his wife along with attendants, unstitched long *dhoti* clad Portuguese soldier, with graceful folds in front, young *Siva* of the *sivayana* tradition, care-free and affluent *Rama* of the Bengali gentleman. Female attending figures both in the *rathas* and in the thrones are purely conventional. The wooden brackets attached to thatched cottages are relief works as their utility is to strengthen the cornices and frames and to produce a fine decoration. The cult icons have sumptuous ornament and their head, face, fingers and feet have perfect finish. The motifs in woodworks are drawn both from animal and vegetal worlds, and are mostly of secular character, but the mythological subjects are generally represented in the door-jambes.

Narrative panels based on the epic and *puranic* sources, such as the various *Krishna* legends and the fight between *Rama* and *Ravana*, as well as individual deities, like *Sitala*, *Panchanan* are the normal type and met with, but social scenes and events depicted on door-panels, together with their counterparts on the *rathas*, constitute a valuable source of the contemporary society. The unfold before us the pomp, pageantry and easy-going leisurely life of the *zaminders*, the sad plight of the toiling masses, *inter alia*, the drummers, musicians, wrestlers, acrobats, women carrying pitchers on their waists and the like. Foreigners are found engaged in hunting animals. The secular scenes depicted are *bostom-bostomis* (singer mendicants) and a woman playing on *khanjani* (tambourine). Parrot, peacock, as pets on laps of the fashionable ladies, look more like members of their families than as mere avian birds of the forest. The world of flora and fauna are very close to humans and all worlds of divinities appear happily integrated into a compact organic whole in the art of wood carvers of Bengal. The pivot of wood carving of Bengal is divine figures, looking more human than divinity and the dress and ornaments worn by them are identical with those which are worn by the mundane

devotees. In brackets the women in the attitude of swinging in a hammock is of great artistic merit alike in the pure and serene expression of their eyes and faces, the curve of their every limb, showing their exquisite balance and an extraordinary inhibition of sensuous feeling. The Brahmanical pentads (*panchadevatas*), viz., Vishnu, Siva, Durga, Ganesa, Surya are depicted most. Gods and goddesses, anthropomorphic, zoomorphic and vegetal forms are their motifs of the wood carvers of Bengal.

Item :

Ratha (Chariot)

The antiquity of wooden *ratha* cannot be accurately ascertained, but its prototype is the stone sun-temple at Konarak in Odisha, constructed during the reign of Narasimha I (1238-1264 AD). The important *rathas* are found at Puri; Pingla, Garbeta, Narajole, Mahishadal, Chandrakona, Medinipur, Kultikari, Nigbaliya, Howrah, Kanthalia, Mahesh, Hooghly, Sadekbag, Murshidabad, Krishnanagar, Nadia, Bawali, South 24 Parganas, Chorabagan, Jorabagan, Bowbazar, Chetla, Kolkata; Mehar, Comilla, Dhamrai, Bangladesh, patronised by *zaminders* and *nouveux-riches* and constructed as towered temples, like *pancha-chuda* (five-pinnacle), *nava-chuda* (nine-pinnacle), *thirteen-chuda* (thirteen-pinnacle), and *twenty-one-chuda* (twenty-one-pinnacle). The height and dimension of the *rathas* are varied and big *rathas* are as tall as a three-storied building. A bardic rhyme purulent at Garbeta (Santra, 1980: 34) reads like that –

*“Opader chhutor vuda
Ratha kareche tera chuda”*

Transliteration – Old *chutor* of that locality made a *ratha* of thirteen pinnacles.

An interesting song sung in the *sangkirtan* (music festival) in Dhamrai *ratha* (Bhowmick, 1412 BS: 39) runs like that –

*“Khnodaya nace, bobaya gaya,
Andhe nayan mele caya.*

.....
Dhamrai Madhab rathete,”

(Transliteration – Lame dances, dumb sings, blind sees in the Dhamrai Madhab *ratha* festival).

The posts with their capitals bearing designs in a great variety of patterns and the exquisite bent cornice bracket, termed *varsa* in *ratha* are very substantial wooden structure, carved beautifully into all kinds of artistic designs and became the universal revetment for its external decoration. In cornice brackets, the head and the trunk of an elephant form a common motif. The sculptors take delight in portraying this motif with all their skill at their command.

Khat, palanka (bedstead)

Khat, palanka, divan (cot) with figures nymphs, erotic relief and jewel studded leaf work became popular among *zaminders*. Chairs and work-tables from Berhampur, Murshidabad are noteworthy. But cane-topped on moderately high legged sitting stools without back-rest and plain and simple benches were used by Rabindranath Tagore in his dining-room. Poet Sandhyakaranandi (12 AD) in his *Ramacharita* (111.33_34) tell us that the palaces at Pala capital Ramavati were enriched with fine designed furniture, studded with fold plates. In the *Mymensingh Gitika* (Vol.1. p. 322) mentions –

"Khat palanka ache kata chanduya masari"

(Transliteration: Many bedsteads, litters have unique mosquito nets.)

Kabikankan in his *Chandikabya* (p.120) mentions –

"Bahu byya kari kadi, karilan khat phidi"

(Transliteration: With much expenditure made bedstead and low height stool.)

Legs of bedstead and chairs are often designed in different styles to represent the shape of paw of lion, horse, peacock and even fairy. Almirahs are sometime designed in a very expressive manner and engraved also. The bedstead of Marquis Dupleix, preserved in the Museum Art Gallery, Institute Chandrenagar, Hooghly is very imposing and high.

Dola (Litter) and palki (Palanquin)

Dola and *palki* have carved floral motifs in low relief and their handles are shaped like the proboscis of an elephant or head of a peacock. The decorative *howdah* (litter) of the Gokulchand Jiu temple in Santipur is outstanding. Tamonash Chandra Dasgupta (1935: 302) has mentioned in the *Manasamangal* that goes –

"Champa nagesvar pati kasthar choudal, nana

Chitrabali tate ankiche sakal"

(Transliteration: Litter is made of *champa nagesvar* wood and different pictures are drawn on it.)

Various types of *dolas* are *kekora dola*, *dhekarlaga dola*, *parhi dola* and *khatola*. The Santal *bahi/doli* (litter) has incised decorations.

Sindhu (chest)

Well-to-do householders have big chest for keeping safe their valuable belongings. Such chest, boxes painted with scenes from mythology is common.

Dolls and toys

As a source of perennial pleasure for children dolls and toys are manufactured traditionally. These are generally simple and the Bengal dolls, measuring 9"X4",

plano-convex or triangular, coloured generally designated as Kalighat dolls, as these are sold from here or mummy dolls, because for looking like to Egyptian mummy. In Ranchi area dolls are known as *tukudana*, in Gujarat, *gudiya*. But the life-sized female dolls remind us the weight-bearing female stone statue pillars in portico of the Erechtheion on acropolis at Athens in Greece. Excavation yielded wooden dolls of Maurya age (3 BC) from Chandraketurgarh, North 24 Parganas.

Wheeled horse and elephant

Wheeled, almost flat horse and elephant, coloured deep red, yellow, blue and black are drawn with a string tying to their necks by children as pleasure game toys. Ramchandra Sutradhara and some others come from Comilla as refugees and settled down at Santipur, who are expert craftsmen of such toys. At Sonargaon, Dhaka such toys are available.

Puppet

Puppet, height 2'0" to 2'6" is carved in light wood with head, face, eye, two hands and body up to waist. Their faces smile with fun.

Owl

Semi-rounded curvature of the body of owls with clear indication of their plumes, ears and eyes, leaf-like or round, made at Nutangram, Burdwan are unique. These owls and the *Jagannatha* image of Puri are abstract forms.

Mask

Wooden masks for dances, plays and pantomimes, like *Gambhira* dance in Malda, *Chow*, once at Chilkigarh, Jambani in West Medinipur and Gajan at Santipur are made of light wood. Masks of *Siva*, *Durga*, *Kali*, *Rama*, *Ravana*, *Hanuman*, *Jambhuvana* have wide opened eyes, prominent noses, thick lips, wide chick usually coloured are used as a part of religion. Users have a belief that who wear masks become the divinity. This is practically a synthetic magic.

Walking stick

Walking sticks with tops shaped like parrot, peacock with beaks opened, snake head with opened mouth, *Kadamba* flower, the shafts encircling with gold or silver foils at patches or with intertwined snake, fish scales, and the tops covered with brass caps, studded with precious emerald, diamond, ruby, pearl stones are used by the *zaminders* and upcoming rich people. Often these were imported from Myanmar to India. Seikh Fyajulla in his book *Goraksh Bijoy* mentioned (Bhattacharya, 1976: 146) –

*"Subarner trikadi deuk, subarner chadi
Subarner chati deuk, subarner lathi"*

(Transliteration: Give three gold coins, gold walking stick, gold umbrella and gold stick.)

Comb

Santal wooden combs have chevron, stripe, horizontal line designs. Less number of hand-fans, semi-circular when spread out, their blades usually measuring 15cm-25cm, carved with floral motifs and tiny figures of human, divine and semi-divine beings, paper knives and flower vases containing vegetal and floral carvings have artistic merit.

Kunke (measuring bowl)

At Dubrajpur, Suri, Bankura wooden *kunke* of different size are made for dry measure of corn. Pigeon in pairs and distended tail-feathered peacock of brass plates are appended on outer rim of the *kunke*.

Dice

Moulds of *sandesh* (a kind of sweet meat) having lotus, green mango, *rohu* (carp) fish, geometric designs on their surfaces are beautifully engraved. Such dices are also made out of broken pieces of stone plate and of terracotta.

Printing block

In Bengal printing of textile is traditionally done by hand-blocks made of closed fine grained hard, well-seasoned wood, e.g., tamarind with embossed patterns in indigenous vegetal colour – red, orange, blue. Hand-block printing is a slow and simple process done manually; but its workmanship is fine and beautiful. Printed *namabali* is worn around the shoulders by the priests and *Vaishnava* devout in connection with ritualistic performances and *sangkirrtan*. Foot-prints of Vishnu, tulsi (*Ocimum sanctum* Linn.) leaf, round flower and couch have repeated designs bordering the holly texts, largely in Bengali scripts -

Hare Krishna, Hare Krishna

Krishna Krishna, Hare Hare

Hare Rama, Hare Rama

Rama Rama, Hare Hare.

The art of printing *namabalis*, handkerchiefs and scarfs are practiced at Khagra in Murshidabad. In printed *saris kalka* (cone locally called *turaji*; Persian origin), happened to be the most common and favourite motif lavishly used to decorate the *anchala/pallav* (end-piece); *butis*, small sprays of flower, leaves, bird, animal, even human motifs, largely in the body and *kalmilata* (*Ipomoea aquatic* Forsk.) *sankhalata* (conch arranged like creeper) in the borders. These designs are engraved with fine lines.

At Serampur, Hooghly in the 18 AD and Garanhata, Chitpur, Kolkata in the 19 AD wooden blocks were engraved with Bengal alphabets for printing books and almanac with astronomical and other information.

Pata (Book-Cover)

Wooden book covers portray carvings in low relief to safekeeping the illustrated palm leaf and handmade paper manuscripts against damage caused by abrasion. Low relief figures are carved out on visible sides of *pata*.

Domestic Utensil

We find the names of *Karnka* (begger's bowl), *Barkosh* (tray) in the Vedic literature. Copper, brass, bell-metal replace wooden vessels at one time. Small rounded vermilion casket looks like the Buddhist *stupa* and the Hindus *Lakshmi* small wicker-work basket with a lid in structure. Bowl, tray, vat of different dimensions, lamp-stand are made in boiling out the inner part with chisels and adzes. Bowls have raised rings at their bottoms and lids to cover their mouths. Mathagoda in Medinipur, Sushunia, Hapania in Bankura and Raynagar at Diamond Harbour in South 24 Parganas wooden vessels are made, mainly by the Karanga Community. They make vessels blackish with smoulder of husk and straw. A few refugee families came from Dhaka and settled at Kalna and Nabadwip prepare household utilitarian wooden bowl, ladle, sieve, rolling-pin, baylon, rice pudding, mortar and pestle, paddle, vermilion casket for domestic use.

Boat

Boat is the main water transport in riverine Bengal. The *goalies* (prows) of boats are shaped like *makara*. Crocodile, peacock, parrot, duck *samsamukhi* (swan-shaped) and demon mouth. The *mayurpankhi bajra* (*mayurmukhi* – peacock shaped boat) is gliding in the Ganges as pleasure boat of the kings and *zaminders*. Balagarh in Hooghly is the main boat making centre in Bengal.

Jaltungi (Pleasure-house)

This is the summer pleasure house, built in long ponds. The pillars, rafters, door-panels and windows of *jaltungis* are decorated with lace-like designs for easy flow of the cool breeze in the summer season. The *jaltungi* of Bawali Mandal *zaminder* is brick made having decorated door panels and windows.

Vrishadhvaja (Obsequial sacrificial post)

Vrishadhvaja/ vrishakastha consisting of a crude effigy of the departed person below, surmounted by a crude bull for crossing the *baitarani* (hades) and a siva *linga* on a temple for spiritual benefit. *Vrishankastha* is not offered to any deceased woman whose husband and son are still alive, only a sandwood bull is sacrificed. *Vrishakastha* is, in all probable, originated from the sacrificial post of the Vedic period or from the menhir monument of the Santals, Mundas, Hos tribal people.

Musical instrument

Form and decorative motifs in the classical musical instruments of Bengal are admirable art objects, produced in Kolkata, Bankura, Murshidabad and Dhaka. Vina, setar, behala, sorod, esraj, surbahar, tambura, sarang, mridanga, dholak, kara, nakara, jagajhampa musical instruments have decorative designs. The top of the stringed instruments are adorned with reliefs illustrating peacocks with plume indications, parrots, female beauties, lotus flower and its petals. On their shafts are decorated with small flakes of ivory and bivalve shell, bordering in rows. Anantatal Sutradhara and Akhyay Chandra Sutradhara of Bishnupur were unparalleled craftsmen of such instruments. The Indian Museum, Kolkata, houses such a collection.

Wood

Wood has been the most ubiquitous popular medium of expression of the creative impulse of the carvers first before they worked in more solid and durable materials, like stone and metals. Even in later times a sculptor seems to have tried his hand in wood as in the days of yore. Its subtle varied colours and grain give a variety of pattern and texture to its surface. The *Matsya Purana* (CCLXIII) refers to *daruja* (wood) images; the *Samba Purana* (XXX.2) *varkshi* (wood) image, particularly for making wooden (*darumayi*) divine idols (Dasgupta, 1990: 12). But timber with several holes and knots must be avoided. Serving extant specimens of ancient wood carving are extremely meagre as wood as a material is easily prone to perish, particularly in the moist climate of Bengal. And hence, little remains to comment of their antiquity. The medieval Bengal literature the *Manasamangal* (16 AD) of Bamsidas Chakraborty, the *Bami-sikha* (17 AD), the *Narahari-sakhanimaya* (18 AD) and the *Bhakti-ratnakar* (late 18 AD) prescribe *neem* wood for fashioning images of *Gauranga* and *Nitai*, as *neem* acts as insecticide and for its fine fibres entailing the carved images smooth and beautiful. The *Chandikabya* of Kamal Locan reads,

“*Sehit bhuban majhe sptiker sthamba saje,*

Dvarete kapat manohar.”

– (Bhattacharya, 1976: 128)

(Transliteration: In the world crystal pillars are befitting, panels charming at door.)
Somnath Bhattacharya has mentioned in his article entitled *Banglar Daru Taksan Silpa* (p.128) quoted from *Manasamangala* –

“*Sundar pindiguli mandarar sar*”

(Transliteration: Fine low height seats are of *mandar* hardwood.)

The *Mymensingh Gitika* (Vol.I, p. 315) mentions,

“*Uttam kanthaler pendiguli gharete patil*”

(Transliteration: Best low height stools are placed on the house floor.)

The *Chandimangal/ Chandikabya* (c. early 17 AD) of Kavikankan Mukundaram Chakraborti furnishes us an exhaustive list of vegetation that grown in *rarh* Bengal, of some are used for wood carving (Jajneswar, 2006: 47-49).

Indigenous widely available varieties of woods having pleasing range of natural colour and tonal depth are largely used for carving. Wood carving depends to a great extent upon the nature of the timber, which possesses a fibrous nature in different degrees and toughness. They range from not very resistant, but very durable and easy to work. For fine and detailed carving the carver chooses wood of close texture. The timbers traditionally in Bengal include *Neem* (*Margosa – Melia azadirachta* Linn. = *Azadirachta indica* A. Juss.), *Kanthal/ panas* (Jackfruit – *Artocarpus integrifolia* Linn. f.), *Mandar* (*Erythrina variegata* linn.), *Champak Nagesvar* (*Mesua ferrea* Linn.), *Simul* (*Salmalia malabarica* Schott & Endl.), *Jial* (*Lannea grandis* (Dennst.) Engl.), *Tetul* (Tamarind – *Tamarindus indica* Linn.), *Bel* (wood apple – *Aegle marmelos* Corr.), *Babul* (*Acacia Arabica* Wild.), *Sissoo* (Blackwood – *Dalbergia sissoo* Roxb.), *Segun* (Teak – *Tectona grandis* Linn. f.), *Sal* (*Shorea rubusta* Gaertn.), *Palas* (*Butea frontosa* Roxb.), *Piyal* (*Terminalia tomentosa* W & A), *Asan* (*Terminalia tomentosa* Roxb.), *Baheda* (*Terminalia balerica* Roxb.), *Gamar* (*Gamelina arborea* Linn.), *Tamal* (*Gorcinia morella* Desr.), *Mango* (*Magnifera indica* Linn.), *Amda* (*Spondias pinnate* Kurz), *Chatim* (*Algotonia scholaris* R. Br.), *Syaoda* (*Streblus asper* Lour.), *Ebony* (*Diospyrose elenum* Koenig), *Chandan* (Sandalwood – *Samtalam album* Linn.), *Var orientalis*, L. Merrill. and *Mahogany* (*Swietenia mahagoni* Linn.). Wood of the latter three is used largely in Karnataka for their easy availability. Teak and blackwood are like gold, both for their good quality and durability. Teak has a general use. *Mahogany*, yellowish green, close straight-grained compact, but not very strong is easily available. Ebony is hard, dense, heavy, generally black and rare, and is used for carving ornamental combs, furniture, picture frames and walking sticks, mango is especially popular in Bengal, because of its ready availability and softness. Carvers have to bestow meticulous care on the selection of their raw woods and have to take into account even the alignment of the veins of the woods.

Seasoning

The removal of the much of the moisture from wood in controlled drying is seasoning or conditioning, done before use it to minimize shrinkage and distortion, caused by loss of water. Shrinkage is unequal in its three structural dimensions and it tends warp as it dries. The water contents in freshly cut wood constitutes from one-third to more than third of its weight. Seasoning is carried out by the traditional process of natural drying in piling up the cut timbers in an open air for years together, occasionally as many as ten years.

Technique

The Sutradharas have been historically known for their ingenuity and artistic bend of mind. Some exquisite wood carvings of early Bengal bespeak the clarity of vision and skill of carvers. They translate the shape in his imagination into perfect form with deftness. Furthermore, before beginning his job, he has in his mind a clear preconception of the final shape of the objects. The design to be produced is often drawn on a piece of paper and it is then carved out in wood. The carver cuts a piece of wood into the required size and carefully trimmed out its unwanted portion. He then draws roughly the broad outline of the figure by free-hand drawing usually with a chalk or with *geru* (red ochre) on the already trimmed piece. Carver then starts chipping off the unwanted portion by means of adzes. Steel chisels of different shapes and sizes are tapped with deft strokes, light and heavy, according to necessity by an iron hammer or by a wooden mallet for fine works, and thus proceeds to shape in carving accurately the desired form what wanted to complete the low, moderate or high relief-carvings. Cylindrical-headed and round-headed hammers are used. For smoothing the surface files and rasps are used. For intricate pattern gouges and knives are used. Chisel edge when curved in various arcs, is known as gouge and these two tools are chiefly used in carving wood. By repeatedly reversing the direction of the chisel a wavy pattern will develop. A V-shaped chisel is used to ream a conical hole. For making a groove on wood or on slices off its edge a chisel makes a long stroke. Axe (*parasu*) and cleaver (*kulisa*) are also used for cutting down trees by hewing when required. A hand-saw is used to cut wood planks into pieces. Planks are placed on a wooden crude work-bench for smoothing its surfaces by scraping with rasps. There are different processes to decorate woodworks. These may generally be decorated in carving, woodcut engraving, inlay, gesso painting with gypsum or lac on veneers and turnery, nowadays, in thin slices of wood. Of all these engraving is the most popular form.

Carving

The object to be carved is usually held in hand and the basic tool for carving or to create patterns or to pare down pieces is the sharp knives. The knife is used with care. Large items are held steady by their hand and can be reduced by hewing with adze before whittling. Carving with a chisel is a faster method, as more power is used. Carving in the round is first roughened out with an axe. Relief-carving is made by simple creating an outline of the design with shallow cuts, made with a U-shaped gouge. For deeper relief-carving a deep gouge can carve away the waste wood across the grain. When the required depth is reached, flatter gouge is used to level off the ground. Totem pole is carved with an adze. The outline of the designs is cleaned with care until it appears to have fretted out and fastened down. The type and size of the tool effect the size and intricacy of the work achieved. The long

parallel fibres are its strength along its grain. The flat fleshy chest and other exposed parts of a wooden sculptural figure is rubbed with unfolded sand-paper or with carborandum, a hard compound of carbon and silicon for polishing, while the angularities with a sand-paper, narrowed down it by folding.

Engraving

Engraving of figure is done with a knife and *narun* (nail-clipper) for fine marking of nose, nail.

Inlay

Inlay was popular in 18 and 19 centuries. ivory, stag horn, tortoise-shell, bivalve-shell, in delicate form, brass, pewter, tin, brass, silver slivers, at present, metallic wire even and small pieces of wood, in contrasting colours, are inlayed into cut out grooves in the solid wood to form different patterns on its surface. Brass inlay was in the early 19 AD by using both carving and engraving processes designs on wood are made more attractive and dazzling with colours.

Gesso Painting

Different gesso paints have been used on woodwork in a variety of ways to represent figures following the tradition of painting on paper or cloth panel. Surface coating with oil and natural resin as varnish finishes wood to opaque and protects the substance from damage due to abrasion and exposure to excessive moisture in Bengal. Varnish is made by dissolving natural shellac, the most common material in alcohol. Beeswax is combined with turpentine to form a paste that could easily be applied to coat furniture. If its use is required to be repeated in future, the earlier layer is rubbed down with a hard brush. Wax polish is very durable and does not mark on the wood. *Tisi* (Linseed – *Linum usitatissimum* Linn.) oil is applied for polishing. In order to prevent degeneration of wood *til* (Sesame – *Sesamum indica* Linn.) oil, mixed with a little ramzai, a kind of red earth is coated to aid preservation, largely on teak wood furniture. The latter two help wood to withstand the rigours of climate and the ravages of insects partly to which it is usually exposed.

Turnery

Nowadays, turnery drawn designs are getting preference in decorating furniture. For construction of chair box-frame tenon, for bedstead pinned square or rectangular mortice-and-tenon and for door-frame slip tenon are employed. Tenons are cut on the ends of one pair of rails and the corresponding mortices are cut into perpendicularly oriented legs.

Nowadays, fevicol or durofix synthetic rubber adhesive, screw, block screw are used to join patch works in furniture.

Chisels are sharpened by rubbing them on a whetstone with water* serving as lubricant and coolant to ease the work of grinding.

The full range of woodworking common tools are axe, adze, chisels of various types, viz., straight skew chisel, spade chisel for scraping, gouge to make flute, *narun* for fine marking, centrebit auger, screw driver, hammer, mallet, foot-rule, plane, scraper, hand-saw, sand-paper, turpentine, linseed oil, wax, resin, cotton, etc. Superior quality steel is essential to maintain the sharpness of the tools.

Centre

The important woodwork centres in Bengal are Narajole, Daspur in Medinipur; Thalia, Nijbalia in Howrah; Chandernagore, Hipur in Hooghly; Ranaghat, Krishnanagore in Nadia; Tantipara, Dubrajpur, Brojergram, Koridhya, Kalipore, Suri in Birbhum; Bishnupur in Bankura; Nutangram, Kalna, Katwa, Paluli, Dainhat, Karajgram, Ganfulia, Haripur in Burdwan; Kanchrapara in North 24 Parganas; Piyali in South 24 Parganas and Jiyaganj, Beldanga in Murshidabad.

Artisan

Names of some of the master wood carvers as evident from scribes are Madhabchandra Dey, Rakhachandra Sutradhar, Garbeta, expert in making *ratha*, sculpture and *at-chala mandap*, Kalicharan Mistri, Kalipada Dey, Gopal Dey, Haradhan Dey, Srinath Dey, Srinath Dey, Rajani Dey, Bhootnath Dey, Santosh Dey, Haripada Dey, Paresh Dey, Nilmoni Dey, Gopinath Snai, Banamali Mistri, Paticharan Mistri, Ramdhan Khadkari, Gobardhan Senapati, Bisvasvar Pariya, Medinipur; Fakirdas Nandi, Kishorimohan Snai, Rabin Karmakar, Bagnan, Harimohan Kundu, Fakirchand Dey, Nanilal Dey, Saratchandra Das, Thalia, Khetromohan Dey, Dinabandhu Chanda, Hiralali Pal, Nagendranath Pal, Goshta Mistri, Surendranath Gorai, Akhya Manna, Satish Manna, Bisvajit Mistri, Shyamsunadar Dey, Gopinath Dey, Tarak Mistri, Tinkari Mistri, Howrah, specialized in *vrishakastha*; Biharilal Sutradhar, Niranjan Sutradhara, Surja Sutradhar, Bankura; Ramchandra Sutradhar, Nadia; Sambhunath Bhaskar, Burdwan and Ramkumar Das, South 24 Parganas. Nabin Bhaskar, Dainhat, Burdwan, and Gokulbihari Bhaskar and Mahadev Bhaskar, Howrah are experts in Kali. Nabin Bhaskar had made the *Bhavatarini Kali*, Dakshineswar, Kolkata.

Social status of the Sutradhara

In Bengal the carpenters are called *chhutor*, a carpenter caste. Dr Wise describes them as a very low caste. In the time of Ballal Sen (1158-1179 AD) the Sutradharas were enrolled to *niche* (Risley, 1981: 287). Today their social rank in the Hindu community is low. They were sinking in social estimation and in a Brahmana passage a carpenter's touch is said to impart ceremonial impurity (Majumder, Raychaudhury and Dutta, 1978: 44). Brahmans will not take water from their hands (Risley, 1981: 290, Singh, 1998: 3395). They call in a special denomination of Brahmin *purohita-guru* for their religious and ceremonial purposes. The Sutradharas, claim descent

from Visvakarma or according to others, from Kansa, son of Kunti by the sun-god before her marriage to Pandu. Karna as it stated in the Mahabharata was left exposed by his mother on the bank of Jumna, where he was found by Adhoratha, the charioteer of Dhritarashtra. The Sutradharas seem to have adroitly taken advantage of the resemblance between words *suta* a charioteer, and *chhutor*, a carpenter, to equip themselves with a mythological pedigree of undoubted responsibility. Though their profession is a clean one, they are regarded as a semi-clean caste (Bhattacharya, 1995: 197). *Taksan* did not enjoy much honour and they came to be described as *asuddha* (impure) in *Satapatha Brahmana* (1.1.3,12, Ray, 1998: 72). Endogamy at the community level exogamy at *gotra* (clan) level are their marriage rules. The sutradhara *samaj* (society) has four regional *thaks* (divisions), based on geographical distribution, viz., *Brahmajnia* (*Raj Hansa*) includes Jessore, Khulna, Nadia; *Purbangiya* includes Assam, Dhaka, Comilla; *Bardhamana* includes Burdwan, Bankura, Birbhum and Murshidabad and *Astakula* includes Purba Medinipur, Paschim Medinipur, North 24 Parganas, South 24 Parganas, Howrah, Hooghly. Such division were prevailed earlier, now untraceable. Visvakarma is regarded as their patron deity, represented him by the tools, chisel, hammer they used in their trade and worship on the last day of *Bhadra* (August-September) and in *Magh Panchami* and *Lakshmi*, their family deity. A great majority of them are followers of *Vaishnava* sect, some are *sakti* too. Sutrdharas are now included as OBC (Other Backward Community) in West Bengal. They rank in Odisha, next to Brahmans. In south India they are known as *Achari* (Religious Teacher) and they are known as *Bisva* (Universal) Brahman and enjoy a much better social position. They were by profession image makers, scroll painters and architects. They were the sacred thread and do not employ other Brahmans for their religious ceremonies.

Conclusion

Eastern India, particularly Bengal has a long tradition of wood carving. During the period from the 17 AD to 19AD new motif was added to the age-old Bengali tradition. Foreigners brought with them their own woodwork tradition and since then there was intermingling of exotic trend with the local one, and a mixed art form was the consequent result, though less, in some cases. Wood carving maintains much of its local tradition. The disorganization of village economy and the discount on the use of wood carvers service have resulted a change is use of wood, and the old master wood carvers are rapidly becoming extinct. Again the pictorial designs are carved with electrical operated turners and hence, a decline in the artists' freedom in woodworks is seen. Many Sutradharas are now working under business entrepreneurs in urban furniture manufacture shops, equipped with modern machines.

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Management of Heritage Sites: Do We Need New Approach?

RAMESH CHANDRA AGRAWAL

Abstract

The history of the conservation of monuments and maintenance in India goes back to early centuries of Christian era. Inscriptional records and the literary references available have provided that the monuments were cared and looked after time to time by the Kings, their subordinates, monks and merchants. The systematic conservation and the study of the antiquarian remains started in the 18th century and regular legislations about the monuments and sites were framed in the beginning of the 20th century. In the beginning there was no concept of the management of the monument. With the passage of time it was realized that monuments and the sites need to be maintained and preserved on a concept based management. The Archaeological Survey of India is the nodal agency for the upkeep of the monuments and the maintenance. The various legislations have strengthen the working of the Government organizations and now the monuments are being looked after and controlled on the concept of the public involvement.

Keywords

Conservation of the monuments, Archaeological legislation, Management process, Qualification and training, Tourism and Development of the monuments with peoples involvement.

"It shall be the duty of every citizen of India to value and preserve the rich heritage of our composite culture" (Constitution of India). The moral and Constitutional responsibility of the Indian citizen enumerated in the Constitution of India is the total philosophy of our heritage management. It is very well known that India is a great repository of ancient cultural and natural treasures of exceptional value. 23 Heritage and 5 Natural Sites have been declared as the World Heritage Monuments and Sites which are being maintained and preserved and now need a new concept of maintenance and management.

The history of the conservation of the monuments of India goes back to early centuries of Christian era. King Rudradaman (AD 130-150) repaired the Sudarshan lake which had developed huge breach. He made it stronger without changing the original character. (E.I.Vol.VIII,p.42). A recent find of a copper plate inscription from Bagh caves has revealed that for repairing the broken and dilapidated portions of the monastery, the king Subandhu granted lands. Similarly, during the medieval period, Vijaynagar rulers also carried out extensive repairs to Channakesava temple, Belur. Brihadeshvar temple, Tanjor and several other monuments in the capital city of Hampi. The Sultans of Delhi and the Mughal emperors also carried out extensive repairs to Quwwatal Islam Masjid, Qutub Minar and Jama Masjid of Badaun in Uttar Pradesh. The Jama Masjid of Bagi Khatu in Nagore district of Rajasthan was repaired and restored by emperor Akbar (Siddiqi, p,21) The benevolent ruler of Kashmir Zain-ul-Abadin (1421-1472) also carried out repairs to Martand temple built by Lalitaditya Muktapida.

Further during the year 1664 the visit of Dr Bernier to Kashmir valley and the monuments in Mughal India opened a new chapter of antiquarian interest which gave birth to systematic collection of antiquities and then their preservation. In these activities pioneering work was done by Sir William Jones, the Chief Justice of Calcutta High Court, who formed, on 15th January 1784, The Asiatic Society, an institution for enquiring, among other things into history, antiquities, arts, sciences of the sub-continent. The formation of the Society organized the efforts of its members and contributions started pouring in from all quarters announcing new finds. The start made in Calcutta was soon followed in other parts of India.

The initial activities of the society were mainly oriented towards the study of the antiquities & the monuments and the concept of preservation was confined only to collection of antiquities. But with the arrival of Sir Alexander Cunningham, the concept of conservation was introduced, which was even lauded by India's First Secretary of State, Sir Charles Wood, who observed that the preservation of historic monuments is the well deserving responsibility of the Government and thus the foundation of the Archaeological Survey of India was laid. Alexander Cunningham as the first Director General of Archaeological Survey of India surveyed Rajputana, Bundelkhand and certain areas of Punjab. He collected Indo-Greek coins in Punjab identified celebrated sites of Sankisa, Sravasti and Kaushambi, all intimately connected with the life of Buddha. In 1880, to look after the monuments and their preservation H H Cole was appointed by the Government and he carried out the repairs of the monuments of Delhi, Agra and examined the conditions of the

monuments of Kashmir, Rajputana, Bombay and Madras.

With the turn of the century, the Archaeological Survey of India entered into a new era. The arrival of the Lord Curzon as the Viceroy of India, archaeology got a new impetus. On 6th February 1900, he announced that research could not be set behind the conservation and the conservation behind the research. Both are parts of any scientific scheme of any antiquarian work. He further stated that he was not one of those who could afford to patronize the one and ignore the other. He said it was his judgment that it is equally our duty to dig and discover, to classify, decipher and conserve (Roy, A.I. No 9, p.33).

Such was the task Curzon chalked out for the Archaeological Survey of India and to meet these requirements he appointed Sir John Marshall as the Director General of Archaeology. While appointing Sir John Marshall he emphasized and declared that the most important function of the Director General to secure that the ancient monuments of the country were properly cared for, that they were not utilized for purposes which were inappropriate, that repairs were executed when required and that any restoration which might be attempted was conducted on artistic lines. Thus the Viceroy of India placed the Archaeological Survey of India on a sound and secure foundation. How on this foundation a pyramid was raised, belongs to the more recent history.

In 1947, the far reaching political changes that affected India gave a jerk in the Archaeological working and management and in order to recoup what has been lost during the partition, the managers of the heritage launched a massive program of research and conservation. (Lal, C F, p, 21). New sites were discovered and the monuments which were lying neglected for centuries were taken up. In 1950, Constitution defined that (i) Ancient and historical monuments and Archaeological sites and Remains declared by or under Law made by parliament to be of National Importance should be in charge of the Central Government. (ii) Ancient and Historical monuments not belonging to the first category should be in charge of the State Government. (iii) Both the States and Central Governments will have concurrent jurisdiction for Archaeological Sites and Remains not belonging to the first and second category. This clearly defined the jurisdiction and also joint responsibility of the Union and the State Governments. The Constitutional provisions were vigorously followed and one after another monuments were given concerted attention, primarily aiming towards saving the monument from further decay and disintegration.

The introduction of country and town planning regulations, construction of dams, mushroom growth of colonies (In Delhi, Ahmedabad, Bijapur, etc.),

expansion of roads, highways, rail network, appreciation of land values and industrial expansion caused gradually serious threats to the monuments and their environment. Today the monuments of India face serious challenges.

Archaeological Legislation in India

For the maintenance and preservation of the monuments in India and to save the monuments and sites from the onslaught of unplanned development, the Government of India enacted Ancient Monuments and Archaeological Sites and Remains Act in 1958 and to regulate the activities in and around the monuments, Ancient Monuments and Archaeological Sites and Remains Rules 1959. These two legislations, to a certain extent, saved the monuments from misuse and strengthened the progress of management. In the pre-Independence India, a lay citizen hardly showed any concern for the Heritage Remains and in the garb of protecting the antiquities many were taken away from the country. In the post-Independence India 'treasure seekers' and 'antique-merchants' took the advantage of the ignorance of the people and disfigured many monuments by knocking the antiquities and art objects. Lack of resources and well equipped manpower further accelerated the vandalism. In 1972 the Government realized the gravity of the situation and enacted the act known as the Antiquities and Art Treasure Act, 1972. The enactment of this legislation came as a blow on the vandals and on antique-dealers. The various provisions embodied in the act made compulsory the registration of the movable objects and antiquities and several State Governments created in their respective archaeological organizations, the infrastructure for the registration of the objects lying with the individuals and kept a close watch on the movement of the objects. It was emphasized that anyone desiring the sale or transfer of the object was bound to have the details recorded with the Registering Officer. This legislation restricted the movement of the antiquities and the art objects. To protect the adjoining land from misuse, unplanned development, construction of buildings and quarrying the Government in the year 1972 issued a declaration prohibiting constructional activity and mining operations upto 100 meters from the protected limits and further beyond it up to 200 meters prohibited and regulated. But these laws proved not sufficient to strengthen the Heritage Management. Today we need comprehensive Heritage Laws where every component is viewed as total heritage-monuments-its fragments, adjoining land, traditional arts and craft of the area where monuments and sites are situated and the things alike. Further, the comprehensive legislation should be process oriented rather than a piece of restriction. Too much restriction at times, produces negative results.

The legislation, as a whole, be humanly oriented and create a sense of belonging. Once the socially oriented legislation is formulated, the process of management becomes flexible and there is a greater scope of controlling detrimental impacts.

The Management Process and the Organisation

The Archaeological research as a discipline was pursued more vigorously and widely. In the last five decades there had been a greater emphasis on the archaeological research and no serious attention was paid towards the management of heritage in real perspective, In the last 20 years the archaeological research and the heritage management has remained as a mixed exercise of archaeological organizations. In this mixed process, management always remained secondary and research primary, though, the conservation of the monument as a routine exercise of the archaeological organizations continued. But an independent infrastructure for management was never thought indispensable. Now the archaeology has become a discipline and in most of the Universities of the country it is being taught as a subject. The fresh graduates from the universities who join the archaeological organizations are much more oriented towards the research, and have no perception of the management. I need not emphasize that the heritage management is distinct from the discipline of archaeology but in India the management of the monuments and their upkeep and archaeological research are handled by one individual. Whereas the management of the monuments and the sites requires a specific aptitude and qualification which most of archaeologists do not possess. To be more precise scientific investigations and management, though, form the part of the any systematic and scientific working but need independent orientation and involvement. An archaeologist may understand the implications of the management but cannot be a good manager whereas a manager may understand something of the archaeology but has to be a good manager. To discharge the responsibility of the management of the monuments and sites he is expected to be familiar with the financial implications, personal management, legislation frame-work and working of the Government at different levels. Unless an infrastructure for managing the monuments/sites and other relics is created with basic knowledge of management and its varied components, the proper maintenance of the monuments and sites and places and their protection cannot be achieved. To create good managers the Universities and the archaeological organization should provide vigorous training in the methods of the management and the concept of learning by practice without having any aptitude should be discarded completely.

Qualifications and Training

For the effective management of the monuments and the sites, a concept based management is necessary which has two components: (i) those who manage from the administrative as well as from the academic side, and (ii) those who are mainly responsible for the management. The young youths who are to be recruited for the management be given rigorous training in management, personnel management, planning, communication, human relations, legislation, environment, safety measures and the land use along with this, the working knowledge of the archaeology and other related subjects. For repairs, maintenance and conservation a separate set of workers be created with a knowledge of engineering and architecture and both should work in a manner congenial to the better maintenance and preservation of the heritage.

World Heritage Monuments in India

India is an active member State on World Heritage Committee since 1977 and an elected member since 1985. There are 23 World Heritage Sites and 5 Natural Sites inscribed on the heritage list (1) Ajanta Caves, 1983 (2) Ellora Caves, 1983 (3) Agra Fort, 1983 (4) Taj Mahal, 1983 (5) Sun Temple, Konark, 1984 (6) Group of monuments at Mahabalipuram, 1984 (7) Churches & Convents of Goa, 1986 (8) Group of Temples, Khajuraho, 1986 (9) Group of Monuments at Hampi, 1986 (10) Group of Monuments at Fatehpur Sikri, 1986 (11) Group of Temples, Pattadakal, 1987 (12) Elephanta Caves, 1987 (13) Chola temple at Thanjavur, Gangaikondacholapuram and Darasuram, 1987 & 2004 (14) Buddhist Monuments at Sanchi, 1989, (15) Humayun Tomb, Delhi, 1993 (16) Qutb Minar Complex, Delhi, 1993 (17) Pre-historic Rock-shelter of Bhimbetka, 2003 (18) Champaner-Pavagarh Archaeological Park, 2004 (19) Red Fort Complex, 2007.

The Natural sites which have been inscribed on the heritage lists are (1) Keoladeo National Park, (2) Manas Wild Life Sanctuary, (3) Kaziranga National Park, (4) Sunderbans National Park and (5) Nandadevi National Park.

The responsibility of management and maintenance of the Cultural sites lies with the Archaeological Survey of India under the Ministry of Culture and that of management and maintenance of the National Parks and Sanctuaries lies with the Ministry of Forest and Environment. The Archaeological Survey of India is primarily responsible for the better upkeep of the monuments and sites of Cultural Importance and the sustainable development of the environment of all the historical places. Some twenty years back, the monuments which have been inscribed on the World Heritage list were cared and looked after in a general manner but since 1998 the World Heritage Monuments have been given extra care and attention and are being regularly monitored.

To create an awareness amongst the citizen of India about the importance of these monuments and many others spread all over the country a systematic awareness campaign is organized every year to popularize the monuments as well as to create a sense of belonging and care for the monuments. In these awareness campaigns school children, local citizens, people from different walks of life (politician, Doctors, Lawyers, Industrialists, Social Workers, Administrators and Professionals) have been involved. With a view to disseminate the message of preserving the monuments at every World Heritage site in India, photo exhibitions of the structural conservation work, chemical preservation and environment developments are organized. In the process school children and educational institutions take active parts. School children also participate in the process of upkeep of the monuments and conservation process. The process of involvement of the people has yielded encouraging result.

To equip the available work force and infrastructure, new techniques, study and training in the raw-material, conservation principles, methods and the philosophy are regularly updated through discussions and lectures. An experiment started on two World Heritage Monuments Sanchi and Khajuraho have provided new insight, i.e., the monument is not the pile of stones but a past in itself, which illustrates the history of the people and their creative skill.

For the balanced development of the area falling within the close vicinity of monuments the State of Madhya Pradesh created special Area Development Authority whose primary function was to develop the area in a planned manner and contain the adverse impact over the Heritage Site. The experiment failed miserably.

For the balance development of the area falling within the close vicinity of the monument a new approach has to be adopted for the protection and preservation of the monument by involving the people in a friendly way or making them to feel that they dwell/reside in a historic environment which is primarily of their own rather than of any other authority or agency.

For example in the area of Luteyen's Delhi there are restrictions for the maintaining the historic character of the area. Similar restrictions are not there in many areas of Delhi, I may quote that the area of Nizamuddin, the area of Sarvapriya Vihar, area of Hauz Khas, area of Jantar Mantar, area around Jama Masjid and many other areas having population around the heritage buildings.

The situation in case of many monuments under religious use provides a very different picture. The Lingraj temple complex group in Bhubaneswar, Jaganath temple in Puri, Dwarka Dhish temple in Dwarka, many monuments

in Ahmedabad city, Churches in Goa, Daman and Diu and many Buddhist monasteries in Ladakh, Jaina Temples in Rajasthan, Jama Masjid in Burhanpur, Bijapur, Mosques in Delhi, Kashmir, Dholka, etc. The inhabitants living in the proximity of these monuments are insensitive about the heritage value of the historical structures. We need altogether a different approach of greater involvement of the people, an action plan duly supported by the people and a very holistic approach for all the heritage properties rather than pick and choose. My friends in the field certainly will differ what I am propounding because it aims to sacrifice certain personal interest if the heritage environment is to be cherished by the generations yet to come.

Let me emphasize you further that in this endeavour Government officers and those who are supporting the Government either from inside or outside have to introduce a new approach, which may be cumbersome in the beginning but concerted efforts and dedication certainly will yield dividends and we will have our heritage sites well protected for future generation.

The problem of the monument under religious use has another dimension. These monuments called popularly living monument have internal as well as external issues. The custodian of religious performances carry out many changes in the monument not compatible with the monument such as fixture, changes of floors and even executing certain things obliterating the original character of the structure. The Jaina temples in Jaisalmer Fort were subjected to various such changes ignoring all objections of the ASI. Similarly outside the heritage building people living in proximity introduced incompatible activities like establishing commercial activities even carrying out construction activities overlooking/ignoring all provisions of the law. This situation is prevalent almost everywhere across the country. This situation has to be tackled for saving heritage from disfigurement and creating sustainable development.

The changing thrust from Natural history to Archaeology in Indian Museums

SHYAMALKANTI CHAKRAVARTI¹

Natural history is the scientific research of plants or animals, leaning more towards observational rather than experimental methods of study. Grouped among the natural sciences, natural history is the systematic study of any category of natural objects or organisms. Natural history begins with Aristotle and other ancient philosophers who analysed the diversity of the natural world.

Natural history museums, which evolved from cabinets of curiosities, played an important role in the emergence of professional biological disciplines and research programs. Particularly in the 19th century, scientists began to use their natural history collections as teaching tools for advanced students and the basis for their own morphological research.

In Archaeology and Natural History, we use a multidisciplinary approach to find answers to important questions about prehistory and its implications for today's world. Research in Natural History and Archaeology aims to understand prehistoric human societies, the environments in which they developed and the environmental consequences of human presence.

Historians of archaeology have noted that prehistoric stone artefacts were first identified as such during the seventeenth century, and a great deal has been written about the formulation of the idea of a stone age in the nineteenth century. Much less attention has been devoted to the study of prehistoric artefacts during the eighteenth century. Yet it was during this time that researchers first began systematically to collect, classify and interpret the cultural and historical meaning of these objects as archaeological specimens rather than geological specimens. These investigations were conducted within the broader context of eighteenth-century antiquarianism and natural history. As a result, they offer an opportunity to trace the interrelationships that existed between the natural sciences and the science of prehistoric archaeology, which demonstrates that geological theories of the history of the earth, ethnographic observations of 'savage peoples' and natural history museums all played important roles in the interpretation of prehistoric stone implements during the eighteenth century.

¹This paper was presented at the Seminar, *From Natural History to Archaeology to Science & Technology: Paradigm Shifts in the Indian Museums*, on 26 July 2011, in the Department of Museology, University of Calcutta.

The year 1814 should not be judged in isolation for the fact that a museum is born in the India. This was, in fact, the beginning of a significant epoch in the socio-cultural context and the scientific achievements of the nation. The year is otherwise considered as the beginning of 'modernity' and end of mediaeval era with Raja Ram Mohan Roy permanently settling in Calcutta to accelerate his reformist movement. The year witnessed the first missionary school in the country established at Chinsurah by Reverend May and the first bishop of city Dr Thomas Fanshwa Middleton, entering the town to preach a new religion. A new theatre called Chowringhee Theatre and a dramatic society came into existence. This year for the first time the work of municipal improvement of the town was entrusted to the Lottery Commission and one hundred forty feet boring was operated in search of a spring of pure water near the river Hooghly. And born in the same year along with the pioneering Bengali prose writer Pearychand Mitra and Ramgopal Ghosh, the favourite son of Fortune and Learning, the Asiatic Museum started functioning.

The Asiatic Museum was thus founded with the intention that its enquiries would be extended to whatever is performed by Man or produced by Nature. It was determined to establish the Museum into two sections, one which would be called archaeological, ethnological and technical, the other geological and zoological. Members of the Asiatic Society working in different parts of the Indian subcontinent, South East Asian countries and Australasia enriched the Museum with generous presents of curiosities and specimens of Natural History during the period of 1817-1832 [Proceedings of the Asiatic Society 1817-1832, Volume III, Book I, p.115 by P Thankappan Nair]. The Society did not neglect to take timely and early action in arranging the objects of the Natural History in the Museum. The collection of antiquities, coins, etc., in the Society's Museum were taken up for the systematic arrangement and cataloguing in 1826 [ibid. p120].

At the initial stages the Museum had, among other exhibits, stuffed specimens of albatross, hens, pigeons and booby birds from the Cape of Good Hope, Nepalese birds and a large collection of European birds presented by the Royal Museum of Copenhagen. A young pigeon with two heads, presented by Radhakanta Deb, from his aviary, did not go unnoticed by ladies visiting the Bird gallery. The Zoological gallery of the Museum had a number of interesting stuffed animals from Australasia, Malayan countries, Nepal and various parts of India. Neither a pair of Kangaroos from Australia, nor Unicorns from Nepal, were wanting in the gallery. A large ape (orang utan) from the west coast of Sumatra, large number of snakes, horns of rhinoceroses from Sumatra and Assam, hill-cow of Arracan, Ther deer, Ethiopian hog, jaw bone, vertebra and cranium of whales, stuffed gangetic alligator, skins of emu, bucks, pangolin and giraffe, etc.

The mineralogical collection of the Society owed its rapid growth owing largely to the zeal of the members. Major General Hardwicke recommended in 1820 the

purchase of standard works of mineralogy to promote the study of the subject. Dr Clarke Abel, Joint Secretary prepared a catalogue of minerals even in 1826. A rich collection of minerals was presented by Capt. Jenkins in 1827. David Ross of the Calcutta Mint, a specialist in Mineralogy got the sanction of the Society to construct a number of cabinets for display of mineralogical specimens.

Until the end of the 19th century there were few museums in the country which possessed the exclusively the collections of natural history. As early as 1819 efforts for forming a museum had been made in Madras and the Madras Literary Society desired to have a museum of Economic Geology in 1828. It was probably in 1835 (?) the Medical College Museum, in Calcutta, was established. The Museum of Economic Geology in Calcutta opened in 1840. In 1843 the Madras Literary Society requested the Government for the formation of a Central Museum in Madras. Formation of six local museums in southern part of India was actually started, but all these except the one at Rajahmundry were closed down in 1861. The oldest Medical Museum in Asia, the Grant Medical College Museum at Mumbai was set up in 1845. In 1851 the Victoria & Albert Museum was established at the Victoria Gardens of Mumbai. The same year the Government Museum & National Art Gallery, Madras (1851) came into existence. The scope of the Central Museum of Natural History, Economic Geology, Industry and Arts was fully outlined in 1855.

The next museums in the country originated in different parts of India are – the Government Museum, Trivandrum (1857), Central Museum, Nagpur (1863), Lucknow State Museum (1863), Mysore Government Museum (1866), Zoology & Botany Museum, Ernakulum (1874), Mahant Ghasidas Memorial Museum, Chhattisgarh (1875), Government Central Museum, Jaipur (1876), Kutch Museum (1877), Bombay Natural History Society Museum (1883), State Museum & Zoological Garden (1885), Zoological Museum, Madras Christian College (1885), Victoria Jubilee Museum, Vijayawada (1887), Lord Reay Maharashtra Industrial Museum (1888), Natural History Museum of St. Joseph's College, at Tiruchirappalli (1889), Victoria Technical Institute, Madras, Baroda Museum & Picture Gallery (1894), Barton Museum of Antiquities, Bhavnagar (1895), SPS Government Museum, Srinagar (1898).

It is clear from the above list that the two museums of economic geology in Madras and Calcutta; Zoology & Botany Museum in Ernakulum, Zoological museum in Madras were the institutions of the kind to deal partly with the natural history. We have however the full-fledged natural history museums during the 19th century only in Bombay (1883) and in Darjeeling at the turn of the century in 1903.

But when we consider the activities of the Society's Museum during 1833-1841, it is observed that much stress have been laid to appoint a reputed naturalist to supervise its collection besides developing of fossil deposits from various parts of the country. Specimens of natural history, of mineralogy and geology have flowed

in faster than they could be accommodated. Even the private collections of natural history were donated to the Museum in a large number. In 1839 an elaborate report was prepared on the specimens of natural history in the Society's Museum. Soon a reputed natural historian, specializing in Indian fishes was appointed. In 1842 Henry Paddington with his profound knowledge of geology, zoology and osteology took charge of curatorship of the Museum of Economic Geology. Then joined Edward Blyth, a proficient scholar in geology, botany, meteorology and other branches of natural history to serve the Museum for the next 22 years. The Society's Museum reflected the scientific progress of India. It was true that zoology, geology, meteorology and botany had not developed into independent discipline in the early 19th century.

This is entirely in contrast with the situation in Europe. For example the two most celebrated natural history museums in the continent were set up almost in the middle part of the 18th century. The Museum of Natural History and Archaeology, Norway with collections and displays related to natural history and cultural history dates back to 1767. The Natural History Museum, London, was initially housed in Montague House in Bloomsbury in 1756, which was the home of the British Museum. The construction of the new house was begun in 1873 and opened in 1881; the museum is home to life and earth science specimens comprising some 70 million items within five main collections: Botany, Entomology, Mineralogy, Palaeontology and Zoology.

The early museums in India were sarcastically compared to the "lady's vanity bags" accommodating all and sundry items a woman might have required. From prehistoric tools to paintings, folk ornaments to moon rocks, fossil flower to magic lantern, every items of life and nature had a curious shelter on the shelves of the museum.

Archaeology has come to acquire for modern India a significance which is at once deeper and subtler than a strict definition of the term as a scientific discipline would seem to imply. To put it briefly, it is archaeology which, more than anything else, has helped India to rediscover herself, to win back, so to say her long-lost identity. Yet the urge for archaeological investigations took a long time to germinate on the Indian soil. It was Sir William Jones and his learned followers who initiated antiquarian studies in the country. should be regarded as the true pioneers in the field of Indian archaeology. Their immediate programme included a formidable multiplicity of topics for instance, geology, geography, mathematics, mechanics, mineralogy, ethnography, agriculture, architecture, music, language and literature. Archaeology could only have a very low priority in this extremely crowded programme. The half century following the foundation of the Asiatic Society witnessed the germination of archaeological thinking from the seeds of antiquarian speculations. The man whose genius and labours helped archaeology to free itself from its antiquarian and literary affiliations was James Prinsep, the celebrated

Secretary of the Asiatic Society. Of his immediate successors, the most prominent were Alexander Cunningham, Markham Kittoe and Edward Thomas in north India; Sir Walter Elliott in south India; Dr J Stevenson and Dr Bhau Daji in western India, each following his own line. Cunningham was among the first to realize the necessity for organizing a country-wide survey of archaeological remains. And a new era was ushered in with the establishment of the Archaeological Survey of India in 1861.

During the earliest stages of museum movement the nucleus collections have been mostly geological and biological. But with the formation of the Archaeological Survey the place of archaeology was felt in the museums. From the beginning of the 20th century and with the lease of life given to the Archaeological Department by Sir John Marshall and Lord Curzon the archaeological sections in museums and separate museums of archaeology developed as institutions deserving special attention. It was during the glorious epoch of Sir John Marshall who was seen as the sole commander in the archaeological field in India, museums received a priority which was quite novel in their history. Even as early as 1903 he had recognized the need for close collaboration between the Survey and the museums housing archaeological collections. The archaeological sections of the Peshawar Museum, the Indian Museum had the full-time superintendents of the Survey in promoting the archaeological services. Marshall was responsible for setting up a large number of museums under the direct control of the Survey including those at Agra, New Delhi, Delhi Fort, Lahore Fort and at the excavated sites of Taxila, Mohenjo-Daro, Harappa, Sarnath, Nalanda. Once started, the museum movement thrived rapidly and new archaeological museums came to be founded in rapid succession at Bijapur and Baripada, Chamba and Ajmer, Gwalior and Khajuraho, Sanchi and Bodhgaya.

We have now a chronological list of the archaeological museums in the 20th century: Archaeological Museum, Mathura (1874), District Archaeological Museum, Dhar (1902), Archaeological Museum, Red Fort (1909), Archaeological Museum, Khajuraho (1910), Archaeological Museum, Bijapur (1912), Archaeological Museum, Jhalawar (1915), Museum of Archaeology, Sanchi (1919), Bharat Kala Bhavan of Art & Archaeology (1920), Archaeological Museum, Gwalior Fort (1922), Archaeological Museum & Picture Gallery, Trichur (1938), Archaeological Museum, Amber (1938), Museum of Art & Archaeology at Vallabh Vidyanagar, Surat (1949), Museum of the Department of Archaeology, M S University, Baroda (1950), Amaravati Archaeological Museum (1951), Archaeological Museum, University of Sagar (1951), Alampur Archaeological Site Museum (1952), Kondapur Archaeological Museum (1952), Archaeological Museum, Hampi (1953), Buddhagaya Archaeological Museum (1956).

The development of archaeological museums was given a high priority in Sir Mortimer Wheeler's scheme of reorganization. In 1945 a Museums Branch was

constituted to look after chiefly the archaeological site museums in the country.

To sum up, in Indian museums both natural history and archaeology survived almost parallelly. The museum of economic geology began functioning only in the third decade of the 19th century to be specific in 1828. And a vigorous institutional support for the development of natural history was initiated by the Asiatic Society almost at the same time during 1833-1841. Although a full-fledged natural history museum came up in the country after the elapse of fifty years only in 1883. The first archaeological museum was however established at Mathura in 1874, nine years before the Bombay Natural History Museum came into existence. But whatever the chronological records show a great thrust to build up archaeological museums no doubt precipitated at the initial years of the 20th century. Is it true that History is only an extension of Natural History?

We should note here also the contribution of the two great intellectual movements of the middle of 18th century – the Renaissance and Enlightenment. The Renaissance created an interest in antiquity and the Enlightenment gave a new direction and new depth to man's studies in nature and his own work. Both these intellectual movements shaped the destiny of the host of museums in Indian subcontinent.

But in Indian context certain other factors were responsible for the changing of thrust in museums from natural history to the area of archaeology. The exploration for natural wealth was primarily a part of colonial investigation to exploit the country's resources commercially. Therefore the European investigators concerned with the museums at the initial stage laid stress on collecting such materials of interest and researching thereupon in accordance with the underlying policy of the Company's regime. Whereas the vast treasures of archaeological wealth in the country both on surface and underground initiated romantic curiosities to know about the past glory. With the establishment of a new body to hold reins over the matter a discernible paradigm shift came to be noticed also in the domain of museums. In the beginning of the epoch the multi-disciplinary museums became the fashion of the age set up to accommodate objects of natural history and archaeology along with others. In the third quarter of the nineteenth century, however, archaeology stepped into the domain of the museums in India singularly.

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Mobile Science Exhibition in India : 1965-2014

JAYANTA STHANAPATI

Abstract

Birla Industrial and Technological Museum or BITM, the first major science museum of the country was established in Calcutta in 1959. An avant-garde, BITM, carried the message of science beyond its four walls through a travelling science exhibition which it had launched in 1965. By late 1966, the museum had introduced the 'Mobile Science Exhibition', mounted on a specially designed bus called 'museobus'. Trail along similar lines and constantly upgrading it, currently twenty five science museums and science centres, located in seventeen States and two Union Territories, operate mobile science exhibitions, throughout the year, for the benefit of rural and suburban students. Quite importantly, Twenty one of these institutions are units of National Council of Science Museums. This article is all about a brief historical account of this exemplary outreach of science museums and science centres in India.

1. First Industrial and Technological Museum in India

A good sixty years ago, Syt Ghanshyam Das Birla, a philanthropist and an eminent industrialist of the Birla Family decided to donate their opulent house at Birla Park on



Plate 1. *The building donated by Syt G D Birla*

Gurusaday Road in Calcutta. The reason behind this was the setting up of an industrial and technological museum by the Council of Scientific and Industrial Research (CSIR), Govt. of India. An acquaintance of close quarters, to two of the towering personalities of that era – Pandit Jawaharlal Nehru, Prime Minister of India and Dr Bidhan Chandra Roy, Chief Minister of West Bengal, Mr Birla sent a proposal, through Dr Roy, to Maulana

Abul Kalam Azad, the then Union Education Minister and Vice-President of CSIR on 7th December 1954, expressing his desire for the industrial museum. Now it needs special

mentioning that after independence, the First Five-year Plan of India initiated in 1951 had given great stress on development in areas like, agriculture, irrigation, energy, transport, communication, community development and social services. In 1956, the Planning Commission shifted its focus towards developing capital goods and heavy industry in the country, to achieve long-term economic benefit. So, as per Mr Birla's desire, it would indeed be the best way to present the public with a museum which would very explicitly impart industrial topics as well as supplement science and technology education imparted in schools and colleges. The proposal was readily accepted and accorded by the Prime Minister and within a year, in 1956, the property was transferred to CSIR. Meanwhile, a sum of ₹ 20 lakh came to be allotted for the development of the museum in Calcutta during the Second (5-year) Plan Period.^[1, 2]

The museum was christened with the name Birla Industrial and Technological Museum (BITM) and taking the next step, CSIR constituted a Planning Committee with Dr B C Roy as Chairman to determine the scope of the museum and manage its finance. Along with this, came the key decision to appoint adequate number of professionally qualified manpower who would not only contribute intellectually and technically to develop the museum, but also would be responsible for its growth and expansion. In November 1956 Mr Amalendu Bose was appointed by CSIR as Planning Officer of BITM. He was then working as a Patent Inspector in Calcutta after completing higher studies in Chemistry in Calcutta and in the US. While in USA, he had visited various galleries in the Chicago Museum of Science and Industry. Mr A Bose was a visionary, who realized the importance of inducting right kind of people, having enthusiasm for this new profession and during 1957-58, he recruited Mr Phanindra Mohan Neogi as Senior Technical Officer, Mr Saroj Kumar Ghose as Junior Technical Officer, Mr Rabindra Chandra Chandra as Junior Technical Officer (Arts), and Mr Shasanka Sekhar Ghosh as Senior Technical Assistant. They were further assisted by few staff in respective fields.^[2]

Coming back to the enhancement of BITM, the Planning Committee had desired that the museum should portray the advances in technology, the contribution of technology to the welfare of mankind, and the application of modern methods of technology in the Indian industry. Bose and his team therefore decided to acquire and develop exhibits in branches of science and technology such as electrical communication, electric power generation and transmission, nuclear physics, optics, transportation, civil engineering, chemical technology, and mining and metallurgy. They succeeded in setting up museum galleries on electricity, electronics, metallurgy, petroleum, nuclear physics, optics and miscellaneous, and a television studio. Although some models were received as gifts from abroad, an overwhelming majority of them were built indigenously.^[1]

All set to elate the visitors, Birla Industrial and Technological Museum was formally opened by Professor Humayun Kabir, Union Minister for Scientific Research and Cultural Affairs, on May 2, 1959, in presence of Dr Bidhan Chandra Roy, Chief of Minister, West Bengal, Professor M S Thacker, Director General of CSIR, and Shri B M Birla and Shri M P Birla, who represented the Birla Family. This was an effort and a creation for everyone to take a peek in the fascinating realm of science and technology, and likewise extract what the museum had to offer ... not to teach science and technology, but to arouse the interest to let one be taught the same.^[3] On the First Anniversary of BITM in 1960, Professor Satyendra Nath Bose, National Professor, gave an address on the "Message of Science." He emphasized that science could play a very significant part in effecting an all-round improvement in the condition of man. While underlining the need for popularising science among the people, he stressed that BITM could play a vital role in this respect.^[4]

By 1963 there were six Curators in BITM, working with Mr Amalendu Bose, Planning Officer. They were Mr Saroj Ghose, Mr Rathindra Mohan Chakraborti, Mr Samar Kumar Bagchi, Mr P M Neogi, Mr S S Ghosh and Mr C S Pai. The Arts Section was looked after by Mr R C Chandra.^[5] In the same year, two new galleries were opened, namely, Popular Science in January and Communication in June. On 1st January 1964, Mr Bose was transferred to Bangalore to set up Visvesvaraya Industrial and Technological Museum. He took with him three experienced officers of BITM, Mr R M Chakraborti, a Curator, Mr Amalendu Roy, a Technical Assistant and Mr Subrata Datta, an Exhibition Assistant, for the new project. Mr Saroj Ghose, senior most Curator of BITM then, was on long leave to pursue post graduate engineering studies at Harvard University in USA. Mr Samar Bagchi, henceforth became the Curator-in-Charge of BITM. He developed a new gallery on Mining and it was opened on 27 June 1964. So by 1964, BITM had ten permanent galleries.^[5, 6]

2. Carrying message of science beyond the four walls of museum

In 1965, Saroj Ghose, Curator-in-charge of BITM felt the need to take scientific exhibits beyond its four walls to create scientific temper in the community. During 1963-1964, Ghose had pursued post graduate engineering studies at Harvard University in USA. He also spent a few months, thereafter, at the Smithsonian Institution, Washington DC, studying its exhibits and activities. It is then he came across 'Artmobile' of the Virginia Museum of Fine Arts, in Richmond, carrying small size paintings for display in various locations temporarily. He also saw a photograph of a UNESCO 'museobus' carrying ethnological artefacts moving through West African countries.^[7]

In 1950s, UNESCO had developed five travelling science exhibitions and two of those, namely, 'Our senses and the knowledge of the world' and 'Energy and its transformation', were exhibited in some Indian cities.^[8] Travelling science exhibition was also a significant activity of the Polytechnic Museum of Moscow since late 1950s. The Russian exhibitions consisted mainly of display panels, posters and small number of three dimensional working exhibits.^[9] But, there is no record of indigenously developed travelling science exhibitions. Thus Mr Saroj Ghose got inspiration to introduce new kind of mobile science museum in India, particularly with working or participatory exhibits. While returning from the USA and before taking over the charge of BITM, Mr Ghose met Dr Hussain Jaheer the then DG, CSIR in Delhi in the last week of March 1965. Dr Jaheer asked him what new idea he had brought with him from the USA. Mr Ghose narrated his concept of Mobile Science Museum in fair amount of details. Dr Jaheer heard patiently and uttered just two words 'go ahead'. The DG, CSIR then allotted additional fund and gave full support to the project.^[7]

It took six months (May-Oct 1965) for Mr Saroj Ghose and his team in BITM to design and fabricate the exhibits of a travelling exhibition on 'Our Familiar Electricity'. The exhibition was mounted on specially designed stands which could be easily set up in a hall, dismantled and transported by truck. The exhibits were designed by Mr Saroj Ghose; portable stands was designed by Mr Shasanka Sekhar Ghosh; artwork was done by Mr R C Chunder; engineering drawings were prepared by Mr D Basu; fabrication was done by Mr Ashok Dutta and Mr S B Shome in the Electrical Workshop.^[7, 10, 11]

Ultimately, going novel, BITM moved out its four walls with a travelling science exhibition called the 'Mobile Science Museum'. The travelling exhibition titled 'Our Familiar Electricity' was inaugurated by Mr Prafulla Chandra Sen, the Chief Minister of West Bengal at Narendrapur Ramakrishna Mission Ashram School, Narendrapur, about 17 kilo-meters away from BITM, on 17 November 1965.^[12] The unit on 'Our Familiar Electricity' with 30 exhibits attempted to make school children and general public familiar with electricity and its use in daily life. The working models showed operation of telephone receiver, electric lamp, electric heater, electric fan, radio receiver and so on. Written explanation of individual exhibit was given in simple



Plate 2. Inauguration of Mobile Science Museum at Narendrapur.

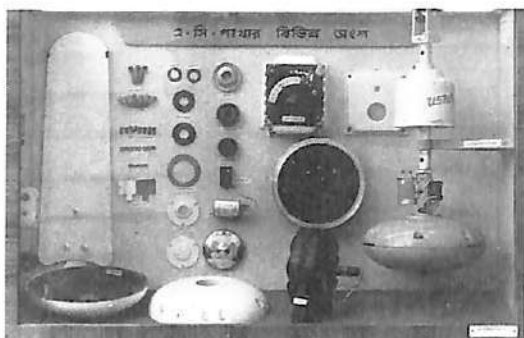


Plate 3. Parts of a ceiling fan – an exhibit



Plate 4. Parts of a telephone receiver – an exhibit

Bengali. Each exhibit was housed in a cabinet of size 99 cm (height) x 73.4 cm (breadth) and 30 cm (width). The exhibit cabinets were mounted on display stands made out of 1.9 cm diameter light-gauge conduit pipes, which could be assembled, dismantled and carried to different sites.^[13] The exhibition at Ramakrishna Mission Ashram School, Narendrapur, was on display for five days. Mr Dilip K. Pathak, Guide Lecturer from BITM coordinated the activities in the school. A covered lorry was used to carry the exhibit boxes, display stands, a film projector and other materials. The lorry was painted red and was named 'Mars' after the red planet. During 1966, the same unit was exhibited in 25 schools in the districts of 24 Parganas, Howrah, Hooghly and Nadia in West Bengal.^[5, 14]

3. Museobus – carrier of Mobile Science Exhibition introduced

The authorities of BITM soon felt operational difficulties in running the mobile science museum as designed in 1965. It was a cumbersome and laborious



Photo 5. Museobus on Transformation of Energy

process to pack, load, unload, unpack and set up display stands and exhibits at each exhibition site. Solution to this problem came in mid-1966 with the introduction of 'museobus', which was conceptualized by Mr Saroj Ghose and designed by Mr Shasanka Sekhar Ghosh. Detailed drawings were prepared by Mr Debabrata Basu, a Senior Draftsman.^[7] Venus, the first Indian 'museobus' was a specially designed structure on standard truck chassis that

mounted a set of 28 exhibit cabinets of standard size in four rows, two facing outside and two facing inside. So, 14 (7 x 2) exhibits were placed on the

floor of the bus facing the outside at eye level for visitors outside the bus and the remaining 14 (7 x 2) were placed on the upper level for visitors standing inside the bus. The museobus was fabricated by National Motor Works, Calcutta.^[5, 11, 15] The mobile exhibition bus carrying working and participatory science exhibits on the theme 'Transformation of Energy' was inaugurated on December 27, 1966 in Barsul Vijnan Mandir near Shaktigarh in Bardhaman district of West Bengal. The first exhibit of the unit dealt with the Sun, the primary source of energy in the solar system, while the others were on various forms of energy, principles of conservation of energy and conversion of one form of energy in to others. The museobus travelled 2861 km in 1967 to hold exhibitions successfully at 77 different sites in West Bengal and was visited by 1 lakh 85 thousand visitors. During next two years, the unit travelled further 5507 km in West Bengal and Bihar to hold exhibitions in 85 places which drew 1 lakh 37 thousand visitors. BITM operated this particular exhibition unit till 1979-80.^[16]

4. Evolution of 'museobuses' and display techniques

In 1966, BITM changed the title of travelling exhibition from 'Mobile Science Museum' to 'Mobile Science Exhibition'. It was realised by BITM authorities that the mobile unit was not carrying any scientific artefact, typical of a museum, but was showing didactic and working exhibits. So the term 'exhibition' looked more appropriate than 'museum'.^[7] The first unit of mobile science exhibition titled 'Our Familiar Electricity' had 30 exhibits in 1965. When installed in a museobus the number was reduced to 28 in 1967. With the introduction of a trailer museobus in 1969, the number of exhibits was reduced further to 24. The unit on 'Transformation of Energy', however, had 28 exhibits during the years from 1967 to 1980.

Why did BITM use museobuses of different lengths or experimented with various number of exhibit? Dr Saroj Ghose, former DG, NCSM has replied to this question recently, "The unit on 'Our Familiar Electricity' was mounted on portable stands, hence the number of exhibits could be anything. But when we started planning for a museobus, the exhibits had to be a multiple of 4 because of 4 rows, 2 facing outside and 2 facing inside. So the number of exhibits had to be 20, 24, 28, 32, etc. Our first attempt was to accommodate maximum number. The exhibit cabinets had to be of standard size for inter-changeability. The maximum length of the bus, as approved by the Motor Vehicles Authority, permitted maximum 7 exhibits in a row. So 'Transformation of Energy' contained 28 exhibits. By 1967 we started regular Science Demonstration Lecture (SDL) programme. We introduced a trailer unit (with exhibits of Light and Sight) drawn by a separate driving unit. The idea was that after reaching the site, the exhibit unit would remain stationary and the driving unit would be used to conduct Science Demonstration Lectures and Film shows in neighbouring schools. The maximum permissible length of a trailer unit permitted only 6 exhibits in a row. Thus the number of exhibits was reduced to 24.

Initially the exhibitions were held in district headquarters and larger towns, but when we started holding exhibitions in deep interior both the long integrated museobus (Transformation of Energy) and the trailer unit turned out to be difficult to manoeuvre in narrow streets and particularly while entering through the gates of schools. Finally we disposed off the trailer and reduced the length of the integrated unit to accommodate 4 x 6 exhibits for greater manoeuvrability. In Nehru Science Centre, in the 1980s, R M Chakraborti and A K Date designed and made an expandable museobus, the width of which could be expanded after reaching the site. This provided a very comfortable space inside the bus, but this was discontinued for manoeuvrability problem. Of late, NCSM has introduced integrated bus body of even smaller length with 4 x 5 exhibits to negotiate the sharp bends in hilly tracts of the north-east".^[7]

In 1981, Mr Ingit Kumar Mukherjee, while working in BITM as a Curator, had developed a set of 24 exhibits on the theme 'Know Mechanisms Around You' to use as travelling exhibition in areas where large museobuses could not enter. The exhibits were smaller in size than standard MSE exhibits and each exhibit had its own stand and wheels. The whole exhibition could be moved from place to place by a mini truck. However, the entire exhibition was kept on display in a hall in BITM for long time. The author asked Mr Mukherjee recently as to why BITM never circulated the unit as a travelling exhibition? Response came from Mr Mukherjee promptly – "The 'Know Mechanisms around You' unit was developed in early eighties. It was to depict the mechanisms that work for the gadgets and machines we use in our everyday life. The exhibits were set in lightweight aluminium boxes and the tubular casings could be used as stands for display at site. The idea was to enable MSE units to be taken out in small vans or trucks to villages or hilly areas where road conditions did not allow the big buses to move. It so happened that the old library of BITM was then being shifted to the new location and we had an empty hall at hand that needed to be filled. After elaborate meetings taken by the then Senior Curator of BITM, it was decided that the 'Know Mechanisms around You' unit would be placed in the hall vacated by the library instead of sending it out on tour for the time being... In fact, it outlived its life as an exhibit in BITM. Later, in the late eighties and early nineties, a large fleet of big standard Museobuses was procured and so, it seems the focus shifted to fabrication of standard MSE exhibits. Much later, a smaller bus for hilly areas was designed in CRTL (Central Research and Training Laboratory, a unit of NCSM) but the exhibits were standard in nature. The 'Know mechanisms around you' unit was not sent out as a MSE unit and so, its performance as a MSE unit could not be evaluated at any point in time."^[17]

5. MSE activities of BITM under CSIR

Prior to formation of National Council of Science Museums in April 1978, only two science museums in India, namely Birla Industrial and Technological Museum,

Calcutta and Visvesvaraya Industrial and Technological Museum, Bangalore, were operating Mobile Science Exhibition units. Both the museums, located more than 2000 kilometres apart, were functioning under the Council of Scientific and Industrial Research. Between 1965 and 1978 BITM used three to five museobuses per year to carry exhibitions on eight different themes. A unit on Popular Science, initially with 12 exhibits, was carried by a van. These units altogether organized exhibitions at 1725 sites, located in West Bengal and its neighbouring states like, Bihar, Orissa, Assam and Meghalaya (Table 1).^[18]

Table 1. Operation of MSE by BITM during 1966-1978

Sl. No.	Title of MSE Unit	No. of Exhibits	Years of Operation	No. of Exhibition Sites	Visitors
1	Our Familiar Electricity	30/28/24	1966-1970,1973	209	7,60,789
2	Transformation of Energy	28	1967-1978	743	1,41,397
3	Popular Science	12/24	1969-1978	101	7,19,070
4	Light and Sight	24	1969,1970,1975-1978	227	2,86,955
5	Water – the Fountain of Life	24	1971-1974	189	2,13,169
6	The Planet We Live In	24	1973,1975,1976	106	1,96,751
7	The Science of Motion	24	1976-1978	103	1,21,546
8	Mathematics through Fun	24	1976,1977	47	54,938

According to a report published in The Hindusthan Standard (Calcutta) on 18 November 1965, Mr P C Sen, Chief Minister of West Bengal in his inaugural address of Mobile Science Museum had requested BITM authorities to organize a mobile agricultural exhibition for the benefit of farmers in the remote villages. While offering vote of thanks, Mr Saroj Ghose as Curator-in-Charge of BITM thanked the CM for the suggestion and promised to undertake the project at a later date. He had also mentioned that BITM's next venture would be a mobile exhibition on energy for school children.^[19]

While the unit on 'Transformation of Energy' was developed in 1967, a unit on 'Agriculture' was developed after more than a decade, in 1979. Why was there a delay in introducing an exhibition on a theme that would be useful to farmers, who were not necessarily school students? Dr Ghose has replied recently, "You must have noticed that I did not promise to CM that the unit on 'agriculture' will be developed next, I said 'at a later date' simply because I knew that we were not prepared for development of *working exhibits* on subjects like agriculture, environment, etc. Our concept was to involve the visitors in participation with the exhibits. At that time it was easy to develop working exhibits on electricity, energy, light & sight, water, etc., rather than on agriculture, environment, ecology, etc. We

introduced such subjects in MSE at a later period when we were, to some extent, able to develop animated (still not so much working) exhibits."^[7]

Exhibits of a mobile science exhibition unit are conceptualised and designed by a Curator. It then moves to the Arts section of the museum where art work of each



Plate 6. *Fabrication of an exhibit in the workshop*

exhibit is prepared by an Exhibition Officer. From there it goes to the workshop-in-charge – a Curator or a Technical Officer. The exhibits are fabricated by technicians of different trades. Generally, a mobile science unit travels 8 to 9 months a year with breaks (returns to the museum) after every forty five days. While on tour, its activity is coordinated by an Education Assistant and he is supported by a technician and a driver. Although always claimed as an outreach program for the rural masses, mobile science exhibitions were organized mostly in suburban and rural schools, benefitting

student community and not the common mass. This was true even for the Unit on 'Agriculture'. When requested by the author, Dr Saroj Ghose explained, "This was entirely due to logistic convenience. Schools were the only institutions in the interior areas having minimum infrastructure for holding such exhibitions. We needed adequate open space with some kind of security for keeping the bus and holding the exhibition. We needed a room with cooking and toilet facilities for our staff to stay for three days. We needed about 12 student volunteers for demonstration of exhibits (initially trained by our Guide Lecturer). And finally we needed some amount of enthusiasm surrounding our Museobus. Schools were the only choice for stationing the mobile bus. But visitors were never restricted to school students only. In a small place this kind of events always attracted attention of the people at large and the Museobus was open to all."^[7]



Plate 7. *Curator-in-Charge of workshop checks an exhibit under fabrication*



Plate 8. 'Toss a Coin' – an MSE exhibit



Plate 9. Students taking notes from an exhibit

6. Science Museums and Centres of NCSM that operate MSE

As already stated above, BITM and VITM functioned under CSIR, till April 1978. Between 1978 and 2002, NCSM had established twenty one more science centres in the country (Table 2). First three units (Sl. No. 1, 2, 3) – BITM (1959), VITM (1965) and SSC Patna (1978) were established when Mr Amalendu Bose was CEO of the organization. Next eighteen centres (Sl. Nos. 4 to 21) were opened between 1982 and 1997 during the tenure of Dr Saroj Ghose as Director and Director General of the NCSM. Mr Ingit Mukherjee, as DG had established two science centres (Sl. Nos. 22, 23) in Kurukshetra (2000) and Goa (2002) which are functioning under NCSM. He also upgraded Regional Science Centre, Lucknow to Regional Science City in 2007. All the units of NCSM, except Science City, Kolkata and Digha Science Centre, run mobile science exhibitions, eight to nine months a year.^[20]



Plate 10. Front and side view of a Museobus



Plate 11. Rear and side view of a Museobus

Table 2. Science Museums, Science Centres and Science City functioning under NCSM

Sl. No.	Science Museum / Science Centre	Year of Establishment	MSE attached (Yes/No)
1	Birla Industrial and Technological Museum, Kolkata	1959	Yes (1965)
2	Visvesvaraya Industrial and Technological Museum, Bangalore	1965	Yes
3	Shrikrishna Science Centre, Patna	1978	Yes
4	District Science Centre, Purulia	1982	Yes
5	District Science Centre, Dharampur	1984	Yes
6	District Science Centre, Gulbarga	1984	Yes
7	Nehru Science Centre, Mumbai	1985	Yes (1978)
8	District Science Centre, Tirunelveli	1987	Yes
9	Regional Science Centre (City), Lucknow	1989 (2007)	Yes
10	Regional Science Centre, Bhubaneswar	1989	Yes
11	National Science Centre, New Delhi	1992	Yes
12	Raman Science Centre, Nagpur	1992	Yes
13	Regional Science Centre, Tirupati	1993	Yes
14	Bardhaman Science Centre, Bardhaman	1994	Yes
15	Regional Science Centre, Guwahati	1994	Yes
16	Regional Science Centre, Bhopal	1995	Yes
17	Dhenkanal Science Centre, Dhenkanal	1995	Yes
18	Digha Science Centre and National Science Camp, Digha	1997	No
19	Science City, Kolkata	1997	No
20	North Bengal Science Centre, Siliguri	1997	Yes
21	Regional science Centre and Planetarium, Kozhikode	1997	Yes
22	Kurukshetra Panorama and Science Centre, Kurukshetra	2000	Yes
23	Goa Science Centre, Panaji	2002	Yes

7. MSE Units of Science Centres established by NCSM, but run by the user states

Mr Ingit K Mukherjee was Director General NCSM, from 1997 to 2008. During 2003-08 he had established two science museums and nine science centres for non-NCSM organizations. NCSM handed over charge of all these museums and centres to respective users after their inauguration. It was only Rajiv Gandhi Science Centre, Mauritius to which the MSE unit was attached to (Table 3).^[20]

Table 3. Science Museums and Science Centres developed by NCSM for non-NCSM organizations during 2003 -2008

Sl. No.	Science Museum / Science Centre	Year of Establishment	MSE attached (Yes/No)
1	Science Centre, Port Blair	2003	No
2	Mizoram Science Centre, Aizawl	2003	No
3	Nagaland Science Centre, Dimapur	2004	No
4	National Agricultural Science Museum, New Delhi	2004	No
5	Rajiv Gandhi Science Centre, Mauritius	2004	Yes
6	Manipur Science Centre, Imphal	2005	No
7	Arunachal Pradesh Science Centre, Itanagar	2005	No
8	Shillong Science Centre, Shillong	2006	No
9	ONGC Golden Jubilee Museum, Dehradun	2006	No
10	Kalimpong Science Centre, Kalimpong	2008	No
11	Sikkim Science Centre, Gangtok	2008	No

When asked by the author, Mr Ingit Mukherjee has clarified the reason for not providing MSE units to any of the science museums or centres, except the one in Mauritius that did not function under NCSM after inauguration. He wrote, "The main reason for not giving MSE units being run by states is that these centres had inadequate infrastructural capacity in terms of planning capability, human resources, training and repair facilities to run MSE in addition to operating the main centres. Many of such centres were run by the states by employing far less number of staff than what was planned and prescribed in the initial project plan. The other reason was that the centres were located in small states – many of them with difficult-to-access hilly terrains. The scope of the MSE tours was therefore limited. For Mauritius, although the island country is small in area, they wanted the unit prior to setting up the centre as they wanted to announce the coming of non-formal science education in Mauritius, through Rajiv Gandhi Science Centre, by accessing all corners of the island, connected with good roads, well ahead of the opening of the centre. The whole island knew about the new science centre even before it opened its doors to the public."^[17]

Working its way to progress and advance itself further, NCSM has established ten science centres during the years 2009-14, under leadership of Mr G S Rautela, as DG. The work for some of these was initiated by Mr Mukherjee before 2009. These centres are being run by respective user states after their inauguration. MSE unit was attached to only one of them, Chhattisgarh Regional Science Centre, Raipur. An MSE bus with exhibits has also been provided to Science Centre, Port Blair by NCSM, two years ago (Table 4).^[21]

The question put up to Mr Rautela by the author on 28 November 2014 was – "Do you have any plan to offer MSE units to other science centres, already established by NCSM? Will the science centres being set up by NCSM have MSE units at the time of their inauguration?"^[22] No response has been received.

Table 4. Science Centres developed by NCSM for non-NCSM organizations during 2010-2014

Sl. No.	Science Museum / Science Centre	Year of Establishment	MSE attached (Yes/No)
1	Solapur Science Centre, Solapur	2010	No
2	Regional Science Centre, Ranchi	2010	No
3	Regional Science Centre, Dharwad	2012	No
4	Regional Science Centre, Jaipur	2012	No
5	Chhattisgarh Regional Science Centre, Raipur	2012	Yes
6	Pimpri Chinchwad Science Centre, Pune	2013	No
7	Regional Science Centre, Coimbatore	2013	No
8	Science Centre, Jodhpur	2013	No
9	Jorhat Science Centre, Jorhat	2013	No
10	Regional Science Centre, Pilikula	2014	No

8. MSE units outside the umbrella of NCSM

Now let's see the picture beyond the NCSM's supervision. India altogether now has sixty science museums, natural history museums, science cities and science centres. Twenty three of these are functioning under NCSM and twenty more were established by NCSM for others. Out of remaining seventeen science museums and Science Cities, etc., only two institutions, namely, Kerala State Science and Technology Museum, Thiruvananthapuram and Periyar Science and Technology Centre, Chennai have mobile science exhibition units.

9. Development of MSE units by NCSM units (1965-2014)

During the period between 1965 and 1976, BITM while functioning under CSIR had developed eight mobile science exhibition units. In 1978, at the time of formation of NCSM, only six museobuses were in operation in India. BITM with three museobuses exhibited five units, namely, Transformation of Energy, Popular Science, Light and Sight, Water – the Fountain of Life, and the Science of Motion. VITM then had two museobuses to exhibit units on the Planet We Live In, Water – the Fountain of Life and Popular Science. NSC Mumbai had one museobus with an exhibition unit on Man Must Measure.

The first twenty years of NCSM, when Dr Saroj Ghose was its Director or Director General, it saw nineteen more new exhibition units. Mr Ingit Mukherjee was DG of NCSM from 1997 to 2009 and during his tenure various units developed

mobile science exhibition units on fifteen new themes and in the last six years, NCSM with Mr G S Rautela as DG has developed eighteen MSE units (Table 5).^[14, 16, 18, 20, 21]

Table 5. Mobile Science Exhibition Units developed by NCSM Science Museums/Centres between 1965 and 2014

Sl. No.	Title of the Mobile Science Exhibition Unit	No. of Exhibits	Year of first introduction	Developed by
1	Our Familiar Electricity	30/28/24	1965/1967/1969	BITM, Kolkata
2	Transformation of Energy	28	1967	BITM
3	Light and Sight	24	1969	BITM
4	Popular Science	12	1970	BITM
5	Water – the Fountain of Life	24	1971	BITM
6	The Planet We Live In	24	1973	BITM
7	The Science of Motion	24	1976	BITM
8	Mathematics through Fun	24	1976	BITM
9	Popular Science	24	1978-79	BITM
10	Man Must Measure	24	1978-79	NSC, Mumbai
11	Agriculture	24	1979-80	BITM
12	You and Your Environment	24	1981-82	NSCM
13	Food and Nutrition	24	1986-87	NSCD
14	Perception I	24	1987-88	NSCM
15	Perception II	24	1987-88	NSCM
16	Food and Nutrition	24	1990-91	BITM
17	Energy	24	1991-92	BITM
18	Technology at Home	24	1991-92	NSC, New Delhi
19	Our Universe	24	1992-93	RSC, Bhubaneswar
20	Man and Machine	24	1992-93	NSCM
21	Time	24	1992-93	RSC, Nagpur
22	How Things Work	24	1993-94	BITM
23	Technology at Home	24	1993-94	VITM
24	Man the Tool Maker	24	1994-95	NSCD
25	Man and Space	24	1994-95	VITM
26	Heat & Temperature	24	1994-95	CRTL
27	Motion	24	1996-97	RSC Tirupati
28	Computers for You	24	1999-2000	NSCD
29	We Are One	24	2002-03	CRTL

30	Environment	24	2002-03	RSC, Tirupati
31	Water	24	2002-03	RSC, Kozhikode
32	Invention	24	2003-04	RSC, Bhopal
33	Fun Science	24	2004-05	BITM
34	Emerging Technologies	24	2004-05	BITM
35	Time	24	2004-05	RSC, Nagpur
36	Astronomy and Space	24	2005-06	RSC, Nagpur
37	Mathematics (for NBSC, Siliguri)	24	2006-07	BITM
38	Biodiversity	24	2007-08	VITM
39	Popular Science (for CRSC, Raipur)	24	2008-09	CRTL
40	Global Changes	24	2008-09	RSC, Bhubaneswar
41	Energy	24	2008-09	RSC, Bhopal
42	Non-conventional Energy Sources	24	2008-09	NSCD
43	Fun Science	24	2009-10	RSC, Nagpur
44	Popular Science (for SC, Port Blair)	20	2009-10	CRTL
45	Water and Sanitation	24	2009-10	NSCM
46	Heat and Temperature	24	2010-11	BITM
47	Popular Science	24	2011-12	RSC, Kozhikode
48	Water	24	2011-12	KPSC, Kurukshetra
49	Popular Science	20	2011-12	RSC, Guwahati
50	Electricity and Magnetism	24	2011-12	RSC, Bhubaneswar
51	Fun Science	24	2012-13	RSC, Bhopal
52	Mathematics	20	2012-13	RSC, Bhubaneswar
53	Popular Science (for DSC Purulia)	24	2012-13	BITM
54	Science Syllabus based Exhibits	20	2013-14	DSC, Dharampur
55	Fun with Mathematics	24	2013-14	KPSC
56	Popular Science (for SC, Bardhaman)	24	2013-14	BITM
57	Mathematics	20	2013-14	RSC, Guwahati
58	Hands-on Science	24	2014-15	NBSC, Siliguri
59	How Things Work	24	2014-15	RSC, Bhopal
60	Our Senses	24	2014-15	RSC Tirupati

Scrutinising a carefully the contents of Table 5, we will see that between 1965 and 2014, MSE units were developed on forty one different subjects, eight of which were on Popular Science, three on Fun Science and five on Mathematics. MSEs were also developed on many other subjects, more than once.

10. Repetition of exhibits in MSE units

In recent years some mobile science exhibition units were introduced as new units, with almost same set of exhibits. On 26 February 2007, a unit on 'Mathematics' with 24 exhibits, was launched by BITM from North Bengal Science Centre (NBSC). Another MSE unit on 'Mathematics', claimed to be a new one, with 20 exhibits, was inaugurated at RSC, Bhubaneswar, on 19 September 2011. On examination of both the lists of exhibits, it was found that only four exhibits of the new unit were different from the previous unit (Table 6). A unit on 'Hands-On Science' of 24 exhibits was inaugurated at NBSC, Siliguri on August 18, 2014. On scrutiny it was revealed that twenty two exhibits of the unit existed in MSE units on the themes of Popular Science and/ or Mathematics, operated by various NCSM units during 2013-14. Similarly, a unit on 'Popular Science', claimed to be a new one, was inaugurated at Bardhaman Science Centre on 18 February 2014. But it appeared that all the 24 exhibits were part of Popular Science MSE units operated by DSC Purulia and two other science centres of NCSM during 2013-14.^[22]



Plate 12. MSE on Mathematics inaugurated at NBSC Siliguri in 2007

Table 6. Exhibit details of Mathematics units of 2007 and 2011

No.	Mathematics Unit of NBSC Siliguri (2007)	Mathematics unit of RSC Bhubaneswar (2011)
1	Abacus	-
2	-	Angle and Polygons
3	Area of a Circle and Value of Pi	Area of a Circle
4	Binary to Decimal	Binary to Decimal
5	Brahma's Discs	Brahma's Discs
6	Colour Game	-
7	Combination Lock	-
8	Conic Section	Conic Section
9	Cycloid and Involute	Cycloid and Involute

10	Decimal to Binary	-
11	Early Numerals	-
12	Epicycloid and Hypocycloid	-
13	Form of a Hyperboloid	Acrobatic Stick
14	Geometric Proof of Algebraic Identity	Geometric Proof of Algebraic Identity
15	Head or Tail	Toss A Coin
16	Height and Distance	Height and Distance
17	I can Tell Your Age	I can Tell Your Age
18	Indecisive Ball	Indecisive Ball
19	Insert the Right Object	Plug the Hole
20	Logic Gate	Logic Gate
21	Number System	-
22	-	Pascal's Triangle
23	Platonic Solids	Platonic Solids
24	Play with Dice	Play with Dice
25	Pythagoras Theorem	Pythagoras Theorem
26	-	Tic-Tac-Toe
27	Time Division	-
28	-	Triangle
Total	24 exhibits	20 Exhibits

11. Operation of MSEs by NCSM during 2013-14

During the year 2013-14, twenty one NCSM units operated twenty three MSE buses (16 units with 24 exhibits and 7 units with 20 exhibits) on a wide range of topics on science and technology. These museobuses covered a total distance of 48,050 kilo-meters in rural and suburban areas of the country and altogether held exhibitions for 2583 days at 1179 sites. More than 19 lakh 75 thousand visitors witnessed such exhibitions. That was not all, many of these MSE units carried with them kits and gadgets to organise some additional programmes like Science Demonstration Lecture, Science Quiz, Planetarium shows, etc., for school students (Table 7).^[22]

Out of 23 MSE units as many as nine were on Popular Science. There were three units on Fun Science and two were on Mathematics. Other subjects having single units were Environment, Biodiversity, Energy, Non-conventional Sources of Energy, Transformation of Energy, Man and Space, Astronomy and Space, Electricity and Magnetism, and Heat and Temperature. The author requested Mr G S Rautela, DG, NCSM, by an email on 28 November 2014, to clarify the reason/s for introducing

* Table 7. Is attached separately

large number of MSE units on Popular Science and Fun Science simultaneously in the country.^[23] Once again, no response was received. Of late, NCSM has introduced smaller museobuses, measuring 850 cm (length) x 250 cm (breadth) x 350 cm (height), with 20 exhibits to negotiate the sharp bends in hilly tracts of the north-east. However, out of seven such MSE buses only one was used by Regional Science Centre, Guwahati in the north-east and remaining six units were operated from science centres in plain land. The author approached Shri A S Manekar, Deputy DG, NCSM on 21 November 2014, for a clarification.^[24] No response was received.



Plate 13. A museobus with 20 exhibits holding an exhibition

During 2013-14 average cost of fabrication of 24 exhibits for an MSE unit by NCSM was ₹ 6.00 lakh. Further, running cost of sixteen MSE units of NCSM during the same year was ₹ 25.76 lakh. The average expenditure of ₹ 1.61 Lakh per unit was truly nominal considering the significance of the activity.

12. Operation of MSEs by Non-NCSM centres during 2013-14

A count of only four science museums and centres outside the umbrella of NCSM are operating MSE regularly. Two of these four centres, Science Centre, Port Blair and Chhattisgarh Science Centre, Raipur received ready-built museobus with exhibits from NCSM (Table 8).^[25, 26, 27, 28] In response to a question Dr Saroj Ghose, former DG, NCSM, has remarked, "It is much easier to develop a mobile exhibition unit as one time activity, but far more difficult to keep it running on road for 8-9 months a year. Changing sites every three days require meticulous programming, advance knowledge of road conditions, mobilisation of support of school authorities, and a very careful staff planning. Following the examples of NCSM, many museums in the country started their own museobus service but failed to sustain the project."^[7]

13. Statistics of MSEs run by NCSM units (1978-2014)

Starting with six MSE units, at the time of formation of NCSM in 1978-79, the number rose to twenty two by 1996-97, when NCSM had same number of centres under its umbrella. The average of last fifteen years statistics show that annually 22 MSE units hold exhibition at 1273 sites by covering a distance of 53,000 kilo-meters.^[20, 21]

* Table 8. Is attached separately

Table 9. Statistics of MSEs run by NCSM units (1978-2014)

Year	MSE Units	Exhibition Sites	Kilometres Travelled	Visitors
1978-79	6	345	Figure not available	5,59,623
1979-80	5	289	Figure not available	6,51,463
1980-81	6	Figures not available		6,16,000
1981-82	6	423	20,000	10,80,000
1982-83	7	250		5,02,918
1983-84		Figures not available		
1984-85	6			7,00,000
1985-86	7	283	24,171	
1986-87		Figures not available		
1987-88	10	530	34,647	12,45,268
1988-89	11	593	34,262	12,84,149
1989-90	13	500	23,905	11,76,196
1990-91	14	649	37,181	12,68,385
1991-92	15	703	35,442	12,90,613
1992-93	17	866	38,594	21,43,673
1993-94	19	999	43,728	26,34,119
1994-95	19	988	51,196	27,05,289
1995-96	21	1141	59,288	21,28,976
1996-97	22	1279	58,770	23,72,729
1997-98	22	898	48,227	18,87,878
1998-99	22	1190	51,850	20,63,917
1999-2000	22	1066	54,845	19,22,875
2000-01	22	1158	46,966	16,40,830
2001-02	22	1149	41,411	20,68,255
2002-03	22	1276	46,660	23,85,815
2003-04	22	1282	49,127	25,93,935
2004-05	22	1355	72,722	22,94,328
2005-06	22	1383	49,001	18,59,649
2006-07	22	1240	49,575	18,36,984
2007-08	22	1416	50,511	20,31,703
2008-09	22	1370	57,893	21,42,216
2009-10	22	1332	61,694	23,06,548
2010-11	22	1313	54,178	20,91,251
2011-12	22	1375	57,275	23,04,538
2012-13	22	1208	55,303	17,50,750
2013-14	22	1179	48,050	19,76,951
Average of last fifteen years (1999-2000 to 2013-14)	22	1273	53,014	20,80,442

14. Impact of MSE on Student Community – not studied

The author recently requested Administrative Officers of NCSM (Headquarters), Central Research and Training Laboratory, Birla Industrial and Technological Museum, National Science Centre Delhi, Nehru Science Centre Mumbai, and Visvesvaraya Industrial and Technological Museum to let him know the "Title and Summary/ Conclusion of studies carried out (if any) by the museum/ centre and its satellite units on 'Impact of Mobile Science Exhibition on Society or Student Community' or similar to such studies." It appeared from their responses that no such study has been carried out so far in NCSM. Other non-NCSM science museums and centre have also not done any impact assessment of MSE so far.^[22]

15. Exhibiting science on wheels and reaching the mass at large

Museobus, as the names states, is more like a body of knowledge preaching on wheels. To birth, hatch and nurture such an autonomous yet highly depended mechanism of exhibit requires a complete ministry of administration provided by the parent body. Though, computing all the pros and cons of this supreme idea, the museobus is without a doubt one of the finest cultivation of educating people at large and hopefully, it would ripen to its fullest in the coming years.

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Table 7. Operation of MSE by Science Museums and Science Centres of NCSM during 2013-14

State / Union Territory	Science Museum / Science Centre	Title of MSE Unit	No. of exhibits	No. of Exhibition Sites	No. of Exhibition Days	Distance Travelled (Km)	Running Expenses (Rs.in Lakh)	No. of Visitors
Andhra Pradesh	Regional Science Centre, Tirupati	Environment	24	60	103	2051	1.38	66100
Assam	Regional Science Centre, Guwahati	Popular Science	20	47	97	3622	1.32	38500
Bihar	Shrikrishna Science Centre, Patna	Energy	24	55	111	1891	1.44	28237
Delhi	National Science Centre, New Delhi	Non-conventional Sources of Energy	24	33	103	2353	3.10	35745
Goa	Goa Science Centre, Panaji	Popular Science	24	39	74	857		37474
Gujarat	District Science Centre, Dharampur	Popular Science	20	54	105	1862		54235
Haryana	Kurukshetra Panorama and Science Centre	Popular Science	24	45	135	2286		134502
Karnataka	Visvesvaraya Industrial and Technological Museum, Bangalore	Man and Space	24	69	127	3674	1.80	76738
	District Science Centre, Gulbarga	Biodiversity	24	124	144	1314	1.39	50985
Kerala	Regional science Centre, Kozhikode	Popular Science	20	52	150	1496		173420
Madhya Pradesh	Regional Science Centre, Bhopal	Fun Science	20	52	124	3621		65004
Maharashtra	Nehru Science Centre, Mumbai	Astronomy and Space	20	53	100	1159	1.46	63230
	Raman Science Centre, Nagpur	Fun Science	20	65	135	2360		129181
Odisha	Regional Science Centre, Bhubaneswar	Electricity and Magnetism / Mathematics	2420	72	216	3157	3.54	118217

	Dhenkanal Science Centre, Dhenkanal	Popular Science	24	36	72	1254	0.81	26359
Tamil Nadu	District Science Centre, Tirunelveli	Popular Science	24	62	106	4361	1.73	111892
Uttar Pradesh	Regional Science City, Lucknow	Transformation of Energy	24	80	169	4287		170114
West Bengal	Birla Industrial and Technological Museum, Kolkata	Heat and Temperature / Fun Science	24	69	225	3294	3.72	493743
	District Science Centre, Purulia	Popular Science	24	45	124	1461	1.42	44485
	Bardhaman Science Centre	Popular Science	24	45	118	795	1.59	26676
States - 14	North Bengal Science Centre, Siliguri	Mathematics	24	22	45	895	1.06	32114
	Science Museum - 2	23 units	24 x 16	1179	2583	48050	25.76	1976951
	Science Centre - 19	20x7				(Total)	(for 16 units)/ 1.61 (avg)	(Total)

Table 8. MSE Units operated by Non-NCSM Science Museums and Science Centres during 2013-14

State / Union Territory	Science Museum / Science Centre	Title of MSE Unit	No. of exhibits	No. of Exhibition Sites	No. of Exhibition Days	Distance Travelled (Km)	No. of Visitors
A & N Islands	Science Centre, Port Blair	Popular Science	20	76	132	4531	18,319
Chhattisgarh	Chhattisgarh Science Centre, Raipur	Energy	24	60	60	12000	30,000
Kerala	Kerala State Science and Technology Museum, Thiruvananthapuram	Popular Science	24	75	200 (approx)	73,763	1,20,000(approx)
		Astronomy and Aerospace	24	75	200 (approx)	14,269	1,20,000(approx)
Tamil Nadu	Periyar Science and Technology Centre, Chennai	Popular Science	24	Information not received despite repeated requests to Director			
		Mathematics	24				

Museum Marketing: Responding to the Changing Business Landscape

SUNJAY JAIN AND KANIKA MONDAL

Marketing has moved beyond the concept of profitability and creation of value for consumers to a belief that takes the entire business landscape into account. The business landscape, also called the business environment, is a complex and powerful force that presents organizations with far greater challenges than those by value creation for the business and the consumers. Therefore we need to be cognizant of the factors that constitute the business environment and how they drive our decisions.

The business environment comprises forces that act upon the organization and its consumers and create threats and opportunities. It includes everything that exists outside and inside the organization and influences its growth, performance and success. The factors that exist outside constitute the external environment and include economic, political, social, technological and competitive realities. Those which exist within the organization such as its employees, practices and the organization culture, make up the internal environment. This paper explores the critical forces that exist in business environment of museums and illustrates how responding to them is a prodigious challenge for museum managers.

External Environment

Economic environment

A major determinant of marketing strategy is the economic environment in which an organization operates. Economic climate produces certain constraints. Three types of factors in economic environment can affect marketing strategies: (1) changes in buyer income, (2) inflation, and (3) governmental economic policies (Robin 1978).

Changes in buyer income:

There is a close relationship between buyer income and market potential. Purchasing power of people largely determines the market potential of a product. "In general, as people's income rise, they spend less on necessities and more on discretionary purchases" (Keegan 1995). Necessities are the products whose consumption remains constant irrespective of the changes in income. A discretionary product is considered desirable by consumers, but it is something they can do without. When income is low people cannot afford certain products, and they even tend to postpone

their purchase decisions. Thus, demand of a product largely depends on the income level. "Demands are wants for specific products that are backed by an ability and willingness to buy them. Wants become demands when supported by purchasing power" (Kotler 1997: 9).

In short, people spend money according to their needs and ability to pay. Here, the issue relevant to marketing is: How to maintain optimum demand level from the buyers' income point of view? As consumers differ so widely in terms of their income, it becomes imperative to segment population on the basis of income and use price differentiated policy. In the words of Gandhi (1991: 64) "An understanding of this unequal income distribution helps marketing man to properly delineate the market segment and develop appropriate strategy to market products and services." This means adopting different price strategies for different income groups. Moreover, the pattern of purchasing power keeps on changing affecting the pattern of demand level. An anticipation of the changes or understanding of the trend can aid in determining marketing strategy.

In India, like other developing countries, museums are primarily seen as an instrument of educating the masses. Therefore, in most of the museums admission charges are kept very low and even items sold in museum shop are priced at no-profit-no-loss basis. In general, in India and other developing countries, strategy has been to maximize use by keeping charges low. As museums are still continuing their old pricing policies ignoring the changes in economic as well as social climate, most of them are facing a financial crisis.

Inflation:

Inflation is a persistent and substantial rise in the general price level. It has a two-fold impact on an organization: increased cost of operation, and fall of purchasing power of consumers. The Marketing strategist should understand the trend of inflation and anticipate the rate of inflation. On the basis of anticipations, a new marketing strategy can be formulated: revising pricing policies, generating more income, improving efficiency and observing economy. Most of our museums have exhibited inertia in adapting to inflation. For decades they have been charging the same admission fee. Price of items sold in museum shop is not adjusted every year to cover the increased cost of production. Moreover, virtually no efforts are made to improve efficiency and observe economy. As a consequence their economic health and general performance has deteriorated.

Governmental Economic Policies :

An important component of the external environment is the economic health and behaviour of the government which can have significant impact on operation of an organization. The government exercises control over finances of museums and determines the budget allocation for the government museums and financial

assistance to non-government museums. Even financial policy of a museum is decided by the government. Museums have to operate in conformance with government's policies.

When governments face financial crisis, they take steps to reduce deficits by pursuing a policy of cut in expenditures. This directly influences museums in several ways: vacant posts are not filled up, new positions cannot be created, existing projects may be suspended temporarily, new projects may not be sanctioned and operating budget may be reduced. Since it is almost impossible to influence the economic policies of the government, museums must be aware of them and anticipate their impact so that the situations that arise due to it can be handled successfully. It is a good sign that museums in India have realized this and have started to look for alternate sources of funding. However, they still need to find out ways of improving efficiency and observing economy by saving on wasteful expenditures.

Competitive Environment

Kotler (1985: 55) provides a useful way of gaining insight into competitors. He identifies four types of competitors that an organization might face: (1) desire competitors, (2) generic competitors, (3) service form competitors, and (4) enterprise competitors, which are discussed here in museum context.

Desire Competitors :

Other immediate desires that the consumer might want to satisfy. This refers to the multiple desires of an individual. At a time one can have several desires like to learn, to travel, to have recreation, to socialize, to eat, and so on. These desires co-exist in varying degree of intensity, and work as stimuli to get response in terms of satisfaction. The more intense the stimulus, the more vigorous the response is. For example, a person with a strong urge to learn might prefer to satisfy his desire of learning than other desires.

Generic Competitors :

Other basic ways in which consumers can satisfy a particular desire. This refers to the multiple ways of satisfying a particular desire. For example, the desire to learn can be satisfied in number of ways: watching TV, joining an educational institution, going to a library or going to a museum.

Service form Competitors :

Other service forms that can satisfy the consumer's particular desire. This refers to the variety that exists in a particular way of satisfying a particular desire. For example, the desire to learn in a museum can be satisfied by several museums – Archaeological Museum, Natural History Museum, Science Museum, Art Museum and Anthropological Museum; or Government Museum, University Museum, Private

Museum, Local Authority Museum, and so on. One has to choose from the existing service form competitors.

Enterprise Competitors :

Other enterprises offering the same service form that can satisfy the consumer's particular desire. This refers to the variety that exists in a particular service form competitor. For example, consider the variety of Archaeological Museums: State Museum, Site Museum and the Museum of Dept. of Archaeology.

Thus, competition is very different from the popular belief which confines it to organizations offering similar products. The competitive environment consists of a chain of competitors that concerns the marketers. The first concern is a clear focus on customer needs and wants to create customer value(s) which is (are) compatible with the aims of the marketer. The creation of value is the mainstay of marketing effort. A value communicated to potential consumers identifies their needs and induces them to action. An illustrative example is the publicity folder brought out by the National Museums and Galleries on Merseyside, UK. "What do you do with your visiting friends and relatives?" The folder arises a need by asking readers: "If you've got friends or relatives visiting and you would like to offer them something entertaining and interesting – the National Museums and Galleries on Merseyside could provide you with the perfect answer. It's inexpensive, entertaining and will provide you all plenty to talk about." It also details a number of options like: Stay back in time; Witness a murder trail; Indulge your appetite; Shop museum style; Pit your wits; Satisfy your curiosity; Go behind scenes; See other people at work; and so on. This folder is a unique example of market oriented approach (Figure 1).

The second concern is to gain competitive advantage, i.e., creating better customer value than the competitors. Here the marketing effort is focused on creating and maintaining differential advantage in any of the elements of the marketing mix. For example, an organization might have a product that is equivalent in quality to that of the competition but offers this product at a significantly lower price, and if it can get customers to believe that the quality of its product is equal to that of the competition, the lower price will give the organization competitive advantage. The purpose is to make the total offer more attractive than that of the competitors (Figure 2).

Museums by virtue of their nature enjoy competitive advantage in terms of their offerings. They provide a controlled contact with the real, authentic object which no other organization can provide. Libraries offer knowledge but through secondary source. Television communicates information but the size of the images is restricted to the size of the TV screen, and colours and textures are distorted. Moreover, museums in India have also enjoyed price advantage by charging nominal fee. Unfortunately, our museums have not yet realized the competition. This is evident by the little promotional material used by them. At the most some publicity

is done through posters and banners at the time of temporary exhibitions and special programs but the message communicated is more informative in character than persuasive, i.e., creating a need and telling how to satisfy it with a promise of reward.

Here it would be relevant to quote an example of the stiff competition faced by the NCSM with a private group in the year 1995 when they were organizing a show of indigenously developed robotic dinosaurs. The Hariparvat Merryland and Resorts Limited brought dinosaurs at a lease of \$ 400,000 for one year from Dinamation International, USA and put them on show before the announced schedule of the National Council of Science Museums (NCSM). They gave excessive publicity to it through advertisements in newspapers, hoardings and TV programs. Moreover, they appointed agents to directly contact schools and book visits of school children. Incentives were offered in the form of discount on entry fee for group bookings and free entry for teachers. A number of other attractions such as mehndi competition, painting competition, quiz / complete the story; fancy dress/ fashion show for various age groups were added to woo people. The NCSM was shocked as it was felt that now their show might flop. They charged Hariparvat for back stabbing and tried to reconcile the hard realities of market place. The pinch of competition that the NCSM faced is reflected in the statement of Dr Saroj Ghose who said, "We can have our exhibition within seven days free of cost, which they cannot afford. We don't have to pay ground rent, no royalty to outsiders or to hire any outsider. We can undercut them but we don't want to be nasty" (Mohapatra 1995). The NCSM wanted to avoid competition by negotiating with the Hariparvat that they would organize their exhibitions all over South India, Bombay and Bangalore and the NCSM will not go there and will confine to Northern India (Figure 3 & 4).

Political and Legal Environment

The influence of political and legal environment on an organization is pervasive. It can pose opportunities as well as threats. Therefore, an understanding of how the political and legal environment operates is essential to protect the interests of the organization. The implications of political and legal environment are two-fold: one, policy formulation, and two, defining and enforcing laws. The organizations are expected to operate in conformance with both. Here are a few examples to illustrate this.

The National Policy on Education popularly known as New Education Policy was introduced in the year 1986 to promote education and envisage the enrichment of the cultural content in education in as many manifestations as possible. The following excerpts from National Education Policy (Khullar 1987) highlight the facts that are relevant to children's museums, and for that matter to any museum having children as one of the target groups:

- To arouse in the child certain elementary sensitivities towards environment.

- To help them learn through playing freely with natural material like clay, sand, flowers and leaves.
- To help learn through movement and sound by singing and dancing together and by exposure to natural environment to participate in the joy of sensing colours, forms and rhythms.
- For this purpose ... community would be motivated to provide facilities such as open spaces and other incentives to familiarize children with toys, posters, pictures, models with cultural motifs. It is envisaged that each village will have a children's park and a children's museum would be there in every school. At the primary level it is proposed to impart every child with a basic core of facts about India's cultural heritage.

Thus, the New Education Policy lays special emphasis on learning of culture and natural environment with the purpose of enabling children to develop sensitivity to beauty, harmony and refinement by integrating culture and environment with education at the pre-primary stage. The policy offered an excellent opportunity to Indian museums to link museum education to mainstream education. Unfortunately, they did not respond and preferred to remain same in terms of their objectives and programs. There is little collective endeavour of museums and schools to infuse a new life into the education system. Non-science museums, in general, did not make conscious efforts to integrate their resources with school curricular work to enhance the learning opportunities for children.

On the other hand, museums in Britain responded well to the National Curriculum for pupils aged 5-16 in schools, as outlined in the provisions of the 1988 Education Reform Act by evolving exciting, creative and innovative projects and teaching methods. From the existing base, education strategies were refined to suit the demands of the National Curriculum. Many interesting case studies are published in the booklet compiled and edited by Elizabeth Goodhew (1988).

Turning to the legal environment, the introduction of Right to Information Act by Central and State Governments has created new threat to public organizations. According to the act, any citizen can monitor the practices of public organizations by seeking information as his/ her right. In response to this act organizations including museums have appointed Public Information Officers to cater to the information needs of public. Now the real challenge for them is to be transparent and accountable. Another such legislation issued in public interest is the 'Persons with Disability Act' which requires all public buildings to make provisions for people with disabilities. Because of this act many museums in India have made provisions for ramps and provided wheel chairs.

Another notable element of legal environment is the provision of 'Public Interest Litigation' (PIL) which in simple words means litigation (a lawsuit) filed in a court of

law, for the protection of 'Public Interest.' It can be filed against State, Central or Municipal Authority by any public-spirited person on behalf of a group of people whose rights are affected. The member of the public may be a non-governmental organization (NGO), an institution or an individual may or may not having a direct interest in this PIL. This has contributed to rise of consumer movement in our country with focus on issues such as rising prices, corruption and defective consumer items. However, museums have not remained untouched. National Museum has faced PIL in issues related with collection management. Thus understanding of legislation is also an indispensable part of day-to-day affairs of museums. Many legal problems can be averted with sufficient knowledge of the current legislation and by developing and promoting good practices.

Social Environment

The social environment is changing rapidly with regard to demographic factors, literacy levels, pattern of employment, awareness about consumers' rights, and attitude towards life and living which has a direct influence on museum's operation. The Indian population is growing and it seems certain that it will continue to grow. The implication of the growing population is that the demand will also grow resulting in continuous use of even poorly planned museums. This provides museums with a kind of resilience for survival.

A major transformation in our society is taking place due to rising average life span because of improving medical facilities and health consciousness. Eventually the population of old people is growing. This has had an effect on the size and character of markets. The Indian Railways and the Indian Airlines have already recognized and responded to the needs of the older people. The Government of India also sensed its implication in terms of rising pension costs and has increased the retirement age by two years. The growing population of the old people offers an opportunity to museums also to develop product mix to suit their requirements.

Another factor that has bearing on the composition of population is the migration of people – from rural to the urban areas, from one city to another city, or from densely populated cities to suburbs. Any major change in the composition is a concern for marketers because it is possible to lose an existing market or get a new market.

The improving income and literacy levels are giving way to a new kind of society. Eventually the attitude of Indians to life and living is undergoing a rapid change. Their attitude is shifting from savings-oriented to spending-oriented. According to Krishnaswamy and Vaidya (2012): "[I]n the last few decades dynamic changes have occurred due to the fast growing economy, a shift from traditional to modern technologies, globalization, industrialization, constant travels across the world, evolving tastes and increased demands for 'fast' and processed foods throughout our country." Food and drink today have acquired a greater 'fun' image

than ever before. The traditional attitude to food – that it is serious and nourishing seems to be gradually yielding ground to the demand of the pleasurable principle. As a consequence, food does not have to be only nutritive 'do good' but can, as the modern Indian consumer is finding out, to be orally-gratifying with lots of fun. This is well defined in the case of fast foods – Chinese food, burger, pizzas, etc. This shift in attitudes towards food has a bearing on food services in museums.

Increasing awareness among women about their rights and equal opportunities is a concern for our museums. Time has come when Indian women may feel discriminated and demand to de-sex the language used by museums. Using non-sexist language such as avoiding use of masculine singular pronouns; using various plural forms such as theirs, them, people, etc.; using devices such as he/she, he or she, s/he; and developing a set of vocabulary consisting words like chairperson. Museums need to take this factor into account while framing their communication policy.

Spread of education has made people aware of their rights as consumers. As a consequence consumer movement as an urban middle class phenomenon is gaining momentum in India. Number of consumer societies or consumer advocacy groups is increasing. The focus of consumer movement has primarily been on rising prices, adulteration of food and defective consumer items. It has not yet touched museum services. As the situation might change, museums should prepare themselves to face it.

Moral fabric of our society is becoming weak. Today, we are witnessing an unending succession of scams: financial, sugar, fodder, mustard, uniform, medicine, this scam, that scam – the list is endless. In Bihar alone, estimates of money siphoned off run to a whopping ₹1,600 crore. And as more scams are discovered daily, the estimates can go up and up. Corruption lies at the heart of our society. "Transparency International of Germany has listed India as the ninth most corrupt country" (Vittal 1997). The word 'corruption' may be used to refer to any unethical act such as selling of adulterated foodstuffs, profiteering in trade or misuse of power.

This calls for adding moral dimension to development paradigm if the problems faced by our society due to deteriorating moral standards are to be avoided. There is a need, therefore, to recognize and provide for moral education. The principal aim of education is to bring about positive behavioural changes in a human being. It should refine the pupils and develop them into disciplined, responsible and mature citizens. Imparting moral values, respect for elders, love for nature and helping those who suffer are as rewarding and important as providing students with knowledge. Our museums must recognize this reality and shoulder the responsibility of inculcating among the children certain fundamental moral values.

Technological Environment

We live in the age of technological explosion. Technological environment has been changing rapidly resulting in new products and new ways of doing things. Lighting engineering, security gadgets, storage equipment, communication system, conservation equipment, computers, building and exhibition materials, packing material, and even management and education technology all are being perfected continuously. The rapid perfection of technologies offers many opportunities to accelerate changes that favour an organization and its consumers (Figure 5 & 6).

Museums in India, in general, have not responded well to the changing technological environment. Consequently, one can notice poor quality services, and inefficient, outdated and uneconomic ways of doing business. Application of new technologies is not always easy. Replacing old technology with new does cost money which many of our museums are not in a position to afford. It is rather unfortunate that some national and state level museums have failed in taking advantage of new technologies even after making investments. The reasons for this could be careless attitude of the curators, lack of knowledge of new equipment and motivation to work diligently for organizations' benefit and progress. This has resulted in museums failing to fulfil their existence as learning institutes. If museums want to survive and progress in today's rapidly changing environment, they cannot ignore new technologies. The museums that are not attuned to the technological advances will find themselves out of place.

Internal Environment

The internal environment of a museum or for that matter any organization comprises all the elements within the organization that influence its activities and performance. The key element is the organizational culture which is the sum total of values, beliefs and norms shared by people working in an organization. By 'values' we mean abstract ideas about what is important and what is right or wrong, good or bad and desirable or undesirable. Beliefs are people's perception of what should or should not exist in a particular situation. Values and beliefs should not be confused. Values are widely accepted beliefs that are relatively stable and long lasting. For example, honesty is a value and the degree to which individuals relate their actions towards it is their belief which can change according to the situation. Norms represent formal principles or rules which people are expected to follow. For instance, 'No Smoking' is a norm to be followed by visitors as well as employees in museums.

The beliefs and values held by employees are strong determinants of culture of an organization. Here it would be prudent to mention the views of Ron Burt (2003) who says: "Putting aside the specific beliefs that employees share, the culture of an organization is strong to the extent that employees are strongly held

together by their shared belief in the culture. Culture is weak to the extent that employees hold widely different, even contradictory, beliefs so as to feel distinct from one another." Thus challenge for museums is not just the articulation of organizational culture but instilling it in the employees to make it a competitive asset.

Another important element of internal environment is the people working in the organization. The organization's success or performance depends on their performance and behaviour which in turn are influenced by their level of motivation. Motivation, in the words of Robert Dubin (quoted in Prasad 2005: 567) "is something that moves a person to action and continues him in the course of action already initiated." This implies that motivation is a drive that influences all our behaviour. We act or do not act according to the intensity of drive. In organizational context, motivated employees develop positive attitudes, become ambitious and productive. The absence of motivation makes people lose interest, creativity and inclination towards work. It also leads to development of negative attitudes, frustrations, conflicts at workplace and behaviours such as engagement in politics. All these activities pose a threat to organizational harmony, culture and performance.

The task of marketing in an organization is to treat employees as markets and understand their behaviour. It needs to find answers to questions such as: why and how employees behave and what the implications are. A reasonable hypothesis is that the behaviour of people working in a museum cannot be totally changed or controlled, but can be understood reasonably well. The understanding of behaviour of people in museums can provide significant advantage in managing them successfully. As human behaviour cannot be kept in a matrix by force, the strategy of the museum should be to motivate its employees and promote organizational culture on a regular basis by instilling certain values such as professional excellence, sense of belongingness, pride, justice, customer care, co-operation, integrity, respect, truth and tolerance. Motivation supported by organizational culture can be instrumental in making individuals effective members of an organization.

The preceding discussion elaborates the expanding sphere of marketing and clearly indicates that focusing our marketing efforts on value creation for consumers will not be enough. It is inevitable to keep a close eye on the environment in which we operate and understand and embrace the multitude of changes. The implications of changing environment for museums are predictable that help in defining the path for strategic action. The challenge for museums is to develop and implement effective strategies in dynamic business environment. More importantly, it is critical to keep on evaluating and revising strategies to cope with the changes swirling about.

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Acknowledgement

The authors are grateful to Mr Harshad Rohit, Photographer, Department of Museology for editing the photographs.



Figure 1: *Publicity folder of the National Museums & Galleries on Merseyside, UK*

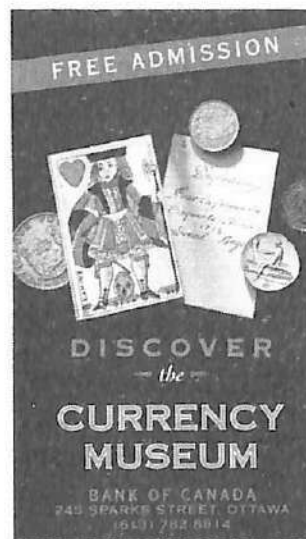


Figure 2: *An example of gaining competitive advantage by offering 'Free Admission'.*

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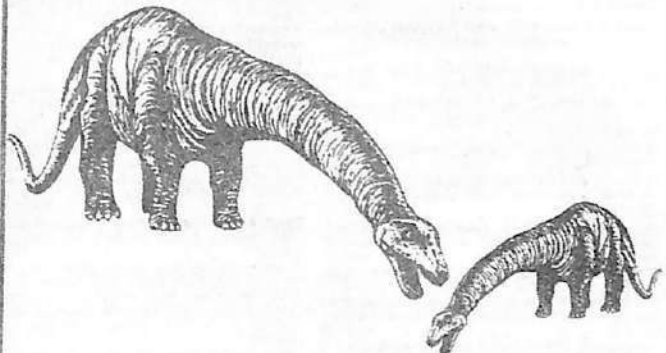
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Figure 3 & 4: Advertisements for 'Dinosaur Show', Hariparvat Merry Land & Resorts Limited, New Delhi

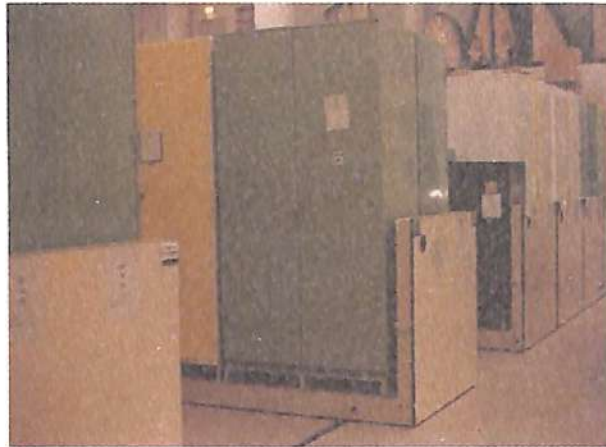


Figure 5: Adaptation of mobile storage systems to utilize existing storage cabinets, Canadian Museum of Civilization, Ottawa



Figure 6: Education cart with digital technology, American Museum of Natural History, New York

UNESCO Summer School of Museology, Brno 1986 – 1999

JAN DOLÁK

Gradual development of museums brought about urgent need for special training of museum workers. As a result, different courses began to be organised for them beginning with the late 19th and early 20th centuries (e.g. Paris, Brno, and Pennsylvania). Systematic training for museum workers at university level began to be provided from the 1960's onwards (Rio de Janeiro, Brno, Leicester, etc.). However, even systematic training in museology could not fully replace short-term courses among which the International Summer School of Museology (ISSOM) held in Brno every year from the mid 1980's ranked as one of the most important on the world scale. Its founding fathers were no less than the renowned Czech anthropologist and former president of ICOM Jan Jelínek, and the founder and doyen of Czech museology Zbyněk Zbyslav Stránský. The summer school quickly won wide international recognition. Many of its graduates became world-renowned experts and among its lecturers were distinguished representatives of museology¹, such as Bernard Deloche, Peter van Mensch, Andre Desvallées, Francois Mairesse, Hildegard Vieregg, Marc Maure, Tomislav Šola, Eiji Mizushima, Anita Shah, Tereza Scheiner, Lai Sun An, Friedrich Waidacher, Martin R. Schärer, Wilhelm Ennenbach, to mention just a few. The school became a unique platform for meeting and sharing ideas among experts from both the sides of the iron curtain and, on many occasions, participants coming from the third world countries. It produced a considerable quantity of reading material and bibliographies for internal needs, built a library, established international contacts and (co)organised international conferences. Among the latter, one of the most important was the conference Thirty Years of Museology Training at Masaryk University in Brno held from 12 to 13 April 1995, and the international symposium Museology for Tomorrow's World held from 9 to 11 November 1996. ISSOM has been mentioned in a number of reference books of general nature and in many newspaper and journal articles.² A paper entitled 10 Years of the International Summer School of Museology was written by Z. Z. Stránský

¹ Complete list of alumni and lecturers are archived at UNESCO Chair in Brno.

² E.g. Tlachová K.: Zahájení Mezinárodní letní školy muzeologie na brněnské univerzitě [The Launch of the International Summer School of Museology at Brno University]. Univerzitas. Univerzita J. E. Purkyni, Brno 1988, 69-70.

Schärer M: Museological Training: The Role of ISSOM, ICOFOM, and a Swiss Example. In: Stránský, Z. Z.: Museology for Tomorrow's World. Proceedings of the international symposium held at Masaryk University, Brno, Oct 9-11, 1996. Munich 1997, p. 131-135.

on the tenth anniversary of the school.³ Nevertheless, a comprehensive view of the history of this interesting school, especially with respect to final phase of its existence, is yet to be produced.

Systematic training in museology at Brno University was gaining recognition. In 1983, the business director of the Moravian Museum in Brno⁴ Frantisek Gale and the Head of the Museology Department of the same institution Z. Z. Stránský visited the Paris UNESCO centre to follow up on the growing interest of the centre in the project of systematic training in museology in Brno. Another objective of the visit was to raise "substantial grants in dollars" from the UNESCO.⁵ After the submission of different projects (e.g. introducing IT in museums) a decision was made to found an international centre for training in museology.⁶ The centre was eventually established by virtue of Resolution GP XI.1.5. No. 82 23 of UNESCO General Conference held in Sofia in 1985 the implementation of which was entrusted jointly to the Moravian Museum and the University of Brno. UNESCO allocated the necessary funds for the school and the first year of the International School of Museology (ISSOM) took place from 3rd to 28th August 1987. ISSOM was controlled by a scientific and pedagogic board composed of leading Czech and Slovak museologists. Until 1989, the chair of the board was an expert in Czech studies and the dean of the Faculty of Arts and Philosophy Jan Chaloupek, the vice-chair was the director of the Moravian Museum Jiří Sejbal and the secretary was Z. Z. Stránský.⁷ Based on the instruction of the Rector of the university Bedřich Čerešňák, the number of students in the first year could not exceed 10, and the final number was 9 of which three from Yugoslavia and one respectively from Canada, Finland, New Zealand, Ethiopia, German Democratic Republic and Poland. Among the lecturers were 22 Czech and Slovaks, 2 Dutch, 2 Yugoslavs, one Austrian and one East German.⁸ The tuition fee was USD 500 per student. In addition to lectures and seminars, the curriculum contained excursions to Czech and Slovak museums and visits to museums in Budapest and in Vienna. The extraordinary nature of the project can only be appreciated taking into due account the broader international

³ Stránský Z. Z.: 10 let International Summer School of Museology. Brno 1996. Internal paper in Czech. Archived at UNESCO Chair (UCH).

⁴ In 1990 the museum resumed its original name Moravské zemské museum (Moravian Museum).

⁵ Quotation of Z. Z. Stránský. Stránský Z. Z.: 10 Years of International Summer School of museology. Brno 1996. Internal paper in Czech. Archived at UNESCO Chair.

⁶ o.c.

Archives of Masaryk University (AMU), A1 Rector's office, New handling, signature O, carton no. 1

⁷ Archives of Masaryk University (AMU), A1 Rector's office, New handling, signature O, carton no. 1

⁸ Archives of the Moravian Museum (AMZM), ISSOM file, Report on Implementation of the First Run of ISSOM of September 1987.

political context. The founding of the school itself was closely monitored by the secret police with respect to the choice of both students and teachers.⁹ Classes had to be delivered in English and French, but most of the teachers could not speak any of the two. As a result, the most important teaching material had to be translated and lectures had to be interpreted. The person who played a critical role in this and who also helped to solve terminological issues was Kateřina Tlachová.¹⁰ Of great importance for the school were also the linguistic and logistic skills of another two ladies – Pavla Fuchsová (Seitlová) and the school secretary Zdena Pospíšilová.

As for its programmatic focus, ISSOM drew upon the primary conception of museology in Brno, i.e. the basic division of museology into theory of selection, thesaurisation and presentation. The basic lectures were the responsibility of Z. Z. Stránský, other teachers chose topics falling within the above framework and corresponding to their fields of expertise. This was the only feasible solution bearing in mind the extremely fragmented nature of the concept of museology as a field of study and a subject of teaching on the world scale; and the effort to promote the approach adopted in Brno. As a result, comparing ISSOM with other schools, even from a later period of time, shows that stress was laid on the theory of the field of study while museum pedagogy and even more so museum management and marketing were not attributed so much importance. Only the basic A course, i.e. an introduction to the study of museology, was delivered in the first years of the school. Until 1990, the Moravian Museum was in charge of the personnel, operational and financial aspects of the ISSOM. With the gradual development of the school the proportion of domestic and foreign lecturers changed and the technical equipment and the operational and technical support improved. Foreign lecturers would prepare their lectures, recommended relevant literature or send their study material in advance for reproduction. But they were not involved in research projects or present at any coordination meetings for teachers.¹¹ The diversity of theoretical and practical knowledge on the part of the students who were graduates of the most varied types of schools from around the world became an issue. Some of them appreciated the more theoretical approach of the Brno school, others criticised the lack of practical instruction on "how things should be done."¹² Participants from Asia or Africa are likely to have felt that the Brno conception was an expression of a specific

⁹ Stránský Z. Z.: 10 Years of International Summer School of Museology. Brno 1996. Internal paper in Czech. Archived at UCH.

¹⁰ o.c.

¹¹ Program conception of ISSOM, Z.Z. Stránský, Brno 1996, internal material. Archived at UCH.

¹² Stránský Z. Z.: 10 Years of International Summer School of Museology. Brno 1996. Internal paper in Czech. Archived at UCH.

European trend (or even hegemony) in thought which did not correspond to cultural patterns in other parts of the world. Promotion was another issue. Information about the ISSOM was published in ICOM News and in some national information materials and journals only at a later stage.

The fall of the iron curtain was a natural milestone in the existence of the ISSOM. Newly-gained liberty brought the possibility to travel and to touch topics which were taboo in the past. It was a new impulse also for the summer school in Brno. At the same time, the new social and political climate made the school face new challenges. What was once a unique platform became just one of the many ways to obtain information on the state of the art in museology on the world scale? Different training programs and specialised courses, e.g., Open Society Fund, the Dutch project Matra, etc., were promoted in the country. They were seen as new, "western" and as such desirable, in contrast to the ISSOM which promoted and to a large extent also concentrated the results of an almost thirty-year research effort. At the same time, some Brno museum experts took offers to study abroad. The school had a growing number of competitors whose approaches were considered by many as closer to practical life as opposed to the metatheoretical dimension marking the approach practiced in Brno.

Still before the fall of the iron curtain, the ISSOM team was joined by another outstanding personality, Vinoš Sofka, a Czech museologist naturalised in Sweden who eventually became chair of the new scientific and pedagogical board. The regular course in museology was transferred from the Moravian Museum to the Faculty of Arts and Philosophy and the ISSOM went under the rectorate of the university. Unfortunately, the well-established museological journal *Muzeologické sešity* remained under the control of the museum and so did the large library.

The history of the ISSOM should be regarded as part of a wider context formed by the other centres of museology in Brno. A fully fledged museology teaching program at Masaryk University could only start after the political change in November 1989. This was rather late with respect to the age of its leading personality Z. Z. Stránský and had a negative impact when the need for a generational change arose. In 1994 the UNESCO Chair of Museology and World Heritage was set up as a new department within the rectorate with Vinoš Sofka appointed as its director. The fragmentary nature of museology training in Brno split up in three sometimes assumed (tragic) comic dimensions. Not only was Z. Z. Stránský (born in 1926) no longer granted a full-time contract by the Faculty of Arts after the age of 65, but he was expected to take a regular leave to be able to teach at the ISSOM (a department of the rectorate of the same university).

The first half of the 1990's was characterised by an overall growth of the ISSOM. In 1993, the school was fully transferred under the Rectorate of Masaryk University

and professionalised.¹³ In 1995 Z. Z. Stránský left his position of Head of Museology Department at the Faculty of Arts to work exclusively for the ISSOM. In the same year, the ISSOM published his Introduction to Museology in English and in French.

The ISSOM was actively searching for a new orientation and co-operating institutions. According to minutes of 1992 the school had a 3 year history of negotiations with the Austrian and German UNESCO commission concerning their involvement in the school's activities. The Austrian party proposed a written agreement among the representatives of the three countries which failed to be signed also due to diverging opinions on the overall conception of the school. The German representative Andreas Grote proposed for Brno to be responsible only for the theoretical introduction into museology studies, while the central part of the summer school and the thrust of the teaching activities would be transferred to Berlin, with prevailingly practical orientation. Both positions were in contrast to the conception of museology developed in Brno, and the negotiations eventually failed.¹⁴ In 1994, two new course lines were open: the B line focused on collection building, and the C line dedicated to museum presentation and museum education. Later, an additional D line was introduced. The effort to offer courses with a specific focus was certainly correct, but the increase in quality came at a time of a gradual decline in demand for the school's training activities. This brought about fragmentation of efforts with many courses on offer being cancelled due to low numbers of applications. While the regular presence programs in museology were done at the Faculty of Arts and Philosophy, the ISSOM formed part of the Rectorate which apart from some advantages brought about some pitfalls in the relationships within the University. The positive effort of V. Sofka to assert the UNESCO Chair was not coordinated or interconnected with the other centres of museology in Brno, at least not in the eyes of Z. Z. Stránský.¹⁵

A number of critical remarks can be found in the paper "Comments of the ISSOM students on the C line of study and on the school in general" of 1995. They were afraid that less and less space was allowed for discussion and some of them even wrote: "Veterans say things are getting worse year by year. Ever more improvisation and lack of clear objectives resulting in organisational issues."¹⁶

¹³ Proposal for a transformation of the ISSOM, author Z. Z. Stránský, August 1997. Archived at UCH.

¹⁴ MU, Rectorate, signature O, carton 10, file MŠMT 1992, Minutes of intradepartmental working group for the Ministry of Education, Youth and Physical Education, Brno, 23.11.1992.

¹⁵ Letter of Z. Z. Stránský to Vice-Rector J. Šrámek of 6 November 1995, file ISSOM- prospects. Archived at UCH.

¹⁶ AMU, Rectorate, signature O, carton 10, file MŠMT 1995. Comments of ISSOM students on the course and the school in general.

The ISSOM also had its own staff. In 1997, there was one director with a part-time contract and a head of secretariat with a full-time contract. The work contract of Z. Z. Stránský with Masaryk University ended on 31 December 1997 and his successor to the post of director of the school Krasimir Damjanov replaced him on the 1 January 1998. The administrative handover was rather slow, though. In a letter of 16 November 1998 the Vice-Rector Jiří Fukač invited Z. Z. Stránský to return the keys and to retrieve his books from the rectorate, and asked him about the assets transferred from the Moravian Museum to the ISSOM on the basis of two protocols of 1992.¹⁷

Also worth attention is the scope of financial resources of the ISSO that can be divided into four categories: UNESCO participation programmes,¹⁸ tuition fees collected from students, grants from the Czech Ministry of Education and financial subsidies from the university. For instance, a financial report of 19 September 1994 shows that the amount of USD 15,006 received from the UNESCO was used in the following way: USD 8,827 for teachers (travel expenses), USD 3,329 for excursions to Austria, USD 2,850 for three scholarships of USD 950 each.¹⁹ The budget for 1996 consisted of the following items: Income: CZK 587,000 – Czech UNESCO Commission, CZK 400,000 – Ministry of Education, CZK 703,000 – tuition fees. Expenses: CZK 1,450,000. With the exchange rate of approximately 29 CZK per 1 USD at the time, the expenses of ISSOM in the above-mentioned year, excluding wages and operating costs, were USD 50,000 which was definitely a lot of money.

The 27th General Conference of the UNESCO approved a participation grant for the ISSOM of USD 20,000 for the period from 1994 to 1995.²⁰ The same amount was allocated for the years 1996 and 1997.²¹ However, the school was not included in the participation programme for 1998-1999. The Czech UNESCO commission did not endorse the school's project for an Internet distance learning programme in museology and the Moravian Museum stopped financing the school in 1998.²² In addition to standard sources, the school raised money from other institutions, e.g., Czech museums (Český Těšín, Velké Meziříčí), rector's grants, etc.²³ Z. Z. Stránský also tried to raise funds from the Czech Grant Agency, for instance in 1996 submitting

¹⁷ Dossier 1998, file ISSOM- general correspondence. Archived at UCH.

¹⁸ J. Fukač, official letter of 18 October 1998, separate files ISSOM – prospects. Archived at UCH.

¹⁹ UNESCO file, participation programmes, contracts, money. Archived at UCH.

²⁰ A letter by J. Moserová of 23. 9.1994. File ISSOM - finance. Archived at UCH.

²¹ Resolution, copy in French – file UNESCO Resolutions, participation programme. Archived at UCH.

²² Financial statement for 1998 of 4 February 1999 – file archive ISSOM 23/5, archived at UCH.

²³ Proposal for a transformation of the ISSOM, author Z. Z. Stránský, August 1997. File ISSOM – prospects. Archived at UCH.

a project entitled Scientific and Pedagogical System of Museology, but the project was not endorsed.²⁴ The need for thorough transformation was ever more apparent. One of the most extensive proposals for a solution was compiled in August 1997. The author of the text Z. Z. Stránský briefly summarised the achievements of the ISSOM by that time, and pointed out the dramatic increase in costs, international competition and declining number of students. For instance, in 1997, only 8 students registered for the C line, and the D line was even cancelled.²⁵ The basic course scheduled for June 1998 was cancelled because only 4 students registered for it. A D line course on the "collection building strategies of museums on the threshold of the new millennium"²⁶ was realised from 28 September to 9 October 1998 and was attended by 11 students. Lack of money was compensated by constantly growing tuition fees. For instance, the tuition fee for one run of the course in 1998 was USD 1,200, which was an astronomical amount of money for the majority of potential participants. At the same time, money was not always spent in the most efficient way. K. Damjanov, the new director of the ISSOM who succeeded to Z. Z. Stránský wrote: "Teachers' travel costs amount to tens of thousands of crowns only to deliver one lecture".²⁷ Approximately 50 % of students who registered for the course finally gave up for financial reasons and the total number of potential participants gradually declined.²⁸

A number of official and personal statements can be found in Brno archives with respect to the possible solution of the situation. The paper "The state of museology at Masaryk University and its solution" written by the Vice-Rector J. Fukač deals with the critical situation of the three museological centres in Brno (ISSOM, UNESCO Chair and the Department of Museology at the Faculty of Arts) and with the negative feedback in foreign press.²⁹ There is no doubt that the background to the paper was the article "Is it worth going to study in Brno?" by Inta Baumane, director of the Municipal Museum in Jūrmala (Latvia), on page 6 of the *Muzeju Vestnesis* journal no. 12 of 1998 published by *Lavtijas Muzeju Vestnesis*.

²⁴ Dossier 1997, file ISSOM- general correspondence. Letter of Chair of Czech Grant Agency prof. Karel Štulík to Z. Z. Stránský. Archived at UCH.

²⁵ Letter of Z. Pospíšilová to L. Sulitková of 22. 8. 1997 – file UNESCO resolutions, participation programme. Archived at UCH.

²⁶ AMU, Rectorate, AI New handling, carton 39. Report on activities of the UNESCO International Summer School of Museology at Masaryk University in Brno of 4.2.1999. Author K. Damjanov

²⁷ K. Damjanov – a letter to the Rector, file ISSOM - prospects. Archived at UCH.

²⁸ Proposal for a transformation of the ISSOM, author Z. Z. Stránský, August 1997. File ISSOM-prospects. Archived at UCH.

²⁹ Conception of changes of ISSOM and Chair. Material of 22. 3. 1999 – envelope Archive ISSOM 2. Archived at UCH. In the same paper Fukač calls for the creation of a new curriculum at the Faculty of Arts „substantially different from the curriculum of the Stránský era.”

Inta Baumanė wrote that the ISSOM was in a crisis and that the course from September 29 to October 9 was poorly organised and failed to meet most expectations.³⁰ In the same year, the director of the Moravian Museum P. Šuleř wrote: "... the Summer School is unfortunately losing international credit."³¹

In a situation like that, it was difficult for the ISSOM to define its mission and further orientation. On March 17, 1999, the ISSOM director K. Damjanov submitted a project proposal to the Vice-Rector F. Gale for Distance learning in conservation and restoration for museum and gallery workers. However, the "project" to be financed by the Ministry of Education was only a general and tentative concept with little chance for success.

On March 31, 1999, the representative of the Ministry of Culture and of the Czech UNESCO commission Michal Beneř concluded that the ISSOM had stagnated over the previous five years (absence of new thought, repetition) and suggested to "streamline all museological activities into one new institute of museology."³² K. Damjanov came up with a similar progressive idea in 1998 to merge all centres of museology in Brno into one institution.³³ Also P. Šuleř suggested integration of the three centres into one, but none of the proposals have been implemented so far.³⁴ The three experts were different personalities, yet very well aware of the weakness of museology in Brno caused, among other things, by its fragmentary nature. Also Pavel Holman, successor to the head of Museology Department at the Faculty of Arts Z. Z. Stránský suggested the conglomeration of the Department with the ISSOM and the UNESCO Chair.³⁵

The last and somewhat desperate attempt to find a solution was the transfer of the ISSOM under the administration of the UNESCO Chair of Museology and World Heritage. In a letter of April 19, 1999, the Vice-Rector J. Fukač informed the director of the school K. Damjanov that the ISSOM would be integrated into the Chair and that his work contract would expire as of May 31, 1999.³⁶

Historically the last run of the school was the A line general course from 12 to 23 June 1999 attended by 11 students and 7 lecturers.

³¹ Proposal for a new organization of museology studies at Masaryk University, author P. Šuleř, dated 14.10.1998, archived at UCH.

³² Minutes of the meeting of the intradepartmental commission for the ISSOM of 31.3.199, Prague, Tuscany Palace, Dossier 1999, file ISSOM – general correspondence. Archived at UCH.

³³ Development Prospects. Author K. Damjanov 1998. Archived at UCH.

³⁴ Proposal for a new organization of museology studies at Masaryk University, author P. Šuleř, dated 14.10.1998, archived at UCH.

³⁵ AMU, Rectorate, AI New handling, carton 39. Proposal for further orientation of museology at Masaryk University. Author P. Holman, 1998

³⁶ Letter of J. Fukač to K. Damjanov of 19. 4. 1999. Envelope ISSOM 2 archive. File ISSOM and Chair strategy for change. Archived at UCH.

In 2000, 8 students registered for the ISSOM but none of them was able to pay the tuition fees and all of them applied for a scholarship with the university. As a result, the director of the UNESCO Chair V. Sofka sent a letter to Vice-Rector J. Fukač with a recommendation to "withdraw from the realisation of the 2000 run of the ISSOM"³⁷ and his proposal was approved.

On June 12, 2001, the management of Masaryk University took a highly critical stand with respect to the activities of the UNESCO Chair responsible for the ISSOM. Their statement says that the Chair "failed to recruit a new staff member in spite of funds available for such purpose," and that "No new publication was issued under the aegis of the UNESCO Chair except for one single reprint of the Czech version of the textbook by Z. Z. Stránský."³⁸

An attempt to continue the ISSOM courses was made in 2001 by the Masaryk University Museology Department staff (P. Holman, K. Suchá).³⁹ The registration fee amounted to USD 1,500 per participant and the course curriculum primarily consisted of excursions in the Czech Republic and Slovakia. The school was scheduled for the period from 28 August to 11 September 2001. Also this run of the ISSOM was cancelled, because all participants from developing countries applied for scholarship.⁴⁰ The management of the school decided to cancel the run on August 1, 2001 and K. Suchá informed all the parties concerned two days later.⁴¹ No course was planned for 2002, primarily due to the delay in selection procedure for the new head of the UNESCO Chair.

The last attempt to revive the summer school was made by the new head of the UNESCO Chair Jan Dolák in 2003. A total of 13 participants from Europe (especially the Baltic countries) and Africa registered for the course to be held from August 26 to September 9.⁴² However, only 6 of them paid the tuition fee of Euro 950 by the deadline. The management of the Department of Archaeology and

³⁷ Letter of V. Sofka to J. Fukač of 26. 6. 2000. Envelope ISSOM 2 archive, file ISSOM and Chair strategy for change. Archived at UCH.

³⁸ AMU, A1 Rectorate, New handling, signature O, carton no. 1. Position statement of Masaryk University management on the activities of the UNESCO Chair of Museology and World Heritage and the new integration of the chair into the structure of Masaryk University, dated 12. 6. 2001.

³⁹ The affirmation of P. Holman that the last ISSOM was realized in 2001 is not correct. Holman, P. *Cesty brněnské muzeologie*. In *Muzeologie na začátku 3. tisíciletí/Museology at the Beginning of the 3rd Millennium: proceedings from the international seminar on theory and practice 2*. Brno: Technical Museum in Brno, 2009, p. 200. ISBN 978-80-86413-61-7.

⁴⁰ E-mail of V. Sofka to Head of Department of Archaeology and Museology of Masaryk University Faculty of Arts Z. Měřinský of 10. 5. 2002 – cover UNESCO Chair 1 archive. Archived at UCH.

⁴¹ E-mail of K. Suchá to K. Tlachová of 3. 8. 2001. File ISSOM 2001. Archived at UCH.

⁴² ISSOM 2003 – separate file. Archived at UCH.

Museology decided to cancel the event and the participants were informed of the decision on June 24, 2003. The project for the 2003 run of the school was a plausible, yet an unrealistic attempt which failed due to a deep crisis of museology in Brno at the level of personnel and expertise. The history of the ISSOM came to an end. Subsequent suggestions to renew the ISSOM, for instance with a focus on conservation (in cooperation with the Technical Museum in Brno), never went beyond general declarations of intent. Nor the university, nor the faculty came up with an initiative for a change.

The ISSO deserves high credit for its contribution to expertise and training in museology. During its existence of more than one decade, it trained and influenced hundreds of its students. The relevant literature produced by ISSOM is still widely quoted. The decline of the ISSOM was due to a combination of adverse factors: lack of money, organisational issues, staff issues, the retirement of the legend of Brno museology Z. Z. Stránský, unsolved generational change issues and complex relationships among local teachers and the organisers of the school. Domestic and international competition and, paradoxically, the fall of the iron curtain, also played a role in the process. The ISSOM lost its exclusive position of a unique platform for gathering experts from the East, the West and the Third World.⁴³

⁴³ This article is based on another article published in the Czech language: Dolak, J.: Mezinárodní letní škola muzeologie 1986 – 1999. *Museologica Brunensia*, Masaryk university, Brno 2014/5. pp 43 – 46.

A seventeenth-century collection of Indian medicinal plants in the Natural History Museum, London

CHARLES E. JARVIS

Abstract

A collection of several hundred pressed and dried plant specimens, prepared in India and sent to London in 1697 from Fort St George (Chennai) by the physician Samuel Browne, is described. Along with his original handwritten notes describing the medicinal and other uses of the species, Browne also recorded their vernacular names. The collection, housed at the Natural History Museum in London, is a remarkable survivor from the end of the 17th century and would undoubtedly repay closer study.

Keywords

Samuel Browne, Chennai, Fort St George, Herbarium Specimens, James Petiver.

Introduction

One of the most significant European collectors of information on medicinal practice in India in the last decades of the seventeenth century was the English physician Samuel Browne (d. 1698; his surname is variously rendered by others as "Brown" but he signed himself "Browne"). Employed as a surgeon by the East India Company (EIC), he was stationed at Fort St George (Chennai) between about 1680 and 1697 (Jackson, 2010). Browne is perhaps best known for having been tried (and acquitted) by a Grand Jury in 1693 for medical negligence in connection with the death of the Chief Justice of Choultry in Chennai, a Mr Wheeler, by accidental arsenic poisoning (Mathiharan 1998). However, Samuel Browne was evidently a remarkable observer and also an energetic collector, both of medicinal information and dried specimens, of the many indigenous plant species that he encountered in use in medical practice in India.

Samuel Browne and James Petiver

For the last decade of the period when he was at Fort St George, Browne was in regular correspondence (see Sloane MSS 3321, 3332, 3333, 4068; British Library) with the London apothecary, James Petiver (1665-1718). Although the

subject matter discussed by the two men relates predominantly to plants, some letters touch on insects and other animals, indicating a marked breadth to Browne's interests. It is clear from this correspondence that Browne was sending Petiver a great deal of preserved plant material, chiefly in the form of pressed plant specimens. While these came mainly from the area around Chennai, Browne also sought interesting and useful plants from other parts of the country, and elsewhere. He appears to have had good contacts with collectors in other parts of Asia, for example with the Moravian Jesuit Georg Joseph Kamel (1661-1706) in the Philippines, and was evidently the hub of a significant network that crossed the Indian Ocean and reached as far as China (Winterbottom 2012). It was through the activities of Browne that a great deal of material, not only from India but also from elsewhere; found its way to England in the last decade of the seventeenth century.

Petiver was undoubtedly one of the most enthusiastic collectors of natural history specimens of his period and he made strenuous efforts to recruit potential collectors, particularly among people whose occupations took them to places distant from England. He therefore cultivated sea captains, surgeons and clergymen among others, often providing them with collecting materials (such as paper for pressing plants, and glass jars for pickling reptiles and insects) and detailed printed collecting instructions (Petiver, ca. 1700). Through these and other means, by the time of his death in 1718 he had amassed a collection that included some 40,000 dried plant specimens from many different parts of the world. These specimens were subsequently purchased by his friend, the Royal physician and collector, Sir Hans Sloane (1660-1753) who incorporated them within his own substantial herbarium (Dandy 1957, Jarvis, Spencer and Huxley 2012). On Sloane's death, his own vast collection of books, manuscripts, artwork, antiquities, instruments, coins, medals and natural objects formed the founding collection of the British Museum when it opened in 1759 (MacGregor 1994). More than a century later, the Museum's natural history collections (including Sloane's surviving specimens) found a new home in London in South Kensington in what is now the Natural History Museum and it is there that Samuel Browne's Indian specimens can be found today.

As respectively a physician in India and an apothecary in London, Browne and Petiver clearly had overlapping interests in the area of medicinal plants and their uses. Petiver himself published extensively on plants and, among the brief descriptions of the numerous species that appeared in his *Musei Petiveriani* (Petiver, 1695-1703), are frequent references to Browne as the source of his specimens. For example, of three shrubs (entries 131-133 from Petiver's *Centuria* 2: 20, published in 1698), Petiver wrote "*These three grow about Fort St. George, from whence they were sent me by my Ingenious Friend Mr. Sam. Brown.*" In addition,

the dried specimens upon which two of these published entries were based still survive in Petiver's herbarium at the Natural History Museum (no. 131 in Herb. Sloane (HS) 249, fol. 48; no. 132 in HS 249, fol. 43).

Samuel Browne's East India Company Herbarium

However, the herbarium collection that is the focus of this article never formed part of James Petiver's own collection (and was therefore not incorporated as one or more of Sloane's numbered herbaria). It was assembled by Samuel Browne in 1697 and sent to his employers, the East India Company. Containing specimens of more than 300 different species, arranged in seven books with the species numbered consecutively, it was accompanied by brief descriptions of each plant with notes on the properties and uses of each. A surviving autograph letter (now mounted at the beginning of the collection), written by Browne at Fort St George and dated 20 September 1697 (Fig. 1), explains his motives:

Having served your Hono:^{rs} long here in this Garrison which hath given mee the oppertunity of making the foregoing Collections of Indian Plants & Druggs the greater part whereof I presume are not perfectly knowne and some altogether unknowne in Europe, I presume to offer the same to your Hono:^{rs} acceptance being the only means I have of acknowledging my Obligation Humbly praying your Hono:^{rs} will Please if they shall be thought worthy of any notice to permitt Mr. Petiver the Apothecary in Aldersgate Street with whom I have Corresponded about Plants to have a sight thereof.

On their arrival in London (certainly by 1699), the specimens were given by the East India Company to the Royal Society ("for improving Natural Knowledge") where Petiver had access to them, as Browne had requested. The collection remained in the possession of the Royal Society until 1781 when it was transferred to the British Museum.

Additional manuscript notes prepared by Browne accompany the collection, including a listing of the vernacular names "of Indian Plants, Druggs, Fruits & c:^a" (see Fig. 2). Maintaining Browne's original numbered sequence, the specimens were then mounted, one species to each page and accompanied by the relevant manuscript notes for each, in the seven books (which were only later re-bound into the two volumes in which they are found today). Where mature seeds had been received, Petiver evidently distributed some of them to well-established gardens (such as those at Badminton, Fulham, Enfield, Oxford, Mitcham and Chelsea) in the hope that plants might be raised and more learnt about these interesting Indian species.

The dried specimens, which are generally of high quality and are remarkably well-preserved, are mounted on the right-hand folios (the pages measure 380 x 225 mm). Browne's original handwritten notes, sometimes accompanied by a paper

slip carrying the corresponding printed text cut out from the *Philosophical Transactions of the Royal Society* (see details below) are mounted on the left-hand facing page. Each species collection is frequently accompanied by a small piece of bamboo inscribed with the vernacular name in Tamil.

The Published Account of Browne's specimens

In 1700, a detailed account was published (Brown and Petiver 1700a) in the *Philosophical Transactions of the Royal Society* of the 47 species (collected "at Hinguer Pollum, about 20 miles from Fort St. George") that had been mounted in the first of the seven books. Articles dealing with the plants in each of the remaining six books, collected in different localities, followed (Brown and Petiver 1700b, 1700c; Petiver & Brown 1700a, 1700b, 1702a, 1702b). Compiled by Petiver, the entries for each species typically commence with a vernacular name provided by Browne, supplemented by published accounts of the species (if any) added by Petiver. These were followed by a transcription of Browne's notes on medicinal applications and the entry concluded with additional remarks from Petiver.

The most prominent among the publications cited by Petiver is undoubtedly Rheede tot Draakenstein's magisterial 12-volume *Hortus Indicus Malabaricus* (1678-1693), perhaps not surprisingly as it was one of the few detailed published accounts then available for the plants of any part of India (Nicolson, Suresh and Manilal 1988). Where relevant, Petiver also referred to species accounts (usually based on material that Browne had sent him previously) from his own *Musei Petiveriani* (1695-1703) and other articles in the *Philosophical Transactions of the Royal Society*. While a small number of references can be found to Caspar Bauhin's *Pinax* (1623) and John Ray's *Historia Plantarum* (1686-1704), Petiver refers rather more frequently to publications by Leonard Plukenet (1691-1694, 1696, 1700).

Leonard Plukenet (1641-1706), who was latterly botanist to King William III and Queen Mary, like his contemporary Petiver also amassed a significant collection of plants and insects that was acquired by Hans Sloane after its owner's death. However, unlike the friendly relationship that existed between Petiver and Sloane, that between Plukenet and Petiver was frequently bad-tempered and argumentative and, in the article on Browne's plants, Petiver misses no opportunity to make pointedly critical comments about Plukenet and the accuracy of his observations. For example, on page 584, Petiver comments waspishly on Plukenet having described and illustrated the same species twice under different names, "I wonder so great a Botanist as Dr *Plukenet* should not know his *own Plants*, especially such he had taken the pains to *Figure*."

The second species from Browne's first book serves to illustrate the main features of the collection. This plant (*Senna auriculata* (L.) Roxb., syn. *Cassia auriculata* L.), with the vernacular names "Gens(t?)ue" and "Avaree" (see Stayavati, Riana and Sharma 1976; Nadkarni 2009) reported by Browne, is represented on

the right-hand page by several pieces of well-preserved plant material, showing leaves, flowers and a single detached mature fruit (Fig. 3), accompanied by a small piece of bamboo inscribed with another vernacular name (Fig. 4). On the facing page are pasted Browne's original comments with Petiver's published account of the species (albeit cropped to exclude some marginalia) pasted immediately below them (Fig. 5). Comparison of the two shows those parts that are quoted verbatim from Browne by Petiver, and where additions (or omissions) have been made by Petiver.

Although Petiver reports the name "Avaree" from Browne, he omits "Gens(t?)ue" but Browne's description "this is shrub about 2, 3 or sometimes 4 foot high it bears a flat pod about a finger long and more than halfe an Intch Broad" is transcribed with only very minor modification, and attributed to Browne ("S. B."). The same is true of Browne's original "it Purges both in Infusion and is given by the Natives in y^e Pox and lingring fevers" but Browne's observation "it seems to me to be a sort of Bastard Senna" is omitted.

Petiver's additions include two extra names - "*Madrass Flower-Fence*, with membranaceous pods" and, from his own *Musei Petiveriani* no. 635, "*Crista Pavonis auriculata, non spinosa, siliquis membranaceis e Madraspatan*", the latter evidently based on material (now in H.S. 94, fol. 36, NHM) he had received previously from Browne. Petiver also heaps scorn on Leonard Plukenet's observational abilities, writing

Dr *Plukenet* hath given a lame figure of this in his *Phytogr.* Tab. 314, Fig. 4 and hath very little reason to suppose this *Oriental Shrub*, to be the *Tepehoaxin* of *Rcechus* (correctly "*Recchus*" in Hernandez, 1651) pag. 410, which bears red *Flowers* and two *Seeds* only, whereas the *Flower* of this is yellow, and the *Seed* seldom or never fewer than six.

Discussion

These early volumes of East India Company specimens have been rightly described by Dandy (1957) as Samuel Browne's most important collection. A remarkable survivor from the end of the 17th century, the collection carefully records and documents an English surgeon's perceptions of the medicinally useful plants of the area around Chennai. Unusually for the time, vernacular names were recorded (if sometimes imperfectly) along with the purposes to which the plants were put, and the way in which they were dispensed by Indian physicians. Crucially, the well-preserved dried specimens that accompany the descriptive records allow the species involved to be identified with certainty. This little-known collection would undoubtedly benefit from closer study for the medicinal information that it contains, as well as shedding light on the networks of knowledge that were being developed between Europe and Asia during this period.

Acknowledgements

I am grateful to Mr Supreo Chanda (Department of Museology, University of Calcutta) for his invitation to write about Samuel Browne's fascinating collection, and to my colleague Raneer Prakash (Natural History Museum, London) for her comments and assistance with relevant literature, and to Dr V. Sampath Kumar (Botanical Survey of India, Howrah) for interpreting the text shown in Figure 4.

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To the R^t Hono^r the East India Company.

Having served your Hono^r long here in this Town
 which has given me the opportunity of making
 the foregoing Collections of Indian Plants & Drugs
 the greater part whereof I presume are not perfectly
 knowne and some altogether unknowne in Europe,
 presume to offer the same to your Hono^r as a plain
 being the only means I have of acknowledging my
 Obligations Humbly praying your Hono^r will
 please if they shall be thought worthy of any Notice
 to permit Mr. Feliver the Apothecary in Fleet
 Street with whom I have Corresponded abo
 Plants to have a sight thereof.

Y^r Hono^r
 most humble and
 Faithfull Servant
 Sam^l Browne

Fortst George
 20. Sep^r. 1697.

Figure 1

Samuel Browne's autograph letter to the East India Company, dated 20 September 1697, accompanying his gift of the specimen collection (Browne's East India Company collection, volume 1, image courtesy of the Natural History Museum, London).

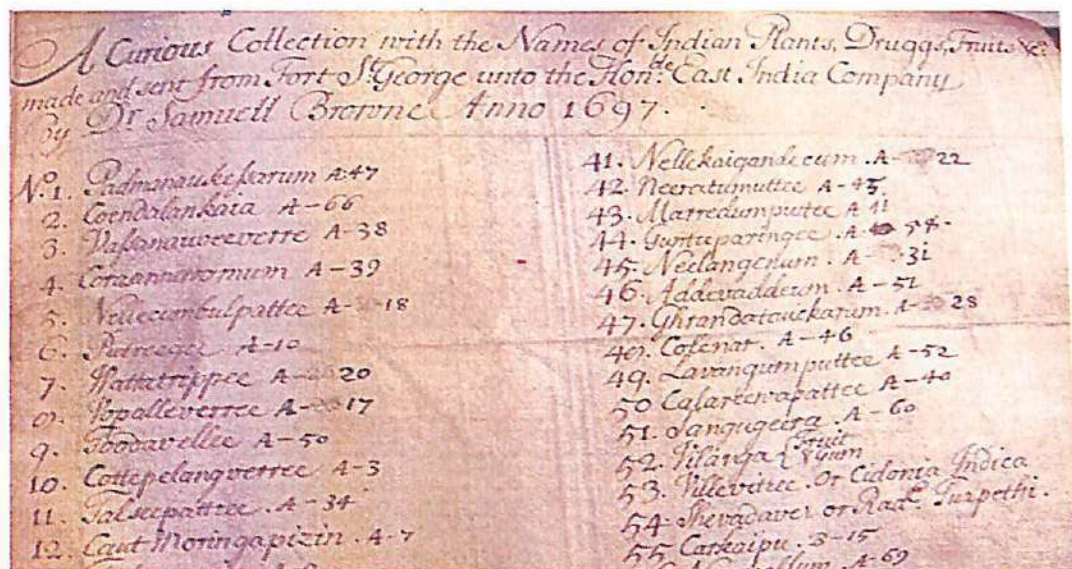


Figure 2

Samuel Browne's autograph list (dated 1697) of "... the names of Indian Plants, Druggs, Fruits &c. ..." (Browne's East India Company collection, volume 1, image courtesy of the Natural History Museum, London).

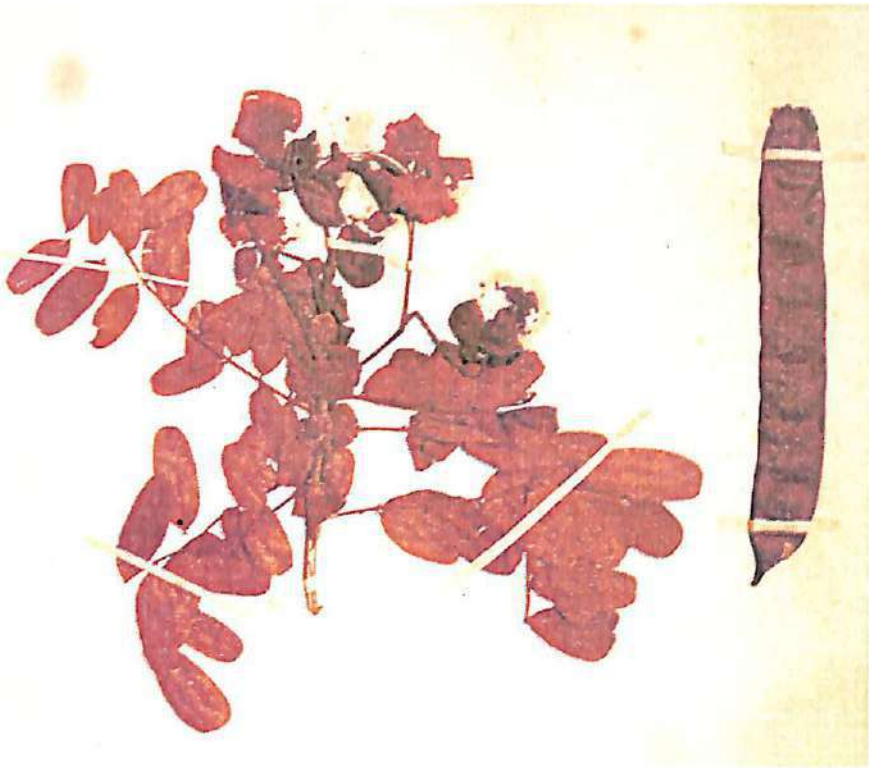


Figure 3

Part of the dried material accompanying Samuel Browne's record of his species number 2, comprising a flowering sprig and a detached fruit of *Senna auriculata*(L.) Roxb. ("Avaree") (Browne's East India Company collection, volume 1, species 2, image courtesy of the Natural History Museum, London).



Figure 4

A piece of bamboo accompanying Browne's specimen of his species number 2, *Senna auriculata*, inscribed with its vernacular name in Tamil ("Aa va ra ci ta" or "Avarachidi"). A pencil annotation to its right notes that the bamboo label has been mounted upside down (Browne's East India Company collection, volume 1, species 2, image courtesy of the Natural History Museum, London).

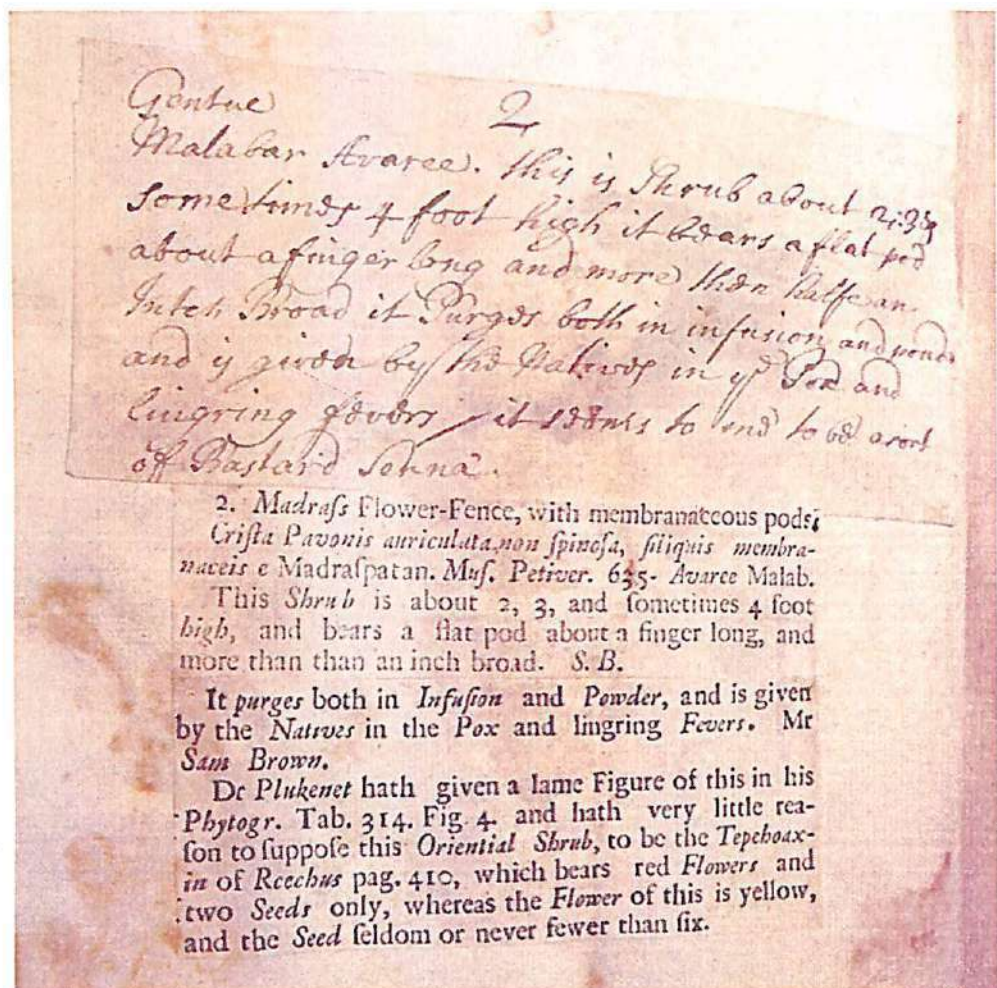


Figure 5

Samuel Browne's autograph description (above) accompanying the dried plant material of species number 2, *Senna auriculata*. Below it is pasted the corresponding entry cut out from the account of the species published in the *Philosophical Transactions of the Royal Society* (Brown & Petiver 1700a). (Browne's East India Company collection, volume 1, species 2, image courtesy of the Natural History Museum, London).

Role of ICOFOM in Creation and Development of Museology

OLGA N TRUEVTSEVA

The period of formation of Museology as a science in its contemporary understanding is referred to the middle 1960s. Its formation was led by a long-term discussion about usefulness of development of a special scientific knowledge of a museum, its role in a society which, fortunately, was initiated by structure of a modern musicological basis. In this process outstanding scientists have figured greatly in this process – I Neustupny, J Jelinek, Z Stransky, V Sofka (Czechoslovakia), A Razgon and J Pishchulin (USSR), Z Rivier (France), K Hudson (Great Britain) and others. They laid the groundwork for modern museology and generated the community of museologists, which in 1977 was designed the International Committee for Museology (ICOFOM) – an international non-governmental organization – of the International Council of Museums (ICOM). It is important to note, that this event happened in Moscow and Leningrad the former USSR. Since then ICOFOM became the centre of Museology, accumulating, coordinating and directing efforts of researchers and practical activities of a museum.

The recognition of Museology as an independent scientific discipline was achieved in many respects due to the fact that ICOFOM organized meetings, precise discussions of concrete problems of museums' development in the changing world. During the first years of its activity ICOFOM directed its efforts to the discussion of problems dealing with organization of research work, and the opportunities of science and research in a museum. This discussion resulted in conclusions about the necessity to improve research in and for the museums. According to the opinion of authoritative scientists who participated in the discussion, researches should become an obligatory part of a museum activity, one of its fundamental functions. Without interdisciplinary researches, field and laboratory works the museum will not execute its other functions; they rather more would only remain a storehouse of collections and the collected unused information.¹

Some following ICOFOM conferences were devoted to studying of the core of the museum phenomenon, definition of the concept of museology and its place in the system of sciences, to researching of the structure of museology, to defining

¹Document No. 2. Report from the second meeting of the ICOM International Committee for Museology\Museological Working Papers. 1980. No.1. p. 58-59.

the place of museology in the system of sciences, to disclosing the sense of a museum subject through subject life and consciousness.ⁱⁱ

In the 1980s museum experts were extensively discussing problems of "new museology," connected with the development of the museum science in general and, integrated museums and ecomuseology. The representatives of "new museology" considered the museum as, first of all, the form aimed at the decision of urgent problems of local community. One of the most effective forms of the integrated museum activity was in the revival of traditional crafts, directing the population to preservation of humanistic bases of interrelation between a person and nature. During the ICOFOM conference in Leiden (1984) there was organized a special seminar devoted to the discussion of new museology problems. In October, 1984 Canadian museologists organized the first international seminar for ecomuseums and new museology in Quebec.

During 35-year period of its activity ICOFOM, the International Committee for Museology has organized and carried out more than 30 symposiums in different countries of the world. The topics of the international meetings uncover breadth and many-sided nature of discussing problems of museology, focused on theoretical and applied activities, "Systematization and Systems in Museology" (1980); "System in Museology and Interdisciplinarity" (1982); "Collecting today is Collecting for the Future" (1984); "Originals and Substitutes in Museums" (1985); "Museology and Identity" (1986); "Museology and Museums" (1987); "Museology and Developing Countries" (1988); "Museological Research" (1992); "Language of Exhibitions" (1991); "Museology and Art" (1996); "Museology and Memory" (1997); "Museology and Globalization" (1998); "Museums, Economic and Social Development" (2001); "Museology: an Instrument for Unity and Cultural Diversity" (2003); "Museology and Intangible Heritage" (2000); "Museology and History: a Field of Knowledge" (2006); "Museology and Audience" (2005); "Museums, Museology and Universal Heritage" (2007); "Museums, Museology and Global Communication" (2008); "Museology: Back to Basics" (2009); etc.

In this concern it is necessary to mention, that members of ICOFOM Board repeatedly came back to the discussion of some individual, most topical and key themes. The researchers' work on shaping of the theory was the most important and significant one both for ICOM, and the International Committee for Museology.

It is important to emphasize, that the contents of scientific discussions were broadcast to museum professionals from pages of the magazine "Museological Working Papers" (MuWoP), published in 1980, the first solid work of scientists and

ⁱⁱThese problems were discussed at the symposiums: "System in Museology and Interdisciplinary Field" (1982, France); "Collecting Today is Collecting for the Future" (1984, the Netherlands); "Originals and Replicas in Museums" (1985, Yugoslavia).

practitioners from different countries of the area of museology; "Museology and Authenticity" (1986, Argentina); "Museology and Museums" (1987, Finland); "Museology and Development of the Countries" (1988, India); "Museology – Returning to Sources" (2009, Belgium).

An important component of Committee's activities was and is the preparation and edition of the "ICOFOM Study Series" (ISS) – the scientific publication and basis for each of the symposiums. ISS were and are the main scientific edition of ICOFOM, a source of scientific discussions for theorists and specialists of museums. These editions played an important role in formation and development of museology as a scientific discipline. It was the first international collections of theoretical works on museology.

International Museology Schools played an important role in the development of the theory of Museology and its relationship to museum practice. Special attention is to be given to the experience of International summer museological school organized in 1986 under the aegis of ICOM and UNESCO which took place at Masaryk University in Brno/ Czech Republic. This school carried out retraining and improvement of professional skills of museums curators. The founder of this school was the well-known museologist Zbinek Stransky. Since 1988 the School was headed by Vinos Sofka.

Opposed to other educational institutions which were carrying out short-term preparations of museum workers, the program of the school in Brno provided the professional programme of museological education, based on innovative approaches to museum practice. Taking into consideration the fact, that the majority of students (most of them professionals of museums or universities) had rather rich and varied experience of practical work; teachers of school set as the purpose not only to get their students acquainted with modern methods of museum work, but also to structure and to form museological thinking focused on judgment of practice from the point of view of enlightening challenges of modern life. Thus the significant part of knowledge was developed in the process of discussions and colloquiums where students discussed both methods of museum activities and the approaches to preservation and reproduction of historic-cultural heritage.

Social value of the school was that its graduates became carriers and representatives of new museological ideas focused on humanitarian and ethical values and requirements of society. The International Summer School for Museology in Brno existed till 1999. Both its ideas and principles of training appeared to be not only claimed, but also really embodied in other countries, in particular in Russia.

For 12 years of its activity the school has trained both beginners and skilled workers of museums from the countries of Europe, Asia, United States of America, Canada, and Latin America who now continue researches in the area of museology in their own countries, and who are founders of museums and similar schools.

They are An Laishun (Chinese People's Republic), Jan Dolak (Czech Republic), Teresa Scheiner (Brazil), Yanis Gar'ans (Latvia), M Gnedovsky, N Nikishin, I Kossova (Russia) and others.

The attempt to create a similar school in Russia was undertaken in 2002 by I M Kossova, the Head of the Department of a museum activity in Academy of Retraining of Art Workers (Moscow), and by the heads of creative laboratories on "Museum Pedagogics." On the basis of the school-laboratory created by her there were trained museum workers from the Republic Saha (Yakutia), Buryatiya, Republic of Altai, Khanty-Mansiisk, Yamalo-Nenets autonomous regions, which were short-handed with museum professionals. In Republic Karelia there was created "Summer Museum-pedagogical School on the Island Kizhi."ⁱⁱⁱ

Summer museological schools were organized by V A Shmyrov, the Director of the Memorial centre of History of political repressions "Perm 36," a student of International museological school of University of Masarik, 2000, in Brno. The project was headed by M Gnedovsky – the Director of Institute of Cultural Policy (Moscow), who also was a student of International museological schools in Brno. Leading Russian museologists delivered lectures within the terms of schools' activity.

The long-term period of activity of International Museological schools in Altai is marked by annual meetings (since 2004) with members of Board of Committee of Museology. The following representatives of ICOFOM worked in Altai: Vinos Sofka (Sweden), Hildegard Vieregg (Germany), Jan Dolak (Czech Republic), An Laijshun (Chinese People's Republic), Ann Davis (Canada), Martin Schärer (Switzerland), Suzanne Nash (USA/ Sweden), Nelly Decarolis (Argentina), Kuo-Ning Chen (Taiwan) and others.

The Committee of Museology has always responded to the most relevant problems of the modern times and challenges. It is possible to give many examples when discussion of theoretical problems of museology corresponded to the processes which took place in the society. For example, in the beginning of the new millennium the expansion of globalism has resulted in searching for new forms of preservation and reproduction of cultural heritage. A series of special forums of museologists were devoted to the problems of preservation of tangible and intangible heritage.

On October, 2-8, 2004 in Seoul (South Korea), was held the 20th General Conference of the International Council of Museums in which more than two thousand persons from 150 countries of the world participated. The topic chosen for the General conference in Seoul was "Museums and Intangible Heritage."^{iv} The

ⁱⁱⁱSee : Summer museum-pedagogical School on the Island Kizhi (1999-2000). Petrozavodsk, 2000. p. 167.

^{iv}The International Committee for Museology (ICOFOM) dealt with this topic already in the year 2000, on the occasion of its Annual Meeting in Munich/Germany and Brno/Czech Republic. See: Vieregg, Hildegard/Davis, Ann (Eds.): *Museology and the Intangible Heritage*. ICOFOM Study Series 32. Munich/Brno 2000.

Conference emphasized the idea that it was necessary to direct activity of museums toward preservation of intangible heritage.^v The task to investigate the very nature of this kind of heritage, to reveal optimum ways of its preservation and pass it to the subsequent generations was put before practical workers of museums and museologists. The discussion of these problems was initiated by information technologies, computerization of museums. In a three-year programme, 2001-2004, the Committee of Museology emphasized on "Virtual and Real In Museums" and opened discussion for a forum of 2002 in Cuenca (Ecuador) and on Galapagos islands on a topic "Real and Virtual in Museums." And another example was economic problems of museums' activity in the end of the 20th century. This theme was urgent for museums of many countries of the world which were experiencing financial crises of a boundary of centuries. This was especially definite for Russia which had survived the disintegration of the USSR. The international museum community discussed on the next symposium in Barcelona (2001), the problems dealing with the topic "Changes in Management: Museums in the Face of Economic and Social Problems." Particularly, the influence of globalization highlighted the problems of self-knowledge of a personality, intercultural, verbal communication, cognition of reality. The basic ideas of philosophy of dialogism (symposium of 2010) were equally significant for both museologists and practical workers of a museum. The theory concerning work with visitors and construction of modern expositions and exhibitions is especially claimed.

The theme "Museums, Museology and Global Communication" drew attention of scientific and practical workers of museums in 2008. The international symposium of ICOFOM 2008 was held in two countries – Russia (Novosibirsk, Barnaul) and the Chinese National Republic (Changsha, Hunan province).

The works of foreign and domestic museologists, working in ICOFOM – H Vieregg (Germany); T Sholy (Croatia); M Sherer (Switzerland); T Shrainer (Brazil); P Van Mensha (Netherlands); J Dolak (Czech Republic); E Devis (Canada); A Sundieva, L Shljahina, I Kosova (Russia) are considered to be serious contribution to the development museology.^{vi}

The Committee of Museology is the living organism carrying out the growth of authority, the influence on museological tasks and the increasing its membership. Entering upon her duties as the president of ICOFOM, a well-known historian and museologist from Germany Hildegard Vieregg expressed serious concern about

^vVieregg, H. ICOFOM 2004 and in Future (2005-2007) // ICOFOM Newsletter, 38. 2005. p. 3-6.

^{vi}Vieregg, H. *Museums Kompass Bayern: ein Schlüssel zum Verständnis für Brauchtum, Handwerk, Technik, Kunst; ein nachschlagewerk in Sachgruppen* / M. Schmeer-Sturm, K. Ulbricht, H. Vieregg. München: Reisen und Bildung, 1992. / Vieregg, H. *Geschichte des Museums. Eine Einführung*. München, 2008. p. 343.

complexity of management and support of contacts to a plenty of the members representing different countries of the world. Thus the decision on decentralization of the Committee was accepted. The Committee of museology of Latin American countries (ICOFOM LAM), with its head Nelly Decarolis (Argentina), was created in 1989. And in this respect it was a good example. It was offered to create Regional Committees in Europe, Asia and the countries of Pacific Region, Africa, Northern America.^{vii}

In 2003 the Committee of Museology of Siberia (ICOFOMSIB) was organized in Barnaul in order to more purposeful and systematically study Siberian museums, cultural and natural heritage, realization of teamwork. In 2010 Siberians have joined to the countries of Asia and Pacific region. The similar regional committee is created in Chinese People's Republic.^{viii} Museologists from Asia and countries of Pacific Ocean joined this committee in 2010.

The growing quantity of students, wishing to receive knowledge in the area of museology, and the increased quantity of faculties in high schools testifies to the growth of influence of museology.

Nowadays only in Russia 34 high schools, academies and universities are engaged in preparation of experts and bachelors for museums. 10 of them are located on the territory of Siberian Federal District. At St.-Petersburg State University Departments of museology are organized at two faculties (philosophical and historical). Two departments teach experts for museums in Omsk State University. Now the vigorous activity of the Committee has united museologists and practical workers of museums from 110 countries of the world. More than 400 voting members and 2100 non-voting members (individual and institutional members) work in the Committee. For 35 years of careful work, ICOFOM managed to consolidate mental potential of museologists and practical workers from different countries of the world, to improve the theoretical concept of "museology" as a science, and to communicate basic concepts of museology: structure, methodology, methods, purposes and goals. One of the most important aims was to define the place of museology in the system of the sciences and to determine basic tendencies for the future development of museology.

^{vii}Information bulletin of ICOM Russia. No. 3/2001. Moskow : Secretariat of ICOM Russia, 2001. P. 2.

^{viii}INOFOCOM SIB // Newsletter 36. March, 2004. p. 6.

Heritage conservation development and participatory learning in South East Asia – 3 examples¹

JONATHAN SWEET

Abstract

Over a number of years the author has been involved in community-based capacity building projects in which various forms of participatory learning have been applied. This paper argues for the potential of these types of experiences to enhance the learning of project participants, particularly in non-traditional heritage and museological circumstances. The examples are indicative of the region's cultural diversity and the heritage values that underpin each, are quite distinct. The projects are contextualised within a broader heritage discourse and their value as sites of applied research is also considered.

Keywords

Asian Studies; Community museums; museology; participatory learning; UNESCO

Introduction

In South East Asia conservation activities may or may not include local community consultation or capacity building. However, as this paper will demonstrate it may be beneficial to heritage sustainability to design community-based heritage projects in which participatory learning is integrated into the development process. The range of examples discussed here are indicative of the region's cultural diversity and the heritage values that underpin each of these projects are quite distinct. In each case, however, the project proceeded because of a strong desire expressed by the local people to enhance their agency in heritage conservation. The cases studies are: the *Development of the Vieng Xai, Interpretation Plan*, Laos PDR; the *Kelabit Highlands Community Museum Development Project*, Sarawak, Malaysian Borneo; and, the *Lampang Temples Project*, Thailand.

These discrete projects have informed an over-arching research project that has been shaped by a need to understand the potential of participatory transformative learning to be integrated into heritage conservation that occurs in non-traditional

¹A version of this paper was presented at the *International Research Conference on Humanities and Social Sciences 2014*, University of Sri Jayewardenepura Nugegoda, Sri Lanka.

heritage and museological circumstances. The aims and characteristics of learning in this context could be described thus: to provide participants with the capacity to critique the cultural heritage management practices they use currently use and consider them in relation to other methodologies; to enable people to actively participate in discussions about managing the future of their heritage, and in exploring options for its management in times of impending change; and to work with participants to identify and refine the necessary cultural heritage tools and knowledge that can help them address the issues when the project or intervention is over. In some circumstances these may be very ambitious aims and a central question of the research has been the extent to which this approach is practical and possible more broadly.

Concerning the research design, methodology and collection of data. It is acknowledged that heritage studies and museology are interdisciplinary disciplines, comfortably blending history, archaeology, sociology, communications and conservation sciences. In the field of heritage and development issues of traditional knowledge, beliefs and practices, economics, politics, education, health and industry and trade are also relevant factors. In this research the conception, design and implementation of each of the case study projects was underpinned by desk research that garnered information from historical archival sources, relevant legislation and policy documents. Planning for each project developed as an iterative process based on models promoted by UNESCO and ICCROM, which were calibrated according to local circumstances and community consultation and drew upon the evaluation of each preceding component. Qualitative data concerning each project, which included sampling a range of participants, was collected in a number of forms. These included audio-visual and photographic documentation.

Museums, heritage and development

These projects should be considered within an historical context of development practice. Over the last 25 years (at least) museum and heritage workers have participated more actively in community development projects. From being involved in institutions and organizations that are primarily concerned with collections, buildings and things, cultural heritage practitioners have moved to an arena where they can also focus on people, communities, and landscapes. The influence of the new museology and subsequent social inclusion and cultural diversity discourses means that they can now be, as is outlined by the International Council of Museums (ICOM), 'in the service of society and its development'. Thus, conceptually, it is no longer a radical shift for heritage professionals to work within the development sector – indeed there is now a coherent argument for cultural heritage work to be a legitimate component of development work, including community capacity building.

Alongside this however, we also need to acknowledge the influence of an additional sentiment that was articulated by UNESCO. This is contained in

the *Recommendation concerning the Most Effective Means of Rendering Museums Accessible to Everyone, 1960*. In article five, which concerns the 'Place and role of museums in the community', it stated that museums should:

Contribute to the intellectual and cultural life of the community, which in turn should be given the opportunity of taking part in the activities and development of the museums. This should apply in particular to museums situated in small towns and villages.

This recommendation is echoed in the recent work that UNESCO and ICCROM have orchestrated in Asia during the last decade or so. Working in partnerships with local representatives in unilateral or multi-lateral arrangements they have sought to engage people in heritage conservation processes, motivated by a desire to assist with supporting the resilience and sustainability of communities and their heritage values.

It is notable too that these activities have also been influenced by a number of other important regional initiatives, which have their origin in local discourses. For example these include:

1995: Seminar on *Technical Problems in International Cooperative Activity for Conservation*, Nara, Japan. Where delegates called for recognition of local knowledge. (Agency of Cultural Affairs 1995)

1995 - 98: UNESCO 'LEAP' program. Which encouraged greater participation by local people in preservation activities. (Engelhardt 1997)

2003. ESPAC tourism review, *Promotion of Buddhist Tourism Circuits in Selected Asian Countries*, UN, which promoted the links between cultural and natural heritage tourism and teaching and learning. (ESCAP 2003)

2008 - 10: UNESCO 'Museum to museum program'. Where research found a need for training delivered through partnerships with complementary strengths. (Sweet, J. and James, L. 2009)

Similarly, the projects I am coming to occurred within a development context that focused on non-traditional museum locations, in temples and villages, where there was an expressed interest in using the heritage assets of the community for the purposes of social and economic growth.

It is within this context that in the following cases a model of participatory learning was applied; in other words, the programs were designed for some members of these communities to engage with the processes of heritage conservation and to gain confidence in making decisions about prioritizing their heritage values, managing heritage assets, and interpreting them for a range of audiences. In these examples the term 'community' is used variously. In the first case it refers to government civil servants and their associates, in the second case to the members of the Kelabit

indigenous ethnic minority, and in the third case to the clergy of an established religion, Buddhist monks. Each one of these 'communities' wants to preserve and promote different heritage values in ways that are context specific, but which are also aligned with the expectations of a range of contemporary audiences or participants, including pilgrims and tourists. Thus, these communities, while vastly different, are all interested in harnessing the linkages between the past and the present and between traditional and contemporary values.

Interpretation planning at Vieng Xai Caves, Laos PDR

Vieng Xai is an official heritage site funded by the Laos PDR government in a remote part of the country. The heritage significance has been defined as 'the birthplace of the Laos nation'. This refers to the modern state established in 1975. At this site the natural landscape of mountains and caves were utilized and adapted to be the military stronghold of the Red Laos during the American/Vietnam War. The site is complex and speaks vividly about the organisation of a society in the harshest of circumstances. It is therefore potentially an important heritage site embodying a range of values recognised by local people and tourists. In this project visitor management and interpretation planning was undertaken within 'a pro-poor tourism' paradigm, with a view to creating opportunities for local people to benefit from heritage tourism. (Wills, J. *et al*, 2007)

An intensive learning program was designed in which Australian post-graduate heritage management students worked in teams with local site managers and central government representatives to assess the most pressing conservation issues and to address these through both immediate remedial solutions and long term planning. For example, one team worked on the preservation and organisation of movable cultural heritage, creating detailed inventories and management guidelines for material that had been neglected; and another worked on transforming the site office into a visitor interpretation centre through introducing information displays. This place then became the starting point for self-guided visitors to explore the site with the aid of rudimentary guidebook that was also written.

The relevance and usefulness of this program to local management was ensured by the agency the local participants had in contributing to the design and focus of the activities. A measure of the program's success is that a follow-up program was requested and took place a couple of years later.

Kelabit Highlands Community Museum Development Project, Malaysia

The Kelabit are a low-population indigenous ethnic community who live in the highlands of Sarawak close to the border of Kalimantan, Indonesia. They were the last of the tribes of Borneo to come into contact with the west but since WWII, under the influence of Christian missionaries and western education, some members of the community have become professional and prosperous members

of Malaysian society. In recent years these leaders have become increasingly concerned about the loss of distinct culture, and are facing the realisation that their children are losing their Kelabit identity. This program was therefore established to be a framework for participatory learning, through which members of the community have been exploring the potential of creating a museum and cultural centre to become an anchor for conservation, and a means to reclaim the representation of their cultural values and identity.

This project has been configured such that the learning occurs through a high degree of grass-roots community consultation in which the members of this predominantly rural community have been participating. (Sweet, J. and Horman, T., 2012; Sweet, J. and Kelly, M., 2013) Community meetings were organised to discuss and explain various issues and locals orchestrated visits to longhouses to enable people to present and tell stories about significant movable cultural heritage. Through this process people were reconnected with aspects of their history and customs and began to understand how this would be interesting to relate to visitors or their children.

Three fieldwork campaigns have already been undertaken which have started to address issues such as the articulation of tangible and intangible heritage assets and heritage values, the role of traditional practices, and concepts of museum architecture, design and branding. As a result of local participation in this process there has been much animated discussion within the community, and the leadership has started to make decisions about what kind of organisation this community wants. By providing an opportunity for the community to participate in the activities involved in the development process, the project has contributed to the community's agency in adapting museology to their own circumstances and requirements. It is planned that the museum will be completed in 2015 and that another participatory program (which is currently being developed) will be focussed on community-based heritage interpretation and the provision of educational programs to enhance visitor experiences.

Lampang Temples Project, Thailand

The monasteries of northern Thailand, like many elsewhere, have substantial collections of objects that they have acquired through merit making over a long period of time. In many cases these objects are deteriorating. Many of these artefacts may be of religious significance but there are also others that relate to the local history of the communities who use the temples. In this case, the custodians, Buddhist monks, believe that there is great potential to use these collections for the benefit of the community.

In this project that was conducted in partnership with Chiang Mai University and UNESCO Bangkok, the objective was to help these custodians to develop appropriate ways in which they can manage this material more effectively, and

make it more accessible for visitors and local people. If we take a standard definition of the public museum as it has come down to us from the European enlightenment, the temples in Thailand are not usually classified as museums because they are primarily places of worship, more importantly embodying intangible rather than tangible heritage values. Nevertheless, they may qualify under the ICOM definition of a museum because they are community organisations that perform many similar functions to museums. Additionally, some monasteries clearly identify with museums in the ways they are responding to heritage tourism, where collection material is presented to visitors using museum style display techniques. (Sweet, J. and Wills, J., 2013; Sweet, J. and Wills, J., 2011)

This type of community-based conservation activity will be appreciated in South Asia, where local traditions of preservation have been integrated into local cultural practices in similar organisations. This program in Thailand, however, responded to the perception of local experts (and was supported by priests of high rank) that some of the traditional activities were not well understood, resulting in a situation where significant heritage material was at risk of deterioration or loss. (Boonyasurat, W. and Srisomwongwathana, A., 2010: 70-83) Thus the clergy supported a very structured participatory learning program in museology was designed especially for the monks to address issues such as the articulation of heritage significance, the role of collections management and the means of interpretation and communication. Lessons and workshops took place in the temple, and site-visits were arranged to other temples in the district to broaden the range of case studies. In this situation the monks were challenged to rediscover past practices and to develop appropriate contemporary conservation strategies. Additionally, this required the western participants to address preconceived notions of what museology means in this non-traditional museum context.

Conclusion

The projects discussed here are representative of efforts to enhance the agency of local people in the heritage development process. Each participatory process differed in approach. In the first case this included close working relationships between local and international participants; in the second case, a high degree of grass-roots consultation and participation; and in the third case, a custom-designed and highly structured intensive programme. Nevertheless, for participants in the host communities and for those visiting, these projects provided valuable opportunities for the advancement of cross-cultural learning and engagement through practice, interaction and dialogue. Furthermore, the facilitation often enabled members of these host-communities to reconnect and engage in new ways with their own long-held heritage, and, in particular, to begin to articulate the heritage values which they wish to preserve and promote and to begin to develop their own strategies for achieving their goals.

In the course of the design and delivery of these participatory programmes some issues arose. These include the question of the relationship between heritage and transformative learning in different circumstances. For example, we may question the extent to which museology can be effectively integrated into development projects by poorly resourced or marginalised communities. It is clear that Buddhist monasteries of Thailand are long-established entities that receive strong government and community support. The Kelabit, on the other hand, are a low-population, poorly resourced and very fragile indigenous community, but they nonetheless benefit greatly from a leadership that is highly educated and well connected in Malaysian society. So, while not wishing to make a claim for the universality of this kind of approach, these examples nevertheless provide an insight into a way in which museology in Asia may be developed in the future. What we can say confidently is that museology is a potentially inclusive intellectual and practical framework through which people can develop approaches to the conservation of their cultural heritage values in places, which are not usually recognized as museum spaces.

Generalising across the three examples, the findings strongly demonstrate the capacity of heritage and museum work to contribute to community development. Although these projects were designed for distinct communities in quite different geographical and cultural contexts, the establishment of inclusive and participatory processes that included local expertise provided an effective framework for learning. In particular, it was interesting how the recognition of the similarities and differences between global museological and heritage theories and techniques and local traditional methods of preservation were discussed in interesting and informative conversations between the participants. As were the discussions concerning the design of appropriate and achievable interpretation programs.

The research framework in which these projects are situated may contribute to the evolution of sustainable approaches to cultural heritage conservation in South East Asia, and probably in South Asia as well, through continuing to add comparative case studies to the international heritage management literature. As these projects have evolved there has been an effort to publish reports concerning the research process. These reports have sought to articulate the ways in which these programs engaged custodians to appreciate (not uncritically) a range of perspectives in developing effective and appropriate strategies for the preservation and interpretation of heritage sites and collection material. And, additionally, these reports have discussed how these communities have begun to address the needs and expectations of visitors and cultural heritage tourists more effectively through enhanced interpretation acumen and communication planning. More importantly perhaps, apart from contributing to heritage research, this knowledge may also have implications for income generation within these communities through the creation of meaningful, relevant and engaging employment opportunities for some members, which may assist in underpinning the sustainability of their heritage values.

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Empowered Women and Women Empowerment : an Anthropological Perspective

SOMA BANDYOPADHYAY

Abstract

Globally significant concept of empowerment raises two dimensions like empowering women and social reform through empowered women. The article enquires what actually empowerment is – enhancing the number of empowered women or ensuring social sustainability! Indian women enjoyed immense liberty in Vedic period. Was it initiation of women empowerment or cultural safeguard for empowered women! Women empowerment in reality is consolidation of power among some women. This hypothesis is tested among the women quilt makers of Pallishree Colony, Bankura, West Bengal. The study attempts to analyse how handling of power through women introduces dichotomy among empowered women and women empowerment.

Keywords

Women empowerment, Empowered women, Vedic women, Mana, Quilt makers.

Introduction

The word empowerment itself is a broad subject matter. It needs special consideration as it has a great role in social change. Empowerment is a phenomenon which has a lot to do in social continuity. Empowerment can be stated as a process by which one achieves control over oneself. Empowerment is actually the yield of this achievement found among number of empowered individuals. Gender specific concept of empowerment is another domain of discussion. Women empowerment is nowadays being discussed with special interest. This interest gives birth to a fundamental issue why women empowerment not men empowerment is considered so important! As the society goes on both men and women get control over themselves. They share their ideas and equally contribute in decision making. But still over emphasis on women empowerment depicts the fact that women somehow are not given equal importance which needs alteration or rectification for social wellbeing.

Women empowerment is a prolonged process. It is really hard to perceive what actually empowerment is meant for – to empower certain sections of women or the process of empowering the women section of a particular society as a whole.

Women empowerment presently draws special attention of the social scientists may be as a consequence of —

- ❖ Prolonged gender inequality and dependence of women over men.
- ❖ Prolonged deprivation of women through conservative women guardians.
- ❖ Prolonged disappointment due to lack of equal opportunities with male counterpart.
- ❖ Cultural prescription of gender bias and differential treatment towards boys and girls within a same family.
- ❖ Prolonged torture occurred by the empowered women to protect their property of power... and so on.

Empowerment is a construct shared by many disciplines and arenas: community development, psychology, education, economics and studies of social movements and organization. As a general definition, empowerment is a multi-dimensional social process that helps people gain control over their own lives. Empowerment is a process that challenges our assumptions about the way things are and can be. It challenges basic assumption about power. Power is at the core of the conception of empowerment. Empowerment is possible only through continuous change and expansion of power. If an empowered person changes his/her powerful position or expands the power among others, then only empowerment is possible. Power is often related to our ability to make others do what we want, regardless of their own wishes and interest (Weber, 1946). Traditional social science emphasizes power as influence and control, often treating power as a commodity or structure divorced from human action (Lips, 1991). Power is unchangeable in this conception. Weber (1946) conceived power beyond this limitation by recognizing that power exists within the context of a relationship between people or things. Empowerment as a process becomes meaningful only when power and power relationships can be changed through it. Concept of empowerment depends on expansion of power also. A zero-sum conception of power means that power will remain in the hands of the powerful unless they give it up. Power will be seen and understood differently by people who inhabit various positions in power structures (Lukes 1994). Feminists (Miller, 1976; Starhawk, 1987) as well as individuals in families perceive another aspect of power characterized by collaboration, sharing and mutuality (Kreisberg 1992).

Whenever the aspect of empowerment is dealt with in Indian context at least, a preconceived idea comes forward regarding status of women in ancient Indian society. Process of women empowerment itself is sometimes considered as an age old process which has somehow lost its pace and continuity. People have a notion that in ancient period women in general enjoyed equal status with men and were given enough priority and respect. But was it really so! Status is a relative

term. In Sociological expression, it denotes neither rank nor hierarchy but only position *vis-a-vis* others in terms of rights and obligations. In the ultimate analysis, status is “the conjunction of positions a woman occupies.... as a worker, student, wife, mother... the power and prestige attached to these positions and the rights and duties she is expected to exercise.” Women’s status can then be analysed in terms of their participation in decision-making, access to opportunities in education, training, employment and income (Goel, 2009). Did the women of ancient Indian society were in a position to hold ‘status’ in a true sense!

Women in Vedic and Epic period

Moral and spiritual standard of a society is expressed through the respect and regard it shows towards the women. Glorification of women for their sexuality and beauty raises the possibility of exploitation. It stands for the honourable life for the women. There are many civilizations in the world where respect for women and their powerful role in the society are prominent. Some of the most venerating for women has been found in Vedic culture. Through the years of Vedic culture, women have always been given the highest level of respect, freedom, protection and safety.

“Yatra Nari Astu Pujyante, Ramante Tatra Devataa”

(The Gods reside in places where woman is worshipped – *Manu Smriti* III, 55-59)

In the matter of Dharma (religion) in the Vedic culture women stood as a decisive force in spirituality and the foundation of moral development. The 126th hymn of the first book of the Rig Veda was revealed by a woman – Romasha. Women had a very significant position in our ancient Indian Society. In the Vedic society women participated in religious ceremonies and assemblies. There were women like Maitreyi, Gargi, Lopamudra who were learned souls and have put forth their thoughts in Upanishads. The following designations given in different Vedic literature show the position of women in society.

Women designated as	Reason for designation	Designated in
ADITI	Because she is no dependent	Nirukta. 4.22
DHRUVA	As she is firm	Yajur Veda, 11.64
MENA	As she deserves respect	Nirukta, 3.21.2
SANJAYA	Since she is victorious	RigVeda, 10.159.3
SARASWATI	Since she is scholarly	Yajur Veda, 20.84
SIMHI	Since she is courageous	Yajur Veda, 5.12
SUYAMA	Since she is self-disciplined	Atharva Veda, 14.2.18
VISHRUTA	Since she is learned	Yajur Veda, 8.43

In early Vedic civilization women was always encouraged to pursue spiritual advancement without hindrance. Throughout the history of India and the traditions of Vedic society, women were also examples in maintaining the basic principles in *Sanatana Dharma*. The nature of motherhood of woman was always stressed in Vedic India. Pitamaha Bhisma said –

*“Upadhyayan dhasacharya acharyanam satam pita
Sahasram tu pitrun mata gauravenatirichyate”*

“The teacher who teaches true knowledge is more important than ten instructors. The father is more important than ten such teachers of true knowledge and the mother is more important than ten such fathers. There is no greater guru than mother” (Mahabharata, Shantiparva, 30.9). In ancient India the Sanskrit words used by the husband for the wife were *Pathni* (the one who leads the husband through life), *Dharmapathni* (the one who guides the husband in dharma) and *Sahadharmacharini* (one who moves with the husband on the path of righteousness and duty).

Priority of women was also expressed in Hindu religion. The balanced position of spirituality of the goddesses and gods was reflected in combined conception of divinity. Even then priority was given to the goddesses while expressing the divinity – for example *Radha - Krishna, Laxmi - Narayana, Parvati - Siva, Indrani - Indra* and so on.

History establishes the fact that women of the Vedic society have enjoyed priority, respect, honour and status. They have given equal privileges with their male counterpart especially in sectors like education, creative activities, etc. Gods and Goddesses were jointly worshipped to maintain a balanced perception of spirituality. But was it women empowerment? One of the primary conditions of women empowerment is equal right of women in domestic as well as social decision making process. Vedic women did not have much opportunity to play important role in decision making. *Sayamvara* was the liberty of women to choose her husband but this sphere of authority was not widened in other aspects of life except for marriage. A woman was honoured in Vedic period mostly as a wife not as a female individual. Wives were enjoying honour, respect but they were bound to obey the decision of the senior members of their in laws house. That means one senior woman was empowered to execute her decisions not all the women in general of a family. Rajmata Satyawati, probably the most empowered women of Mahabharata was honoured and regarded as the main decision maker of Hastinapur. But her daughters in law did not have the decision making authority. If Draupadi or Sita could take the decision of their lives, then the episodes like *Vastraharana* or *Agnipariksha* did not came forward. Vedic society perhaps produced empowered women but not initiated the process of women empowerment.

Women in post Vedic period

During post-vedic period, women started losing their status in society, which she attained in the Vedic age. She lost her independence; she became a subject of protection. Women turned out to be the most cared wealth of family, a potential unit of socio-cultural progress. The law-givers of ancient India made it obligatory on men folk to protect the fair sex. Thus ordains Manu (Manu Smriti IX,3) –

*“pita rakshati kaumare bharta rakshati yauvan
vardhakya sthavire putra na stri svatantramarhati”*

Her father protects her in childhood, husband in youth and sons in old age, A woman is not fit (?) for independence (Manu Smriti V, 148).

Manu did not treat women at par with men so far as rituals of Vedas are concerned. The women was not eligible to study Veda, nor for use of mantras in performing sacrament except marriage. Manu believed that there is vital structural difference between man and woman. Man was responsible for hard work, earning the bread and women for household duties. Manu says “when creating them God allotted to woman a love of their bed, of their seat and of ornaments, impure desires, dishonesty, mature and bad conduct. That is why Manu does not contemplate equality between man and women in different walks of life. On the contrary Manu wanted that women should not only be honoured, she should not be put to any grief. However, he insisted that a husband should be constantly worshipped as God by a faithful wife.

Empowerment in global perspective

Empowerment as a concept was first brought at the International Women’s Conference in 1985 at Nairobi. The conference concluded that empowerment is a redistribution of power and control of resources in favour of women through positive intervention.

The Programme of Action 1992 has comprehensively given the below mentioned parameters of empowerment of women (Goel, 2009: 37):

- Enhance self-esteem and self confidence in women.
- Build a positive image of women by recognizing their contribution to the society, polity and economy.
- Develop in them an ability to think critically.
- Foster decision-making and action through collective process.
- Enable women to make informed choices in areas like education, employment and health especially reproductive health.
- Ensure equal participation in the developmental process.
- Provide information, knowledge and skill for economic independence.

- Enhance access to legal literacy and information related to their rights and entitlements in the society with a view to enhance their participation on an equal footing in all areas.

Concept of women empowerment in India

In order to address the concerns of women in society, the Government of India has established the Department of Women and Child Development within the Ministry of Human Resource development. A National Policy for the Empowerment of Women 2001, provides the framework for addressing women's issue. The objectives of the policy are as follows:

- Creating an environment through positive economic and social policies for full development of women to enable them to realize their full potential.
- The *de-jure* and *de-facto* enjoyment of all human rights and fundamental freedom by women by equal basis with men in all spheres – political, economic, social, cultural and civil.
- Equal access to participation and decision-making of women in social, political and economic life of the Nation.
- Equal access to women to health care, equality education at all levels, careers and vocational guidance, employment, equal remuneration, occupational health and safety, social security public office, etc.
- Strengthening legal systems aimed at elimination of all forms of discrimination against women.
- Changing societal attitudes and community practices by active participation and involvement of both men and women.
- Mainstreaming a gender perspective in the development process.
- Elimination of discrimination and all forms of violence against women and the girl child.
- Building and strengthening partnerships with civil society, particularly women's organizations.

The quilt-maker women of Pallisree Colony

Pallisree Colony (locally known as Mana) is an age old settlement emerged after construction of Durgapur Barrage on Damodar river. Durgapur Barrage was constructed in 1955 by the Damodar Valley Corporation to provide irrigation facilities in the villages along with banks of Damodar. Before this construction the present settlement area was covered with long aquatic grasses locally known as Mana. After construction of the barrage and the water reservoir, the settlement started emerging as regular water flow has been stopped. The settlement has got the name Mana for abundance of aquatic Mana grasses. The inhabitants of Mana were mostly refugees from Bangladesh. In the long run the settlement has grown

and presently it is recorded as Pallisree Colony under jurisdiction of Barjora Panchayet, Bankura, West Bengal. As the settlement was grown on sandy river bed, it took a long time for the inhabitants to make it habitable. The lands are still now not fit for paddy cultivation. Only a few vegetables are grown in winter season. Arable lands submerge during monsoon especially when lock gates of the barrage release bulk amount of water. The inhabitants of Mana were leading a miserable life with all sorts of constraints. People started working as daily labourers to sustain. They started going to distant places even to different states in search of some occupation. Niranjana Das and his wife went to Orissa and with their prior knowledge of needle work they learned to prepare quilt. After getting back they started making quilt altering the raw material to make it cost-effective. Niranjana Das started collecting sarees from different urban areas and purchased poor quality cotton from bedding houses in Durgapur, Burdwan. His wife made the quilt and finally Balaposh – an alternate source of earning was introduced to Mana. People specially the females started Balaposh sewing after getting training from Niranjana Das and at present this is a widely accepted cottage industry in Pallisree Colony. Very recently some allied industries like preparing cotton etc. are established. Two factories are there within Pallisree Colony where the raw material of Balaposh is prepared. Huge amount of pieces of cloth is purchased by the factory owners from different tailors and cloth merchants of Calcutta and nearby areas. These pieces are crushed in a crushing machine to prepare the raw material for Balaposh. This is locally known as *Tulo*, but not the actual cotton for quilt. Before crushing the cloth-pieces are cleaned and unwanted materials are eliminated. This painstaking job is done by the female workers of Mana with a nominal wage rate. Not only nominal wage the female workers of Mana are facing lot of difficulties and health hazards. The workers working in the factories have minimum provision of standard environment for working. They are suffering from several respiratory diseases which affect their domestic lives also. Still they work. Do they work only for bread-earning? There are some female workers whose husbands or sons earn enough to run their families. There is no perception of surplus earning for wellbeing of the families, higher education for the children, strong inclination towards banking or highly commodity dependent life-style. Two different views come from two categories of workers – the factory workers and the quilt makers.

The quilt makers continue the jobs because

- They can prepare *Balaposh* along with their household works
- They have to invest a very little for starting quilt making
- They don't have to go outside for this work
- They can earn money according to their time as well as labour investment.
- They can contribute their earning in their families

- They can control their lives at least to some extent.

The factory workers carry on the jobs as

- They have a continuous flow of income irrespective of season and demand of *Balaposh*
- As their wage rate is constant they can be calculative regarding their earning.
- They are getting money in proportion to their investment of time and labour
- They don't have to invest any amount.
- They can contribute their earning in their families
- They can control their lives at least to some extent.

The last two reasons, i.e., contribution in family and control over life are common for the two categories workers in support of their work. The female workers of Pallishree Colony are of opinion that they are getting control over their lives (Bandyopadhyay, 2013). If empowerment is considered as a multidimensional social process of getting control over life, then it may be inferred that empowerment of women is going on in Pallisree colony. Is it the reality! Let us go for some cases. 63 women of Pallisree Colony directly or indirectly involved in quilt-making were interviewed by the author. Age range of the informants was between 19 to 66 yrs. Each case was separately analysed of which some typical cases are mentioned in this study.

Case A

Sabity Roy (F-24), daughter in law of Durga Roy (F-47) do not prepare *Balaposh*. When she was asked about the reason she said, her mother in law does not allow her to do so. When Durga was asked about her prohibition she said Sabity is too young to do the job. Later on she will do it after having proper training. Sabity was seen to do household works, even difficult than quilt making while her mother in law was making quilt in their courtyard cleaned by Sabity.

Case B

Jamini Biswas (F-30) have two school going daughters. It is hard for her to manage all the household works including problems of her daughters. Still she prepares *Balaposh*. A lion's share of her earning is snatched by her husband and Jamini puts more labour to earn more money for the sake of her daughters' education.

Case C

Aparna Hazra (F-20) is living with her widow mother Suhasini (F-42) after being separated from her husband. Suhasini goes to factory and hardly manages her family with the nominal wage she earns. Aparna performs all the household jobs but having opportunity to earn some money even staying at home she is not allowed to prepare *Balaposh*. Suhasini established her logic in favour of her prohibition.

She said if Aparna starts earning money she would lose control over herself and it will stand for the possibility of her second marriage.

Case D

Minu Das (F-40) play a leading part in **BANDHAN**, a micro-finance agency working in Pallishree colony. She trains as well as helps the female workers to get money from this agency and to develop their business. Her daughter Bina (F-21) prepares *Balaposh* along with all the household duties. Mina and her husband control all the financial handling of taking order and selling finished products. She sets a target of work to be finished within stipulated time but prevents Bina to be involved in financial matters only for her less experience and tender age.

Plenty of cases are there except for these referral cases. One single question comes out if all the cases are analysed – Do all of them have equal control over life! What happens in reality! Initiation of Self-help groups, presence of micro-financing agencies is considered as tools for measuring how effective the process of women empowerment is in a particular society. In Pallisree Colony there are more than 20 Self-help groups maintained by the female-workers, more the 5 micro-financing agencies providing financial assistance to develop their business and to earn more money. What's going on – women empowerment or some women are getting empowered and having control over their lives?

Conclusion

This study is an effort to throw some light on the ongoing debate on what social process actually exists – women empowerment or empowering a section of woman in a society with the help of a type case of Pallisree Colony. People having faith on the Indian philosophy have an idea that at least in Vedic period women empowerment was a traditional conception. But was it really the fact! Women in Vedic period have given liberty to some extent. Except for choosing husband through *Sayamvara* women were not given priority in taking any social decision and very little in domestic decisions too. Women had the liberty to enjoy the glory as a queen, but not as a female individual. After getting married with a king a female no more had a liberty to control her married life. She could never expect her same position and glory as her husband married twice or thrice. Women in Vedic and Epic period were considered as a creature that needs more protection, more care and more safety. This consideration was conceptualized as offering women a position in the society and showing lot respect to them. But women hardly got opportunity to show their capability in making any social decision except for a few like Rajmata Satyabati.¹ The power of Rajmata Satyabati was not expanded horizontally or vertically. Hence her daughters in law had to be subjugated just to carry the lineage on. Almost all the

¹ Probably the most powerful woman of Mahabharata.

queens of Hastinapur faced subjugation only because of this centralized power. The next prerequisite of empowerment is expansion power. Understanding power as zero-sum, as something that you get at my expense, cuts most of us off from power. A zero-sum conception of power means that power will remain in the hands of the powerful unless they give it up. From this point of understanding too, the Vedic or Epic women were simply empowered to a certain extent. There was no empowerment in general.

In contemporary society also the same thing is going on. Women of contemporary society have a misconception that they have lost priority in comparison to the Vedic or Epic period. So far as the aspect of decision making is concerned women are almost in same position. Due to increase in number of nuclear families women now have a little authority in domestic decision making. If the decision extends the periphery of her own nuclear family, there are some Rajmata Satyavatis who are empowered to take control over it.

One of the primary important parameters of empowerment is role in decision making. Daughter in law like Sabitry and many others are still unable to play a little role in even domestic decision making. Persons like Bina and many others don't have the independence to know how much she deserves for her labour. Only second marriage is the solution for girls like Aparna, they don't have any control over their lives. This in no way can be considered as empowerment. This is the process through which women like Durga, Suhasini and Minu are getting empowered and executing their power over persons like Sabitri, Aparna and Bina.²

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²Names of the informants are modified due to ethical reasons.

Decolonizing the museum *ad infinitum* ?

BRUNO BRULON SOARES

Abstract

The recent name change of certain ethnographic museums in the world denotes a new conceptual framework for the institutions. In 2013, even the International Committee for Museums of Ethnography – ICME began a discussion towards a possible change of its name, considering that the term "ethnography" historically expressed different meanings in different parts of the world and its use reflects a colonial perspective. In view of this new interpretation of the decolonization process, the present paper addresses the decolonization of museums in a critical perspective emphasizing the institutions' performative enunciations in the 21st century.

Keywords

Museum, Anthropology, Decolonization, Ethnography.

In April 2014, professionals from ethnographic museums around the globe were confronted with a new idea. Three museums – the *Tropenmuseum* in Amsterdam, the *Rijksmuseum Volkenkunde* in Leiden, both in the Netherlands, and the *Afrika Museum* in Berg en Dal, in South Africa – merged to one new museum: the National Museum for World Cultures. The merger would not be noticed by most visitors because all three museums remain open and keeping their old names (Claessens, 2014). However, from that moment forward the new name would be used internationally, as a new concept for colonial museums.

For financial reasons, it was known that the three museums would have to merge to ensure the *Tropenmuseum's* survival. The Dutch Ministry of Foreign Affairs didn't want to subsidize the institution any longer and the Ministry of Education, Culture and Science only wanted to provide funds if the museum merged with the Leiden and the Berg en Dal museums. With the change of tutelage, the traditional ethnographic museum in Amsterdam stops being a part of the Royal Institute for the Tropics, though it remains located on its premises. All of its curators would be stationed in Leiden from that moment and there are plans to reconstruct its building even though no funds were made available for now.

Internationally, this institutional merger is possibly reflecting a relatively small revolution in the universe of ethnographic museums that is in motion. In the end of

2013 a debate was initiated inside the International Committee for Museums of Ethnography – ICME of the International Council of Museums – ICOM. A few members of ICME decided that the time had come to change the committee's name. According to Per B. Rekdal (2013), ICME member who published a small text in the committee's Newsletter entitled *A new name for ICME?*, the problem with the current name lies with the term "ethnography", a central term for anthropologists but that was no longer making sense for museum professionals who worked in the institutions entitled as "ethnographic". In Rekdal's view, the term "ethnography" historically expressed different meanings in different parts of the world and its use "reflects a colonial world view" in the context of colonial museums related to local museums in the former colonies.

The new name, suggested in Rekdal's text and in an e-mail sent to all the ICME community, should be "The International Committee for Museums of Culture and Society" or, using the plural form, "The International Committee for Museums of Cultures and Societies"¹. In a very simple perspective, the proposition was for the change of the term "ethnography" for the ethnographical terms "culture(s)" and "society(ies)" aiming to "free" these institutions (and the committee that deals with them) from their colonial past.

In view of an analysis of the matter and its implications, a few questions can be posed. By insisting in a terminological revision of their own names of birth, how are museums today dealing with the decolonization of their practices? Is this superficial change only a matter of appearance? How far can this process of "decolonization", that involves hiding the past, go for museums? As museum professionals and analysts, haven't we decolonized enough?

1. Decolonizing *ad infinitum* ?

The present paper addresses the decolonization of museums in a critical perspective emphasizing the institutions' performative enunciations in the 21st century. In general, museums in Europe and in the former colonies for the past few years have been dealing with the issue of decolonization, either by denying it or by giving it emphasis. Some European museums have shown many controversial solutions to the 'problem' with the colonial past, while other institutions, particularly in countries historically submitted to colonization, have been dealing with the past by its suppression while keeping their doors open (for most of the time) fulfilling the role of Eurocentric public temples.

Museums are constantly *performing* history as heritage, and the artefacts become appropriated by particular historical agenda that sustains the museum performance based on particular ideologies and value systems. These ideologies

¹Rekdal, Per B. E-mail sent to ICME's members on November, the 14th, 2013.

are responsible for the creation of specific versions of history, which are transmitted by the museum discourse today. By understanding museums as performances or performers, creators of the past, it is plausible to recognize their action as deeply located in cultural history (Appadurai & Breckenridge, 1992, p.36) and the museum objects as embedded in specific cultural dramas. Museums are both creating and appropriating such dramas according to the particular interpretations of history that 'fit' the present. Hence, most museums are dealing with the present performances of "decolonization" in order to forget the darkness of the colonial past.

This paper's aim is far from being the judgment of museums enunciations throughout history. The perspective here presented intends to critically analyse the strategies mobilized in the so-called process of decolonization. If the new trend for ethnographic museums is really the denunciation of "ethnography", how are the anthropological concepts being interpreted by these institutions? What can be said about their relation to the mother-discipline where they were founded? Either way, if the alternative names are going to be adopted or not by most of these institutions, the movement for a re-evaluation of their names and of their symbolic meanings denote important transformations in the contemporary universe of museums.

Putting in check the very notion of "ethnography" after so many years of debates in the theory of anthropology concerning this concept might be perceived as a rather naïve movement for museums and their professionals or, in a slightly different sense, as an act of desperation for dismissing a painful past. Ethnography as we know it in contemporary anthropology is currently in the centre of the discipline. In fact, as a concept it has been "decolonized" by anthropologists long before museums decided to have a problem with it.

Colonialism/imperialism became an issue for anthropology almost 50 years ago in the aftermath of political decolonization, when "the voices of national liberation rang louder in the academy" (Fanon, 1961 apud Stocking, 1991). It was the moment when access to traditional fieldwork sites now in control of independent "new nations" became problematic (Stocking, 1991, p.3). Some began to speak of a "crisis in anthropology". A more systematic critic developed first in France in the early 1950s in the context of independence movements and colonial warfare in former colonies such as Indochina and Algeria (Leiris, 1950; Balandier, 1951 apud Stocking, 1991). Later, in Britain, it took a different form where the focus was on the implications of colonial involvement for anthropological theory. In the United States, while the country was involved in the culmination of postcolonial warfare in Vietnam, the ethical and political role of the ethnographer was in the centre of concern. The final years of the 1960s and the beginning of the 1970s were marked by a consistent academic production on the colonial situation and its implications to anthropology (Asad, 1973).

Throughout the years, anthropologists have presented different approaches to the understanding of other people's systems of values. For instance, one could jump to Geertz perspective expressed in the 1980s, according to which "we see the lives of others through lenses of our own grinding and [...] they look back on ours through ones of their own" (1984, p.275). Furthermore, one could argue that anthropology have made ethnography transpose ethnocentrism by exploring its own limitations.

As Marilyn Strathern has put it, classical anthropologists such as Frazer, have been criticized "for treating events, behavior, dogma, rites *out of context*" (1987, p.254, her emphasis). According to the author, reflecting on the foundations of modern anthropology, "the problem is a technical one: how to create an awareness of different social worlds when all at one's disposal is terms which belong to one's own" (Strathern, 1987, p.256). When confronted with ideas, concepts and values from a culture conceived as other, the anthropologist is faced with the task of rendering them within a conceptual universe that "fits" them, and thus of creating that universe usually by describing it through *ethnography*. Anthropologists' task, thus, since before de movement of decolonization, was to make comprehensible the "natives" subjectivity through the subjectivity of the researcher expressed textually in ethnography :

The analytical technique, deriving from postulates about the integrity of society and culture, is embedded in literary technique. The imaginative leap becomes *between what "we" find ordinary and what "they" find ordinary*. Hence the significance of Malinowski's perpetual insistence that "they" were more than projections of Western theories. [...] Their ideas had to be appreciated in their own terms. (Strathern, 1987, p.261, her emphasis).

Since colonialism was incorporated into the subject matter of anthropology (with the emergency of a genre of "colonial ethnography") (Stocking, 1991), and with anthropologists working hard towards a decolonization of the discipline, its concepts and methods, museums have been left behind remaining limited to the determined universe of their specific collections. As places commonly associated with material culture and its meanings, museums cannot escape the "colonial legacies" (L'Estoile, 2008) that are responsible for guaranteeing the presence of the past in these institutions. After decades of an intensive theoretical production regarding decolonization, anthropology's colonial past can still be confronted within the walls of an ethnographic museum, sometimes in the museum building itself and particularly in its collections. Beyond a conceptual revolution that has possibly been accomplished by anthropologists, can museums still accomplish a symbolic revolution towards the decolonization of its performances? That is a question without a satisfying answer in the present. Museums are only beginning to realize how

much of their inescapable past still guides their present actions and “decolonization” is only a vague idea while new names do not correspond to a completely new discourse.

2. New names and old mistakes

In 2012, a new French museum located in Marseille opened its doors. It was entitled the *Musée des civilisations de l'Europe et de la Méditerranée* – MUCEM, and it inherited the old ethnographic collections of the *Musée national des arts et traditions populaires* – MNATP². The new museum is an attempt to give new meaning to collections once thought as “ethnographic” that were originated from the work of ethnographers with regional European and Mediterranean cultures. The MUCEM represents a particular case of museum reformulation in which the change of keywords in its name in order to instate a new way of looking to the past relations between Europe and the rest of the world is still being discussed by museum professionals and anthropologists.

Facing the sea, the MUCEM is “open to the current of change” – according to the museum’s website. It was conceived as a “cultural center” for the encounter of different “civilizations” from the both shores of the Mediterranean Sea. In this museum and in a few others in the world – as those previously mentioned in the beginning of this paper – the terms “culture”, “civilizations” and “society” are being used regarding a new agenda that wishes to bring together the two sides separated by ethnography, the one of the observers and the one observed.

More recently, when ICME decided to discuss a name change possibility, ultimately it was debated within the international committee how its members perceived the institutions in which they worked. One of the points mentioned was the fact that maybe the singular term “culture” should be preferred instead of “cultures” in plural, considering that some of ICME’s members work in museums which are not necessarily dealing with several distinct cultures or their relations but rather with ‘culture’ in its general anthropological (?) sense. Another approach to this matter, mostly expressed by Rekdal’s intervention, was concerned with the use of the term “ethnographic”, perceived in many countries as old fashioned or “colonial”.

But are the terms “culture” and “civilizations” less colonial or ambiguous at all? Haven’t these terms also been created and sustained by anthropologists in the process of getting to know other peoples in order to dominate them in a certain way? And can museums from different parts of the world reach a common terminology divorced from ethnography and deprived from any colonial implications?

²Which inherited the European collections of the traditional *Musée d’Ethnographie du Trocadéro*, in Paris, and that was idealized by Georges Henri Rivi re in the 1930s. The MNATP closed its doors in 2005.

As the anthropologist Roy Wagner has demonstrated, "culture" is a notion forged by anthropologists in order to control their own reality while studying another (Wagner, 1981). In this sense, "culture" has been "invented" as a method for the anthropological analysis, placing in different sides the researcher and who is the subject of his/her research. The idea of "culture", then, establishes a relation of equivalence between observer and the observed, in which cultural variations can be studied once the anthropologist recognizes its own "culture" as "culture". The same artificial sense of "equality" is suggested with the use of the term "civilizations" applied at the same time to European societies and the ones that have once been defined as "savages".

The problem is that these terms – that are, in fact, in a general sense older than the term "ethnography" – don't seem to solve the problem of colonization, and present the same problems (and maybe others) that are being attributed to the "ethnographic" noun. Regarding the concept of culture, vastly disseminated in anthropology before the 1960s, Herzfeld suggests that

Cultures were like things with minds – mutually incompatible minds guiding intractable things. This is the vision of culture that is so often reproduced today in the media, following popularizing academics who rely heavily on those anthropological discards. Those who decry "Balkan nationalism", "religious fundamentalism", and the like fail to realize the extraordinary resemblance of their own cultural fundamentalism with what they reject in exotic "others". (Herzfeld, 2001, p.28).

The difficulty concerning the term is in the fact that anthropologists or the supposed "museums of cultures" cannot clearly determine where are the boundaries between different cultures, and if the idea of "culture" is further explored they will realize that the term is also used to separate "our" culture from "theirs". The problem is then structural and it deserves more attention and reflection than it has been given by museums recently.

From an anthropological point of view, the terminological revision in the museum world demonstrates a partial attempt to revise the very institutions that didn't took part in the reformulation of anthropological theory in the past decades. What is needed, then, is possibly a return of these former "ethnographic" museums to anthropology and its recent debates, not looking for answers, but benefiting themselves from this discipline's interrogations. Authors who studied the discipline and its methods from the perspective of the colonial encounters, such as Talal Asad (1973), start with the fact that the basic reality in which social anthropology was conceived, in the beginning of the 20th century, was marked by the power relations established between dominant (European) cultures and dominated (non-European) ones (Asad, 1973, p.17). In fact, museums – as well as ethnographers – have to ask themselves how relations of power affected the contextual conditions that led anthropologists to assemble their collections and to formulate a particular

objective version of the past. As Asad put it, the colonial power structure made anthropology's subject of study accessible and safe, by making the proximity between the European observer and the people observed physically sustainable and practically possible. In the same way, the fieldwork allowed a certain kind of intimacy that was virtually impossible without ethnography.

The reason for the asymmetrical relation between observer and observed established since the birth of anthropology lies in the political dialectic of world power. Even if, in a condescending way, anthropologists wish to say that they have contributed to the preservation of the societies' cultural heritage that would have, otherwise, been lost for posterity (Asad, 1973, p.17), museums must assume that the founding fathers of the discipline have also contributed, sometimes indirectly, to the maintenance of the power structure represented by the colonial system.

It doesn't matter if they are called museums of ethnography, anthropology, folk museums, folklore museums or museums of civilizations and culture, while keeping the collections of their ethnographical past, witnesses of the colonial situations that built them, these museums are doomed to be constantly revisiting the inconvenient facts of their past. In addition, even though a symbolic change can be anticipated as a necessity for ethnographic museums in different parts of the world, we can safely say that the mere adaptation of their names is probably not going to be sufficient, considering that the problem is much deeper, as we can envision, than a lexical one.

3. What do museums do, then ?

As Geertz once observed, "What does the ethnographer do? – he writes." (Geertz, 1984, p.274). For long – and even longer in the British social anthropology –, the work of ethnographers have been established to be their writing, and ethnography is their method. What, then, is left for museums and their ethnographic collections? In fact, museums with ethnographic collections today are no longer collecting through ethnography. The new acquisitions of a contemporary museum are no longer directed by ethnographic research, what has been the motive for a deep crisis in these museums for the past two decades. Anthropologists are considerably being left out of the decisions regarding museums' collections, even though they were the ones responsible for their assemblage in the past. In this sense, anthropologists themselves are recently questioning the role of the discipline in these institutions.

Without scientific research as the main axis of ethnographic museums, their other professionals (curators, *conservateurs*, museologists, etc.) became the sole guardians of collections that were formed in different times of history and by different ideologies. Recuperating Strathern's terms, the objects in a museum are necessarily "out of context". Their contextualization in the present is always a performance of the past. Museum professionals are better defined, thus, as *performers* rather than *researchers*. They no longer have to be involved with the "other" defined by

ethnography, because they now have *theatre* as an excuse.

It is safe to observe an important change in the anthropologist's work since the breakup and redistribution of colonial power in the 1950s and the echoes of this process in the cultural theories of the 1960s and 1970s (Clifford, 1983). Progressively the "West" no longer presents itself as "the unique purveyor of anthropological knowledge about others", and "it has become necessary to imagine a world of generalized ethnography" (Clifford, 1983, p.119) in which anthropologists are not the only ones who can formulate contextual universes of meaning. With the anthropologists' authority shaken, museums take part in the interpretation of the isolated parts of the "distant" worlds explored by colonization.

This new museum calling is enhanced by the contemporary truth that there are no scientific truths after all. Presented by art and performance the same artefacts previously sustained by scientific facts are more convincing than they were to the average audience. In an interview regarding the birth of a museum, Stéphane Martin, the director of the *Musée du quai Branly* – the well-established Parisian enterprise that transforms ethnographic collections in primitive art – states that "making a museum is making theater, it is not writing theory" (Martin, 2006, p.125). The *quai Branly* project, over the last few years, have demonstrated to the world how the museum's work is practically and symbolically divorced from the work of the contemporary anthropologist. While writing a text is the conceivable way anthropologists express a particular scientific narrative, the museum performance now has liberated itself from the anthropological method and is free to present new versions of reality created from their collections.

Museums have always "made theater" with the available objects in the different periods of their existence and according to the particular ideologies that sustained them. The difference today is in the lack of commitment with ethnographic interpretation and a greater awareness of the museums' own performative power, which does not exempt themselves from the task of dealing with the past in a reflexive way.

4. Some conclusions

The contemporary anthropological reflection that has anthropology itself as a subject admits its deeply "western" rooted epistemology. This configures an initial step towards the necessary critical distance to be produced inside the discipline towards its own objects of analysis. In these recent approaches to anthropology, the goal is the demystification of the notion according to which knowledge can only be produced where power relations have been suspended. By admitting that power produces knowledge, as Foucault (1977) once did, and that anthropology occupies a declared power position, museums will be free from their own limitations and preconceptions, and will become agents that produce reflexive knowledge of their own, revising the past rather than dismissing it.

Much has been said in other analysis (see, for example, Karp & Lavine, 1991) on how colonized museum practices are being conducted in the present. Anyone who studies museums know how much of their structure, organization, taxonomy and documentation are colonial in origin (Appadurai & Breckenridge, 1992, p.51). Thus while museums may desire to change the cultural drama in which their practices are embedded, what is in the core of their performance – or the *text* of the museum's *context*, as proposed by Appadurai and Breckenridge – is indeed colonial. To admit this fact is indeed assuming a reflexive approach.

Museums artefacts are generally testimonies of the past and carriers of historical information, but they are also *witnesses* of their own history and the circumstances of how they were collected. As much as museums try to silence such circumstances, most of the times they are inescapably *in* the objects as they are, by extension, in the very institutions where they are kept. The ethnographic blindness that has been proposed by hiding ethnography from the institutions' names is a rather extreme interpretation of the decolonization process. The only way for museums to build a new interpretation of the colonial past is through dialogue rather than through silence, through an active process of reflexivity rather than dismissing the reflection already initiated by the ethnographers themselves.

The first step is to recognize that museum users do not come to their exhibitions as "cultural blanks" (Appadurai & Breckenridge, 1992, p.36). They come as persons which have been introduced to particular national cultures and which have learned history through a particular perspective. They are not there merely as "viewers" or passive receivers of the past. They deserve to be treated as active subjects of the museums' narratives, as "participants" of history rather than just bystanders. Indeed, many local museums but also national ones have recently engaged in projects that promote participation – a complex concept that we are not going to discuss here – through the recognition of the public as agents of their own history and vocal participants of their own heritage.

Museums are the inventors of our past, future and present, and we exist to the world by constructing our own lenses through which we may see ourselves and the others more clearly or, at least, in a less confusing way. Through dialogue, museums open the door for the multiple interpretations of the world, and suddenly their focus is dislocated from the objects themselves to the particular lenses we use to look at them.

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Indian Natural History Collections at the Natural History Museum, London, United Kingdom

RANEE PRAKASH

Abstract

The Natural History Museum in London, United Kingdom houses over 80 million specimens from various disciplines including Botany, Zoology, Entomology, Mineralogy and the Earth Sciences. A selection of the Indian natural history collections held in the Life Sciences Department (Plants) made by various collectors during the British Raj (1612-1947) in India are discussed. There is a need to constantly keep adding collections from modern time series as most of the collections are historic and science needs to progress collectively across boundaries.

Keywords

British Raj, collectors, museum, natural history, type specimen

Introduction

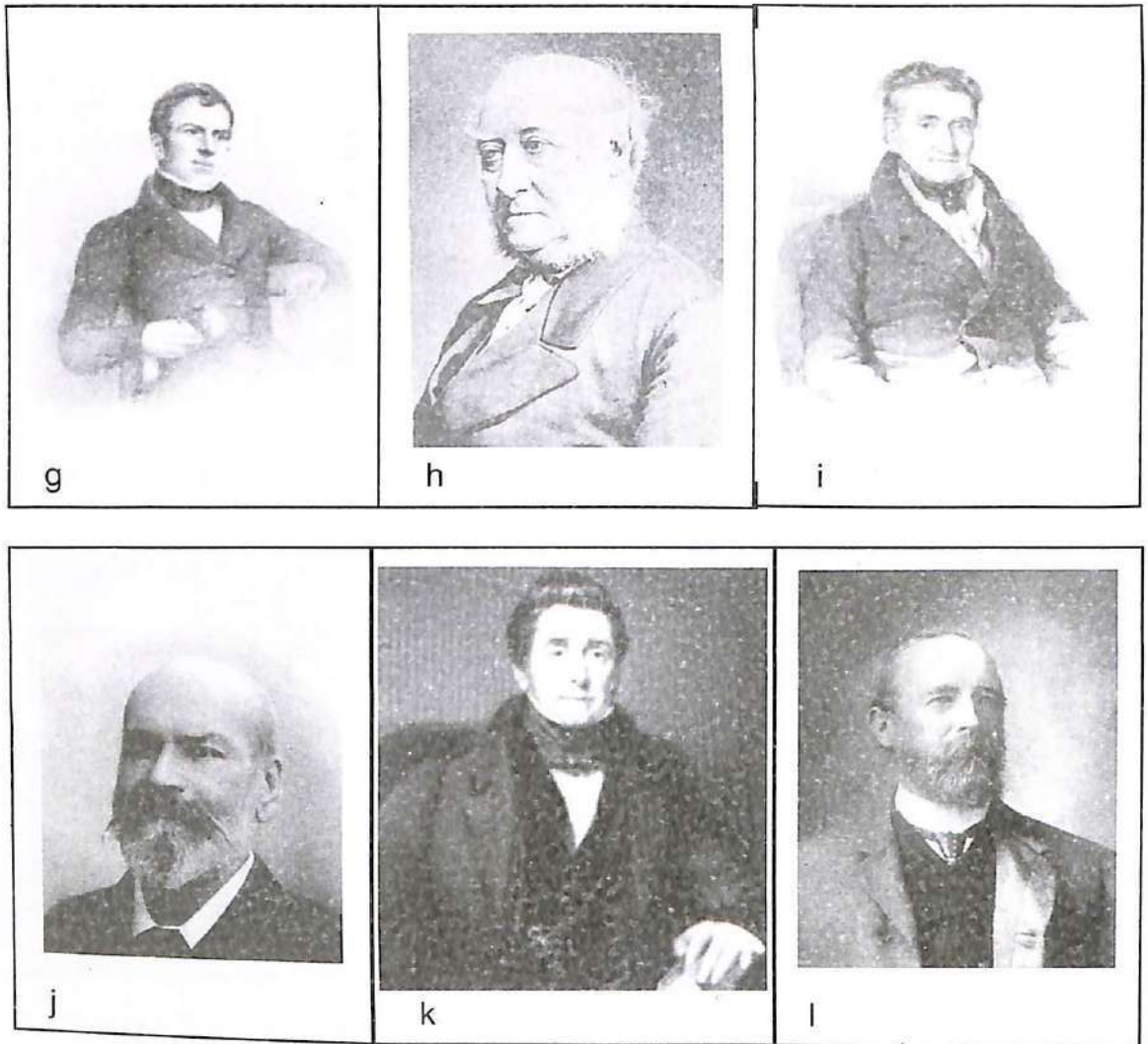
The Natural History Museum (NHM) grew out of the British Museum which was established in 1759 based largely on the collections of Sir Hans Sloane (1660-1753). Due to lack of space, the British Museum's natural history collections moved to South Kensington where they occupy the landmark Alfred Waterhouse-designed building which opened to the public in 1881. With the passing of the British Museum Act 1963, the British Museum (Natural History) became an independent museum with its own Board of Trustees, and with the Museum and Galleries Act 1992, the Museum's formal title changed to the Natural History Museum. The Museum is a non-departmental public body whose mission is to inspire better care of the planet and to advance our knowledge of the natural world. We intend to be seen as a voice of authority on the natural world with our mission to maintain and develop our collections, and use them to promote the discovery, understanding, responsible use and enjoyment of the natural world. The staff of the museum are experts in science-based taxonomy, identification and conservation worldwide, enhancing the quality of life. The Museum is a scientific centre of global significance and one of the world's leading visitor attractions for engagement of the natural world. NHM is supported by the United Kingdom Department for Culture, Media and Sport which is ultimately responsible to Parliament for NHM's key aims and activities.

The museum is home to life and earth science specimens comprising some 80 million items within five main collections: Botany, Entomology, Mineralogy, Palaeontology and Zoology. Recently, the former Botany, Entomology and Zoology Departments have been amalgamated into a new Department of Life Sciences, with the former Mineralogy and Palaeontology Departments united in a new Department of Earth Sciences. The Museum welcomed a record number of over 4.5 million visitors in 2013.

Materials and Methods

Various collectors and their collections housed in our Museum have been studied and information sought from relevant literature including British Museum of Natural





History, 1904-1912; Desmond, 1992; Noltie, 1999; Collar & Prys-Jones, 2012; Magee, 2013; see bibliography for full references). A number of (chiefly botanical) collectors in India whose specimens are housed in the Museum are discussed under 'Results'. Can you identify the collectors from their portraits (see Fig. 1)? Let us put their names to their faces and look at their contribution to natural history.

Fig. 1.

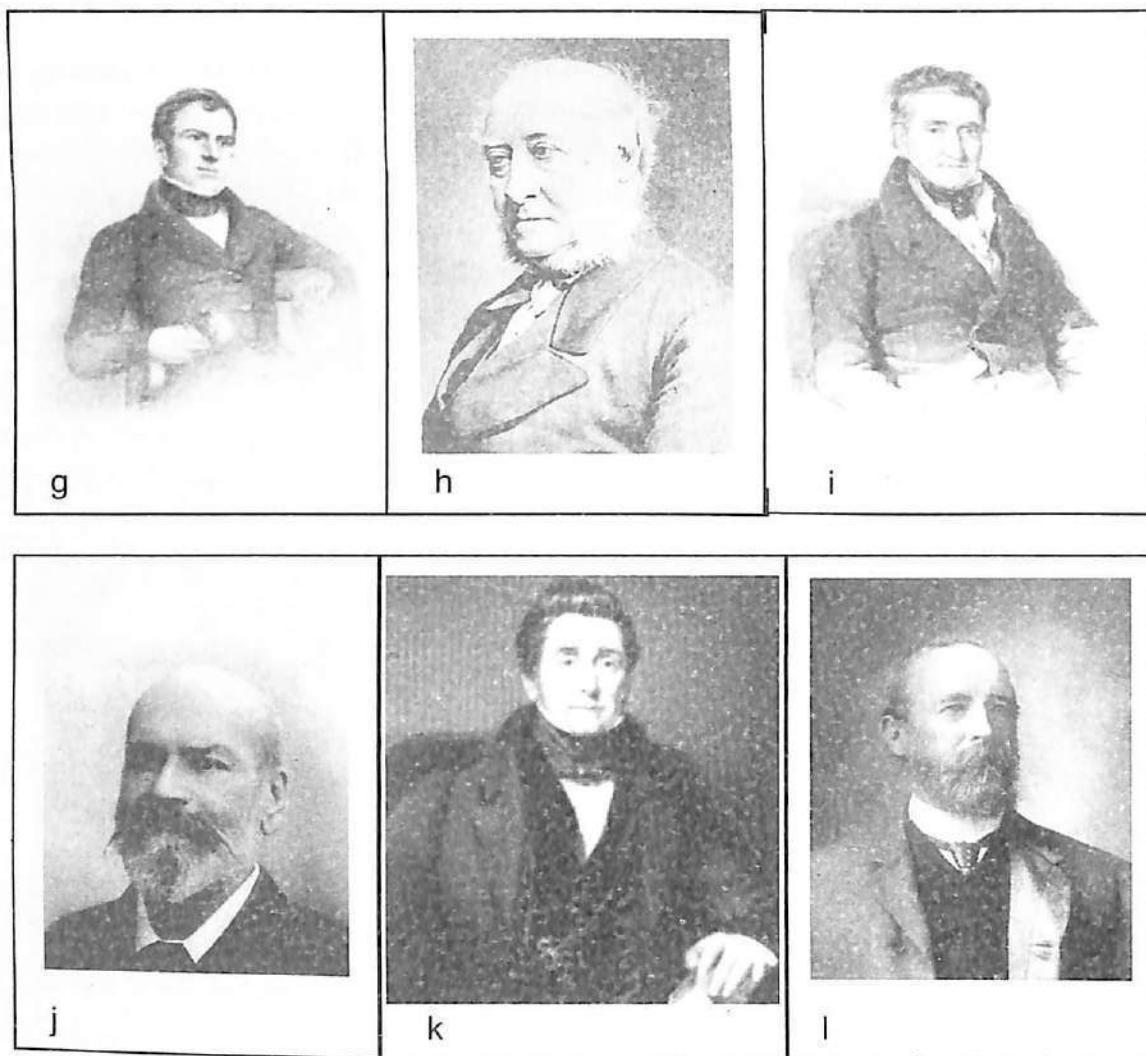
Collectors (or owners of collections) of significant material from India: a) Sir Hans Sloane, b) Robert Kyd, c) William Roxburgh, d) Nathaniel Wallich, e) William Skyes, f) Sir J.D. Hooker, g) William Griffith, h) George Elliot, i) Thomas Hardwicke, j) Col. R.H. Beddome, k) John Fleming, l) A.O. Hume

Results

Sir Hans Sloane (1660-1753) was a noted physician, scientist and collector who amassed one of the greatest collections of his time of plants, animals, antiquities, coins and many other objects. He is probably best known for promoting the popularity of drinking chocolate in England (from the cocoa plant, *Theobroma cacao*, which he had encountered in Jamaica). During the 15 months that he spent on that island in 1687-1689, Sloane made extensive notes on the local fauna and flora, listing about 800 new species of plants and cataloguing them in Latin in his 'Voyage to Jamaica' (1707, 1725) (see Carter, 1995). Sloane's specimens, acquired between the 1690s and 1740s, chiefly from other collectors, are the founding core of NHM's collections. In NHM, there are 265 bound volumes containing an estimated 120,000 dried plant specimens in the Sloane Herbarium, an extensive boxed collection of 'Vegetable Substances', as well as smaller numbers of insects, shells, etc.

In his will, Sloane offered this vast collection to the nation for the sum of £ 20,000. After his death in 1753, money raised by a lottery was used to purchase the collection and so was created the British Museum at Bloomsbury and later, its offspring, the Natural History Museum at South Kensington.

In the late 17th century, Samuel Browne (d. 1698) and Edward Bulkley (1651?-1714), East India Company (EIC) physicians at Fort St George (subsequently known as Madras, now Chennai), sent specimens of plants and animals, along with observations and records of local traditional knowledge, to their employers in England. The plant specimens were sent by the EIC to the Royal Society where they were studied by the London apothecary James Petiver (ca. 1658-1718) who then transcribed Browne's notes which formed the basis for a series of articles published in the *Philosophical Transactions of the Royal Society* (Browne & Petiver, 1700; Petiver, 1700; Petiver & Browne, 1702). These interesting accounts mention plant names and their local uses as well as some animal names (Petiver, 1700) found from the area around the area of Fort St. George. The specimens themselves remained at the Royal Society until 1781 when they were transferred to the British Museum (Dandy, 1958). These collections, now housed in our Historical Collections Room on the seventh floor of Darwin Centre 2 building are accompanied by important records of local plant names and their traditional uses in the 17th century. An example is *Terminalia bellerica* (Gaertn.) Roxb.; "the fruits, root, bark and leaves when boiled in water and drunk, expels phlegm and cures fever as per the doctrine of the Natives". The figure and description of the illustration in the fourth volume of *Hortus Malabaricus* (Rheede tot Draakenstein, 1683, pp. 23-34, tab. 10) seems to match the tree that



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Browne mentions and, in the *Philosophical Transactions* account, Petiver writes that the Royal Society "is obliged to Mr. Sam. Brown for bringing the knowledge of this tree, which had lain in obscurity" (Petiver, 1700).

Dr Edward Bulkley (also spelled Buckly/Bulkeley) succeeded Samuel Browne as Chief Surgeon at Fort St George in 1692, and was mentioned in the "Third Book of Samuel Brown" (Petiver, 1700). He sent a collection of Chinese medical instruments to the Royal Society, as mentioned in an article by Sir Hans Sloane (1698) which also mentions the first ever recorded medico-legal autopsy performed in India. Bulkley also sent animals (mainly shells and insects) to England (see list in Petiver, 1700, pp. 859-862). He died in August 1714 at Chennai.

Various employees of the EIC such as Robert Kyd (fig. 1b), William Roxburgh (1c) and Francis Buchanan-Hamilton (no portrait of him has been traced) contributed tremendously to Indian natural history between 1786 and 1815. Robert Kyd (1746-1793) proposed the establishment of a Botanical Garden in 1786 and, in 1787; he took up the post of the first Superintendent of the Calcutta Royal Botanical Gardens (now known as the Acharya Jagdish Chandra Bose Indian Botanic Garden (AJCBIG)). William Roxburgh (1751-1815) was Kyd's successor and took charge of the gardens in November 1793. Nathaniel Wallich took over the post in 1817 which he occupied until 1846, when he retired to England. In 1814, Wallich had also established the Indian Museum at Serampur.

Naturalists and botanists like William Griffith, David Prain, J. F. Duthie, W. Moorcroft, J. F. Royle, Col. R. H. Beddome and H. Falconer have left a rich legacy behind.

Important Publications on the Indian Flora

Early works included Rheede tot Draakenstein's lavishly illustrated *Hortus Indicus Malabaricus* (1678-1693) and William Roxburgh's *Plants of the Coast of Coromandel* (1795-1798). Roxburgh also published *Hortus Bengalensis* (1814), recording and cataloguing the increasing number of species that were now being grown in the Mumbai garden, as well as *Flora Indica* (published posthumously, 1820-1824). Nathaniel Wallich is famous for his *Tentamen Florae Nepalensis Illustratae* (1824-1826), *Plantae Asiaticae Rariories* (1830-1832) and a catalogue of 20,000 plant specimens (Wallich, 1828). The more methodical scientific documentation of the Indian Flora continued with Wight & Arnott's *Prodromus Florae Peninsulae Indiae* (1834) and further publications by Robert Wight (1840-1850; 1840-1853). 'Flora Andhrica', a dictionary of Telugu plants published by George Elliot (1859), is an important work that recorded vernacular botanical plant names. Subsequently,

Sir Joseph Hooker's *Flora of British India* (1875-1897) and Sir George Watt's *Dictionary of the Economic Products of India* (1896) made further important contributions to the knowledge of the Indian flora, and the Botanical Survey of India (BSI) was established in 1890 in Kolkata to survey the plants of India.

Important Indian botanical acquisitions at the NHM

The late 17th and early 18th century Indian plant collections made by Samuel Browne and Edward Bulkley and acquired by Sir Hans Sloane have already been mentioned. Subsequent to the original establishment of the British Museum, collections from various parts of India were acquired by means of gift, exchange, field trips, donation and purchase. Notable collectors include, for example, Nathaniel Wallich whose numerous Indian specimens are present in NHM with the larger part at the Royal Botanic Gardens, Kew where the Wallich Herbarium is housed separately in 'Wing B', on the ground floor. Other notable collectors whose Indian specimens are housed at NHM include William Griffith, F.W. Junghuhn, Capt. R. Strachey, J.D. Hooker, T. Thomson, Capt. P. Gerard, Fr. J.F. Metz, C.B. Clarke, J.F. Duthie, Col. Beddome, A.P. Young, G. Watt, C.W. Hope and Mrs Bradford to name only a few (see BM(NH) 1904-1912). Many of these collections were acquired via EIC employees. However, in general, significant amounts of material collected since the beginning of the 20th century are lacking from the NHM collection.

Illustrations

NHM houses over 30,000 artworks from India dating from the 1750s to the 20th century. Earlier artworks were often commissioned or created by East India Company employees (such as Nathaniel Wallich). In 2013, Judith Magee (Special Collections Manager in the NHM Library) published "*The Art of India: Images of Nature*", an excellent introduction to the natural history drawings from India held at the Museum. Drawings are important as they record details not seen in dried plants. A selection of drawings is highlighted here.

John Fleming, a physician, had interests in plants with economic and medical uses, such as turmeric and cashew nut. Turmeric is widely used in traditional medicines and as a spice in India (see Fig. 2).

The cashew plant was introduced to India from South America by the Portuguese in the 16th century. Parts of the plant are also used in traditional Indian medicine and to produce an alcoholic drink (*Feni*) in Goa. India is now the world's second largest producer of cashew nuts (see Fig. 3).

Here are also drawings of *Solanum virginianum* (nightshade) (see Fig. 4) and an orchid (*Dendrobium* sp.) (see Fig. 5) drawn in 1848. This species of *Solanum* is used medicinally to treat colds and coughs. Saharunpor (Saharnpur) gardens in Uttar Pradesh State, sent seeds and plants of orchids to Europe where they were grown as ornamentals.



Fig. 2 Turmeric



Fig. 3 Cashew Nut

Fig. 4 *Solanum virginianum*Fig. 5 *Dendrobium* sp.

Figures 2-5 are reproduced by kind permission of the Natural History Museum, London.

Not all of the artworks in the Museum's Indian collections were collected by East India Company employees. Margaret Cockburn, who was born in India and

lived there her entire life, loved to draw the wild plants, birds and insects of her surroundings. She recorded the birds of the Nilgiri Hills in southern India in both her art and writing, and her observations were often used by the renowned ornithologist Allan Octavian Hume (1829-1912).

Allan Octavian Hume and his bird collections

Hume (see Fig. 1.1), who spent 45 years as a civil servant in India, believed that India's development and release from poverty depended on agricultural reforms. After his retirement, he initiated the creation of the Indian National Congress in the call for Indian independence (Collar & Prys-Jones 2012). Hume also had a great interest in ornithology and natural history and has been called the "Father of Indian Ornithology" (Ali 1979).

Hume used his vast bird collection to produce a massive publication on all the birds of India. Unfortunately this work was lost in 1885 when all Hume's manuscripts were sold by a servant as waste paper in the local market. A theft, as well as a landslide caused by heavy rains in Simla (Shimla), further damaged his personal museum and specimens. Disheartened, he wrote to the British Museum offering to donate his surviving collections subject to certain conditions. One of these was that the collection was to be examined and personally packed by Dr Richard Bowdler Sharpe (Dr Sharpe joined the British Museum in 1872 as Senior Assistant in the Department of Zoology, became Assistant Keeper in 1895 and held this rank until his death in 1905). Another condition was that Dr Sharpe's rank and salary be increased due to the additional work load given to him due to these tasks. The Museum delayed in responding to these conditions and it was only after the destruction of nearly 20,000 specimens that alarm bells were raised by Dr Sharpe and the Museum authorities let him visit India to supervise and subsequently transfer the specimens to the British Museum. These specimens are now housed at our Museum's site at Tring, Hertfordshire (Collar and Prys Jones 2012). When Hume returned to England, he also established the South London Botanical Institute at Tulse Hill in London (see www.slbi.org.uk).

A notable bird species, the large-billed reed warbler (*Acrocephalus orinus*) was originally described by Hume in 1871 from a single individual taken in 1867 in the Sutlej Valley, north west India. However, the species lived a twilight existence for the first 130 years after its description because no further individuals were found and the type specimen (element to which the name of a taxon is permanently attached) was increasingly considered to be an aberrant form of Blyth's reed warbler (*Acrocephalus dumetorum*).

However, in 2002, a molecular study confirmed its species status, and since then our knowledge of the large-billed reed warbler has increased greatly through a combination of museum-based studies and field work (Prys-Jones 2010). This highlights the importance of museum's collections and how they can lead to important investigative and taxonomic studies.

NHM's Centre for Arts and Humanities Research (CAHR)

In order to fill in the gaps between arts, humanities and science, an interdisciplinary centre catering to interwoven studies between these disciplines was set up in 2008 at NHM. With the intention of promoting research on the Museum's scientific collections by researchers from the arts and humanities community worldwide, a number of collaborations are taking place with major universities, research institutes and museums (see <http://www.nhm.ac.uk/research-curation/science-facilities/cahr/>).

An interesting example of a CAHR-linked interdisciplinary study is "Wallich and Indian Natural History", from 2011-2012. Based on a pilot study of Wallich's dispersed specimens, drawings and manuscripts, along with records from the East India Company held at the British Library, a website portal hosted by Kew Gardens digitally unites the herbarium collections, drawings and correspondence under a common global platform shared virtually across the world. Institutes with Wallich holdings are encouraged to add data to this website www.kew.org/wallich.

As part of a residency hosted at our Museum by CAHR, Sunoj D. from India worked at the Museum for three months in 2012 and produced a piece of artwork inspired by Rheedee tot Draakenstein's *Hortus Malabaricus*. This book, published in twelve volumes between 1678 and 1693, documents 690 species of medicinal plants found in Malabar. *Hortus Malabaricus* (meaning "Garden of Malabar") is a comprehensive treatise that deals with the medicinal properties of the flora of Kerala State. Hendrik van Rheedee, then Governor of Dutch Malabar, conceived this book. Originally published in Latin, the book has been now been translated into English and Malayalam by Dr K.S. Manilal (The Hindu 2012, Manilal 2003).

During his residency, Sunoj explored the scientific, commercial and political stories behind the remarkable Indian Collection at the museum, adding his own perspectives to it. Sunoj created two works inspired by the *Hortus Malabaricus* plants. One of the aspects of the book that captured Sunoj's attention was the fact that it was written by numerous people from different social ranks. Such intra-caste collaboration had never been seen before, and it was quite a peculiarity at the time. Sunoj painted a wallpaper depicting the plants used medicinally (see <http://www.nhm.ac.uk/nature-online/art-nature-imaging/collections/india-collection/artist-perspective/index.html>, see Fig. 6). His theme was 'Somewhere between living and dying'.



Fig. 6. Sunoj's wallpaper, inspired by *Hortus Malabaricus*. Image reproduced by kind permission of the Natural History Museum, London.

Discussion and Conclusion

Although we have a rich legacy left behind by the various collectors over a period of time, we need modern time series to supplement these older collections which constantly need curating and updating. It will be interesting to track the trails where these collectors were collecting and compare the flora and fauna present then to what is present now. These historic collections can help to lead on many interesting climate change studies and open a chest of drawers for lots of ideas on collections based studies.

I would like to end my article with a reflection on a drawing (see Fig. 7) from William Sykes's collections in the NHM Library. Look at the huge banyan tree and the tent underneath with two people standing by the tent and the two horses near the tent. The landscape seems so beautiful. Whenever you have a chance to visit the NHM, you are welcome to look at these interesting collections and revive the stories behind them. Take a moment to look at the "*Art of India: Images of Nature*" book by Judith Magee and select your favourite artwork. Is there a drawing of a plant or animal that you find particularly beautiful or intriguing or are you fascinated by the various artists who have drawn these works of art or the collectors of the species they portrayed?

The objects in museums' collections tell stories about people, places, nature and thought. It is only possible to understand the world around us if we understand its past, both natural and man-made. The stories told by these objects, brought to life by study and display, help more easily to explore common themes and threads through history and relate those to the present day. Some of the most comprehensive and internationally important collections of natural history, ethnography, technology, art, literature and design are held by UK museums – and so these world collections tell world stories (Report on World Collections, 2014).



Fig 7. A drawing by William Sykes held at the NHM. Image reproduced by kind permission of the Natural History Museum, London.

Acknowledgements

I would like to convey my thanks to Dr B Venugopal (Former Director, Indian Museum, Kolkata) for inviting me to the Indian Museum and for all the hospitality extended to me during my stay in Kolkata. I am also thankful to Dr P Laxminarasimhan (Head, Central National Herbarium, Botanical Survey of India (BSI), Howrah) for providing information on BSI. I am extremely thankful to Dr Charlie Jarvis (NHM) for assistance in preparing the paper.

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Imagining Socio-Economic Development of West Bengal through *Panchayat Raj* Museum

SANJIT JOTDER

Abstract

Panchayat Raj Museum is a product of Democratic Decentralization of India which is known as *Panchayat Raj*. The objective of *Panchayat Raj* Museum is creation of sustained employment by strengthening rural economic infrastructure and also creation of assets in favour of rural poor for their direct and continuing benefits and improvements in the overall quality of life in the rural areas. The *Panchayat Raj* museum cannot change the mode of village economy but it can make people aware of local resources in the sphere of economy and help improve their professional efforts by introducing them to modern techniques and methods to keep pace with the changing world.

Keywords

Panchayat Raj Museum, Community Development, Democratic Decentralization.

West Bengal is a state in the eastern region of India and is the nation's fourth-most populous, with over 91 million inhabitants. The state has *Panchayati Raj* system. Rule of *Panchayati Raj* (Village Committee) is a three-tier system in the state with elected bodies at the Village, Block and District level. It ensures greater participation of people and more effective implementation of rural development programmes. There will be a *Gram Panchayat* for a village or group of village level, *Panchayat Samiti* at block level and the *Zilla Parisad* at the district level.

Conceptions of museums have undergone a profound change regarding their objectives in the recent past. The conception of the *Panchayat Raj* museum is a component of New Museology as envisaged in 1971 Paris General Conference of ICOM. The role of the *Panchayat Raj* museum is a matter of newly perceived aspect away from conventional museum where the synergic interactions between the community of a particular territory and the *Panchayat Raj* museum will involve themselves in the understanding of their ecological, social, economic and cultural aspects. The objective of the *Panchayat Raj* museum is a creation of sustained employment by strengthening rural economic infrastructure and also a creation of assets in the welfare means of the rural poor for continuing their benefit as act for improvement in their overall quality of life.

Predominant Socio-Economic Activities in West Bengal

The predominant subsistence economy of this state is farming and allied activities, viz., fisheries, dairy, poultry, etc. There are a number of artisan groups engaged in weaving, basketry, handloom and handicraft, leather works, pottery, coir industry, food processing, etc. The recent trend of economic activity develops in the field of tourism, especially eco-tourism. So the functions of the *Panchayat Raj* museum in respect of socio-economic development of the sordid rural masses may be classified as Agriculture, Industry, and Tourism

Panchayat Raj Museum and Development of Agriculture

The Panchayati Raj museum can take various programmes to make the people aware about the latest development of agriculture. The museums can provide the information to the people and interact with them for overall economic development of the locality. The information provided by museum are related to,

- High yielding seeds and rotation of crops.
- Better manure and fertilizers, especially on bio-fertilizer
- Improved tools and implements instead of old ones.
- Improved methods of cultivation.

Finance, Supplies and Marketing for Agriculture

From the point of view of finance it is not possible for the *Panchayat Raj* museum to provide directly money to the agriculturists, but it can render help to them by supplying information about loan facilities available from banks and other government organizations. The *Panchayat Raj* museum can also contact the local commercial banks for assisting grants in agricultural pursuits. Besides, agricultural finance, there is another factor related to cultivators' benefit, i.e., agricultural marketing. Due to ignorance, illiteracy and lack of enterprising ability cultivators are ill-fitted to play the role of businessmen. The *Panchayat Raj* museum can arrange for a co-operative society by which cultivators will get the actual price for their product. Local people can be strongly motivated and more interested to get such benefits. If they are guided on what to do and how to do, they are likely to be benefitted.

Panchayat Raj Museum Concerning Village Industry and Handicrafts

Village industry and handicrafts are pillars of rural economy in West Bengal. For developing the village industries and handicrafts the following points may be considered where the *Panchayat Raj* museum can take suitable proactive programmes in,

- Organization
- Finance

- Supply of raw materials and equipment

Organization

The *Panchayat Raj* museum can function to build up organization in various ways. First, it can motivate the artisans to form co-operative for their craft-products to derive maximum benefit in respect of finance, raw materials and to supply the finished products as per demands; secondly, the organization of the village artisans will act as a wing of the *Panchayat Raj* museum, which can be made by the local people for the development of their industry; and thirdly, the *Panchayat Raj* museum will provide the necessary information to the organization of village industries so the people can be aware about the latest developments.

Finance

The poor artisans need money to buy raw materials and machineries. The *Panchayat Raj* museum cannot provide cash in general but the finance for the development of village industries can be supplied by various co-operative and financial banks under the supervision of the *Panchayat Raj* museum.

Supply of raw materials and equipment

The *Panchayat Raj* museums are not in a position to provide raw materials and equipment but it can act in various ways, firstly, the *Panchayat Raj* museum can make people aware about local resources which are readily available; secondly, with the help of experts, the *Panchayat Raj* museum can display the information and arrange workshop about how to use and conserve local resources; and thirdly, the *Panchayat Raj* museum can display modern equipment in its industrial gallery, so that people can be familiar with them and learn its functions.

Panchayat Raj Museum and Eco-Tourism

The most significant change brought about by the realization that the locally available assets can help to boost up the local economy, and thereby it acts as an aid for community development in a very effective way. The rapidly changing nature of global communications, travel has means even to the remote communities to make profit from tourist industry. Several *Panchayat Raj* museums have come forward and grasped this endeavour. It is evident that the *Panchayat Raj* museum model has been used primarily to promote local economy via tourism.

The World Wild Life Fund for nature defines eco-tourism as 'tourism to protect natural areas, as a means of economic gain through natural resource preservation'. A large number of the *Panchayat Raj* museums state that one of their principal objectives is to promote tourism and to assist in local economic development. In West Bengal too the *Panchayat Raj* museum can play a significant role to promote eco-tourism along with cultural tourism. The policy and guidelines taken by the

Panchayat Raj museum on eco-tourism are,

- a) There must be an information centre in every tourist spot which will provide information on heritage attractions, like museums, buildings, historic gardens & sites, etc. festivals, special events, performing arts, religious sites, traditional craft, traditional foods, drinks and natural beauty.
- b) Positive involvement of the local communities is advocated.
- c) There may be a sales counter attached to the *Panchayat Raj* museum for easy purchase of the local handicrafts. It would be better if the local craftsmen are involved with the dealings.

The West Bengal Tourism Department is now trying to build up eco-tourism centres in different parts of West Bengal so that people can find another source of income. The jobs of the Tourism Department will be easy if the existing museums attached to tourist spots take active participation.

Conclusion

Unlike the existing traditional museums, the newly created the *Panchayat Raj* museum will be free to determine its own priorities with regards to its exhibits, staff, educational programmes and other activities, based on the local problems, needs, hopes and aspirations of the population of the area it tend to serve. It will serve as an integral part of the *Panchayat Raj* system, integrating directly the local people in its activities for economic development. Thus the *Panchayat Raj* museums will act as harbinger of development of the rural people.

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Campaign for Museums on Vision 2020: Indian Scenario

DHRITIRAY

Abstract

In recent past the Museum Association of United Kingdom has started a campaign to generate a consensus among the museum professionals to reshape their museums by developing some captions as Vision 2020. The captions are developed by many museum professionals, opinion persons and domain experts of some countries. The caption statements are very much people oriented, focusing the aims and objectives of a museum as defined by the ICOM in 2007. The captions also point towards the responsibility of museum in the service of society and how to be a future museum in accordance with the expectation of people 2020. Irrespective of the European countries the captions are very much meaningful for the museums in India too. Any museum can set its vision, may be for short term or long term, taking ideas of the captions of vision 2020. The present paper discusses some of the campaign captions of vision 2020 adopted by Museums Association, UK in Indian scenario – its strength, opportunity and outcomes for the development of Indian museums and Indian societies.

Keywords

Campaign, Caption, Vision 2020, People, Museum

Introduction

A campaign has started in European Countries to visualize future museum in the line of what the museum has been defined by the ICOM in 2007. Museums Association of United Kingdom has collected various campaign captions from various domain experts, which are the landmark ideas that any country can adopt for reshaping their museums. In India too, the campaign captions are equally important and our museums are equally capable to reshape them in the light of Vision 2020. In India history of modern museum is two hundred years old. In this long period, people's global exposure, their logical thinking about their self-development, technological development etc., are all flourished and enriched enormously. It has now well understood that mission-vision of Museums 1820 can no longer be useful for the museums 2020 and thus we require new thinking, new mission-vision in accordance with the demand and basic requirements of people 2020. It is also true

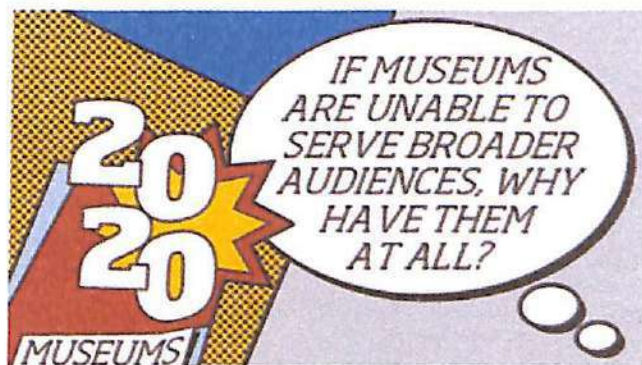
that till date general people in India are not the regular users of museums and many are not at all aware about what museum is, and what it can serve for them.

Museums were established in the beginning for specific purpose, which was not people-oriented. It was for collection, preservation and for entertainment of elites and researchers. But slowly the objective of museums has changed and due to the establishment of ICOM (1946-1947) and its proactive role in defining museum, a new dimension towards the mission and vision of museum has been established. Museums are now no more static organization for preserving heritage but also an organization for the development of society in terms of education and enjoyment. Here some campaign-captions are discussed in Indian context focusing on how museums in India can reshape their mission-vision to work on it, considering deeply on its responsibility to serve all people.

Campaign-Captions and Indian Scenario

More than twenty campaign-captions are selected which are developed by domain experts for Vision 2020 of Museums. These are collected and compiled by the Museums Association, UK. Out of them some captions are discussed here, in Indian scenario.

Caption 1 : **"IF MUSEUMS ARE UNABLE TO SERVE BROADER AUDIENCES, WHY HAVE THEM AT ALL?"** By Caroline Bressey, Director, Equiano Centre, University College London

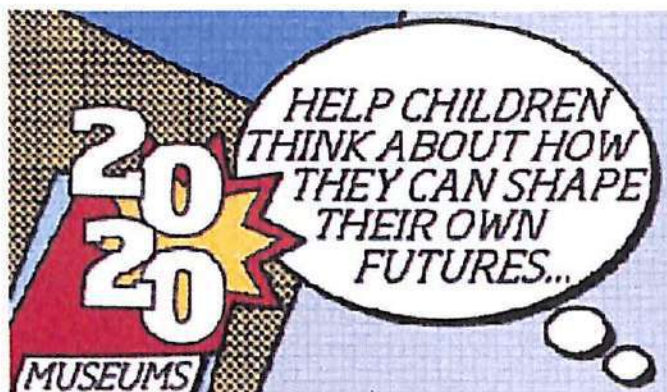


The caption states that the important role of a museum is to serve people more and more. If a museum fails to do that then question may arise on it's existence as a public service organisation. For any museum, 'exhibit-service-people' are the three coherent factors and pillars, which all run together. Museum is for all people and thus it should reach to all people by any means of developmental approaches.

In India, number of museum exceeded beyond five thousands at present. Billions of objects including rare and antiques, precious and artistic as well as evidences of India's mythology, history, art, culture, science and technology are all in the possession of these museums. It is also a matter of fact that to run a museum, to preserve, store and display these enormous heritage a huge amount of public money is used in each museum. Conservators preserve and maintain

objects in their custody, spending good amount of money. In country like India, thus, a firm materialistic approach is required to give maximum emphasis on enhancing the museum clientel to reach more and more people and to contribute for people's development. Museum professionals, thus need to realise that museum is for all and all are important to be served. Requirements of all may be different and their level of perceiving facts are also different but museums need proactive approaches in accordance with the demand of individuals. Thus, the caption is a pathfinder in Indian perspective too to think about the broader audiences, justifying its existence.

Caption 2 : "HELP CHILDREN THINK ABOUT HOW THEY CAN SHAPE THEIR OWN FUTURES", by Dan Jarvis, Shadow Minister, Department of Culture, Media and Sports MP, Barnsley Central



Today's children are tomorrow's citizen. It is thus, most essential to orient all children in society since their very early age, regarding the heritage of the country, origin, traditions, culture, science and values of life. These all will help children to be a complete human with all values of life, which will help every child to shape his/her future. Many science centres are doing well in assisting children but more positive approaches are required from every museum.

'Indian museums depict Indian history, religion, culture, philosophy, biography of great personalities, discoveries, indigenous science and technology, art and craft and many more. Coming out of the static display, today museums need proactive approaches to deliver more lively the inner messages of our heritage objects on display' (Ray, 2008).

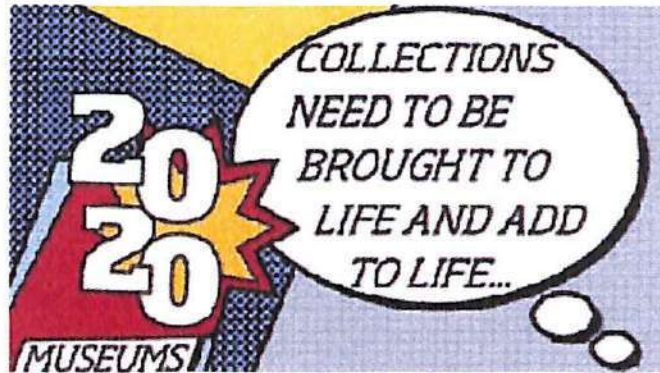
For an example, the Eternal Gandhi Museum, in New Delhi, exhibited the philosophies of our father of the Nation in very easily understandable way by using modern technologies. It is become very easy for any child irrespective of their age to understand the importance and meaning of unity, integrity and non-violence – the teachings of Mahatma. This attempt sets values in the life of children that helps them to be a man with ethics and values. Similar approaches are very much required in any biographic museum for growing children.

Apart from value setting, museums separately need to organize orientation

programs for local school teachers on how to use museum as teaching references on history, science, general knowledge, health and hygiene, environment and in orienting children about their own heritage. In addition to educational arena, museum on sports, art and culture, commercial museums, police museums, maritime museums, museums on film etc. are all equally important to draw attention of teachers who can refer the real evidences while teaching their students and can promote their co-curricular learning. Above all it should be the key concern of all museums to develop museum in supplementing and strengthening the current educational and co-curricular needs of children in society.

Museums are well connected with artists, craftsmen, administrators, defence personnel, writers, actors, scientists, opinion persons, leaders etc., who lead the society. Setting a forum for children to interact with them, museum can add a different meaning to the life of children.

Caption 3: **“COLLECTIONS NEED TO BE BROUGHT TO LIFE AND ADD TO LIFE”**, by *Richard Leese, Leader Manchester City Council, UK.*



Every object in museum has its own story, expression of it gives life to that object and bring it very close to visitors. Selection of the subject of information and its medium of expression are thus, very much important to rejuvenate glorious past. It is therefore, important for museum professionals to give sincere effort in exhibiting the collection in such a way that can generate life in the object and correlated the meaning with the life of visitors.

People come to visit museum keeping a question in their mind that 'what's in it for me (WIIFM)?' It includes people's desire to find something interesting & entraining; to know unknown and to know more known; to get plethora of knowledge; to get satisfied with specific visit objective; to get specified learning's and also to relate themselves in their present life. Thus in every sense, professionals need to concentrate on how to generate life in their exhibition to satisfy people. Since last 200 years museums of India have collected a lot, preserved a lot, displayed a lot and it is high time and also the need of the hour to add value in the objects. Apart from the new acquisition of objects, museums need to focus on the research on

individual object to make its information useful for visitors or users. It is also important to take sincere attempt in selection of theme of the gallery, number of relevant objects to be presented and what 'must know', 'useful to know' and 'nice to know' information to be presented to visitors.

Caption 4 : **"SHIFT THE ROLE OF USER FROM PASSIVE TO ACTIVE"**, by Tracy Puklowsky, Associate Chief Librarian, Research Collection, National Library of New Zealand



The concept of 'museum and its visitors' should be redefined as 'museum and its users'. As stated above, information of each museum object has its own usability. It may be important for some specific users. It is not always a subject to visualize but also to memorize for future use. Maximum visitors in museums of India are passive viewers. It is thus need to redesign the information that can help visitors in generating interest; enhancing their knowledge, capacity of creativity, increasing thinking ability, generating scope of expansion of ideas, helping professionals, etc.

Caption 5 : **"ACHIEVE EXCELLENCE THROUGH FEWER, BETTER RESOURCED MUSEUMS"**, by Timothy Ambrose, Principal, Timothy Ambrose Consulting.



Museum in other way can support artists, craftsmen including their new generations by orienting them about the indigenous motifs, designs, its meaning and significance and giving them the opportunity of new market so that they can continue their age old traditions. In this way a museum not only can help artists and

also help in preserving our living heritage. For example, National Craft Museum, New Delhi, has given opportunity to many artists and craftsmen to make their own creativity within the museum complex and they can sell those products directly to the visiting customers. Museum professionals should therefore, present museum in such a way, targeting specific group of visitors like students, teachers, housewives, professionals, artists, craftsmen, etc., for whom the gallery is developed and who can be benefited. Such condition will attract active visitors in museum.

Excess and similar objects in an exhibition gallery create monotony in viewing and understanding objects on display. Human can concentrate on a single theme for 15 minutes only at a time. People can understand better if there is specific and selected number of objects on display, separated by good space along with useful and interesting information, disseminated through easily understandable media. To attract and satisfy people museum needs only few but important exhibits, which have enough stock of information as per average need, those should be the product of enough research work.

Many Indian museums have enormous stock of objects and in limited space they exhibit a lot of them at a time. Sometimes interested visitors spent their scheduled time to see and understand exhibits of a single gallery only and get deprived of viewing other excellence of other galleries. It is better for very big museums to provide a 'must see exhibits' list to visitors with route plan, so that they can get the glimpses of entire collection within their scheduled time. Our future museum galleries could focus on fewer but most important collection, which are the best pieces and represent the mission-vision of the museum. People can enjoy limited things unless they will get lost in the ocean of information.

Caption 6: **"MUSEUMS HAVE A CRUCIAL ROLE IN CONTINUITY"** by Gareth Wyn Jones, Chair, Amlwch Industrial Heritage Trust and Trustee of National Museum, Wales, U. K.



Museums are the bridge in between the past and present. It is the source of information to know our history, culture and science. Whatever we study in schools, colleges and universities — all the real evidences are stored and exhibited in

museums. It is the place where people can know about their own origin, course of inhabitations, cultures, traditions, rites and rituals. In the era of globalization, when people are migrating from their native land or root for better livelihood, the role of museum is now more crucial to inform coming generations about their course of continuity. Though virtual museums and museums on web have set the provision for distant people to explore their continuity but their real visit could give them the pleasure of discovery. Thus, attempts should require by the professionals today to design museum exhibits, galleries and its information in such a manner that could inhibit the human desire to explore their past and museum should perform significantly in preserving and displaying the evidences of continuity of inhabitants.

Conclusion

Five more years are left to reach 2020. Museums in India can also set some target to achieve by 2020 to earn the image of Future Museum for the development of people, aligning with the new movement. Many attempts have already been started by some museums in India and many things need to plan and implement. A conscious effort and proactive approach can give a new dimension to today's museum towards shifting the paradigm.

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Revisiting the versatility of Asit Kumar Haldar – the Painter of Lyrics in Lines

PIYASI BHARASA

Abstract

Asit Kumar was a versatile personality of 20th century Bengal. He was a painter, sculptor, thinker, writer as well as an able administrator. Being not attracted with the western academic style, he created his own style of painting which was simple, poetical, positive and greatly influenced with the simplicity and depth of traditional Indian Painting. 2015 was he 125th Birth Anniversary of this talented artist of Bengal School. This article is an effort for revisiting the versatility of this multifaceted art personality on this occasion.

Keywords

Asit Kumar Haldar, Bengal School, Poet-Painter, Sculptor, Versatility.

It is freedom when your spirit conjures up a vision from the inert, to illuminate its every line with the flame of your devotion. You have the magic of life's touch in your eyes and your dream has come out in a creation in which are made one, my form and your delight – Rabindranath Tagore on Asit Kumar Haldarⁱ

In the 19th century, a kind of socio-cultural awakening was found in Bengal. A group of Bengali artists gave birth to a new trend of painting being inspired with the Mughal, Rajput, Ajanta paintings, etc. and created a renaissance under the guidance of Abanindranath Tagore and Gaganendranath Tagore. The various protest movements, religious reform movements, emergence of new styles in Bengali literature, political consciousness, and formation of societies and associations for art, were found. This movement and the nationalist feeling inspired the painters like Abanindranath Tagore, to establish a new school, later, known as the Bengal School of Art. The Bengal School of Art created a new awakening in India and brought about a revival of the Indian Art which for centuries lay neglected and hidden from the public view. This was the primary school for development of Indian art. Indian art has travelled a long way since then. In the way, the contribution of Abanindranath



Asit Kumar Halder
(1890-1964)

ⁱCousins, James H. (1924) *Asit Kumar Haldar*. Probsthain. New York.

Tagore and his followers has been undeniable. The art movement of Abanindranath



Mother – Oil on Board

Tagore succeeded to a great extent because of the assistance rendered by his disciples. Asit Kumar Haldar was one of his pupils who played a leading role in the renaissance of art in India along with Nandalal Bose, Surendranath Ganguli, Samarendra Gupta, Kshitindranath Majumdar, Surendranath Kar and others, who were all inspired by Abanindranath Tagore. Asit Kumar, however, distinguished himself from the rest, in his variety of styles, themes, and creations which made him a versatile personality. Asit Kumar, like many other artists of Bengal School is almost forgotten. Recently, Allahabad Museum mounted an exhibition on the paintings of Asit Kumar at Victoria Memorial Hall, Kolkata. 2015 happened to be his post-centenary silver jubilee year of his Birth. Once again, the multifaceted talent of the artist may be revisited on this occasion.

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Early Age

Asit Kumar was the third son of Sukummar Haldar and Suprabha Sundari. Suprabha was the grand-daughter of Maharshi Debendranath Tagore. He was born on 10th September 1890 at 6 Dwarkanath Tagore Lane, Calcutta, popularly known as *Jorasanko Thakurbari*. From an early age, Asit Kumar showed his talent in art. His father soon realised that his son's passion lay in the field of Art. He sent young Asit to Calcutta when he was about 14 years of age only to join the School of Art which was then headed by Dr E B Havell, being assisted by Abanindranath Tagore. Havell and Tagore have ushered in the era of the Renaissance in the Indian Art and Asit Kumar joined them as one of the members of the small group of disciples.

Education

Asit Kumar began his studies on art at Government School of Art, Calcutta in 1904. As mentioned earlier, at the Art School, he was fortunate to get the opportunity to be trained under the direct guidance and teaching of Abanindranath Tagore. Abanindranath's method of instruction was unique. He not only taught the young students how to use brush and pencil in different ways, but also all about colour, contour, freedom of thoughts and the eternal values of Indian Art. He also inspired Asit Kumar to study the *Pata* paintings of Bengal, Rajput paintings, Persian paintings, Mughal paintings and Ajanta frescoes. He learned sculpting from two famous Bengali artists of Krishnagar Patua-para – Jadu Pal and Bakkeswar Pal. Later, he also got to learn sculpting from Leonard Jennings during his Europe visit.

During 1909 to 1911, the Indian Society of Oriental Art deputed him for copying

and documenting the paintings of Ajanta frescoes. He did this on an expedition with Lady Christiana J Herringham, collectively with two other Bengali painters. The objective of this expedition was to bring cave art to a wider audience. Later, in 1921, on invitation from the Archaeological Department of Government of India, he undertook another expedition. This time the expedition was to the Bagh Cavesⁱⁱ and he showed there quite a few surrealistic depictions through his paintings. After his education in India, Asit Kumar made a study tour to Europe in 1923 and soon realized that 'realism' in European Art had limitations.

Professional Career

During 1918, the poet Rabindranath Tagore was thinking to start an art section in Santiniketan in its open air schooling – the old Indian traditional education system. Tagore chose for organising this new art section with the able assistance from Asit Kumar who had, by then, finished from Calcutta School of Arts. Thus *Kala Bhavan* was established at Santiniketan in 1919 and Asit Kumar was associated with this school since its inception. He was the principal of the Kala Bhavan in 1923, assisting Tagore with cultural and artistic activities. During his tenure at *Kala Bhavan*, Abanindranath encouraged him to revive the ancient forms of Indian Art. With his inspiration, Asit Kumar re-introduced and popularised of *Alpana* in homes in Bengal and other parts of India. It is almost forgotten that it was Asit Kumar who initiated this art movement which is now very popular at every home on all joyful occasions. During his stay at Santiniketan, he acted in most of the plays written by Rabindranath that were staged. He was the art designer of the sets and used *alpana* patterns as a form of decoration. Asit Kumar also illustrated a limited edition of *Gitanjali*.

This was the time at Santiniketan, when Asit Kumar undertook the assignment from the Department of Archaeology, Government of India, to copy the cave paintings at Jogimara, Gwalior. His efforts in this direction received considerable appreciation from the art critics: As a result he was twice commissioned by the Gwalior State Government to inspect and copy the fresco paintings at Bagh Caves in Gwalior State in 1917 and 1921. During this time, he introduced many different styles of art to the students, and revolutionized decorative and ceremonial displays there. After spending a few years copying cave paintings and teaching at the Government Art College, he returned back to Santiniketan.

Asit Kumar left for Europe in 1923 for a study tour. During his study tour, he was fascinated by the rare collection of art in the Oriental Section of the British Museum, London and with the trends of Western Art in the various museums of Europe. But, at the same time was disappointed by most of the later modernistic works which he considered was a direct consequence of frustration of life. This was in marked contrast with the beauty, philosophy and positivity of Indian Art

ⁱⁱ"The Buddhist Caves of Bagh." *The Burlington Magazine for Connoisseurs* (1923), Vol. 43, No. 247.

which he learnt and perceived during his study both at the Government Art School, Calcutta and Santiniketan. His experience during his European tour was considered to be most valuable, since it evoked a different thought in artist Asit Kumar. After spending a short while in England with Pearson in 1923, he returned to India and joined the Maharaja of Jaipur Art School. In 1925, having already established himself as an artist of depth, talent and of a different art style, Asit Kumar moved to Lucknow Art School, and later became its Principal. This was a position normally filled by officers of the regular cadre of the Indian Educational Service and he was the first Indian incumbent of the post. Nathaniel Herd became the first Principal of the institution in 1911. For many years, western realism was on emphasis in education of the art school. It was later when Asit Kumar and Lalit Mohan Sen joined the College after 1925 that a shift took place in the curriculum with the introduction of Indian School of painting. He worked in this position until his retirement at the age of 55 in 1945. In the meantime, the Royal Art Academy of London elected him a Fellow, a rare distinction at the time, he being the first Indian Artist to get the fellowship of the Academy in 1934. During his long professional career, Asit Kumar revived the old crafts and designs and made their application in everyday household use. His effort was to try to inculcate a sense of aesthetics among householders. He tried them to appreciate beautiful things around in their homes which were of practical use. He was confident in this mission and this was well recognised by the then Uttar Pradesh Government and various other institutions. After retirement he became the Director of the All India Handicrafts Board at Bangalore during 1956-57 where he helped to revive the ancient handicrafts of Karnataka to make it popular at every home.

Artist Asit Kumar

Asit Kumar was one of the prominent artists of Bengal School. He was known as the 'Poet Artist' since his paintings themselves were poetry. He created his own style taking the elements from Mughal and Rajput style – the traditional Indian paintings. He was equally comfortable in different media like lacquer, tempera, oil, watercolours, gouache, pencil, and even ranged to photography. Apart from being a painter, he was associated with many artistic interventions. Rabindranath Tagore stated on his art: "Asit Kumar's line drawings are lyrics in lines." He had the skill of transforming poetry into an art creation, and this was a natural talent. His talent is evident in his original illustrations of Omar Khayyam and Kheyalia. He had experimented with many new ways of treating colour in an endless variety



Untitled (Krishna) - Gouache
on Paper



'Mother and Child', Water

of ways to suit his subject. He used oil colours as tempera when he painted a series on the life of Buddha. His *lacsit* works were done in wooden panels in lac colour. Many of his creations, during his stay at the Lucknow School of Arts & Crafts were requisitioned by India House, London. He was also responsible for designing Fine Arts courses in the Universities of Allahabad, Benares, Agra, Jaipur and so on. The University of Allahabad bestowed on him a rare honour by dedicating a 'Hall' in the premises of Allahabad Museum, known as 'Haldar Hall' which displays only his works.

As a Sculptor

Asit Kumar was an accomplished sculptor. His natural inclination to this form of art manifested rather early in his life when his father, who was a Civilian, posted at Krishnanagar. The *Kumor-para* and *Patua-para* areas of Krishnagar are famous even now for the craftsmen who make the well-known Krishnanagar clay figurines. Young Asit Kumar often used to visit these places and observe them with minute attention. He learnt the technique with which the cleft hands convert a shapeless mass of clay into a beautiful figurine. He admired this craftsmanship most and this influence helped him to pick up this art form quickly. Later, he mastered the art of sculpture under the guidance of London's Leonard Gennings and made busts of many contemporary famous personages. He was commissioned to make a bust of poet Tagore, cast in bronze for the Tagore Library of the University of Lucknow. His last work was the unfinished bust of Sarvepalli Radhakrishnan.

Academic Endeavour

Asit Kumar was not only an artist of fame but he was also a noted writer. He wrote many books on history of art. His efforts in this area took various forms – he wrote popular books on history of art in English, Hindi and Bengali. On many occasions special lectures were delivered by him in the Universities and other institutions. One of such lectures was "Adhar Chandra Memorial Lectures" in the University of Calcutta. He was a regular speaker at the All India Radio, Delhi and Lucknow Stations till 1958. Besides, at the Asiatic Society of Madras, he delivered lectures which Annie Besant presided. He was frequently invited to speak to the Asiatic Society at Calcutta. In 1961, the Tagore Centenary Celebrations committee invited him as an honoured speaker. His books – *Art and Tradition*, *Our Heritage in Art*, *Omar*

Khayyam, Indian Culture at a Glance, Ajanta, Bag Guha O Ramgarh, Bharater Shailpakatha, Europer Shilpa Katha, Rup Ruchi, Rupdarshika were well known and received. Asit Kumar wrote verses in Bengali. Some of the published Bengali poems are *Rajgatha, Gautamgatha, Manasmukur, Kalpanitika, and Budbud*. He was also a play-wright having written 14 plays and a large number of children's books. The Sanskrit classics he translated into Bengali verse were *Ritusanghar, Mrichhkatika, Meghdoot, Gautam Buddha and Valmiki Ramayana*.

Asit Kumar was also a regular contributor to journals. One of his first contributions was to *Bharati* magazine in 1909 edited by Swarnakumari Devi. He also contributed to the Bengali journals like *Bharatvarsha, Prabashi, Vichitra, Sandesh, Paricharika* (edited by *Anurupa Devi*), *Rochana, Prabartak, Banga Lakshmi, Sri Harsha, Uttara, Rajpath, Udbodhan, Alaka, Azad, Desh Sevak*, etc. Of the English journals and dailies, his articles were sought after in *Dawn of India, Amrita Bazar Patrika, Modern Review, Hindustan Times, Bombay Chronicle, Saqui* etc. His article "The Buddhist Caves of Bagh" in *The Burlington Magazine for Connoisseurs* was published in 1958.

Exhibitions

The following exhibitions were organized on his artworks :

- 1908,1910,1912, exhibitions organized at Indian Society of Oriental Art, Calcutta.
- 1909, at Indian Society of Oriental Art, Simla.
- 1911, at Indian Society of Oriental Art, United Provinces Exhibition, Allahabad.
- 1911, at the Festival of Empire, Crystal Palace, England organized by Indian Society of Oriental Art on the occasion of the Coronation of George-V.
- 1914, 22nd Exhibition of Societe des Peintres Orientalistes to Francaise Grand Palaise, Paris.
- 1924, Travelling exhibition in USA, jointly organized by the American Federation of Art and Indian Society of Oriental Art.
- 1928, Exhibition at Athenee Gallery, Geneva, Switzerland.
- 1930, Retrospective exhibition at Lalit Kala Akademi, Delhi.
- 1938, Inaugural exhibition at "Haldar Hall" at Allahabad Museum.
- 1990, Retrospective exhibition, organized by Lalit Kala Akademi, New Delhi.
- 2003, at Manifestation, organized by Delhi Art Gallery, World Trade Centre, Mumbai and Delhi Art Gallery, New Delhi.
- 2014 at Victoria Memorial Hall, Kolkata jointly organized by Allahabad Museum, Allahabad and Victoria Memorial Hall.

Collections

As it is known, collections of Asit Kumar's paintings and sculptures are housed in Academy of Fine Arts, Kolkata; Allahabad Museum, Allahabad; Boston Museum, USA; Delhi Art Gallery, New Delhi; Indian Museum, Kolkata; Kala Bhavan, Santiniketan; Lahore Museum, Pakistan; National Gallery of Modern Art, New Delhi; National Art Gallery, Moscow; Ramaswami Mudaliar Collection, Madras; Riga Museum, USSR; Rosenstein Museum, London; Travancore Museum, Trivandrum; Victoria and Albert Museum, London; and Victoria Memorial Hall, Kolkata. Apart from the above institutional collections, Asit Kumar's creations are scattered in considerable numbers with the private collectors.

Conclusion

Asit Kumar is widely acknowledged as revivalist of tradition. But, he was very progressive in outlook and approach to art and life. He had a rich wealth of styles, techniques and themes in a variety of his works scattered all over India



'Siddhartha with an injured bird' – Postal Stamp issued on his Birth Centenary in 1991

and abroad. He had his roots in the rich cultural heritage of India and thus he tried to rediscover the soul of Oriental Art. His creations – the lines, forms, colours, and above all, the spirit, created a new style in Bengal School. He was truly a multifaceted artist of the Bengal School. He was not only a painter but a sculptor, a thinker, a writer, a poet and a good administrator as well. His poetic imagination and experience were always reflected in his creations. To experiment with his creativity, he invented a new media in painting – known as *Lacsit* painting. The technique involves mainly the use of lacquer with water colours. He showed that the results could be very pleasing to the eye. His innovative mind

was constantly experimenting with different media. His genius therefore was versatile. His books on art, translation of Sanskrit classics, his poems, songs and essays bear evidences. On him the influence of Tagore was immense. In his book *Ravitirthe* he has acknowledged his debt to Rabindranath Tagore and Santiniketan in establishing himself as an artist. Asit kumar died in Lucknow in 1964, leaving a void in the world of art. The talent of this versatile artist was mentioned by Gandhiji in *Mere Samakalin*, by the

Encyclopedia Britannica, by Sir William Rothenstein's in *Men and Memories*, Vincent Smith's *History of Fine art in India* and many other distinguished books on Indian Art published from time to time. Of this, Lambert's *Art in England*, Coomaraswamy's book on Indian Art and also the book written by E.B. Havellⁱⁱⁱ on Indian Painting need special mention.

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Conservation Problems and Care of Cultural Property in Anthropological Museum

NILANJANKHATUA

The various cultural property and curious objects, which are collected for the museum, are known as museum collection. Every piece of cultural property reflects the cultural values and historical concern of a people. Collection of anthropological museum mainly consists of palaeo-anthropological evidences like fossil hominids; prehistoric tools (stone and bone) and ethnographic objects. The cultural properties, which are acquired from an ethnic group, are known as ethnographic objects. Collection of ethnographic objects is made from the remote areas of the country's innumerable folk and tribal villages through fieldwork. Care and conservation of ethnographic specimens of an anthropological museum is really a challenging task for the museum curator. The ethnographic collections are both organic and inorganic in nature.

Ethnographic objects, which are made from living organisms, are categorically known as organic objects. These organic objects are fashioned out of wood, leaves, leather, cotton, bark, paper, ivory, bone, feathers and are prone to climatic changes and deteriorate easily than the inorganic objects. The inorganic objects are made of metals, like iron, aluminium, clay, stone, plaster of Paris, fibre glass, etc. The ethnographic objects are kept in a better-preserved state when these are housed in their native climate of particular tribal/folk village. But when these are brought to the museum, they are exposed to a new climatic situation and need special care for the desired maintenance for upkeep. Museum is the only place where the preservation of cultural objects can be done for the representation of the past. Museum ensures the preservation and conservation of the cultural heritage of the community through the collection and care of ethnographic objects.

Curators who are working in the anthropological museum are having the basic degree in anthropology. In the case of the Museum of Mankind, Bhopal, the conservator takes all measures related to conservation of the museum collection whenever he is informed the problems by curators or assistant keepers of different galleries. In case of museums of the Anthropological Survey of India, as there is no conservator curator in the Central Museum and seven Zonal Anthropological Museums, the keepers and the assistant keepers have to handle all the risk for the conservation of museum collections. Of course, the curators have been trained in

museology and conservation by attending some training programme/ refresher course conducted by National museum, state Museums and Conservation Laboratory, etc:

Museum collections both organic and inorganic are subject to deterioration. Deterioration is the alteration in an object produced by interaction between the composed material of the object and factors of destruction. The deteriorating factors of an object are natural or manmade. Floods, fire, earthquake, environment pollution are natural aggressors. Human vandalisms, like theft, war, terrorism, misusing cultural property and mishandling are manmade aggressors. Damage is due to lack of awareness, training, security and improper execution of restoration, storage and transport.

For better conservation of the museum collection the curator has to take various steps, like – knowing the museum collection, identifying and categorizing the aggressors, blocking and avoiding the aggressors, monitoring the aggressors, and communicating and solving the problems. Humidity, light, temperature and gaseous pollutants are the various natural cause of concern for deteriorating the museum collection. These deteriorating factors are preventable through preventive conservation.

The curators / keepers of the anthropological museum generally practice two measures – preventive and curative. **Preventive measures** are intended to prevent deterioration of museum exhibits which are in good state of preservation by providing for them satisfactory exhibition and storage condition. The **Curative measures** consist of adopting measures to cure an already deteriorated object by chemical treatment and rendering subsequently the cured objects immune to further decay.

Conservation Problem

Most of the curators of Anthropological museums face the conservation problem of museum specimens. Ethnographic objects, by and large are organic in nature, are prone to climatic changes and deteriorate easily than the inorganic objects. The ethnographic objects are kept in a better-preserved state when housed in their native climate of particular tribal/ folk village. But when these are brought to the museum, they are exposed to a new climatic condition and need special care for the desired maintenance to keep in good condition. **Preventive measures** undertaken in the anthropological museum are discussed below.

Care during Handling and Transportation

After collection, the objects are being transported to the museum. Transportation, packing and their proper handling are important for the safety of museum objects. While packing, care should be taken for selection of packing materials required for correct padding and wrapping the objects. As the collected objects are of diverse shape, weight, sizes, and fragility, hence pose varied packing problems. Generally,

the curators use wooden box, carton, jute bag, thermocol sheet, waste paper, newspaper lumps, cotton, and polythene bag for packing the museum objects. Paper of different types (tissue, brown and Kraft), soft starch free cloth and artificial flannel are the choice wrapping materials. Being soft, spongy and adhesive, tissue paper is used as the first layer touching the object, and brown paper for outer covering. Museum curators do ensure that packing is handled either by their own staff or members of his own staff are present at the time of packing even if expert packagers are entrusted with the job. In practice, museum curators take the office vehicle with trolley for the collection and transportation of the museum objects. Breakable or fragile objects must be kept in one box and not with any other hard objects so as to avoid friction while transporting from one place to other.

Care during Exhibiting the Museum Collections

Displaying the ethnographic collections in the museum needs more care and precautions as these are, by and large, fragile and organic in nature. High relative humidity, high intensity of light and temperature are more sensitive factors towards damage. Selections of display materials play an important role in the preservation of objects displayed in the gallery. Showcasing the specimens permanently in the gallery requires more attention than the temporary exhibition. For display different types of boards, like hard boards, compressed boards, phenolic resin boards and ply woods, are used as panel support, Perspex sheet for pedestals, fixture for holding the objects, wooden and plastic platform for exhibiting large objects are also used as supports. It is very important to check their suitability before using them in display. Ply woods, block boards should not be used in permanent exhibition because of its short durability and susceptibility to insect attack. The background cloth, paint should be tested for their neutrality. Certain materials emanate certain acid fumes, which will affect organic materials very easily. For displaying textiles, source of light are avoided inside the showcase. Wire mannequins are avoided for displaying costumes. Displaying clay pots, step pedestal is used and base of the pedestal and its background are plastered with mud. For displaying small objects, height of the showcase is minimized by using small pedestal inside the showcase. Before displaying, the museum specimens are fumigated and properly treated in the conservation laboratory. Vacuum cleaner is used for cleaning surface dust instead of broom stick. Mopping the floor is better than the floor covered with carpets. Carpets are also not suitable for the disabled persons, who use wheelchairs.

Moreover, maintaining recommended levels of temperature, humidity, intensity of light, proper handling of the museum collection, and day-to-day housekeeping, are the various preventative measures taken for better conservation of the cultural

property. The curative measures are considered useful for deteriorated object by chemical treatment.

Introducing **visual storage** in anthropological museum helps in easy maintenance of the museum objects. This helps in safe handling during physical verification, which is considered an aspect of preventive conservation. Visual storage system is to exhibit many objects in the space allotted for reserve collection. This storage has many advantages as the objects are displayed they remain under constant observation of the museum authorities. If theft occurs, the missing object can be easily detected. This helps the curator to notice whether any kind of deterioration started on any object, like cracks, fungal infection, insect attack, chipping off colours, etc. The visual storage keeps the collections to remain free from frequent handling. Since they are visible selection for loan, exhibition, photography and study can be made out of them smoothly and with less involvement of the museum staff. In the long run, visual storage helps the curator to care and conserve the whole collection and the research scholars to study the objects as per their requirement.

The visual storage can be arranged both inside the reserve collection room as well as in the concerned galleries. The glass door almirah, open metal/ wooden racks, metal cabinet with slanting shelves, showcases with large viewing surface, sliding metal screen and compaction device are the various storage items used for proper keeping the reserve collection of a museum.

Curative Conservation

The curative conservation has also been practiced in anthropological museum. This type of work needs a proper training. The general conservation processes are given below :

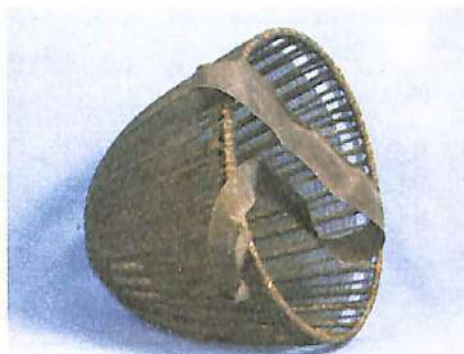
- STEP 1** – **FUMIGATION** : Selected specimen is to be fumigated by using chemicals like Para-dichlorobenzene & Thymol.
- STEP 2** – **CLEANING (Dry and wet)** : Dry cleaning with soft brush to remove the surface dust and Wet cleaning with cotton swabs soaked in Methanol, Rectified Spirit, Acetone, Toluene, Thinner, etc.
- STEP 3** – **STABILIZING** : By using Benzo-triazole, Castrol oil, citronella oil, glycerine, etc.
- STEP 4** – **PRESERVING** : Preservative coating given, by using Poly Vinyl Acetate solution.

Each specimen is to be photographed before and after chemical treatment and a conservation card is to be prepared to record the details of chemical treatment.

Here a case study is being discussed for the chemical conservation of an anthropological object. The cane basket collected from Onge community for the

museum in the year 1948. The basket is made up of cane strips and a belt made out of bark is attached with for hanging the basket round the shoulder. The cane strips were found accumulated with dirt and dust, which turned the basket black. The belt became hard and lost its flexibility. No structural damage found. The basket was dusted with the help of a soft brush. Then it was cleaned with the help of cotton swabs dipped into the rectified spirit and sometimes scraping by a scalpel. Wet cleaning was done thoroughly with the help of soft plastic brush for removing the dirt deposited in between the cane strips by using rectified spirit. Then it is given preservative coating of 2 percent PVA solution and left to dry under shade. The bark made belt is applied with 5 percent citronella oil in rectified spirit to regain its flexibility.

BEFORE AND AFTER CHEMICAL TREATMENT



Conservation of ethnographic objects, partially damaged is best restored through structural maintenance by the artists of the particular ethnic group who produce them. Curators of the Anthropological museum merely act as a catalyst and take the help of the community members only to maintain the indigene of the ethnographic objects. In this sense the community artists are the real curator of their own cultural heritage for posterity.

Being curators of the museum we are generally obsessed with the objects instead of the man and his total heritage. A museum professional with the orientation of anthropological knowledge not only engages himself to collect, display and care for the objects but also performs the role of co-curator in the age of new museum movement. He acts as a catalyst to help the community members who are the real curator of their own cultural heritage. As the concept of New Museology diverts our

concentration towards the new arena, we the curators of the anthropological museums should have given emphasis on how a museum can be community oriented instead of object oriented. By developing community museum sites the museum professionals may try to assure the community members that they are the real owner and beholder of their rich culture, which needs to be revitalized or revived in the new millennium.

Conclusions

In short, it can be said that preventive conservation plays a great role in conservation of ethnographic objects in Anthropological Museum. Various measures are intended to prevent deterioration of museum objects by providing and improvising satisfactory exhibition and storage conditions. Measures include periodical inspection, prevention against the accumulation of dust, care and maintenance of healthy condition inside the gallery and showcases – by replacing the insect repellents and fumigants for deterring the growth of harmful biological agents in the gallery and storage. Moreover, maintaining correct levels of environmental conditions are better for conservation of the cultural property. The curative measures are added steps to cure the objects from ailments. Above all, periodical physical verification of the whole museum collection helps towards prevention from deterioration of ethnographic collection to a great extent in anthropological museum.

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Role of Museum in Preserving the Indigenous Tribal Culture with Special Reference to Indira Gandhi Rashtriya Manav Sangrahalaya

GAURI SHANKAR MAHAPATRA AND BIPASA ROY CHOWDHURY

Abstract

India has the largest tribal groups in the world with a population of 84,326,240 (8.43 crore) which is 8.2% of the total population of 1,028,610,328. They are spread over the Western, Central, Northern and Eastern part of India. The tribal people have rich tradition, culture and heritage with unique lifestyle and custom. Each individual tribe is unique in terms of its material culture, settlement pattern, house type, mode of subsistence, social organization, language, dance, music, adornment, food habit, tools and technology aesthetics, belief system, traditional system of health and healing, etc. Till date it is not preserved properly. As tribal lifestyle, modernizes there is potential threat for the long held traditions. There is a need to preserve and promote these traditions before they are vanished. The study highlights in the context of role of museum to safeguard the tribal culture in their own surroundings with some suggestive approaches.

'Unity in diversity' is the most incredible features amongst the population of India. Among the diversified population, a considerable portion comprises the tribal people, the indigenous people. Tribal culture of India, their traditions and practices influence almost all the aspects of Indian culture and civilization. Each of the tribes has a unique community. These various tribes still reside in the different parts of the country. The speciality of the Indian tribes lies in their customs, cultures, traditions and beliefs. Tribal living perfectly depict a balanced environment, a practice that in no way upset the ecological equilibrium.

It would not have been an overstatement to say that the infinite possessions of the tribal art and craft a precious tangible cultural heritage of India do not receive a considerable attention for various reasons such as their distance from the restricted urban areas where sophistication affectedly flourishing and as well as their simplicity. The tribal culture disappearing so quickly because of :

- depredation of time
- increasing indifference of the tribes in their own culture
- living ignorance of the urban elitist
- lack of preservation and protection
- impact of new economic and political forces
- invasion of modern civilization endangering the tribal culture
- exploitation of the tribal cultural values

Museum is a repository of cultural properties and is an important institution to protect and preserve cultural treasures of our country. Museum house certain collection in possession, it collects materials to present the story of cultural and social changes, its social behaviour, customs and survival pursuit. Mainly ethnological museums focus on the tribal culture, pattern of community life of different tribal groups. Specimens like household objects, instruments, weapons, etc., are preserved in museum. Dresses, crafts, ritualistic objects are also important part of collection. Museum also collects information about the social organization of the tribal people, their religions, rites, laws, fables, legends, etc. The main objective of the museum is to preserve the value system of the tribal material. A visitor can get a glimpse of and a small introduction with the customs and traditions of the tribal communities.

Role of Museum to preserve the tribal culture :

- ✓ to present the history of different ethnic tribal culture, its nature
- ✓ to provide knowledge and information about the distinctive characteristic feature of different tribal groups
- ✓ to provide information about their origin and development
- ✓ to present and interpret the customs, material culture of the tribal people and their locality
- ✓ to awaken the curiosity among the visitors about the tribal culture
- ✓ to develop such plans for demonstrating the traditional (indigenous) wisdom
- ✓ to encourage inter-tribal cultural knowledge
- ✓ to promote folk media for the benefit of the tribal communities in India
- ✓ representation of tribal art, crafts, dance, folk music, oral recitation with the different audio visual aids like information kiosk, video, slide tape programme, film shows, etc.
- ✓ to carry out popular lectures, seminars, specialized exhibition, etc., to understand the indigenous tribal culture and its development.

Museums is a cultural centre which strengthen the indigenous tribal culture and its uniqueness by promoting the preservation of indigenous language, folklore

and folk music, and supporting the work of indigenous artists and uphold the indigenous creative traditions.

Museum is an institution to impart knowledge and open to all. Indira Gandhi Rashtriya Manav Sangrahalaya (IGRMS) began not with any artefact in possession but with certain ideas. IGRMS is basically an ethnographic museum and it depicts the cohesive life style of various Indian tribal communities living in different parts of the country. IGRMS developed outdoor and indoor exhibition and create appropriate environment for its display.

- In IGRMS we can find the tribal cultures from all over our country; in this way it encourages the integration nationwide.
- IGRMS is a centre where we can see unity in diversity, different cultural prototype in one place.
- In IGRMS we find evolutionary story of Man and its culture in Indian context.
- IGRMS preserves and saves the valuable indigenous tribal cultures which are disappearing so fast.
- IGRMS carry out and encourage research in the associated subjects.

Tribal Habitat

In Tribal habitat open air exhibition, actual size dwelling houses are constructed by using indigenous raw material from various tribal groups themselves from all over the country. It is a unique open air exhibition represents the life-sized houses (traditional) of the indigenous tribal people of India. The unique feature of the exhibition is the preservation of tribal dwellings and their daily useable ethnographic items displayed therein by using indigenous technology.

The exhibition is not merely a collection of traditional house and a repository of household objects; it stimulates to define every single component of human survival and dependence under different ecological settings. It is a sincere effort to portray the social, cultural, economic and religious sphere of a tribal society under the spectrum of its habitat, which are developed in the original forms. The most striking feature of this exhibition is that all these exhibits are not a model but are the original dwelling built by the tribal themselves, based on their own traditional ground plan and architectural patterns, using the materials which they traditionally use for the construction of these structures in their respective areas.

The Tribal Habitat has exhibit of dwelling types of Warli people from Maharashtra, Toda and Kota tribe from Tamilnadu, Bodo Kachari Mishing and Karbi tribes of Assam, Kutia Kond, Saora and Gadaba tribes of Odisha, Rathwa and Chaudhury tribes of Gujarat, Agaria and Bhil tribes of Madhya Pradesh, Tharu tribes of Uttranchal, Kamar and Rajwar people of Chhattisgarh, Santhal tribe of Jharkhand, Thangka Naga, Kubai Naga and Ranshakshim tribe of Manipur,

Kucheneme and Chakesang Naga tribes of Nagaland, Birhor people of Jharkhand, Reang tribe from Tripura, and Lepcha tribes of Sikkim, Galo of Arunachala Pradesh, Jatapu of Andhra Pradesh, Bhumij of West Bengal. This exhibition has the youth Dormitories of Muria, Ao Naga, Kanyak Naga and Zemi Naga tribes also. Other traditional structure of this exhibition includes the Maoli Mata temple from Chattisgarh, the Toda shrine from Tamilnadu and the Umang Lai shrine from Manipur. The two village gates constructed on traditional state in this exhibition are Ao Naga gate and Chakhesang Naga village gate.

In addition to the above exhibits relating to the traditional house types, temples and village gates, the premises of tribal habitat are also enriched with other structural exhibits such as Meitei Thumkhong – an exhibit with complete open paraphernalia, showing the traditional salt making devices common in Ningel people of Manipur who are solely responsible for the production of Meitei Thumpak – the indigenous salt of the meiteis, bullock carts of different population including the gypsies, oil press or the oil expeller from various areas, memorial pillars (stone and wooden), ancestral domes and terracotta belonging to the Chaudhury tribes of Gujarat, Mongra Dev the crocodile deity, Dussehra Chariot from Bastar, a huge Iron pan Kadhai from Himachal Pradesh, traditional furnace for extracting iron from iron ore by the Agaria and the Asur tribe, Abode of Anga dev, a deity of Bastar area, megalithic enclave comprising recreated Megalithic sites from Meghalaya and Vidharbha region of Maharashtra, Ao-Lamba – the suspension bridge of the Ao Nagas and many more terracotta figurines in the exhibit complex of potter's hamlet and kiln.

Some suggestive approaches

- Create awareness among the tribal people to save their traditional culture.
- Establishment of tribal heritage museum in tribal areas and involve tribal communities.
- To grow the tribal economic condition involves the museum to marketing their art and crafts.
- To establish tribal research centre in tribal areas.
- Documentation and preservation of fast vanishing tribal culture

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Collection development and Research under the Department of Museology : a Survey

SUBAL KUMAR BARUI

Abstract

Research based on collection development and collection always influence to research. On the other hand research influence to collection development. The Department of Museology is one of the oldest departments in this university. Department is being involved in study, teaching and research. This article mainly deals with the collection development growth of books as well as research development.

Keywords

Collection development, Museology, Research output.

Introduction

Alipore Campus is a social Science and Humanities Campus of the University of Calcutta. Twelve departments and eight research centres are being engaged to their study, teaching and research. Museology is one of the departments of this campus. The department is one of the pioneering departments in India. Teaching and research always depends on library collection. Alipore Campus Library playing a positive and motivating role towards teaching and research.

Definitional Aspects of Museology

The definition of a museum has evolved, in line with developments in society. Since its creation in 1946, ICOM updates this definition in accordance with the realities of the global museum community. According to the ICOM Statutes, adopted during the 21st General Conference in Vienna, Austria, in 2007: "A museum is a non-profit, permanent institution in the service of society and its development, open to the public, which acquires, conserves, researches, communicates and exhibits the tangible and intangible heritage of humanity and its environment for the purposes of education, study and enjoyment." According to Merriam Webster's dictionary — the science or profession of museum organization and management. According to Encyclopaedia Britannica, "...museology meaning the philosophy and theory of museums, while museography is the description of practical museum work..."

History of the Department

The Department of Museology was established in 1959. This Department of University of Calcutta is one of the pioneering in India. The Department offers two-year full time MA/ MSc degrees and research degrees at Doctoral and Post-doctoral levels. Every year students of the Department succeed in NET Examination, conducted by the UGC. The research projects undertaken by the fellows of this department have regularly been appreciated. NAAC acclaimed the Department as one of the rare & valuable departments. The department has upgraded its entire syllabus in conformity with the UGC guidelines and Professional demands as envisaged in the ICGMPD.

Objectives of the Study:

1. To identify the collection of books under this department.
2. To discuss the growth pattern of collection development of books.
3. To depict the research work done by the department and as well as research in progress.

Methods used

This work mainly based on minute verification of Accession registers, Catalogue cards, Online Public Access Catalogue (OPAC), and of PhD dissertations register of Alipore Campus Library as well as University website.

Scope and Coverage

Due to time constraint only ten (10) years has been considered for collection development (2005 to 2014). But research output considered since inception of the department.

Collection Development

The term "collection development" refers to the process of systematically building library collection to serve study, teaching, research, recreational, and other needs of library users. The process includes selection and de-selection of current and retrospective materials, the planning of strategies for continuing acquisition, and evaluation of collections to determine how well they serve user needs. Overall, collection development encompasses many library operations ranging from the selection of individual titles for purchase to the withdrawal of expendable materials. According to International Encyclopedia of Information and Library science 'Collection' is a planned accumulation of selected artefacts. The term is used in museums as well as in libraries. In the latter it includes not only books and other printed matters, but also all information materials. A collection might consist of the whole contents of the institution and is used in this sense in such phrases as collection management or collection development. It can also however refer to a

designated part of the whole. More broadly, it can also be taken to include all the information resources to which a library has access, including those available through physical and virtual networks.

Purpose of Collection Development

- To provide information and knowledge to those who need them, through a collection of documents. It is, therefore, obvious for librarians to identify, select, procure and organize documents for use.
- The objectives of the University library are in tune with the objective of the University itself. It has to fulfil the instructional and research needs of its faculty and students. The University library must therefore, concentrate on the previous of research materials particularly periodicals, manuscripts and archival materials.

Collection development of books under Museology Department

I have considered only eleven years from 2005 to 2014. Four hundred and three (403) numbers of books were collected during these years.

Table 1: Year wise collection of books.

Year	Books collected from 2004 to 2014	% of Books collected
2005	12	2.98
2006	05	1.24
2007	05	1.24
2008	193	47.89
2009	58	14.39
2010	23	5.70
2011	14	3.47
2012	28	6.94
2013	39	9.68
2014	26	6.45
Total Number of Books	403	100

The above table depicts the total collection development of Museology books in the Alipore Campus Library during 2005 to 2014 were 403 (i.e., 100%). In the year 2008, 193 (47.89%) books were purchased which was the highest number in this ten year. The collection was much better only two years, i.e., 2008 and 2009 (193 and 58, i.e., 47.89% & 14.39%). Here I have seen an abnormal growth due to collected of Bengali version books on the other hand in the 2009 collected books were very much qualitative in nature. Picture of collection development growth was not significant.

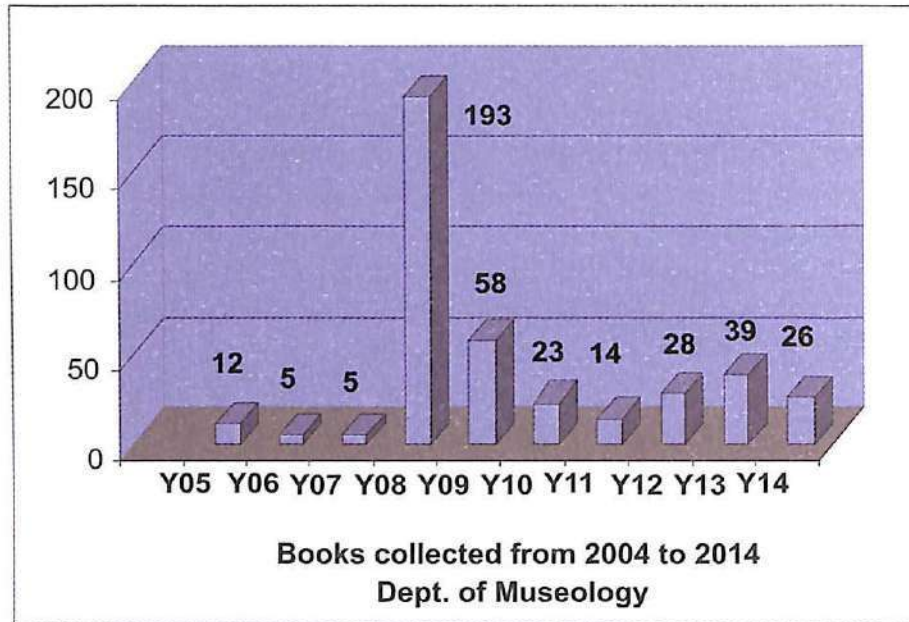
Chart 1: Year wise collection of books.

Table no.1 shows that books were collected by the Alipore campus library during 2005 to 2014. Here Y05 represents as a year 2005 and up to Y14 as 2014. Total four hundred and three (403, i.e., 100%) numbers of books were collected during ten years. From 2005 to 2007 collection development growth were decreasing in nature. In the year 2008 an abnormal growth were seen and it may be mentioned that books were collected on regional language (Bengali) under museology department. Qualitative collections were made in 2009. From the year 2011 collection development growth were increased but in the year 2014 were decreased. It also be mentioned that the year 2008 and 2009 maximum number of books were collected. Lowest collections were made in 2006 and 2007 which are five (5) in number each year.

Identification of the Books on Intra-disciplinary Research

The Department of Museology collected different types of valuable books for research. I have studied that Alipore Campus collected 64 (sixty four) number of books which are on and about Museum, Art, Architecture, Tradition, Preservation, etc. It may be mentioned that out of 64 books collected during 2004 to 2014, only 9 were collected by the department. Contents of books may be helpful to research for History, Islamic History & Culture and Archaeology. It might be due to stress on intra-disciplinary research. It is also indicative to dearth of titles strictly related to

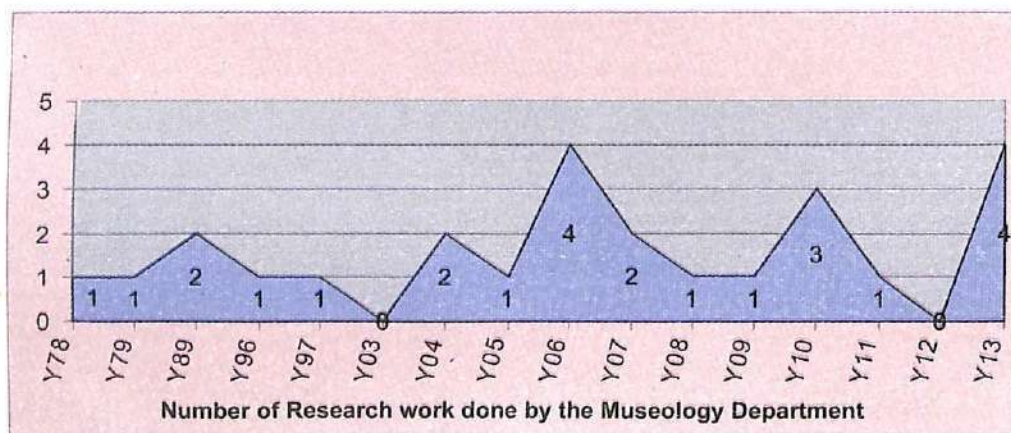
museology. The Department should look into the matter seriously to procure relevant titles in more in numbers.

Table 2 – Research work under the Department of Museology

Title	Researcher	Year of Submission
Museum: its role in military studies in India.	Dilip Kumar Ray	1978
Art and architecture of	Ratna Sen	1979
A study of Zardozi craftsmen and their guilds.	Charu Smita Sharma	1989
Wild life in India – its conservation by educating the public through museums.	Chhanda Das	1989
Role of museum in promoting cultivation and utilisation of lac in India to develop the human economy.	Pradip Kumar Basu	1996
Museum Educational and recreational programmes for the Indian children of pre-school and primary stages.	Sudakshina Bandyopadhyay	1997
Sericulture practices in eastern India – its presentation through museum display.	Alpana Das	2004
Role of museum in creating mass awareness regarding protection of environment and sustainable development.	Kakali Sinha	2004
Site museums under the archaeological survey of India in the changing scenario.	Kakoli Sen	2005
Museum technology: a museological study of application of technology in the museums in India.	Indrani Bhattacharyya	2006
Museum information service – its management and marketing for the survival of museums in India today.	Dhriti Ray	2006
Role of ecomuseum with special reference to the community development in West Bengal.	Malay De	2006
Personalia museums in Northern & Eastern India and their roles in national integration.	Anindita Chakrabarti	2006
Marketing potentialities in the museums of India.	Baisakhi Mitra	2007
Ethno archaeological study of the Mishmi tribal in Arunachal Pradesh and its exposition through ethnographic museum.	Basudeb Malik	2007

Documentation and care of manuscripts in museums in Eastern India (Orissa, West Bengal, Bihar & Jharkhand).	Gauri Shankar Mahapatra	2008
Conservation, care and management of manuscripts in museums of West Bengal – a micro study.	Anindita Kundu	2009
Arts and crafts of Bankura district – tradition and continuity and their exposition through museums.	Trisha Majumdar	2010
History of the freedom struggle in India – its exposition through museums in and around Kolkata (West Bengal).	Sankha Basu	2010
The Contributions of Prof. Sudhir Ranjan Das in the field of Indian archaeology and museums.	Tapankumar Das	2010
Symbolic and imagery representation of Lord Buddha in the museums of Eastern India: collection and communication.	Sarunya Prasopchinghana	2011
Indian museums as vehicle of museum education.	Adinath Baidya	2013
Emergence of high-tech museums in India: a museological study.	Suman Datta	2013
Museum, heritage and tourism in West Bengal : interaction and interdependence.	:Piyasi Bharasa	2013
Siva images of Bengal: their documentation and display in museums.	Ananda Mukhopadhyay	2013

Chart 2 – Research growth of the Department of Museology :



Since the inception the department has been engaged in different study, teaching and research activities. This chart depicts that fast research work were submitted in the year 1978. Total number of research work is twenty five (25) up to 2013. After the year 2003 slight research growth were seen. Maximum four (4) number of research work done in 2006 and 2013. Research growths were not consistent in nature. It is also remarkable that research work were done about their subject content, i.e., Museum Architecture, Art and Craft, Education, Heritage, Management, Marketing and Museum Technology.

Collection Development and Research

I have chosen ten (10) PhD dissertations which are kept in the central library for purpose of study of bibliographical references which are mentioned in thesis. Also I have chosen ten cited books from the PhD thesis for sampling survey. The study proved that 80% books are kept in Central Library and Alipore Campus Library during the time of research. 20% books were not available in the Calcutta university library.

Ongoing Research Work

The department of Museology has been engaged in teaching and research. Forty two (42) number of research works are going on under this department. Documentation and preservation, Museum Education, Cultural Heritage, Science Museum, Bio-diversity museum, etc., are subjects of ongoing research works.

Conclusion

Collection development helps to study, teaching and research. Research growth involves in quality of teachings and tools of research. Quality teaching depends on quality collection development as well as student teacher involvement of the subject. Due to financial constraints and price of books collection development growth not in proper shape. It is remarkable that the Department of Museology is playing vital role in its on-going research works.

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Museums in India: Exploring Recent Trends

ENAKSHI CHATTERJEE

Museums and galleries all throughout the world are at a point of renewal. New forms of museums, new ways of working with objects, new attitudes to exhibitions and above all, new ways of relating to museum public, are emerging. At the end of the twentieth century, many social institutions are renewing their roles and potentials and museums and galleries are among them. From being object oriented, they are increasingly becoming visitor oriented. Museums in India too cannot afford to lag behind in anyway in the global scene. Or else they would fail to generate audience who are their life blood. The museums in India therefore require rethinking and remodelling themselves in every possible manner to reach out to one and all in the society.

The functions of museums are certain to change in the present century. They must develop a clear social function. In the nineteenth century a new age has dawned, which is a knowledge-based age that will replace the industrial age that has existed nearly for the last hundred and fifty years. As the heavy plants of industrial production replaced by the micro-circuits of the computer, the emphasis changed from the production of technology to the production of idea. Knowledge races around the world in micro or even nano-seconds, information is accessed in new ways and new levels of interconnectivity become possible. Thus, in the modern society, knowledge is power and technology is the instrument. The idea of education has greatly changed. No longer do educators think of education solely for the elite. Indeed in the 20th century, the idea that democratic and enlightened modern societies depend for their very existence on education, spread throughout the whole mass of citizenry, has been advocated repeatedly in all sorts of relationships. Only an educated citizenry can participate effectively in the government of a nation and can provide the guidance and support to its leaders. It is imperative at this time for the museums in India to consider reaching out to the society at large, for the benefit of everyone. The obligation to communicate now takes precedence over all the other museum functions.

The very first aspect of museums in India that need attention is the relation between the museums and their audience. During the following decades, the relation between the museum and its public will become more and more important. Their relationship requires focusing on genuine and effective use of the museum and its collections. In the past, the core public function of a museum was the creation of displays and the provision of public access to them. The display was both the

primary feature of the museum and also the primary means by which the museum sought to engage audiences with its collections. Earlier visitors were content to stroll through the displays and have rarely sought more than tangential visual experience of objects. Now, there is a clear and consistent demand for a close and active encounter with objects and exhibits. Earlier the label was considered to be enough to convey information about an object. However, this is not possible in case of viewers who are semi-literate or unlettered. For them labels alone will prove to be mute and provide little or no information at all. This result in a kind of repulsion and the visitors might go past the object without being able to connect with the objects. This is especially true in case of a developing country like India where a considerable section of the population is still unlettered. It is thus absolutely necessary that labels be supplemented with visual aids and even better if it is possible to make the objects more interactive where the visitor can utilize his/ her senses such as touch, hear or even smell. A physical experience using all the senses is called for. The prime assets of museums are the direct appeal to the eye and to the sense of touch and the potential capacity to present a number of facts simultaneously and in palpable context. Science and technology museums in India are a fine example about how the display can be made appealing to the visitors by actually providing an opportunity to interact with the exhibits. Thus, on the whole, an experience that involves all the senses of the visitors is called for. Regarding such a holistic approach Eilean Hooper-Greenhill (1999: 2) opines –

Increasingly this experience is expected by visitors to be of immediate personal relevance with an interaction which is sustainable for several minutes and which results in a clearly identified knowledge gain. When this rapid and explicit benefit is not available, museums are not popular; where displays, discovery centres, responsive exhibits, dramatic performances and interactive videos enable this experience, museums are overwhelmed with appreciative visitors.

In the twenty first century museum display in India will form only part of the visitor experience and will represent only one of the means used to respond to audience requirements. Current museum priorities include access and comfort, eating and shopping, flexible exhibiting and engaging the visitor. This is because these days the museum is not merely a storehouse of artefacts and an institution for scholarly use. Rather it constitutes a significant part in the leisure industry and at present faces a stiff competition from other sources of entertainment such as multiplexes, shopping malls and so on. There are increasing expectations from previously marginalized audiences who are mostly informal visitors. In other words, these are the vast majority of people, who come to the museum. Their expectations include :

1. The visit will be enjoyable, interesting and even 'fun.' It will provide family entertainment and there will be things to do together.
2. The visit will provide an opportunity to learn something – preferably starting from familiar concepts and moving to the unfamiliar.
3. The site will cater for all ranges of prior knowledge, ability and age.
4. The site will provide good quality facilities including visitor amenities and a high standard of service.

The museum will serve as a centre for informal learning. This is because these days learning is not restricted to the school by means of a structured curriculum. In a country like India where there still exists a significant section of people including adults who are unlettered. For these people education is a process of lifelong learning is a necessity. For them the museum is a better option than schools that restrict their doors only to specific age groups. Museums are more flexible and open their doors to all age groups at all seasons of the year.

Museums are not end in themselves. They are means in the service of man and of his cultural evolution. To accomplish their mission they have to excite people as well to inform them. Most museums in India receive automatic acceptance. Many a times it so happens that a new visitor feels disoriented and intimidated on entry. The first impression is vital. A very significant barrier to the process of communication between the visitors and the collection is the visitor feeling unwelcome and being embarrassed as they do not know what to expect. The orientation process by means of pre-visit information has to be such that it includes a feeling of welcome rather than being intimidated. Security though important in a museum must not hamper the communication process. If the visitors feel being watched they experience discomfort. It is very annoying to have someone breathe down the shoulder all the time. Security can be discreet. The idea of a scowling guard in a stark uniform is often intimidating. Same goes for the docents and guide lecturers. They may always assume a friendlier and cheerful attitude, more of a friend ready to satisfy the visitor's curiosity, rather than a person content to give dry and monotonous lectures on the objects. Much of what the staff takes for granted might be absolutely new to a visitor who is generally a novice. A little bit of perseverance, a welcome smile and a laid back attitude on the part of the museum staff might work wonders in such cases.

Apart from a pro-visitor policy another trend that is fast gaining ground is the use of new technical up-gradations in the museums globally right from the end of the 20th century. Supplementing the displays with interesting audio-visual aids was long since popular. The advent of the 21st century has also brought with it the revolution in digital technology. This ultimately led to corresponding development in museum theory, technique and technology. On the eve of the 50th anniversary of ICOM, Dr Saroj Ghose, the then President of ICOM said,

This is the period that has seen a sea change in the concept of museums, with the emergence of new breeds of museums that had never been thought of earlier. The interactive science centres, the society-oriented eco-museums; the multidisciplinary thematic presentations have all changed the concept and content of traditional museums to the greatest extent that man has ever known. This last half century has witnessed perceptible changes in museum activities. Hands-on involvement of visitors in not only science museums but museums of all kinds, and outreach programmes beyond the four walls of museums has made museums much more people-minded than ever before. This period has also seen an invasion of technology having a large impact on museum functions (ICOM News 1997:7).

Introduction of multimedia offers new possibilities in a broad range of museum functions, from registration to curatorial activities, from conservation to photographic services, for capturing and preserving the multifaceted information embodied in the objects of cultural heritage. Multimedia introduced into exhibition in the 1980s immediately proved its efficiency as a means of communication. It has revolutionized the museum field by creating the concept of virtual museum. The virtual museum is another potential area that bears no relation to physical reality. It exists only in an online medium. A virtual museum allows visitors to make an imaginary visit, because the museum has a virtual existence outside its walls, one can take it at home. This technology also allows visitors to plunge into an artificial environment on themes of past historical events. The virtual reality in Kolkata Museum is a milestone in the field. Thus one can take part virtually in the celebrations on the occasion of India's Independence on the 15th of August 1947.

A computer can be used for compact storage and quick retrieval of data in its hard disk. With a host of software readily available in market, wonderful images and effects can be created by dynamic editing. A computer can handle type-setting on the keyboard, scanning of printed text, make slides through scanner, create power point presentations based on the collections, produce digital photographs, labels, and create a video or audio CD directly from a cassette or microphone. Creating a still image, image processing, image magnification, restoring photographs can all be done in a computer. Apart from these digital technologies are also being used in touch-screen kiosks, talking heads, gallery tour by means of mobile, animatronics, immersive visualization, conservation management (includes administrative aspects, recording condition before and after treatment, recording technique, materials used and monitoring effectiveness of the treatment), etc.

In the past, in order to get some information about the museum collection, the visitor was required to visit the museum personally or buy a catalogue. Due to elaborate manual processes, updated documentation was not available. Use of

computer, reprographic machines and digital photography has made documentation easier. Museums around the world have begun using the state-of-art digital imaging technologies in interactive educational programmes, electronic publishing, exhibit design, and creation of high resolution database as well as computerized documentation. However, in India the number is still not very encouraging. In many museums it is either absent or still in the rudimentary or proposal stage. In this case one might put forward the problem of funds. But it is also possible to make small and inexpensive changes using computers and digital technology. If funds do not permit for elaborate changes such as immersive visualizations or huge dioramas, most museums can at least afford a computer, which has become more of a necessity than luxury these days, for digital documentation or restoration of archival materials. It is wrong to think that these technologies fall exclusively within the domain of science and technology museums because they can enhance the performances of any museum to a great extent.

The present century has also taught humanity the significance of intangible cultural heritage. Museums are one of the institutions that act as the custodians of the cultural heritage of the community and culture manifests itself not only in tangible elements but in intangible elements as well. These intangible elements include songs, rituals, beliefs, traditions, faith, etc. These are generally passed down as heirlooms from one generation to another. A number of such intangible elements are slowly dying into oblivion due to modernization. If no conscious effort is undertaken to preserve them then a time will come when they will cease to exist and the future generations would never know about this rich cultural heritage of India. Museums in India are waking up to this reality. Many museums in India are arranging for live performance by artists, workshops involving artisans, where the visitors too can participate. Since heritage concerns the community, the concept of community museums and eco-museums are also taking shape for quite some time.

Elizabeth Crooke (2007: 12) opines "Museums are no longer only being established in imitation of the grand Louvre or Hermitage expression of a museum as high culture, created in the eighteenth century. Instead, the broader concept of the folk, eco or living museum is gaining popularity." In India too the authorities need to think of developing more such museums that involves the community itself in their day to day functioning. Museums and galleries are vital to the educational and cultural health of the society. This however is not always either seen or understood, as long as this is the case the existence of museums will continue to be at stake. The museums and galleries in India need to devise ways and means to maximize their use in the society and to develop new approaches keeping in mind the recent trends in the global scenario.

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Conservation of Manuscripts: The Need of the Hour in Museums of West Bengal

ANINDITA KUNDU SAHA

Museums are the treasure-houses of the human race and collections are central to museums. With the passage of time museums, libraries and archives are the repositories of most of the priceless collection including documentary heritage of mankind since prehistoric periods. In West Bengal there are more than forty repositories that have rich collection of manuscripts. These vast treasures of manuscripts contain the cumulative knowledge of Indian tradition in the fields of philosophy, science, literature, religion, arts and culture, geography and the pluralistic faith systems prevailed in West Bengal.

Though documentary heritages are wonderful resources but they are often underused and under-appreciated. Important for academic research, they also offer scope for anyone to rediscover the past in all its variety. Manuscripts can open up new sources of unexpected insights for individuals, local communities, historians and researchers with specialist interests. But they also need protection and care. So identification, documentation, digitization, conservation and research of these rich manuscript collections are essential for the posterity.

It is obvious that every material object starts decaying the moment it is created. The stability of every material object depends to a large extent upon the raw materials used in its manufacture and the condition i.e. the micro and macro climate to which it is subjected to display or to store during its life time. Besides, effect of macro and microorganisms, over use and exploitation, lack of proper care, management and preservation, and such other various factors play an important role to accelerate degradation, deterioration of manuscripts.

All the material objects follow the irreversible, inevitable course of decay due to the effect of various deteriorating factors. It may seem inevitable that chemical and physical changes must befall all types of materials, but it is essential to understand how objects deteriorate and anticipate the causes of such deterioration, then it is often possible to slow down these changes. Specific steps can be taken to modify the environment that an object is in (whether in storage, on display or while in transit to another location) so as to cushion the negative effects arising from the various deterioration factors.

During field research at different repositories of West Bengal it has been found that the manuscripts of most of the repositories are showing gradual signs of decay and situation becomes alarming for not adopting precautionary measures with a

view to nipping the chance of infestation in the bud. The main reasons for deterioration of these manuscripts are improper cleaning of materials at regular interval; high humid condition; devoid of well ventilation arrangement which facilitates the formation of air pockets and also favours infestation of macro as well as microorganism; improper illumination system' and storage system; improper maintenance of macro as well as micro climate of storage and display room, mishandling, overuse, exploitation etc. All these factors are responsible for physical, chemical and biological deterioration of manuscripts of all kind.

Besides, most of the repositories are not at all aware of the status of conservation of their collection still now. Due to the lack of awareness and proper scientific knowledge thousands and millions of manuscripts kept in different Museums, Para-Museums, Private holdings and Museums like Institutions of West Bengal are being threatened, becoming faded, fragile and some of them have been reduced to dust.

The worst situation is that most of the repositories of West Bengal are mostly ineffectual in the conservation, care and proper management of their manuscript collection. They have neither any financial aid to protect their collection, nor any qualified conservator, curator, museologists and finally conscious enough to know the intrinsic value of the manuscripts, is a million dollar question. Most of them do not adopt any kind of documentation method and cataloguing system. In most of the cases they are indifferent about their duties and some of them are not aware properly about the preventive conservation methods usually adopted for preservation of manuscript collection.

Besides, religious practices play an important role for degradation and deterioration of manuscripts. Religion has been disposed to be decidedly dominant in the world of manuscripts of some areas named Hooghly and Nadia districts of West Bengal. For lack of awareness people of these areas have been treating manuscripts as 'their aged fore-father' worn and weary being penanced by Time's Fool and crying for their eternal burial. The treatment tinged with this sort of fanaticism has certainly been highly detrimental to the conservation of manuscripts.

A large number of manuscripts have been prepared here for daily recitation in temples or in homes. As they pass on from generation to generation, they get crumbled by constant use; or they fall into such hands which hardly care for their safety. The religious taboos also disallow them to let these manuscripts be handed over to places of safe custody.

The next problem related to the conservation of manuscript collection is on economic plain; this involves the paucity of funds and lack of resources with the owners of manuscripts. Owners of such manuscript collection never made any attempt to seek funds from any government, semi government, voluntary organization and NGO. Even they are not aware about such matters for up keeping

the manuscripts properly. The authorities of private repositories paid little heed to this 'Silent Progeny' of the future. Under the pressure of the growing family, the preservation of manuscripts done previously in well-walled, well-roofed room was reduced to a cornered box or to a muddy hut or to a neglected room with moisture and unlighted condition. Under these circumstances where room is leaking in rains or it is permanently uncovered or less covered, the very existence of manuscript collection looks like an irony of fate.

What to speak of those materials which are lying in the personal collections of the under serving descendants of erudite *pandits*. The status of exact numerical number, types, and its present condition are not yet known. The problem is related to the psychology and behaviour of the people of this area. The *pujaries*, *purohits* and *pandits*, who are the manuscript-monarchs, relish their own idiosyncrasies and cherish the romantic slogan 'art for art's sake' to the extent of reducing this fantasy to merely 'book for book's sake' and for no other sake. They hardly like the idea of parting with their book treasure at any cost even if it is granted to be of no use to them. If at all they feel fed up with them, they are pleased to float them in river water in all reverence. In some cases, the contents of manuscripts are considered to be extremely confidential. Hence no knowledge is to be leaked out. With the result, no declaration, no account of these manuscripts and like unaccounted money, these *granthas* are kept in dark and absolute seclusion.

It is a pity that the people of one sect denounce the literature of other sects; sometimes throw away the manuscripts belonging to other sects. This communal psychological barrier also hit at the roots of manuscript conservation.

Complexity involved in conservation of manuscripts can be traced on intellectual level too. People become more money-minded that they consequently withdraw themselves from intellectual pursuits. This wave of intellectual sloth affects badly the up keeping of manuscripts in their ignorance.

Now-a-days a reawakening of the intellectuals, a renewed love for antiquities is on immense increase. The National Mission for Manuscripts had been launched under the Ministry of Culture for a period covering the Tenth Five Year plan, spanning 5 years from 2002 – 2007. During that period, the Mission focused on Cataloguing, Conservation, Preservation of manuscripts up to the end of the 19th Century and improved access to the users. But due to lack of properly trained museologist the work of Manuscript Mission was not moving successfully in all fronts properly.

Most of the manuscript repositories are not at all aware of the status of conservation of their collection still now. As caring for collection is part of the definition of a real museum and one of the essential ethical obligations of each member of the museum profession is to ensure the proper care, management and conservation of both existing and newly-acquired collections and individual items for which the member of the profession and employing institutions are responsible, and to ensure

that as far as is reasonable the collections are passed on to future generations in as good and safe a condition as practicable having regard to current knowledge and resources, it is the need of the hour to create awareness among people of all strata through campaigning, workshop and various other activities about the importance and value of manuscripts.

Manuscripts serve as an index on civilization and any such loss to such material is irreplaceable. As old documents are the "cream" of the cultural heritage of our country and manuscripts are considered as the most important source of authenticity, it is also the need of the hour to make people aware about the methods adopted for conservation of the valuable manuscript collection kept in different repositories of West Bengal. So we can save these rich collections for our future progeny.

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Socio-religious Reformation in 19th Century Bengal: Prologue to Science Museum in India

LYRIC BANERJEE

Abstract

Socio-religious reformation in Bengal Renaissance was a landmark event in the history of mankind. It pushed forward the society to think everything rationally, to fight for progressive ideas and to welcome scientific knowledge. The early 19th century was marked by the hungry quest for science and technology of the western world. In India, social reformers and scientists played an important role to spread rationalistic ideas among the people. Direct and indirect effect of Bengal Renaissance prepared ground for the emergence of Science Museum in India.

Keywords

Reformation, Renaissance, Science and Technology, Museum, India.

In the history of human civilization, Renaissance is perhaps the most remarkable epoch for the expansion of both mental and geographical horizons. A free-spirit towards inventions was produced by Renaissance which encouraged man to acknowledge new ideas and to confront old ideas and customs succumbing to fortune. Science is nothing else, than one of the glories of human intellectual tradition. During European Renaissance, knowledge began to come out in full blossoms. Europe was throbbing with passion for knowledge of arts, as well as of science.

The present discourse intends to highlight the growth and development of science museums in India where perhaps the intimate co-ordination between traditional belief and scientific enlightenment played a pivotal character. This specific characterization can be termed as a concept of new beginning or 'Renaissance' which was the guiding force behind the growth of museums in India.

Man steadily tried to make an amalgamation of humanism and scientific spirit to establish the superiority of man on the world. In this new age revolution in the world of science was taking place and 17th century became the golden age of eminent Scientists like Galileo, Isaac Newton and others.

New waves of thinking, idea were touching our country in 19th Century. The Bengal Renaissance was an effect of British rule, which tried to cultivate Western

ideas into native soil. As eminent historian Sushovan Sarkar (1970:3) opines. –
The role played by Bengal in the modern awakening of India is ...
comparable to the position occupied by the Italy in the story of the
European Renaissance.¹

'Bengal Renaissance', initiated in 1815 and concluded in 1919, had five important stages. The first phase (1815 – 1833) witnessed the rise of the 'father of modern India', Raja Rammohan Roy, who contributed to a great extent to germinate the seeds of modernity in Colonial Bengal. The second phase (1833 – 1857) marked his death and the outbreak of the famous Indian Mutiny. The third phase of Bengal Renaissance spurred with nationalism and provided a platform for the establishment of Indian National Congress (1885). The fourth phase was equally important as it saw the partition of Bengal in 1905. The final episode of Bengal Renaissance welcomed Nationalist leaders to lead the nation.

Religious reformation in Bengal Renaissance is an important chapter in socio-cultural history of Bengal. People in general did not know much about the Hindu Shastras and the Vedas and the Upanisadas – these were closed books to them. To them religions consisted mainly in the conscientious observation of rituals, ceremonies and also of the rules and regulations of the caste system. This great emphasis on rituals and ceremonies naturally resulted in the establishment of an undue influence of the priesthood on society and the priest, to perpetuate their influence, encouraged various superstitious rites in the name of religion. Belief in the efficacy of magic, witchcraft, etc., also formed an important element of popular religion.

Rammohan's religious reform movement had definitely a social purpose before it and the great reformer himself admitted this fact in many of his writings. Intellectual honesty compelled him to admit that the worship of idols, which he denounced vehemently, had been permitted for the uneducated and ignorant masses by the original Hindu Shastras. But at the same time he was quite clear in his mind that the traditional forms of Hindu worship encouraged the growth of various superstitions and immoral practices, helped the domination of the priestly class and led to degradation of the character of the common people.

Amongst the leaders of Bengal Renaissance, Raja Rammohan Roy is always remembered for his achievements to create an environment in favour of enlightenment and rationalism. In Bengal, it was great Rammohan Roy who first voiced to question and to deny the medieval thrust on culture, religion and life as a whole. He with his followers welcomed the knowledge of science and philosophy of

¹ Sarkar, Sushovan. 1970. *Notes on the Bengal Renaissance* in Bengal Renaissance and other Essays. New Delhi. p. 3.

western world launched a fight to introduce the occidentals instead of oriental education though he failed. He also propagated the idea of imparting Western Education to the natives and was enthusiastic about science and technology. Rammohan supported the cause of female education though did not get directly involved with it like Iswar Chandra Vidyasagar, another pillar of the Bengal Renaissance. He also knew the importance of English to impart knowledge about western science and technology. The early 19th century was marked by the hungry quest for the science and technology of the western world. He considered that knowledge of western science and technology would be appropriate to achieve democracy and all comprehensive knowledge. It is the fact that before 1835 science and technology were never included in the curriculum of schools and colleges. Rammohan Roy had advocated for their introduction in a letter to Lord Amherst in 1823 (2004:67).² But it was not considered by the colonial rulers. In 1835, Macaulay in his Minute on Education finally decreed that the government money would be spent on western liberal education of humanities with a sprinkling of science in English medium (1920:313).³ His valiant struggle paved the path of Modernism and more precisely prepared the ground for a Science Museum. With the advent of western education gradually a positive attitude towards modern science evolved in the mind of the newly emerged middle class intelligentsia. Men like Derozio, Akshay Kumar Dutta, Rajendralal Mitra, Trailokyanath Mukhopadhyay, Swami Vivekananda, and Rabindra Nath Tagore had certain roles to play in this perspective.

Louis Vivian Derozio (1809-1831) was another important product of Renaissance. His firebrand student-group of "Young Bengal" fought against *Satidaha* (widow burning) idolatry, bigotry and for widow re-marriage, western education and progressive idea.

Akshay Kumar Dutta (1820-1886) played a significant role in the teaching of science. He taught physics and geography at the Tattvabodhini Pathshala (founded in 1840). He strongly favoured the dissemination of scientific knowledge through mother tongue. He was appointed as Headmaster in the Normal School (to prepare qualified teachers) and engaged to the promotion of scientific studies.

Iswar Chandra Vidyasagar (1820-1891), social reformer of India was a proficient Sanskrit scholar educated in the Sanskrit College. As an educationist, he had done considerable service for girl's education and dissemination of science in his broader vocation. The negative effect superstitions had on the advancement of modern science came into light by him and he campaigned strongly against them. Like

² Palit, Chittabrata. 2004. *Colonial Science*. In Aspect of History of Science. Kolkata: The Asiatic Society, p. 67.

³ Sharp, H. 1920. *Selections from Educational Records 1781 – 1839*. Part - I. Calcutta. p. 317.

Akshay Kumar Dutta, he also emphasised the importance of the mother tongue in the communication of scientific knowledge (2004:51).⁴ And thus the vernacular schools which would impart a complete course of elementary education, including *elements of Natural Philosophy (meaning Chemistry and Physics) and Natural History* were established by his earnest effort. In 1850, "Jivancarita", vernacular scientific literature, containing biographies of torch-bearers of the modern scientific revolution like Copernicus, Galileo and Newton was published by Vidyasagar.

Keshab Chandra Sen (1838-1884) who presented science in intensely religious metaphor. According to him, Anatomy and physiology, geology and astronomy, chemistry and zoology were living preachers. Though he was in Brahmo Movement (theistic), but Kesab Chandra Sen (1916: 203) hoped that inspite of ages, all would assiduously and reverently cultivate the sciences, study closely the scripture of nature, and worship in the vast cathedral of the universe, under the heaven's canopy, the Great Spirit who shines everywhere.⁵ He played a significant role in the foundation of the Indian Association for the Cultivation of Science.

Swami Vivekananda (1863-1902), disciple of the Hindu mystic Ram Krishna Paramhansadev, was known to everyone for his Chicago oration in 1893. He participated in the World Parliament of Religions which was a part of the World fair on religion, science, art, law and human rights which occurred in September 1893 at the Hall of Columbus, Chicago. Message of human oneness was appreciated by all and he spent over a year in USA and during his staying he was invited by learned bodies to deliver lectures on the Vedantic Philosophy of India.

Like socio-religious reformers, writers and intellectuals like Michael Madhu Sudan Dutta, Bankim Chandra Chatterjee, Rabindranath Tagore and many personalities emphasised on science and rationality through their writings or products of scientific advancement.

Bankim Chandra was writing on subjects related to scientific interest regularly for *Bangadarshan*, a Bengali journal and it was helping to promote popular science. Like many other enlightened personalities he was also a strong supporter of Mahendra Lal Sircar's IACS projects.

Rabindranath Tagore was an asset of East. His versatility was reflected on his writings. In the context of science he was very much moved by Darwin's Theory of Evolution. He wrote on what the theory teaches us in *Vividha Prasanga* and *Jagatpida*. Tagore firmly believed that dissemination of science education to grass-root was an essential attempt to eradicate superstition. But he was aware of the wrong uses of science. Sasadhar Sinha (1962:142) said about Tagore's thinking

⁴ Ibid. 51.

⁵ Sen, Keshub Chunder. 1916. *The Study of Science*. In *Keshub Chunder Sen's Essays: Theological and Ethical*. Calcutta: Brahmo Tract Society. p. 203.

on India, "... firmly believed that the final social and economic salvation of India would come through the inculcation of the scientific spirit and employment of science in the service of the people."⁶

Tagore was in contact with eminent scientists in his life. He met Nationalist scientists like Jagadish Chandra Bose, Prafulla Chandra Ray, C V Raman, Meghnad Saha, Satyendranath Bose and so on. Besides them, he met Albert Einstein, Werner Karl Heisenberg, Arnold Johannes Wilhelm Sommerfeld. On science Tagore (1931: 221-225) told Einstein, *Science is concerned with that which is not confined to individuals; it is the impersonal human world of truth.*⁷ Tagore was an active supporter of scientific research and he encouraged Jagadish Chandra in his research activities. He helped Jagadish Chandra in establishing the Bose Institute by providing funds. Tagore was an in-charge of Science section of *Sadhana*, the periodical and he wrote different articles on science, such as *Gatinimayaner Indriya* (Indicators of Motion), *Ichha Mrtyu* (Suicide), *Utpakhir Lathi* (Kick of Camel bird), *Bhugarvastha Jal* (Underground Water), *Vayupravaha* (Force of Wind), etc.

Tradition of Science

Science was a tradition since ancient times, but in later period with the onset of Renaissance, development of science in an intellectual way came in the forefront. Water management was quite developed since Harappan Civilization. Wheel made pottery, well fired brick, cultivation of cotton; man-whole covers, etc., were the examples of technological practices. Kautilya's Arthashastra, a unique work was a store of information on land and sea communications, agriculture and irrigation, ores and mining, plants and medicine, mechanical tools or *Yantras*. In the field of astronomy, India had outstanding achievements. Indians were quite capable to calculate accurate calendars and thus they were known to have computed the definite timings of both the solar and lunar eclipse. India had substantial progress in the field of medical science like Charaka Samhita (perhaps the best source of Hindu Medical knowledge), which made no mention of surgery. But Susruta have taught and practiced surgery in Kasi. In the field of Mathematics, the greatest achievement was to have the concept of zero. Different kinds of metals and alloys were used by the ancient craftsmen and artisans. Medieval period also witnessed considerable scientific activities of India. Architecture, engineering and industry were remarkably developed. Delhi's renowned Iron Pillar in the Qutab Minar complex (dated 410 CE) was an example of metallurgical advancement. Briefly stated that India's scientific and technological advancement was well known in Europe and after industrial revolution India was gradually backward in the field of science and

⁶ Sinha, Sasadhar. 1962. *Social Thinking of Rabindranath Tagore*. London: Asia Publishing House. p. 142.

⁷ Tagore, R.N. 1931. *The Religion of Man*. New York: Macmillan. pp. 221-225.

technology. But with the message of Renaissance the country was pushed forward to revive its old glory in the field of science and technology.

Institutionalizing Science

The study of natural sciences under the auspices of the Asiatic Society, Indian Association for the Cultivation of Science (IACS, 1878), Hindu College were the pioneering institutions to spread the scientific understanding and knowledge towards the society.

Scientists of the 19th Century Bengal and Modern Science

To the British, India in the nineteenth century was considered to be the ideal place the locus for science. Gyan Prakash (Autumn, 1992: 153-178) opined, "It provided a rich diversity that could be mined for knowledge and as a colony, offered the infamous 'elbow room' for an unhindered pursuit of science."⁸

In the mid-nineteenth century science got intellectually developed on one hand. On the other hand it faced its hazards. Being a colonial country India faced some obscure religions, rituals and superstitions, caste affected human relation and understanding which made the country backward. Gyan Prakash (Autumn 1992: 153-178) rightly finds out that,

If the emergence of science in the late nineteenth century as assign of western power constituted the "native" as an object of scientific discourse, the enactment of this process displaced the representations – Western Science versus "native superstitions" – of colonial domination.⁹

Along with performance of science in India of nineteenth century, the ignorant and unteachable subalterns proved to be menacingly with discourse but appeared to be no less important for scientific enlightenment, through museum exhibition. Museums aimed to make objects speak a language revealing an order which might be received in full by the ignorant laymen of India. Gyan Prakash therefore came to the conclusion,

In the emergence of subaltern, then, there appears another, "third" view of the performance of colonial science – one that addresses the general issue of how the staging of science realigned colonial categories.¹⁰

In India, museum movement started with the establishment of the Asiatic Society in 1784. Since then the Asiatic Society has been working in the different fields of

⁸ Prakash, Gyan. 1992. "Gone Native" in *Colonial India*. In *Representations*. No. 40. Special Issue: Seeing Science. USA: University of California Press. p.155.

⁹ Ibid, 153.

¹⁰ Ibid, 155.

research. In 1798, Dr J B Gilchrist felt to hire a house for a library and museum and strongly addressed it. But due to scarcity of funds it was little delayed and in 1805 (May 15) a formal application was made to the government and the site (J N Harrington, V P of the society proposed the corner of the Park Street and Chowringhee Road for the Society's house and it was seconded by H T Colebrooke) was granted to the society. In 1814, Dr Nathaniel Wallich proposed that the Society should have a Museum and the Society accepted his proposal in February 2, 1814 to form a Museum with two sections, Archaeological-Ethnological and Geological-Zoological. The Society opened its Art Gallery in December 1814. The Society advised to form a National Museum in Kolkata (previously known as Calcutta) in 1850, but the society decided (May 1862) to establish a public museum, which was to be the Indian Museum of Calcutta. The building of the museum was constructed (1875) and open to the public in April 1, 1878 with art objects, objects of natural sciences, geological specimens, etc. After the establishment of Indian Museum, Madras Museum and Central Museum (Nagpur) were established with collections of natural sciences.

In colonial times, the British Government organized an Industrial trade fair in Pune to promote their products in 1893 and the displays formed gradually the country's first science museum namely the Lord Reay Museum (Pune). Unfortunately it was closed down and some of the exhibits are kept at the Mahatma Phule Museum, Pune. In 1906, Forest Research Institute, formerly known as Imperial Forest Research Institute was established for the purpose of continuing study and research on forest science. It also holds different museums such as Silviculture Museum, Timber Museum, Social Forestry Museum, Pathology Museum, Entomology Museum, Non-Wood Forest Products Museums. The very existence of these informal endeavours of science object display and preservation proves that there was a congenial environment for future formalized Science Museum.

Museum movement particularly science museum movement in India was started with the establishment of National Physical Laboratory (Delhi) and Birla Institute of Technology and Science (Pilani). But the former one was closed down and the later one continued. Afterwards, the country had Birla Industrial and Technological Museum (1956: Kolkata), Visvesvaraya Industrial & Technological Museum (1965: Bangalore), National Museum of Natural History (New Delhi: 1978), National Council of Science Museums (1978: Headquarter in Kolkata), etc.

If Indian Museum of Kolkata is the first museum in India (1814) – then BITM is also the first of its kind. In the dawn of our freedom, our leaders were conscious of the fact that to cope with the gigantic problems of economic development, Nation has to find its place in this age of Science. Dr B C Roy being moved and inspired by Deutsches Museum at first mooted this idea of installing a museum to keep the Nation in the line with the voyage of the world's Science and Technology and BITM

was established in 1959 at 18 Store Road in a building which has its own glory and glamour of her Heritage Building. In respect of the change in address from 18 Store Road to 19A Gurusaday Dutta Road, this building was owned by several persons – but it has become a pilgrimage to all as it was once owned by a Tagore off-shoot Surendra Nath Tagore from 1899-1919.

It is the fact that a major achievement of the Nehru era was in the fields of scientific research and technological education. Nehru was certain that science and technology were crucial to the solution of the country's problems. In 1938, Nehru expressed his thought to Indian Science Congress through a message which is quoted in below,

It was science alone that could solve these problems of hunger and poverty, of insanitation and illiteracy, of superstition and deadening custom and tradition, of vast resources running to waste, of a rich country inhabited by starving people.¹¹

This perception was reiterated in the Scientific Policy Resolution passed by the Lok Sabha (Parliament) in March 1958 acknowledging the role of science and technology in the economic, social and cultural advancement of India. Jawaharlal Nehru was aware of the significant role in scientific research and technology which would play in India's development and protection. After achieving Independence, Science policy was formulated to develop intellectual ability and a science tradition. But it is regrettable that an elite group emerged in isolation of society at large, feeling no urge to disseminate knowledge to others. And thus a new class of Keepers of Knowledge and controller of knowledge stood on the path of spread of basic learning of Science and Technology and giving way to Bureaucracy.

These science museums and centres have been playing a pivotal role in communicating science in a non-formal mode as well as in supplementing social science education. In general the objectives of these museums are as follows :

- To collect, restore and preserve significant historical objects
- To portray the science and technological development
- To propagate science and technology in both urban and rural areas
- To supplement science education in formal education centres like schools and colleges
- To give training on use of scientific teaching aids to the teachers
- To Render assistance to school, colleges, universities and technical institutions
- To design, develop and fabricate prototype exhibits

Now the time is to wind up the discussion. At the beginning of the paper the researcher spoke on Renaissance and its effect in India. The Bengal Renaissance was the key instrument to fight for truth in all corners of knowledge. A group of enlightened people came into the society and their contributions in different fields were significant in the process of human progress. Akshay Kumar Dutta and T N Mukherjee also were in that group and their contributions were remarkable in the field of Museology. Being a religious person Akshay Kumar Dutta had a keen interest in mineral, geological objects, etc., and he was a great collector of it. He regularly visited Indian Museum's mineral section. Like him T N Mukherjee was also the pioneering museologists of our country. They gave an impetus to develop the museum which portrays not only art objects but also science and industrial objects.

The significant events of global importance are now generally influenced by science and technology, our society, ultimately is the product of science and technology. If the country aims to make her free of superstitions and orthodoxy, she requires developing the scientific attitude of people for which cultivation of scientific methods and culture needs to be spread out and popularized. The pre-condition of a modern and prosperous country is obviously to encourage public understanding of science and technology. Science and Technology should not be considered in relation of pleasure and benefits but an endless source of enlarging the domain of self-confidence and self-reliance.

The contribution of Renaissance in building science museums may be an interesting study. The principal precept and spirit of Renaissance opened the realm of rationality, the guiding force of Renaissance being the thirst for exploring the unknown and untrodden world. Achievement of scientific knowledge and attitude is interlocked with progressive ideas. So the socio-religious reformation of a country depends largely on its progress of science and technology and the scientific progress of myriad minds. Advancement of scientific instruments leads to more cultivation of science and the urge of science cultivation ultimately culminates into building up science museums more and more, for they create in numerous minds, the interest, urge and thirst to enlarge the scientific attitude to-wards developing the modern and progressive society.

Practical Experience of School Science in Science Museums / Centres

PRATIK GHOSH

Abstract

Science Museums and Science Centres offer student education facilities, which are very much necessary to inculcate the theoretical knowledge in the minds of young students. For school groups to make successful use of museums as learning resources, appropriate teaching and learning approaches and strategies, involving a shift from task orientation to student-centred learning orientation, are needed. By allowing student learning to happen in a natural way, that is, by allowing personal interest and curiosity to drive the students' learning, not only will students be gaining more from their excursion, they will be practicing scientific investigative processes. This paper investigates how the resources of science museums or science centres can be used to achieve the practical experience of school science, and introduce a framework to facilitate students' learning in museums.

Keywords

School Science, Secondary Education, Science Museum

Introduction

Museums have emerged over the centuries as important organizational components and they are called society's information infrastructure. Their roles and functions, as they have developed over this period, are the expressions of a variety of cultural and social practices related to education, research, artistic creativity, entertainment and recreation. The Cambridge Dictionary online, defined museums as "Places of study, buildings where objects of historical, scientific or artistic interest are kept, preserved and exhibited." To the Museum Association, a museum is "an institution which collects, documents, preserves, exhibits and interprets material evidence and associated information for the public benefit." The definition of ICOM was –

A museum is a non-profit, permanent institution in the service of society and its development, open to the public, which acquires, conserves, researches, communicates and exhibits the tangible and intangible

heritage of humanity and its environment for the purposes of education, study and enjoyment.

But with the advancement of science and technology and their application to museums, the definition and the functions of museums have changed in the last few years. Museums now enable the public to explore collections for inspiration, learning and enjoyment. They are institutions that collect, safeguard and make accessible artefacts and specimens, which they hold in trust for the society. So the redefinition of museum gives them a more pro-active role and is inclusive of the virtual realm that many museums now occupy.

Museums provide an ideal learning environment, whether it is formal or informal learning, active hands-on participation or passive observation (Hein, 1998). Science Museums or Science Centres offer student education facilities, which are very much necessary to inculcate the theoretical knowledge in the minds of young students. The formal education system does not encourage the natural inquisitiveness essential to nurture proper scientific temperament among the school students. The Secondary Education serves as a bridge between primary and higher education. So with the changing ideas of museum's concept, the science museums of India have valuable responsibilities to develop more and more activities for achieving the success of life of the secondary students.

Learning through Practical Experience

Practical work has become an integral component of primary and secondary school science in India, as in many other countries. Over the years, however, the term practical work has come to mean little more than hands-on activity which has something to do with science. The emphasis on the use of our hands and the insistence on the need for a laboratory, rather than on learning processes, have curtailed opportunities for giving students a full range of experience with the practices of science and its integral role in our lives. Much school practical work is teacher-directed busy work, which is often poorly planned and ill-considered. As several authors have suggested, it has too often become distant from scientific investigation (Klopfer, 1990; Claxton, 1991; Hodson, 1994; Nott, 1996; White, 1996). To assist good curriculum design, it is helpful to regard practical work as having three major purposes :

- to deepen understanding of scientific ideas;
- to experience scientific processes;
- to acquire scientific research skills.

Hodson (1996) refers to these three goals as: learning science; learning about science; and learning to do science. Underlying these purposes is a further set of goals including self-motivation, stimulation of creativity, recognition of the relevance of scientific understanding and independent thought. Furthermore, as Woolnough

and Allsop (1985) point out, practical work can be regarded as comprising *experiences, exercises and investigations*. By cross-matching these three 'styles' or strategies with the three main purposes, a useful mix of student activities can be achieved. One of many possible matches leads to a programme of practical work consisting of :

1. having experiences which facilitate understanding of scientific ideas;
2. carrying out investigations using scientific processes;
3. conducting exercises which lead to acquisition of scientific research skills.

This combination of programme components provides a platform for discussing the utilization of museum environments for practical work.

Learning in Museums

Learning processes in informal settings are different in many respects from those associated with school. They are non-directed, exploratory, voluntary and personal, and proceed through curiosity, observation, activity, a sense of wonder, speculation and theory testing (Ramey-Gassert *et al.* 1994). Museums are informal settings where visitors are invited to choose their experiences, where ideas may not necessarily be met in sequence, where learning may be fragmentary and unstructured, where learning is collaborative. Learning in informal settings is driven by curiosity and maintained by meeting a challenge and gaining satisfaction. Personal ownership of the learning is a fundamental component.

The active processes of constructing meaning from sensory input and curious observation are, at the same time, the essence of practical science (Hein, 1998). "... the constructivist view emphasises the active and imaginative dimensions of learning and discovery" (Russell, 1995: 19). Museums, the places of *musings*, or of 'gazing meditatively or wonderingly' (*Macquarie Dictionary* 1981), are ideal settings for active, contemplative learning. While museums and science centres may not come readily to mind when thinking of school practical science. The following section shall discuss how an understanding of the features of museums and museum learning can be used to extend students' experiences with the components of practical work with reference some important science museums and science centres of West Bengal.

Museums in School Education

Museum provide learning situations is quite different from those provided by formal educational institutions like schools,

- a) Museum provides free choice learning situations devoid of verbal instructions, assessment and other types of controls that exist in schools.
- b) Learning in museums is a spontaneous process, a personal experience not imposed on the visitor.

- c) Museum provides open communication of ideas, concepts and information involving exploration and discovery, and
- d) Class rooms in schools are home for 3R's: reading, (w)riting and (a)rithmetic, whereas museums are home for 3A's: the authentic, the aesthetic and the accessible. The authenticity as revealed by real objects and phenomena exhibited in museums, communicates with a powerful clarity to visitors. Museums are compelling aesthetic environments: they engage the senses, stimulate, inspire and sometimes even overwhelm. A museum makes the whole world, the past, the present and the imagined; accessible to the visitor.

Practical Experience of Science Education through Some Science Museums/ Centres of Kolkata that can be complementary to Secondary Science Education

Development of science and technology in the mind of young students is the measure of progress, prosperity and strength of a nation. It is being increasingly realized that there are various aspects of this objective, which cannot be adequately covered by schools. It is here that Science Museums or Science Centres come to play a vital role in imparting knowledge through audio-visual methods and in fostering industrial development. Some science museums already seek to bring vividly the achievements of science and technology in various field and they may be called as supplementary science education centres for the learning students. To become a complementary source in formal secondary education, the application of modern science in these museums' galleries and other extension educational activities are very much essential to the students.

National Council of Science Museum (NCSM), Kolkata

'Science for all' is the slogan of the NCSM, a pioneer organization committed to popularise and disseminate science in science education. NCSM, a premiere institution in the field of science communication, is an autonomous organization under the Ministry of Culture, Govt. of India with its Headquarters in Kolkata. At the time of beginning, in 1978, three museums, namely, the Birla Industrial & Technological Museum (BITM), Kolkata, the Visvesvaraya Industrial & Technological Museum (VITM), Bangalore and the Nehru Science Centre (NSC), Mumbai were brought under its control. During the last passing years, the NCSM network has covered almost all parts of the country by setting up a suitable infrastructure for dissemination of the message and culture of science and technology. It manages 25 science museums/ centres spread across the country and Central Research & Training Laboratory, in Kolkata. In addition it has developed 23 Science Centres which have been handed over to different States and Union Territories of India. These science centres provide an experiment based learning environment,

characterised by two-pronged channel of communication – exhibits and activities. While the exhibits, both indoor and outdoor, are mostly interactive, the demonstrations and training programmes are also fully participatory and help children and the adults alike to learn the basics of science through fun and enjoyment. NCSM also conducts 23 mobile science exhibition units throughout the country to create awareness of science and technology in rural areas and provides hands on learning opportunity to rural children.

Birla Industrial & Technological Museum (BITM), Kolkata

The Birla Industrial & Technological Museum (BITM) opened in 1959 with few galleries on a) Iron & Steel, b) Copper, c) Petroleum, d) Electricity, e) Nuclear Physics and f) Motive Power. Then, one by one, Communication (1963), Mining (1964), Popular Science (1965), Electronics & TV (1966), Transport (1973) galleries were added. Mock-up Coal Mine was inaugurated in 1983. From the very beginning Popular Lectures and Film Shows got underway. Science Demonstration Lectures for students became a feature of BITM from 1965. The same year also saw the Mobile Science Exhibition (MSE). The first exhibition on wheels through MSE was 'Our Familiar Electricity'. The concept of Model Making Competition, popularly known as Science Fair can be traced back to 1967 and the very next year, the first Teachers' Training Programme was launched. In 1982, the first satellite unit of BITM, the District Science Centre at Purulia was opened. From then on till date, Birla Industrial & Technological Museum, the first Scientific and Industrial Museum in this country have come a long way. With its various galleries, multifarious activities and ever increasing chains of satellite centres, it has become a place where Science happens in front of one's eyes through animated and interactive models. Side by side, the history of Technology and Industry rejuvenates itself to the visitors through real or scale down replicas. In the new millennium BITM has added to its kitty the galleries on *Mathematics, Life Science, Biotechnology, Metals, Fascinating Physics, Television, Popular Science and Children's*. The ones, that got a face-lift, were the *Motive Power, Transport and underground Mock-up Coal Mine* with 'light & sound show'. 3D Show was added in 2006. In the area of Mobile Science Exhibition, units on Fun Science, Emerging Technologies, Mathematics, Global Changes, etc., have generated a lot of interest among the rural masses. An exhibition currently on display in BITM is 'A world in Darkness' for the visually challenged people. Daily Science Shows on Fun Science, Science Magic Miracle, Fantastic Chemistry and Super Cool Bodies are must see items for all. Taramandal (Planetarium) Show gives the view of night sky to the visitors having inclination towards astronomy. Keeping in mind the importance practical experimentation, interactive multimedia software, Virtual Laboratories on 'Chemistry' and 'Zoology' have been developed and are currently available from BITM Library.

In current educational system of secondary education, based as it seems to be, largely on note learning and hence not too encouraging to the development of individual thinking, the BITM may be a place where such students can learn to enjoy learning all over again. It has been sought to attain the practical experience of science among the students through participatory exhibits in galleries and other educational activities.

Present Exhibits of BITM

Exhibits are contained in galleries on Fascinating Physics, Transport, Motive Power, Biotechnology, Metals, Electronics, Television, Life Science, Popular Science, Mathematics, Children's and Mock-up Coal Mine.

Fascinating Physics

The Classical Physics section of this gallery has 28 interactive exhibits on Mechanics, Gravitation, Light and Electromagnetic Waves. The Modern Physics section of the gallery exhibits the microcosm of subatomic particles, the edges of the universe where black holes and pulsars reside, a super cool region near the absolute zero temperature and all such forbidden areas. The 38 exhibits with eye-catching visuals, working models, animations, video, multimedia, unmanned quiz and other presentation techniques make one's experience enthralling.

Transport

Spread over an area of 500² m. with approximately 50 models and exhibits, the gallery portrays the development of transport system from the 'Wheel' to the 'Supersonic Jet Engines' of the modern time through artefacts, models and interactive exhibits in thirteen specified sections. This gallery as a whole presents an opportunity to the visitors to see how the development of transport system in water, on land and in air has added new dimensions to the human life. A 1926 Rolls Royce Car and the Fiat Tipo used by the eminent scientist Sir Jagadish Chandra Bose are the star attractions of this gallery.

Metals

The Metals Gallery of BITM depicts the story of four most important metals Copper, Zinc, Iron & Steel and Aluminium through interactive exhibits, diorama, animated panels and multimedia presentation.

Motive Power

The gallery on 'Motive Power' depicts how ever-rising need of power forced man to use power and nature's wind and water power to supplement his physical strength. It continues up to modern day's diesel and petrol engines. Exhibits on the most recent sources of power and the future projections are also present in this gallery.

The artefacts, interactive exhibits, dioramas and descriptive panels have been arranged to make the visitors aware of the potentials of different sources of power in this gallery.

Electronics

The exhibits in this gallery depict various underlying principles of electronics, its fascinating behaviour and application in different fields of science and technology. One of the special features of this gallery is that most of the principles of electronics have been explained through a number of analogies which people are either acquainted with or experience every day. Rectification, Amplification, Oscillation, Semiconductor, Digital electronics, Micro-electronics, Medical electronics, Computer and Robotics form some of the sections in this gallery.

Television

The gallery on Television depicts the chronological development of this revolutionary technology right from the earlier days of its introduction by the Scottish inventor John Logie Baird to its present form through 25 state-of-the-art interactive exhibits, models, diorama and artefacts in an educative and informative ambience.

Life Science

This gallery is an effort to bring forth the science of life through a series of exhibits, both animate and inanimate. It narrates the story of life on earth, as unfolded through the ages, in all its magnificent varieties on three major habitats this planet could offer – water, land and air.

Biotechnology

The Biotechnology Gallery opens a vista of exhibits to make the technology lucid and easy to understand for common mass. Through arrays of interactive exhibits, this gallery makes the cutting edge technology easy to understand.

Popular Science

The Popular Science Gallery of BITM attempts to provide the opportunity to visitors with a potpourri of hands-on exhibits. Exhibits are mainly under the following topics: Mechanics, Sound, Eye and Vision, Illusion and Perception and Fun Electronics.

Mathematics

The new gallery is an attempt to present mathematical concepts in simple manner and provide enjoyable learning experiences through models, working exhibits in order to create interest in the subject among the young generation so that they are able to pursue higher studies in pure sciences with greater confidence. Supported mostly by interactive exhibits and graphical illustrations, the gallery is a living mathematics lab which offers opportunity to experiment, solve problems and appreciate the beauty of mathematics. Spread over an area of 300² m with about

54 exhibits, the thematic canvas of the gallery includes a brief history of numbers, number theory, positional number systems highlighting India's seminal contribution in their development, basic arithmetical operations, geometry of plane and curved surfaces, solid geometry & conics, mathematical functions, probability and statistics, the basic ideas of calculus, mathematics in nature, and a variety of mathematical kits and brain-teasers for kids. A 'Math Demo Corner' with facilities for conducting a class session on mathematics by the accompanying school teachers, and a 'Children's Activity Area' add to the attraction of the gallery.

Gallery for Children

The gallery has seven sections, namely, *Kid Zone*, *Learning Zone*, *Play Zone*, *Fun Zone*, *Mirror Zone*, *Assembly Zone* and *Ride Zone* where the children can unfurl their imaginations and natural creativity while they play and experiment with the very many objects.

Underground Mock-up Coal Mine

The Mock-up Coal Mine shows the principle of both board and pillar and longwall systems. The machinery used in both the systems has been shown in the Mock-up Coal Mine nearly too full scale. For board and pillar the short-wall coal cutting machine, continuous miner and rotary drill have been shown. In longwall visitors can see power ladder, belt and chain conveyors and friction props. Different kinds of roof supports like roof bolts, wooden props, joists have been used. In the longwall face both sand-stowing and caving systems have been shown. A cage takes the visitors down to the mine. An animation technique gives the visitors the feeling of going down hundreds of feet though they have gone downwards only 3 feet in about one minute time. Visitors will pass through airlock doors into the pit button. The mock-up Coal Mine has been set up to give visitors an idea of an underground mine situation and to educate them on the various facets of mining. One can have an idea of the coal cutting methods – both manual and mechanical, how coal is transported out of the mine, why the tunnel does not collapse after the excavation of coal, what are the safety measures adopted, etc. This mock up coal mine brings to the visitors all such unknown, absorbing and unique facts of the subterranean world.

The Science City, Kolkata

Science City is the largest science centre in the sub-continent, under the National Council of Science Museums. Presently it consists of two facilities, the Science Centre and the Convention Centre. The Science Centre complex comprises Space Odyssey, Dynamotion, Evolution Theme Park, Maritime Centre and a Science Park. The Convention Centre complex comprises the Grand Theatre, one Mini Auditorium and a Seminar hall building with 11 halls, indoor and open air exhibition ground.

Present Exhibits of Science City

Presently Science City has the following exhibits in its Science Centre Complex, which comprises *Space Odyssey, Dynamotion Hall, Earth Exploration Hall, Nano Lab, Evolution Theme Park, Maritime Centre, a Science Park, Convention Centre and Science Exploration Hall.*

Space Odyssey

Apart from the space theatre and motion simulator, this building houses variety of exhibits on space science especially on Indian space programme. A multimedia spherical projection system with scope for interactivity provides information on all planets of the solar system with emphasis on planet Earth. A spinning platform, Van de Graff Generator, 3D theatre, an exposition titled 'Mirror Magic' and a host of interactive multimedia kiosks and exhibits on virtual reality provide both education and entertainment to visitors of all age groups. The Space Odyssey houses India's first *Large Format Film Theatre, Time Machine, 3-D Vision Theatre, Mirror Magic* and exhibits on space science, motion, electricity and virtual reality.

Dynamotion Hall

It is one of the major indoor exhibit areas of Science City in which several interactive exhibits on Mathematics, Physics, Chemistry, Geography, Mechanics and Environment for enriching the knowledge of the masses are available. This area has in it an array of aquaria with exotic fish and other aquatic animals, a well-planned 'insectarium' rearing various live insects in their recreated natural habitat and a series of working and interactive exhibits on diverse principles of motion, transformation of energy, natural calamities and others. This large spiral shaped building offers an exciting journey to the world of science. The aqua mobile, a plethora of exhibits on physical science and the energy ball exhibit complement the building of unique architecture. Here, one can create music while walking on the floor piano, make soap bubbles float in air, man oeuvre the floating ball, make a large dish float in air or observe a well of infinite depth. A virtual harp, which creates music, a working tornado, principles of flight and many more exciting exhibits would stimulate the intrinsic and extrinsic faculty of visitors and keep them engrossed in the process of discovery. Hands-on and interactive exhibits on various topics of science encourage the visitors to experience with props and enjoy the various scientific principles.

Earth Exploration Hall

The hall is housed in a two storied hemispherical building that displays the southern hemisphere in the ground floor and northern hemisphere in the first floor. Slicing a huge Earth globe at the centre of the hall into 12 segments vertically in each hemisphere, each segment has physical geography, land and people, flora and fauna and other dynamic natural phenomena on Earth using interactive multimedia,

video walls, panoramic videos, tilty tables, computer kiosks, etc. It has also a built-in 3-D Theatre where visitors can witness the dynamic phenomena on Earth with 3-D effects wearing a special Polaroid spectacle.

Nano Lab

A state-of-the-art Nano Laboratory fosters public awareness, engagement and understanding of nano science, engineering and technology. It aims to contribute in knowledge transfer from academic institutions to the young students through activity based workshops on new developments in nano science and technology.

Evolution Park Theme Tour

It portrays the story of evolution of animal life, especially the extinct species. How life came into being and diversified over millions of years has always been intriguing to scientists. The Evolution Park Theme Tour is a journey back to early age of evolution of life on Earth. The near realistic ambience gives one the knowledge on evolutionary phases of life and glimpses of those gigantic extinct animals of the past. The exhibition is broadly divided into seven period settings with 71 Robotic Pre-historic Animals, 26 Dinosaurs and 140 Ancient Plant Models, ending with the advent of the Modern Man.

Maritime Centre

Maritime Centre, a permanent pavilion within Science City, depicting segments of maritime history, maritime activity and related subjects, has been developed by Science City, Kolkata in collaboration with Kolkata Port Trust. It has been housed in a specially designed two-storied building having a built up area of around 700 meters and it shaped like a ship. Maritime Centre displays interesting exhibits on maritime activity, replicas, scaled models and precious artefacts of boats, ships and sea going vessels. An unmanned quiz corner supplements the exhibition.

Science Park

In this Science Park, people come closer to plants, animals and other objects in their natural surroundings and also learn about the basic principles of science in an open air learning environment. It comprises Caterpillar Ride, Gravity Coaster, Musical Fountain, Road Train, Cable Cars, Monorail Cycle, Butterfly Nursery and several exhibits on Physical and Life Sciences and a maze set up in a lush green ambience.

Science Exploration Hall

The new 5500² m. Science Exploration Hall portrays the exhibits like Origin and Evolution of Life, Panorama on Human Evolution, Science and Technology, Heritage of India and Cutting Edge Technologies. The facilities in the new building comprise expositions on the following themes: Evolution of Life, The Human Story, Heritage of Science and Technology of India and Cutting edge science and technology.

Conclusion

To make any progress in the secondary level science education some changes have to be made at the level of the curriculum. In a hands-on way of learning science, the schools should start with things that are directly related to the students' experience and are therefore specific. It is important that any programme of study gives students the needed space and not tie them down with constraints of a long list of topics waiting to be covered. Secondary level school education grossly lacks the visual inputs essentially needed to inculcate science in the minds of young students. Today's science museums are highly developed entities, which can be useful tapped to achieve the goal. From the discussion of the above Science Museums/ Centres of Kolkata it is clearly determined that museums may become a supplementary institution for the students. For secondary students there are assorted exhibits on various scientific phenomena and programmes, which bring text books science alive, thereby making students more and more interested in science. The science content up to secondary level should not be framed along disciplinary lines, but rather organized themes that are potentially cross-disciplinary in nature. So by the activities of science museums involving the students for increasing their interest in self-depending experience on science subjects, it will be very helpful to encourage all the boards of secondary education for thinking about the necessity of revision the curricula. Instead of merely listing topics, the syllabus can be presented in four columns: Questions, Key concepts, Resources and Activities/ Processes. So science museums have to develop themselves in the sense of these concepts for becoming a complementary source of secondary education. Science museums may create a link to all the schools in such a way so that every secondary school develop an interest to set up science club or school science centre in their schools by involving the students who work in groups in leisure time. Some collaboration programmes of both science museums and schools should be arranged for organizing science exhibition, science fair, science camp, etc. Some beneficial learning methods should be included in the science curriculum at this level, such as – Project/ Dissertations, Internship Programmes of the students with the help of science museums. To develop more potentialities of science museums to make the science easiest and more interesting to the students, the present research work has been started based on this hypothesis. It would enable to identify exactly the areas where formal school education and museum research can act together to arouse scientific temperament and inculcate scientific spirits in the minds of the future generation of the responsible Indians.

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Acharya Jagadis Chandra Bose Museum – a Unique Research Institute Museum

ISHANI CHATTERJEE

Abstract

To any people, a Scientific Research Institute implies an establishment for carrying out scientific works and which is accessible only to scientists or researchers. Common man, including students develop an in built fear for such institutes. Visitors passing by such Institutes either appreciates its outward architectural beauty or may catch a glimpse of it or may take random shots with him/ her at the forefront without even realising its significance. However, an Institute and its creator both can have a strong impact on its visitor through its Museum. The paper gives an insight into the impact of J C Bose Museum housed within one of the reputed Research Institutes.

Keywords

Research Institute, Bose Institute, Museum.

Introduction

A Research institute is an establishment endowed for doing research specialising in basic or applied research. Although the term often implies natural science research, there are also many research institutes in the social sciences as well, especially for sociological and historical research purposes. In India, the earliest Scientific Research Institute was Indian Agricultural Research Institute, at Pusa, followed by Forest Research Institute at Dehradun. With the onset of Bengal Renaissance, a notable stalwart from Bengal founded one of the earliest modern scientific Research Institutions in Kolkata, namely the Bose Institute.

History of Bose Institute

Acharya Jagadis Chandra Bose (1858-1937) was a part of the Bengal Renaissance who set the stage for modern science development in India during the 19th century. He was an eminent Indian scientist and a man of enormous genius and outstanding ability. As the inventor of millimetre waves and their generation, transmission and reception, he was the first scientist who convincingly demonstrated that plants possess a nervous system of their own and "feel" pain. Repeated delivery of Lectures

at the Royal Institution of Great Britain inspired him to establish a Research Institute with a Lecture Hall similar to the Institution for diffusion of scientific knowledge. After his retirement from Presidency College in the year 1915, he moved forward towards fulfilment of his vision. Finally in the year 30th November, 1917 the Institute was formally inaugurated. Since its establishment, Acharya Jagadis Chandra Bose was elected as the Director from the year 1918 till 1937.

Salient Features of the Institute :

Architecture

Jagadis Chandra Bose had the insight of a scientist with the soul of an artist. He shared a close bondage of friendship with other his other contemporary stalwarts namely Rabindranath Tagore and Nandalal Bose. The building was of a striking design, constructed of fine greyish purple sandstone in Indian style of the Pre-Mohammedan period, with symbolic ornamentation and details throughout. Generally a Research Institute pays less attention to beautification of its exterior, i.e. artistic outlook. But in Bose Institute, one can find an artistic blend throughout.

Entrance Hall

The spacious Entrance hall, i.e., entrance to the first part of the building, initially had a long series of glass cases exhibiting the research apparatus of Bose from physical researches on electric waves to physiological researches. The instruments were arranged chronologically according to their perfection in observation and record. To the right is the staircase leading to the first floor, which during that time was the gallery of the Lecture theatre and the laboratories. In the recent past, the first floor has been converted to another exhibition hall depicting early life and works of Sir J C Bose. Bose himself started display of his instruments so that scientists from all over the world get to see the instruments. Later this part of building was converted to a Museum. On the main Wooden door leading to the Entrance Hall of the Lecture room is carved the symbol of the 'Thunderbolt', symbolizing Sacrifice. Below the thunderbolt symbol, are the twigs of the two plants forming the basis of Acharya J C Bose's experiment – *Mimosa pudica* L. (Touch-me-not plant and *Desmodium gyrans* (L. f.) DC (Indian Telegraph Plant) below the emblem. On the cornice will be seen Emperor Ashoka's emblem of the *Amlaki* fruit (*Emblica* sp.) half of which he had and gave away as the final renunciation of all his worldly possession.

The Lamp-Bearer

As one enters the Institute, on the left hand side, one will find a bronze plaque with the figure of a woman carrying a lamp symbolizing Womanhood as the torch bearer of knowledge. It is often said to symbolize Sister Nivedita, Bose's confidante and well-wisher who was equally responsible for inspiring Bose for setting up his own Research Institute. Within the pool, presently one finds a variety of ornamental

fishes and turtle, the sight of which is mind blowing and interesting for any children. Each and every day, this Institute is visited by the school children who find great amusement in watching these aquatic creatures. The Institute does not impose restriction on their enjoyment. Even the surroundings of the pool bear architectural beauty.

The Lecture Hall

Modern day research Institutes have well developed auditoriums with the latest technology applications. Bose Institute still maintains the grand Lecture Hall as established by Acharya J C Bose in the year 1917. The Lecture Hall has been built with the purpose of accommodating around 1500 people. It was here that the Inaugural Speech of the Institute was put forward by J C Bose. Regular courses of Lectures were organized by the Director to discuss the main results of the research works of the Institute. The Hall had a unique artistic ornamentation inside. The audience can at once see and hear without any visual interruption and acoustic defects. The ceiling bears a painting of the great radiating lotus, adopted from one of the cathedral caverns of Ajanta, bordered by sensitive plants connected with the Institute's work. The painter was Shri Suren Kar, under the guidance of his mentor, Nandalal Bose. The focal ornament to the Hall is a great relief in bronze, silver and gold of the Sun God rising in his chariot to dispel darkness and instil life. Passing by the Lecture Hall, one comes across the different Departmental Laboratories, where researches are in progress. Being inspired by the Nalanda and Taxila Universities, Bose desired that the Research Institute would welcome scholars from foreign lands as well.

The Museum

The J C Bose Museum is a special attraction in the Main Campus. It nestles a permanent exhibition on the life, research contributions and works of Acharya Jagadis Chandra Bose. Sir J C Bose himself started the display of his self-devised instruments which, as a continuous process, made their way into the present Museum in the year 1986-87. The Museum, now dedicated to the memory of Sir J C Bose aims to create mass awareness for the present and future generations on the contributions of Sir J C Bose in the field of natural and physical science through its varied collections of Scientific and Research instruments, Honours and Academic distinctions, correspondences, photographs, personal belongings. It intends to preserve the intellectual thoughts of a Bengali polymath whose original thinking and pioneering efforts have led to significant discoveries in the field of science.

Instruments designed by Bose for his Researches

One of the most important contributions of J C Bose to modern science is the set of delicate instruments he had created using very simple tools. Their use has revealed

many unsuspected activities of the plant and to the establishment of the basic similarity in the response phenomena in both motile and non-motile plant tissues, to those in the more highly specialized animal tissues. The Microwave Apparatus was the earliest instrument for generating microwaves. After 1900, he had devised several Mechanical and Electric Response Recorders for studying the responses in plants. Bose's active period of scientific research extended from 1894 till his seventieth year 1928. This long period of thirty-three years of his researches could be broadly divided into three phases: First stage: Investigations into short electromagnetic waves (1895 to 1899). Second stage: Similarity of electrical responses in the living and non-living substances (1899 to 1904) and the Third stage: Plant physiology (1905 to 1928).

Though he had designed innumerable instruments, the Museum displays some notable instruments from all the different phases of his Research, as classified above. The primary concerns of the museum have been the collection, preservation, restoration and documentation of the rare source materials in order to interpret the life and legacy of Acharya Jagadis Chandra Bose along with the depiction of historical growth of the Institute. Presently the museum exhibits are confined to two spacious halls – in Ground Floor and in the First Floor of the Museum building. The adjoining walls of the staircase display some of the commemorative articles.

Nature of Collections

In the Ground Floor, one comes across all the Biographical objects of Acharya Jagadis Chandra Bose, namely the Scientific/ Research Instruments, Camera, Original Tools used by Bose to build his scientific instruments, Pendulum Wall Clock. It also displays archival materials like Letters, Books, and Research Papers. It also contains a few photographs and painting.

In the first floor, an illustrative, self-explanatory display distributed in different panels, each bearing a thematic representation cantering on early life, research works, acquaintances and letters of Sir J C Bose. An interesting and captivating exhibit is the Diorama containing life-size models with audio demonstration depicting the significant *Presidency College Experiment* of Sir J C Bose conducted in 1894 leading to the world's first transmission of microwaves without any wire in the room of Acharya Prafulla Chandra Roy in the presence of father Lafont and Professor Alexander Pedler, the then principal of Presidency College. The exhibit displaying the attires of Sir J C Bose, the last attire worn before his demise and sarees worn by his wife, Lady Abala Bose serve as a tribute to the memory of Bose.

The Museum also educates one on J C Bose and his contribution towards establishment of the laboratory. After seeing the Museum, visitors are free to see the sprawling garden behind and enjoy nature. They can also offer their respect at the site, where the ashes of J C Bose, his parents and wife are enshrined at one corner of the garden. So, after catching a glimpse of the museum, a visitor is

bound to get interest not only of the Institute, but also the Founder and appreciate his artistic bent of mind. Bose Institute therefore stands apart from other Institutes and the Museum inevitably pulls a visitor towards it. The entire Institute building including the architectural pattern is not restricted only to the researchers. An informal interview with some visitors revealed the role of Museums as Mediators to bring in Visitors:

1. Most of the people enjoyed their visit to the Museum.
2. Visitors enjoyed the Walk across the Garden of the Institute.
3. A thorough understanding of the Museum, followed by visit to the Lecture-Hall and Garden led to better grasp of knowledge about the Institute.
4. The fear they had during access to this Institute was totally wiped out after seeing the Museum.
5. There was not a single visitor who was dissatisfied and did not roam across the Garden.

Bose's aim was not only to enrich the researchers with his philosophies but also to the common men. So we see that the Social relevance of an Institute and the impact can it have on the common people. Regular organization of Museum programmes will draw more and more common people and students. In turn they will be stimulated to visit the entire Institute and carry back valuable memories with them. Scientific Research Institutes are not to be feared by common man. People should be encouraged to have the urge to realize its significance, which is to be mediated by a Museum at its premises.

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Interaction with Visitors and Authorities of Bose Institute.

The Indo-Burma Hotspot – Insect Biodiversity

NAFISA BEGUM

Abstract

India has a rich diversity of flora and fauna. There are several museums across the country, which store and display representatives of the Indian flora and fauna (entomofauna as well), usually those available in the region, the museum(s) is located. This paper tries to provide an overview of the insect population(s), especially butterflies, only in the Indian portions of the Eastern Himalaya, reasons for the loss of biodiversity (with reference to the North East of India) and the role of the regional museum(s) in highlighting the importance of biodiversity (with special reference to the Bengal Natural History Museum).

Keywords

Insect, Butterflies, Biodiversity, North East India, Museum.

Biodiversity hotspots in India

"McNeely's (1990) categorization of India as one of the twelve mega diversity countries in the world paved the way for its placement on the world's conservation map" (Chatterjee, Salkia, Dutta, Ghosh, Pangging and Goswami, 2006: 7). Biodiversity 'hotspots' are areas of high biological diversity and high endemism, but are under severe anthropogenic threats as well. Global biodiversity hotspots, identified by Myers (1988, 2000), included two such spots from India. One is the Eastern Himalaya and the other being the Western Ghats. The Eastern Himalaya biodiversity hotspot got modified to the Indo Burma (Myanmar) hotspot in the year 2000 and now includes all the eight states of northeast India. This comprises the states of Arunachal Pradesh, Assam, Meghalaya, Manipur, Tripura, Mizoram, Nagaland and Sikkim.

The Eastern Himalaya

The Eastern Himalaya, in terms of area, is the second largest, after the Mediterranean basin, extending up to 2,20,60,000² km. "The region now extends

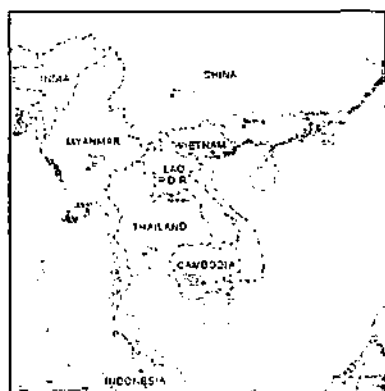


Plate 1: Map showing the boundaries of the Indo-Burma hotspot (as followed by the Ecosystem Profile), Courtesy: Tordoff, et al. (2012, p. 2).

from central Nepal to North East India, Andaman and Nicobar Islands and Hainan island in southern China, Myanmar, Thailand and on to Indochina, then south to Isthmus of Kra in Malaysian peninsula" (Chatterjee, Salkia, Dutta, Ghosh and Worah, 2006: 4). The Indian East Himalayan region (*sensu lato*), constitutes almost 52% of the total East Himalaya, i.e., 5,24,190² km. "Following the more recent biogeographic classifications the region represents three biogeographic zones (Trans Himalaya, Himalaya and NE India) and 5 provinces" (Palni, Rawal and Sekar, 2011: 6).

Table 1: Forest cover in the states of the Northeast of India (adapted from, Chatterjee, Salkia, Dutta, Ghosh, Pangging and Goswami, 2006:5) :

S. No.	N. E. States	Geographical Area of the States (in sq. km.)	Forest Cover in 2003 (Total in sq. km.)
1	Arunachal Pradesh	83,743	68019
2	Assam	78,438	27826
3	Manipur	22327	17219
4	Meghalaya	22429	16839
5	Mizoram	21081	18430
6	Nagaland	16579	13609
7	Sikkim	7096	3262
8	Tripura	10486	8093

The high diversity of land forms and climatic zones of Indo-Burma supports a wide variety of habitats thus, has high overall biodiversity. According to Tordoff, et al: "This diversity is enriched by the development of areas of endemism as a result of the hot spot's geological and evolutionary history" (2012:9).

Insect biodiversity from India and the Indian portions of the Eastern Himalaya

According to Chandra, India accounts for a little above 7%, with respect to the insect population across the globe. He along with Varshney (1998) has put forward that India has twenty seven of the proposed thirty two insect orders, including Order Lepidoptera. Amongst the insects, both the hot spots in India are particularly rich in butterflies (of the order Lepidoptera). Chandra (p. 181) reports 22 of these orders, containing 5892 species of insects, from the state of Sikkim. These include

the Thysanura, Collembola, Ephemeroptera, Odonata, Plecoptera, Orthoptera, Phasmida, Dermaptera, Blattaria, Mantodea, Isoptera, Pthiraptera, Hemiptera, Thysanoptera, Neuroptera, Coleoptera, Mecoptera, Siphonaptera, Diptera, Lepidoptera, Trichoptera and Hymenoptera. Of these, Lepidoptera, Coleoptera, Diptera, Hymenoptera, Hemiptera, Trichoptera, Orthoptera, Odonata and Dermaptera, constitute the bulk (almost 95%), of the total insect fauna. As already pointed out, a biodiversity hotspot shows high endemism also, "... the cursory analysis of data reveal that among the insects few groups like aphids, butterflies and caddis-flies show maximum endemism even up to 50%" (Chandra, p. 183). Results obtained from a study, carried out in the Teesta Basin, Sikkim, claim that the family Nymphalidae of the order Lepidoptera compose 50% of the species observed, in the region. The next families to follow are Lycaenidae (17.2%), Pieridae (17.2%), Papilionidae (8.6%) and Hesperidae (7.0%) (Pai, 2008). Literature reviewed by Majumder, Lodh and Agarwala (2013: 2) suggest that, 76 species of butterfly were previously recorded from the state of Tripura with an area of 10,490 sq. km. (Mandal et al. 2002; Agarwala et al. 2010; Majumder et al. 2011); 104 species of butterfly has been recorded from Meghalaya (22429 sq. km) and 962 species from Assam having an area of 78438 sq. km (Evans 1932; Talbot 1939; Wynter-Blyth 1957; Haribal 1992). In the Trishna Wildlife Sanctuary, "A six-month long study revealed the occurrence of 59 butterfly species that included 21 unique species and 9 species listed in the threatened category" (Majumder, Lodh and Agarwala, 2013, p.1). Pai (2008) states that: "The North east India, (22-30 degree N and 89-97 degree E) spread over 2,62,379 sq. km., represents the transition zone between the Indian, Indo-Malayan and Indo-Chinese biogeographic regions and a meeting place of the Himalayan Mountains and the Peninsular India." The North-Eastern region forms a distinctive part of the Indo-Myanmar hotspot, which supposedly ranks sixth amongst the top 25 biodiversity hotspots, identified globally (Singh *et al.*, 2009: 43). Although, rich in faunal biodiversity, it seems to be poorly documented, due to the remoteness and difficult terrain of the region. There are 3,624 species of insects in this region, as reported by the Biodiversity Strategy and Action Plan for Northeast Ecoregion (Pai, 2008). Web sources reveal that the order Lepidoptera (butterflies and moths), has been the subject of most studies carried out among the invertebrate organisms, in the north east of India. Palni, Rawal and Sekar (2011: 22), report that commonly occurring species of butterflies in North east India include the Atlas Moth (*Attacus atlas*) and the *Priniceps polyctor ganesa*. *Erysmia pulchella* and *Nyctalemon patroclus* are the common moth species found in this region. From Namdapha National Park, 15 new species of beetles and 6 new species of flies have been discovered (Biodiversity hotspots in India, 2011). Four indigenous species of honey bees have been recognized from India, one of these, i.e., *Apis andreniformis*, although, not common in occurrence, has been



Plate 2: *Atlas moth on display at the Bengal Natural History Museum in Darjeeling.*

reported from the North East of India. According to Bhuyan, Bhattacharya and Kanjilal (2005: 1910.), a study on butterflies carried out at the Regional Research Laboratory Campus, Jorhat in Assam revealed the presence of 70 species of butterflies, with the maximum from the Family Nymphalidae (40), followed by the families Papilionidae (12), Pieridae (10), Lycaenidae (5) and Hesperidae (3). Portions of West Bengal are also included in the Eastern Himalaya (Table 1). In 1923, after the formation of the Bengal Natural History Society, the Darjeeling Natural History Museum (set up in 1903), was brought under the Society's management.

This museum which represents the fauna (including insects) of Jalpaiguri, Sikkim, Tibet, Bhutan and Nepal besides, Darjeeling, later came to be known as the Bengal Natural History Museum, and is currently under the Padmaja Naidu Himalayan Zoological Park (Darjeeling). This museum has a good collection of butterflies (over 210 species), besides moths and species of beetles and dragonflies. Insects of the order Orthoptera (constituted by locusts and grasshoppers) and Hymenoptera (wasps, mainly) are also represented in the museum's collection.

Flora and fauna – The interrelationship

According to Chatterjee, Salkia, Dutta, Ghosh, Pangging and Goswami, (2006: 5), "High biological diversity is often related to the forest cover of a region. Most of the North Eastern states have more than 60% of their geographical area under forest cover ..."

Table 2: Biogeographic zones of the Indian portion of the Eastern Himalaya (Adapted from Palni, Rawal and Sekar, 2011: 6)

S. No.	Biogeographic Zones	States Represented from India
1	Trans Himalaya	Sikkim
2	Himalaya	Sikkim, West Bengal Hills, Arunachal Pradesh
3	Northeast India	Assam, Nagaland, Meghalaya, Manipur, Mizoram and Tripura

Extremely diverse in composition and structure, the forest cover in this region, is a combination of tropical and temperate forest types, alpine meadows and cold deserts. Palni, Rawal and Sekar, (2011: 16.) state, "The region has at least 7,500 species of flowering plants, including 700 orchids, 58 bamboos, 64 citrus. Besides, it has over 28 conifers, 500 mosses, 700 ferns, and 728 lichen species."

Increase in the loss of biodiversity

The biodiversity of insects is under threat, as the forest cover of India is rapidly disappearing. Pai (2008) stated, "The primary vegetation in extensive areas of the Northeast India has been disturbed and modified and in some places destroyed by seismic activities, frequent landslides and soil erosion." The forest cover of the North Eastern region of the country is further being affected by the following human activities (influences) – Deforestation, Agriculture, Encroachment, Animal grazing, Human wild life conflict, Forest fires, Illegal extraction of forest products, Commercial plantations, Introducing and replacing the indigenous species with exotics, Uncoordinated infrastructure development, Migration of population (Chatterjee, Salkia, Dutta, Ghosh, Pangging and Goswami, 2006: 12-16).

But, the impregnability of the forests in some parts of the Northeast, still protects them from destruction, (protecting the insect fauna sheltered in the forest, as well) hence, this region is still often considered to be a forest surplus region. Not only the Northeast, the quality of the forest seems to be deteriorating in other areas as well, i.e., the dense forest is becoming degraded into open forest or scrub. With the degradation in the quantity and quality of the flora of an area, the faunal biodiversity of the particular region is sure to dwindle (both, quantity and quality wise). Other threats to the Indo-Burma hot spot include Climate change, invasive alien species, forest fires, droughts, etc., which put undue stress on the vegetation of the region. All such factors thus affect the flora and related fauna of the region (including insects). "Only 5% of its natural habitat remains in relatively pristine condition" (Indo-Burma, 2014). "Nine invertebrate species in Indo-Burma are currently listed as Critically Endangered... This is likely to be only a small proportion of the true total. They comprise three dragonflies..." (Tordoff *et al.*, 2012: 33).

Role of the museums (regional)

The earth has had different inhabitants, since time unknown. Many insect species were present on the planet, even before man had evolved. All or most of them must have disappeared now, following the usual course of life and death, but many had been caught amidst natural disasters, that occurred during that time. At present, when a section of the intellectual mankind, know this and also realize the importance of the different insects (for instance, some beetles (along with other insects) are good decomposers, butterflies are good ecological indicators – providing information on the environmental abiotic and biotic factors of concern, etc.), it is essential to bring forth this knowledge before the rest of the human kind. Museums, considered accountable to the society, must accomplish this job. An attempt to do so might be seen at the Bengal Natural History Museum in Darjeeling. The museum puts up a



Plate 3: The Bengal Natural History Museum appeals to the visitors to protect the butterflies.

wide variety of butterflies from Darjeeling and neighbouring areas, allowing the visitors to realize the varied numbers and types of insects in their surroundings. Not only this, the Museum urges the visitors to protect these insects (butterflies) as well. But, the importance of the butterflies was not put up



Plate 4: The label against beetles displayed at the Museum suggests that, the insects are not liable to be subjected to illegal trafficking, as it is punishable by law.

before the public. Until the common man is provided with the complete background information, he will not understand the real need behind such an appeal. Not only the larger animals, but the invertebrates, including the insects are protected by laws like the Wildlife Protection Act (1972) and the CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora, 1973). Not many people are actually aware of this. A section at the Bengal Natural History Museum displaying seized beetles, stresses on this fact. But, once again the Museum does not provide with the background information, that illegal trafficking of insects is a punishable offence, being bound by law.

Conclusion

“With its high levels of plant and animal endemism and limited remaining natural habitat, Indo-Burma ranks among the top 10 biodiversity hotspots for irreplaceability and the top five for threat” (Tordoff *et al.*, 2012: xvi). The natural history museums displaying and storing insects should try and develop ways to involve the visitors to the museum, to spread awareness about their collections (our rich natural heritage), the need to conserve them for they are important in the ultimate survival of man. We can conclude by quoting Singh *et al.* (2009: 42.), “... preserving earth’s biodiversity holds the key to human survival.”

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Conservation Documentation: a Suggestive Study for Museum Practice

SHILPI ROY

Abstract

Having a complete record of the care and conservation of an object in a museum is necessary to demonstrate the accountability and compliance with legislation and conventions of the organization. As conservation documentation is aimed at recording information related to the object as well as the information revealed by the object, there is a multitude of information categories. This paper highlights the core categories of information that can be documented in a variety of situations, type of conservation documentation, method of conservation documentation and its standardization.

Keywords

Conservation documentation, Information categories, Standardization, Treatment record.

Introduction

It is important to record detail information related to treatment given to an object in its life cycle in a museum. If a museum does not have its own conservation laboratory for treating the object and objects are send outside for treatment, a detail treatment report should always be asked to the organization under which the treatment is carried out. If the object is conserved, a reference to the conservation work should be incorporated in the catalogue record of the respective object. In a standardized museum documentation system, if there are fuller details about the process, it may be most efficient to hold these in a separate file, linked to the catalogue record via a Conservation Reference Number.

Conservation documentation can be defined as the textual and visual records collected during the care and treatment of an object. It can include records of the object's condition, any treatment done to the object, any observations or conclusions made by the conservator as well as details on the object's past and present environment (Moore, 2001: 1).

The potential uses of conservation documentation can be divided into two main categories: management or administrative use; and scientific or research use. Conservation Documentation can help assess the significance of the collection and help formulate policy on future conservation planning by establishing priorities for objects to be treated. Museum Documentation Association, (MDA): UK, the American Institute for Conservation of Historic and Artistic Works (AIC), the Australian Institute for the Conservation of Cultural Material (AICCM), the Canadian Association for Conservation (CAC) etc. produced standardized format for conservation documentation. In the code of ethics, AIC (1994) it is remarked :

The conservation professional is obligated to "produce and maintain accurate, complete, and permanent records of examination, sampling, scientific investigation, and treatment" ... Appropriate records should be made before any intervention that a treatment plan should be prepared, and that dated documentation during treatment should be recorded.

Again in the code of ethics, AICCM (1986) it is stated :

The conservator should "strive to attain the highest standards in all aspects of conservation, including... documentation" ... appropriate records should be made: after a thorough examination of the object and before any conservation treatment is done; when a sample needs to be taken; for a treatment proposal; prior to the removal of material; and when a restoration or reconstruction is to be made.

The United Kingdom Institute for Conservation (UKIC) is divided into different sections which govern each specialty within the conservation profession in the United Kingdom. Most of the sections such as furniture, ceramics and glass, and metal are governed by a general code of ethics and guidance for practice while the archaeology section has its own code.

Information Categories Related to Conservation Documentation

A standardized Conservation documentation procedure must include following core information categories :

1. Pre-treatment condition:

According to Miles (1990) the term "condition" refers to the state of preservation of the object which is determined by instability, damage and disfigurement. The pre-treatment condition should include: any cracks, efflorescence or disfigurement to the object; any sign of damage or wear, additions and losses, previous restoration; locations and extent of physical defects, chemical alteration and its products; dimensional changes, colour change, insect damage, biodeterioration; to what extent, if any, the original surface is still present; and how the condition was

determined, i.e., what type of technique(s) were used, such as magnification and so on. The following definitions of condition grades may be mentioned for analysing the physical appearance of the object :

- a) Good: Object in the context of its collection is in good conservation condition, or is stable.
- b) Fair: It indicates condition, disfigured or damaged but stable, needs no immediate action.
- c) Poor: Poor condition and/or restricted use, and/or probably unstable action desirable.
- d) Unacceptable: Completely unacceptable condition, and/or severely weakened, and/or highly unstable & actively deteriorating, and/or affecting other objects, immediate action should be taken.

2. Micro Environment :

The environment in which the object is housed normally should be recorded, including the temperature, relative humidity, light levels, pollution, location within the museum, and packaging materials, if any. If all of these criteria have been assessed then the conservator should be able to establish the cause of any deterioration to the object, that is, whether it is due to inherent instability of the object, the environment in which the object is kept, or to previous work done on the object including conservation or restoration.

3. Condition after treatment :

When treatment is completed, the condition of the object should again be documented in order to compare with its pre-treatment condition; it is a form of evaluating whether the object is actually improved and most importantly whether it is now stabilized. Therefore the same categories of information that were addressed before treatment may once again be considered. It should also include the environmental and storage conditions in which the object is kept along with the recommended ideal conditions.

4. Material composition and technology :

The analysis of the material composition of the object as well as the technology used in creating it including potential decorations in the form of fragile paint is crucial to comprehend the condition of the object, before the application of the treatment. It is up to the conservator to agree with the identification derived from accessioning and cataloguing or to conduct more extensive tests in order to assess the exact material composition and manufacturing technique. Included under this information category should be a description of material(s), structure and method of fabrication by physical, chemical and biological composition; and the type of analytical technique used to determine these data. The method of identification

may be varied; as simple as a magnifying glass or as sophisticated as a scanning electron microscope, but it should always be explicitly noted what type was used so there is no question as to how the identification was accomplished. Analytical techniques involving chemical analysis are essential to document as they might interfere with further analytical study of object including DNA sequencing or a dating method, etc.

5. Conservation methods used :

The method of conservation is essential to document as it will affect the way in which any cause of deterioration in the future is interpreted. Besides, documenting methods of treatments allows the conservator to monitor and assess the effectiveness of the treatment in the future. The remedial conservation techniques used in conserving an object must be documented completely and any change to the environment, whether in the store or on display, must also be mentioned. Treatment techniques are a separate category of information from analytical techniques; the former includes methods of cleaning or stabilization such as air abrasive cleaning or vacuum impregnation while the latter includes dating techniques and elemental analysis such as neutron activation analysis. Conservation methods should include the addition or removal of material including corrosion products or past conservation/restoration treatments, etc.

6. Materials used during treatment :

The generic names of those introduced into the object and that are intended to remain in the object such as adhesives and consolidants during treatment should be recorded. Other materials with which an object is in contact that are not intended to remain with the object, such as electrolytic solutions and ultrasonic solutions, but these also be documented. Preventive conservation materials in the form of mounts and packaging should also be documented.

7. Administrative details :

This category of information is essential to the identification of the object that is undergoing conservation work and also contains information relating to the conservation work and it includes following: the date of when all the different parts of the conservation treatment took place and the name of the conservator(s); the accession number or other identifying numbers; the amount of time that each part of the conservation process took; other dates such as when it came into the laboratory, deadlines and the date of completion of the conservation process; the owner and/or client for whom the work is being conducted; its normal location including room number and if necessary shelf number; and if, it is a known work of art, then its title or name, the artist who created it and the time period or exact date, etc.

Type of Conservation Documentation

In a museum there are many opportunities for certain types of conservation documentation that to be reported when dealing with the objects. These are listed below :

➤ **Pre-acquisition reports :**

Before an object is formally accepted as a museum collection a condition report should be drawn up as part of a pre-acquisition report. It has two purposes: to assess whether the object is authentic or not and the need of conservation treatment prior to being put into use.

➤ **Field Documentation :**

Documentation about the condition of an object or specimen in field collection of geological, archaeological, botanical or zoological specimens etc. is vital for determining its proper care and conservation at the outset of its new 'life' in the museum. The type of environmental conditions of the object as found should be mentioned. Any first-aid treatments that are applied to object during field collection or immediately afterwards also be mentioned.

➤ **Condition report before/after treatment :**

Documentation should be done for every object that has been brought into the conservation laboratory prior to having any treatment and after the completion of any treatment.

➤ **Technical/analytical report :**

Any time an object is subjected to technical or analytical examination, the work should be documented which includes a description of the method to illustrate how the technique interacted with the object and a conclusion. If a sample needs to be taken then the exact location, composition and size of the material to be removed must be mentioned.

➤ **Treatment proposal :**

A proposal for conservation treatment should be drawn up, based both on the condition report and on what the curator or archaeologist, acting as the client, desires for the object as expressed in the request for conservation. The proposal can detail the problems that the object has and how they might be corrected by specific conservation procedures; the expected results of the procedures should be noted as a justification of the chosen methods and it must record the date and the name of the conservator who proposed the treatment; an estimate of the time needed to complete treatment and its cost can be given and the material resources that might be expended.

- **Treatment report :**
Any type of conservation treatment that is done on a museum object should be recorded in a detailed manner.
- **Loan reports :**
Whenever an object is to go on loan to another institution, whether for exhibition or for study, its condition should be documented prior to approval of the loan request. This record may indicate that the object is too fragile to travel without extensive stabilisation work or expensive packaging and suitable shipping procedures. One of the essential points in the loan report is the recommended environmental conditions for the borrowing institution. Prior to the object being returned to the lending institution another condition report may be produced or the object may be compared to the original condition report sent with it, mentioning change, if any. Once the object returns to the lending institution another condition check should be conducted before it returns to its normal location on display or storage including Dates of departure and arrival at both institutions along with the appropriate names of personnel who were involved with the condition reports.
- **Pre-movement Record :**
An abbreviated condition report can be made before any object is to be moved to another location within the museum or outside its wall. This condition report can highlight the special requirements for object handling and care.
- **Condition survey :**
For collections management purposes a condition survey is used to assess the condition of an entire collection rather than an individual object. An abbreviated condition report should be designed by the conservation department and used to record the condition of the collection. The survey is not to be considered a detailed study of the condition of the objects but rather a superficial look at: how a collection is reacting to its environmental conditions and what priority they should have in terms of attention from the conservation department.
- **Insurance policies :**
For insurance purposes, a condition report should be prepared to estimate the value of the object and an up-to-date condition report should be submitted whenever there is a change to the condition of the object which might affect its monetary value. If objects are damaged by fire or flood, etc. the insurance can pay for the costs of conservation treatment to repair them.

➤ **Security :**

Conservation documentation is essential for the protection of objects on archaeological sites or within museums to identify an object in case of theft as it describes exactly the object's appearance and its material composition. In this context, Schmitt (1997) remarked "Distinguishing features will have been noted in the condition report along with unique signs of damage, defects or disfigurement."

Conservation Documentation Methods :

There are two methods to document conservation work, textual and visual documentation both of which can be in multiple formats and are usually used in conjunction.

1. Textual Documentation :

There are two forms of written documentation that can take when recording conservation work: a free-text, essay style of reporting or an abbreviated check-list style. Both methods have advantages as well disadvantages and may be used in combination or alone. Free-text style documentation seems to be easier to add subsequent treatments and investigations as it is organised by date; however, it is difficult to search for a specific item of information. Free-style forms allow for much more detailed evaluation of the work being done to the object or its environment and allows for the observations, explanations and conclusions of the conservator to be recorded. According to the MDA Conservation Working Party (1977) this type of form is described as "the ideal recording medium" for describing the object and its conservation "as graphically and as easily as possible." The check-list style of documentation form has become more popular in use for several reasons. It is simple to read as the form is pre-printed in type set and the conservator needs only to check off the information that applies to the object; it is a quicker way of documenting information and ensures that the information and terminology are standardized. The check-list style form is very structured and user friendly for two reasons: it is simple to retrieve information from it; and the pre-printed lists are separated into different category boxes on the page which prompts the user to record certain information. This style, however, is not very flexible to any changes in routine work; the form also has to be extremely detailed in order for all possibilities of deterioration and damage, for example, to be covered each speciality within conservation, such as paintings, paper or objects, documents unique types of damage. A multitude of forms would also need to be drawn up to cover the different situations in which conservation documentation should be recorded. A combination of these two styles seems

to be the best compromise but due to the ever changing nature of conservation with new ideas and technologies, designing an ideal form is an ongoing process.

2. Visual documentation :

Photography is one of the most effective methods of documenting the condition of an object or its treatment is visually. Photographs can be B & W, colour or they can be processed as slides; they can encompass their entire object or they can show details. Different kinds of photography, such as raking light, infra-red, reflected or ultraviolet light, can be used to reveal information invisible to the naked eye. The intention of a photograph can be: to illustrate the extent and location of damage and/or deterioration; to show details of new or old information contained in the object; to indicate the size of the entire object or the normal location of the object; to portray how it is being treated during conservation work; to show the colouring of certain parts of the object or the entire object; and, amongst many others, to illustrate analytical or technical work or results. A colour scale and metric scale should always accompany a photograph. Another type of visual documentation is an illustration which is usually drawn in pencil alongside the written description of the object's condition, given a scale, title, date and signed by the conservator. Illustrations can be used alone or to supplement photography but are generally used to clarify information such as location and extent of damage etc. Details such as where, exactly, a type of chemical was applied to the object or where and how long a given crack is, can be shown accurately using an illustration which will usually record scaled measurements. The illustration might show the entire object or a section of it and can be paired with general and detailed photographs. A third type of visual documentation is X-radiography which can be used to illustrate the internal structure or condition of a complex object or to investigate concretions. X-radiographs are able to 'see through' the surface of certain types of materials and show what cannot be seen by the naked eye. A film that is similar to photographic film is generally used to record the image but digital X-radiography has now become commercially available. X-radiographs should be labelled in the same format as photographs and illustrations, but in addition the choice of voltage used and its source; the length of exposure to the X-rays along with the type of film used should be documented.

Conclusion

Conservation Documentation is essential to develop new methods for treatment and new materials to use in treatment. Conservation documentation emerged before

the beginning of modern scientific conservation and has evolved from a scattered activity done generally for publication or as a report for an institution. Recording conservation related investigations is a time consuming job. Therefore, there is an urgent need for our museums to adopt a standard documentation system deciding how information such as condition and treatment procedures is going to be visually and textually documented.

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Survey objective	Relevant factors	Type of data needed
Audit condition	Condition of individual objects Statistics on collections condition	Condition survey Damage types and severity
Identify causes of deterioration	Environment sapce : enclosures supports/mounts, growth of collection humidity, temperature, light, contaminants, pests, provenance Use : display, handling, repairs/conservation, examination, running, operation of objects	Observations, Environmental records, Environmen now, Damage types / severity
Diagnose trend	Condition : past versus present likely and rate of future change i.e. vulnerability and stability. Factors which have caused / likely to causes change	Condition past (?inferred) Condition present, Condition predicted future. (=stability), Present & likely future environment, Present & likely Future use
Affect trend Assess benefits	Change environment, modify use-display conditions, handling, use procedures, running or working, modify object treated or restored Present use, potential use, information potential, relevance to institution's purpose, monetary value, uniqueness, quality of workmanship, physical quality (e.g. wholeness) aesthetic quality	Most potent causes of deterioration Present use (e.g. objects displayable books readable drawing accessible), curatorial assessments(value) number of objects being successfully preserved (in condition defined acceptable)
Recommend priorities	Institutional objectives resources versus benefits consequences of "do nothing"	Conservation preservation policies cost benefit calculations using above data, vulnerability of objects/collections, judgment redeterioration or not

Different aspects of Condition Surveys (Source-Knell, 1994)

Museum Laboratory

Name of the Specimen

Museum Number

Condition of the Speciman

Date of Treatment	Reagent	Date of Inspection	Atmospheric Temperature	Barometric Pressure

Humidity	Remarks

Museum Laboratory Record (Source : Basu, 1943)

CONSERVATION LABORATORY

INDIAN MUSEUM, CALCUTTA

Treatment Record of Metal objects/Coins etc.

S. No.	Examiner :
Date received :	Date of Completion :
Owner :	Date of return :
Acc. No.	
Brief Description :	
Provenance :	
Period :	
Shape and size (details if necessary)	
Brief History :	
Name of Metal :	
Physical conditions :	
Nature of Corrosion :	
a) Present / Absent :	
b) Colour :	
c) Thickness :	
d) Extent of core :	
e) Composition :	
f) Extraneous incrustations :	
Photographic record :	
a) Negative No. :	
b) Light source :	Visible light / U. V. / X-ray / Nil
c) Number of prints with the report	
Treatment :	Remarks by the Head of the team

Treatment Record Format, Indian Museum, Kolkata

Biocultural Systems: A Holistic Perspective on Traditional Knowledge and Biodiversity

AMRITADEY SAHA

Abstract

Biocultural diversity is increasingly recognized as a key concept in the contemporary thinking and practice of conservation. It is a living network made up of the millions of species of plants and animals that have evolved on Earth, and of the thousands of human cultures and languages that have developed over time. For the past several decades, anthropologists and linguists have been warning us about the tragedy of vanishing cultures and endangered languages, swept away by the rise of a global monoculture and dominant languages. In view of accelerating biological and cultural landscape degradation, a better understanding of interactions between landscapes and the cultural forces driving them is essential for their sustainable management. We need, therefore, to foster a sustainability science that draws on the collective intellectual resources of both formal sciences, and local knowledge systems.

Keywords

Bio-cultural Diversity, Language, Nature Conservation, Traditional Knowledge, Sustainability.

Introduction

'Biocultural System' is a term that describes a system containing the knowledge, innovations, and practices of Indigenous and local communities, collectively maintained; and which also incorporates the traditional resources and territory itself, including the diversity of genes, variety of crops, species, and ecosystems, and the cultural and spiritual values and laws developed within the socio-ecological context of the communities. These elements are customary parts of knowledge systems and are, in general, linked to cosmological beliefs as part of the Indigenous 'cosmovision,' or holistic view of the world. According to Federico Mayor, Director General, UNESCO,

The indigenous people of the world possess an immense knowledge of their environments, based on centuries of living close to nature.

Living in and from the richness and variety of complex ecosystems, they have an understanding of the properties of plants and animals, the functioning of ecosystems and the techniques for using and managing them that is particular and often detailed. In rural communities in developing countries, locally occurring species are relied on for many – sometimes all – foods, medicines, fuel, building materials and other products. Equally, people's knowledge and perceptions of the environment, and their relationships with it, are often important elements of cultural identity.

Biocultural diversity is increasingly recognized as a key concept in the contemporary thinking and practice of conservation. As the conceptual level, it brings together the interrelated aspects of the diversity of life, highlights the intrinsic links between them, helps explain human-nature interactions and the co-evolution of nature and culture; as a conservation approach, biocultural diversity introduces notions, tools and methods that enhance conservation outcomes in specific environments managed by peoples and communities.

It is a living network made up of the millions of species of plants and animals that have evolved on Earth, and of the thousands of human cultures and languages that have developed over time. Languages, cultures, and ecosystems are interdependent. They are bound together through the myriad ways in which people have interacted with the natural environment. Through a diversity of cultural traditions and practices, in a great variety of natural environments, human communities have acquired invaluable knowledge of how to achieve harmony with nature. Biocultural diversity is both the source and the expression of all the beauty and potential of life on Earth.

This interrelationship is still especially apparent in indigenous and local societies that maintain close material and spiritual ties with their environments. Traditional ecological knowledge and practices, accumulated over generations, often make indigenous peoples and local communities highly skilled and respectful stewards of the ecosystems in which they live. Indigenous and local languages store and transmit this knowledge and the related social behaviours, practices, and innovations.

We see the commonalities clearly when we look at two fundamental components of biological and cultural diversity: species and languages. Both evolve via a process of descent with modification, although cultural evolution is far more rapid than biological evolution. Both can be classified into closely related families that share a common ancestor. And both are threatened with extinction on a scale never before seen in history.

Traditional Knowledge on Biodiversity Conservation

In order to be effective, efforts on biodiversity conservation can learn from the context specific local knowledge and institutional mechanisms such as cooperation and collective action; intergenerational transmission of knowledge, skills and strategies; concern for wellbeing of future generations; reliance on local resources; restraint in resource exploitation; an attitude of gratitude and respect for nature; management, conservation and sustainable use of biodiversity outside formal protected areas; and, transfer of useful species among the households, villages and larger landscape. These are some of the useful attribute of local knowledge systems (Pandey, 2002). Traditional knowledge on biodiversity conservation in India is as diverse as 2753 communities (Joshi *et al.* 1993) and their geographical distribution, farming strategies, food habits, subsistence strategies, and cultural traditions.

In spite of the modernization, traditional ecological ethos continues to survive in many other local societies, although often in reduced forms. Investigations into the traditional resource use norms and associated cultural institutions prevailing in rural Bengal societies (Deb and Malhotra, 2001) demonstrate that a large number of elements of local biodiversity, regardless of their use value, are protected by the local cultural practices. Some of these may not have known conservation effect, yet may symbolically reflect a collective appreciation of the intrinsic or existence value of life forms, and the love and respect for nature. Traditional conservation ethics are still capable of protecting much of the country's decimating biodiversity, as long as the local communities have even a stake in the management of natural resources.

Traditional Knowledge for Sustainability

We are rapidly losing our critical life-support systems. And now we are also losing the precious pool of human knowledge and languages that can tell us so much about how to live sustainably on this planet – the only home we have. Biologists believe that we're in the midst of the 6th mass extinction of life on Earth – the previous one being the episode that led to the extinction of dinosaurs, about 65 million years ago. They also point out that this current extinction crisis is the first one to be entirely of our own making: those are the mounting pressures caused by human activities that are leading to the collapse of ecosystems and the disappearance of thousands and thousands of living species, every single day.

Just as with species, the world is now undergoing a massive extinction crisis of human languages and cultures. For the past several decades, anthropologists and linguists have been warning us about the tragedy of vanishing cultures and endangered languages, swept away by the rise of a global monoculture and dominant languages. And along with the erosion of linguistic diversity comes the erosion of the traditional environmental knowledge (TEK) encoded in the languages.

As traditional cultures and languages decline and natural environments become degraded, our collective "survival kit" is becoming depleted.

In view of accelerating biological and cultural landscape degradation, a better understanding of interactions between landscapes and the cultural forces driving them is essential for their sustainable management. We need environmental and cultural revolution, aiming at the reconciliation of human society with nature (Naveh, 1995).

The concept recognises that the well-being of human society is closely related to the wellbeing of natural ecosystems. The intellectual resources on which the sustainability science is building on need to take into account the knowledge of local people as well. We need, therefore, to foster a sustainability science that draws on the collective intellectual resources of both formal sciences, and local knowledge systems (often referred as ethnoscience) (Pandey, 2001). Indeed, people have argued that we need to install a Nobel Prize for sustainability (Snoo and Bertels, 2001). Local knowledge systems have been found to contribute to sustainability in diverse fields such as biodiversity conservation and maintenance of ecosystems services, tropical ecological and biocultural restoration, sustainable water management, genetic resource conservation and management of other natural resources. Local knowledge has also been found useful for ecosystem restoration and often has ingredients of adaptive management.

Conservation Principles in Ancient Texts

Natural Resource Management has been in the traditions of the Indian society, expressing itself variously in the management and utilization practices. This evolved through the continued historical interaction of communities and their environment, giving rise to practices and cultural landscapes such as sacred forests and groves, sacred corridors and a variety of ethno-forestry practices. This has also resulted in conservation practices that combined water, soil and trees. Nature-society interaction also brought about the socio-cultural beliefs as an institutional framework to manage the resultant practices arising out of application of traditional knowledge. The attitude of respect towards earth as mother is widespread among the Indian society.

Ancient texts make explicit references as to how forests and other natural resources are to be treated. Sustainability in different forms has been an issue of development of thought since ancient times. For example, robust principles were designed in order to comprehend whether or not the intricate web of nature is sustaining itself. These principles roughly correspond with modern understanding of conservation, utilization, and regeneration.

Conservation Principles: Atharva Veda (12.1.11) hymn, believed to have been composed sometime at around 800 BC, somewhere amidst deep forests reads: "O Earth! Pleasant be thy hills, snow-clad mountains and forests; O numerous coloured, firm and protected Earth! On this earth I stand, undefeated, unslain, unhurt." Implicit

here are the following principles :

- It must be ensured that earth remains forested.
 - It must be understood that humans can sustain only if the earth is protected.
 - To ensure that humans remain 'unslain' and 'unhurt', the ecosystem integrity must be maintained.
 - Even if vaguely, it also refers to ecology, economy, and society concurrently.
- Utilization and Regeneration Principles:* Another hymn from Atharva Veda (12.1.35) reads: "Whatever I dig out from you, O Earth! May that have quick regeneration again; may we not damage thy vital habitat and heart". Implicit here are the following principles :
- Human beings can use the resources from the earth for their sustenance,
 - Resource use pattern must also help in resource regeneration,
 - In the process of harvest no damage should be done to the earth,
 - Humans are forewarned not against the use of nature for survival, but against the overuse and abuse.

Although not in modern terminology, the three segment of sustainability – ecology, economy and society seem to get addressed simultaneously.

Conclusion

Sweeping global change is dispossessing indigenous peoples and local communities of their lands, resources, and lifestyles; forcing them to subsist in highly degraded environments; crushing their cultural traditions or hampering their ability to maintain them; and forcing them into linguistic assimilation and abandonment of their ancestral languages. Traditional ecological knowledge that has evolved over millennia among indigenous peoples living in a diversity of Earth's ecosystems is being rapidly lost as the languages, which encode that knowledge disappear. People who lose their linguistic and cultural identity lose an essential element in a social process that commonly teaches understanding of and respect for nature. The consequences are profound for both the well-being of people and the health of the natural environment. Cultural diversity is closely linked to bio-diversity. The study of these interrelationships need to be studied mainly for the simple reason that culture is not only the ethical imperative for development, it is a condition of its sustainability; for there exists a symbiotic relationship between habitats and cultures, between ecosystems and cultural identity, and that this relationship constitutes a determining factor in ensuring sustainable human development.

Even though, much progress has been made in exchanges; however awareness of the inter-relationship between culture and environment is still in its infancy. Yet cultures shape the environment. Concomitantly, cultures are in turn shaped by the environment. Sustainable natural resource management is driven

by the beliefs and behaviours of the human communities, and local cultures are strengthened by their intimate connections to the natural environment, which sustains them. Our modern world is often poorer for the scientific rationalism, which treats objective and sacred knowledge as separate entities. In contrast, the traditional cultures do not make such distinctions, where very often, ritual and religion are intrinsically bound with the daily chores of living.

Traditional knowledge systems are important for modern societies, not only because traditional knowledge itself is a valuable aspect of cultural heritage and should be protected in its own right, but also because it is of great value in modern development, especially regarding sustainable use of forests, ecosystem management and poverty reduction. Certain guidelines should be put in place to safeguard the sacred areas and promote the traditional knowledge of conservation, namely: the revitalization and enforcement of traditional education; the delineation of boundaries; the improvement of relevant knowledge and their official recognition through a legal status.

Losing biocultural diversity means a major weakening of the whole fabric of life – the web of interdependence that is absolutely vital to our common future. It means losing our options for life on Earth. It is a self-destructive path. And we are all affected, no matter where and how we live. But it is not too late! It is a matter of survival. In a time of crisis, we not only desperately need healthy ecosystems. We also desperately need all the voices of the planet and the ancestral wisdom that they express. Losing biocultural diversity is like losing our life insurance when we need it most. The dual extinction crisis is actually a golden opportunity for new directions in conservation. If biodiversity organizations joined forces which advocates for linguistic and cultural self-determination, there would be a double payoff. By working together with biologists and field linguists, even museums could help to maintain those cultural treasure troves. Conservation biologists could benefit from applying some of that traditional knowledge to their own work. By combining expertise, not only would biocultural diversity be conserved in the environments in which it evolved, but time-tested traditional environmental knowledge could be shared and adapted as appropriate to the wider landscape.

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Smart Visualisation: Shaping the Knowledge in Science Centres

SAYANI GHOSH

Abstract

In 21st century museums are in motion by means of transformation and technological up gradation. Today's generation are tech-comfortable, tech-savvy who from their childhood engrossed in Internet, social media, video games and cell phones. The face to face interaction is transformed into video chatting and mobile texting. Being social institutions, museums and our science centres changed a lot from its exhibit display to contextual environment. As human beings are fascinated in stories, the science centres are trying to convert themselves into a story-telling edutainment zone. The first impression of museum or science centres is created by the beautiful and colourful visuals, texts that hold the impression to the end of the museum visit. The paper tries to explore the design criteria of different visuals of some Indian science centres and the influence of those visuals on the target visitors especially over the thought process of current generation and the influence of it over their learning.

Keywords

Indian science centres, visual elements, design, graphical representation, educational impact.

Introduction

In 21st century the museums, especially the science centres witnessed a huge paradigm shift from traditional to contemporary/ modern era. Now these science centres from being a storehouse of industrial artefacts enter into a digital storytelling domain. For that reason today's science centres are "smart", considering their thinking over the invention of new technology, its conception, adoption and proper implementation & execution in their display and exhibition. Visualisation or power of visual communication has a profound effect on what we do, what we feel and how we gather knowledge. Not only the interactive exhibit, but the visual atmosphere in science centres matter a lot to engage visitors and create an interaction and hold the attention of a visitor. Interaction starts with the eyes and then transferred

to brain and then brain stimulates the hands-on activity. Science centres/ museums are the organisations which accumulate the meaning of science in a broader view under the one roof associating not only the laws and principles of physics, chemistry, mathematics but simultaneously geography, geology, astrology, biology, nanotechnology, marine science and other branches of science. Thematic display of content through graphic design is of utmost importance for a smart museum. The impact of visual design of a gallery (i.e., labels, texts, panels, charts, graphs, etc.) and the interactive multimedia based display of exhibits sheds its mark on the visitors of our current generation and thus imparts informal education through this environment which is the ultimate goal of a science museum. According to Wyman, Smith et al. (2011: 461), "People are becoming of different types of learners. There are innovative new paradigms of consumption".

Elements of visualisation

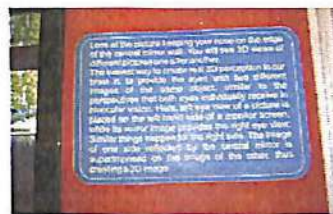
The elements of display or representation of Science centre/ museum constitute different types of visuals associated with hands-on exhibits. Labels, Graphs, Charts, Maps, and other Graphic panels, etc., create the visual atmosphere in those museums. They are significant to deliver knowledge about any exhibit or artefact in a science museum. Without these visual aids the whole story of a gallery cannot reach to the audience or visitors. Communication starts with visual representation and ends up in realisation and conceptualisation of the story through hands-on interactivity with an exhibit. Then, the communication, connectivity starts which ends up in education through entertainment. Brief information, colourful painting, and the lucid language associated with charts, graphs, pictures where necessary, stimulate excitement in visitors. According to Greenhill (1991: 19), "Exhibitions are not always thought of a learning material, but they are the environment where learning takes place and they provide the framework for the meaning making process of visitor through the way they structure objects and ideas."

New thematic and storytelling graphic design with multimedia approach plays a vital role today. It is known to all, that our mind reacts differently to different visual stimuli. As for example, dioramas in science centres, whether it is a diorama of wild life, sanctuary or a diorama of an wetland, are more vivid and aesthetic than an exhibit in a still showcase. Digital technologies have found a home in modern museums in the form of interactive touch-screen kiosks, computer games, large screen installations and video walls with multiple images, digital orientation centre, stand up graphic panels with functioning multimedia LCD, LED panel display, etc. The following visuals in science centres are involved in promotion and popularisation of knowledge in science and technology and scientific literacy among societies.

Labels

A museum label is a mode of communication which describes an object exhibition

in a museum, or one introducing a room or area, or the whole museum. There are various types of labels found in museums such as Introductory Label for the introduction of a whole gallery or a particular set of exhibits and exhibition, Caption Label for the heading of an exhibit, Descriptive Label for the description of any exhibit or exhibition, Section Label for describing the sub topics of museum exhibit or exhibition, Object Labels, Group Label, Credit Panels, etc. In science and technology museums Caption Label, Introductory Label, Object Label and Descriptive Panel display are predominant. Each and every exhibit in a gallery in science museum/ centres is associated with labels. Exhibit labels are printed on paper and pasted on PVC boards which in most of the cases are protected by acrylic sheet. In science centres, the labels are designed with varying font size. Some labels are etched on metallic plate; generally used for outdoor exhibits. Labels are written generally in two or three languages. Most of the science museums use bilingual label constituting English and their local languages. The colour contrast of exhibit texts and background varies from black lettering on white background to blue, red, yellow lettering on different shades of contrasting background depending on the necessity of the exhibit.



Label in Digha Science Centre

Charts

In science and technology museum/ centre different types of charts are also found. Table chart, flow chart, tree chart, pie charts are predominant. These are associated with descriptive text panel on vinyl printed graphic panel display. As for example in North Bengal Science Centre there are a table chart of medicinal plant of north Bengal and carbon cycle are depicted through a tree chart here. Likewise in National Science Centre, New Delhi, there is a pie chart depicted the water usage index in India. There are more instances are found where the exhibit needs chart presentation.



Chart, North Bengal Science Centre

Map

Maps are the essential visual elements which are used for various purposes to designate the places of interests in a country or region or state whether it is of scientific importance or geological, geographical location detection. Colourful maps in science and technology museums/ centres occupied a central role in visual communication in display. In general the printed maps of areas of importance are found on graphic panel according to the requirement of the content of exhibition



Maps in District Science Centre, Purulia

or exhibit. Sometimes the areas of the map are represented through infrared radiation or sensors. As for example in District Science Centre, Purulia, the tourism destination, forest areas, soil condition is represented through maps, whereas in Visvesvaraya industrial and technology museum the map depicting the bell units in India are found in electronics and communication gallery.



Photographs, North Bengal Science Centre

Photographs

Photographs are another visual aids used in museums. The photographs are the most popular visual aids associated with other visual media in science and technology museums and science centres. The exhibit in science centres are associated with photographs whether it is printed on graphic panels or illuminated through backlit panel. Almost each and every gallery of science centres display their objects and convey scientific knowledge through photographs.

Graphic panels

Today the science museums are widely adopted worldwide the representation of subjective content through graphic panel display as it is more attractive and elicit the urge for knowledge. These are vinyl printed posters on PVC board fixed on extruded aluminium channel. Graphic panels are used in science centres for easy access and easy comprehension.



Graphic Panel in NSC, Mumbai

Others

Other visuals that are used in science centres are different types of Models, Diagrams, illuminated backlit panel, Posters, Logos, Banners, Visual Symbols, Way Finding Signage, etc., and moreover the wide usage of LCD panel display with audio-aid are found to help the visitors for finding directions and to plan their visit.



Illuminated Backlit Panel
in RSC, Nagpur

Design Criteria of Visual Communication in Museums and Science Centres

In 21st century the museums employed themselves in engaging the traditional as well as contemporary tools for visual communication. Besides using traditional label we found different types of visuals including drawing, photographs, animation, film and video, graphic-user interfaces and new digital technology and new media.

Three perspective of design should take into account, i.e., the content of exhibition, style and design. In science centres visitors are least bothered to read label. So conciseness, easy accessibility and flexibility need to be applied in design and decoration of the visuals in those institutions. The visitors are of different ages, different educational background and have different values and thinking, so the ultimate message and meaning need to be clear enough for easy comprehension and interpretation. The design includes planning, detailing, writing, editing, evaluation and presentation. Presentation in museums has often been straight forward; focussing on design and exhibition techniques rather than technology to inspire visitors. While discussing and analysing the visual environment created by the designer or curator of a science museum/ centre, it could be found that they are very much sophisticated about the selection of the subject and it's content to be displayed. Their conscious effort is to be able to communicate successfully with the visitors of science museums/ centres with their exhibition or display which not only entertaining but provide informal education. According to Bitgood (1990), there are,

Four types of multi-dimensional nature of visitor experience that include cognitive, effective, sensory, perceptual and behavioural element, where cognitive includes intellectual understanding, excitement, satisfaction and attitude change promote the effective elements, simultaneously sensory-perceptual elements includes sights, sounds, and tactile cues from the environment and the behavioural dimension executed in physical interaction of visitors with exhibit labels/ texts.

Labels or exhibition texts are generally subject or object oriented depending upon the nature or the content of an exhibition. Technical words are often creates barrier in learning. So usage of lucid nontechnical language which is understandable for each and every one should be acceptable. Often we find same types of exhibits and labels in a gallery that cause eye fatigue. According to Bitgood (1990: 118), "Too much text or too many labels may create a decrease in interest and consequently a decrease in reading over successive labels." Besides the selection of size, font, and colour of the text, background, brightness, surrounding illumination, distance from visitor's eyesight, duration of visit, and selection of associated graphical environments associated with exhibit labels are matter of evaluation for designing interpretive visuals in science centres. In science centres where visitors are engaged in hands-on activity, a tight competition arises between visual graphics and interactive exhibits. So, while designing interpretive visuals, i.e., labels or text panels, evaluation of all the associated motivating factors which can divert the concentration of the visitors needed to be done before installing these visuals in a gallery. The display or the content of display in science centres are subjective constituting physics, chemistry, mathematics, biology, engineering, technology,

geology, geography and all the other sub groups of science and technology. So the design criteria needed to be based on scientific research and evaluation which is visitor centric to achieve the ultimate goal of communication through interactivity.

Effective Visuals in Knowledge Making in Indian Science Centres – Some Case Studies

We all know that science centres and museums today are considered as the most popular institution of informal learning. The target visitors of science museums/centres are the students of different age groups as they are considered to be the future generation of our country. To foster the industrial growth and to popularise science and technology in the mind of young generation of our country and to inspire them to take science and technology in their career concerned, science centres took a vital role in society. In current era the Indian science centres are showing new ways of learning over formal text book learning of school. After planning a science centre visit and after reaching there, the learning starts. Before entering the gallery, the education staff tell the story of the museum or any gallery for better understanding and communication. Before hands-on interactivity, visual interaction also starts with the visual articles. In brief, the learning process and communication functions in the following way in museums:

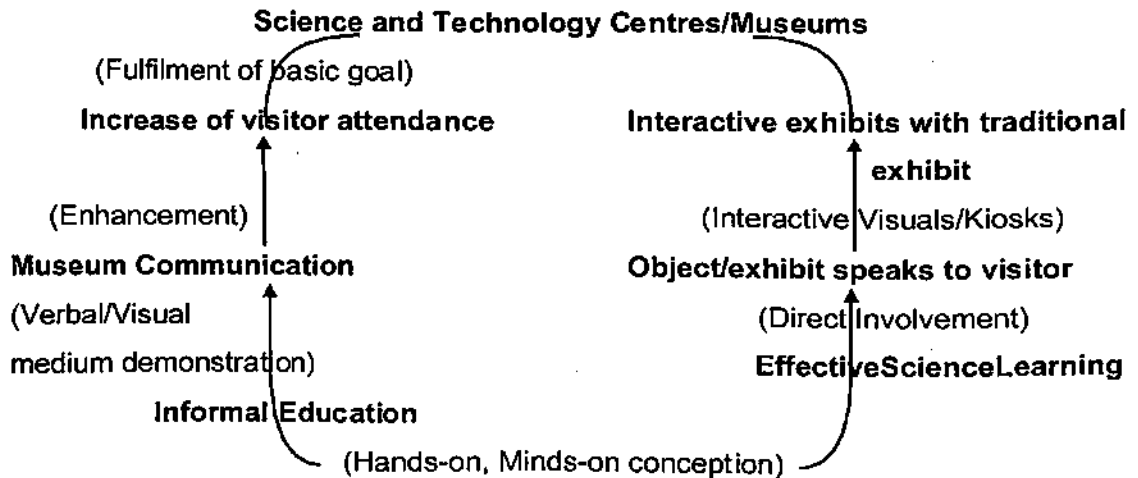
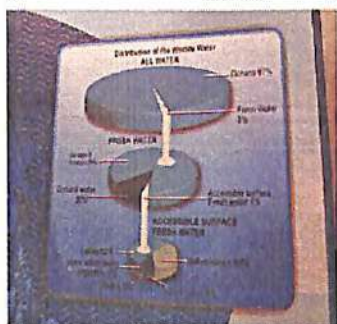


Fig: Process of learning & communication in science centre.

As for example, dioramas in science centres, whether it is a diorama of wild life sanctuary or a diorama of an wetland, are more lifelike and aesthetic than an exhibit in a still showcase. The diorama in its true sense can create a lifelike experience of a wild life, wetland, and sanctuary with fibre glass models of animals and plants. Likewise maps depicting the important historical places or places of interests like mining, forestry, etc., are definitely provide a strong educational support for the

school students. Such maps are predominant almost in every gallery of science museums/ centres either nationalised or regional or district science centres. As for example in District Science Centre, Purulia, the forest areas, tourism destinations of Purulia and the soil condition is represented through the map in "Wealth of Purulia" gallery. The usages of different types of charts like flow chart, pie chart also provide visual aid with educational impact in those centres. As for example the flow chart of medicinal plants of west Bengal in North Bengal Science Centre, Siliguri. In District Science Centre, Digha, we can find the life science gallery which is full of attractive visual panel, labels, texts to popularise the science and its essence in remote areas. The distribution of water worldwide that is been shown in 'Water – the elixir of life' gallery of National Science Centre, New Delhi, is an evidence of visual aids for informal learning in science centres. Besides those additional visual aid each and every exhibit in those centres are associated with labels for detailed learning about those exhibits at a glance.

Diagram is another important mode of visual communication which provides the knowledge of any mechanism, either the internal mechanism of human body or the mechanism of machineries. As for example the diagram of human muscle system in biology gallery of National Science Centre, New Delhi, or the diagram of an aircraft in 'space gallery' of Visvesvaraya industrial and technological museum, Bangalore, are able to create the urge of learning amongst students of biology and engineering. Models are also effective visual element in learning for students. Science museums/ centres used different types of models in galleries depending upon the type and requirement of the exhibit.



Pie Chart in NSC, New Delhi

Generally galleries like fun science, human biology, space, prehistoric/ evolution, and the galleries displaying the exhibits related to physics, chemistry, biology, engineering, earth science, etc., used different models like enlarged model, life sized model, small scale model, sectional model, working model, etc., besides those visuals in science centres way finding signage, attractive wall posters advertising on the special exhibition, display or educational training and programme are also notable example of visual media for effective informal education and communication in science and technology museums/ centres. In National Science Centre, New Delhi, the "Water – the Elixir of Life" gallery is such an example. When we enter into the gallery we can feel the 'blue' (depicting the colour of water) thematic ambience with lot of visuals like colourful charts, maps, models depicting the current status of water worldwide especially in India, elicit the excitement and provide a lifelong experience. At the entrance the state-of-the-art floor projection technology through multimedia projection enhances the aesthetic beauty of this gallery. Likewise, the earth exploration

hall of Science City, Kolkata, represents our global village in a two-storied Dome shaped gallery. The galleries create a clear picture of our Earth, its vegetation, wildlife, culture, tradition, flora and fauna associated with touch-screen quiz kiosks to quench the thirst of knowledge for curious visitors who can themselves operate the questions and find the answers and feel the essence of our beautiful earth to see and learn and explore the text-book geography alive. Besides these, the visual panels compete with those multimedia based exhibit to hold the visitors attention. In VITM, Bangalore the gallery "Bell Hall of Electronics" displayed the graphic panels depicting the Bell units in India and mobile communication. Such instances are frequently found in each gallery of the museum. In "Science for Children" gallery, every exhibit and its environment create a playful ambience. Exhibits that are mostly enjoyed by children are "Be an Animal" and "Sound in Nature," Pin Screen, Mirror Maze, Activity Corner, etc. This gallery along with lot of audio-visual and dioramic representation converted into a beautiful play-zone for the children. These are some of the evidences of activity associated with visuals in those informal educational institutions.

Conclusion

Nowadays science centres are more coordinated and concentrated in their workforce to enter a story telling domain. Emerging information technology in the age of digital transformation is making its mark in a revolutionary pace in every aspect of display from signage to audio-visual, lighting and exhibit environment. The use of audio-synchronised animation is predominant in those science centres. The New holistic approach to adopt technology for designing an exhibition can create a captivating environment for the progress of all and provide joyful experience. Beside IT expertise in designing of multimedia exhibits, the museums and science centres simultaneously engage themselves in continuous research and re-evaluation process to design the visual environment according to the need of the story, subject, context of exhibit or exhibition, keeping in mind that need of today's generation who involve themselves through social media. So here is a urgent need for each and every science centres/ museums, besides changing their techniques of display in a gallery, they should also think to use the multi-media and high-end technology to create the visual environment more brief and highlighted and sophisticated to avoid the conflict between traditional representations with the contemporary representation to make a museum more approachable

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Conservation of Cultural Property in Tropical Countries: Issues and Challenges

JUTHIKA BISWAS

Abstract

Conservation experts are faced with different challenges to preserve India's cultural property because of climatic condition. Cultural properties in India are situated in a wide range of geographical area and in various climatic zones. This paper deals with the issues and challenges in preservation of cultural property and their present status especially in tropical climate and in West Bengal.

Keywords

Tropical Climate, Cultural property, Deterioration, Conservation Problems.

Introduction

The term tropical countries refers to those area of the world which lies between the Tropic of Cancer (23°30'N) and the Tropic of Capricorn (23°30'S). The tropical climate does not confine within this boarder. It covers a large area towards northern and southern part of the tropics. It is very difficult to draw a boundary line between various climatic zones. Different parameters are considered for climatic classification. Köppen's classification of climate is the most recognized classification which is based on rainfall and temperature as a parameter.

Types and Characteristics of Tropical Climate

According to Kumar & Kumar (1999) the tropical climate is divided into following types —

Wet tropics

Wet tropical climate is always hot and humid, extended between 10°C – 15°C North and South of equator. Monthly average temperature lies between 27°C & 30°C and average annual rainfall more than 1500 mm.

Monsoon tropical climate

Area lies within 10°C – 20°C of equator and particularly in the eastern part of the continent. Average annual rainfall is more than 2500 mm and has a short dry season. Southeast Asian countries fall under this climatic zone.

Tropical wet-and-dry climate

Area lies within 10°C – 20°C of the equator. Average annual rainfall is between 1500 mm & 760 mm and has severe dry season.

Sub-humid climate

This climate found between 20°C and 30°C latitudes. It is a transitional climate between tropics and the temperature of coolest month ranges between 18°C and 0°C. This type of climate found in northern India.

Cultural Property of Tropical Country

Culturally rich India is a tropical country. Every types of tropical climate are prominent here. Gairola (1968:139) stated that,

The monuments in India are situated between latitudes 8° and 31° N, and longitudes 68° and 97° E., a vast area including humid sea coasts, the high Himalayan altitudes and the dry regions in the interior of the country. Not only do temperatures fluctuate greatly in these places, but differences in humidity are also wide. Within this extensive area are found a variety of climatic conditions, but the dominant feature is the tropical monsoon.

West Bengal is one of the eastern region states of India. It extends from Himalaya from north to Bay of Bengal in the south. The Tropic of Cancer runs through almost at the middle of the state. West Bengal is enriched with a lot of built architecture of historic, archaeological and religious importance. Most of them are made of either bricks or terracotta and laterite. Stone architecture is hardly found in West Bengal. Geographical and geological condition of this state plays an important role behind the materials of architecture. For geological reasons, stone is not available all over West Bengal. That is why may be the ancient people of West Bengal were not fond of stone architecture. West Bengal is situated at lower Gangetic plain and has rich alluvial soil. Due to tropical climate it receives immense quantity of rainfall in monsoon which results dense vegetation growth. "Rich green dense cover gives a large amount of timber for firing the bricks and the rich alluvial soil for manufacture of brick from very early times" (Joshi, 2008:59).

Most of the temples of Bankura, Birbhum, Burdawn, Hoogly, etc., are made of terracotta. The builders of those temples chose terracotta over bricks as material may be for their durability. Terracotta is more durable and less susceptible to weathering and/ or deterioration than bricks. Due to the scarcity of stone in these area builders could not built any stone temple, but they wanted to give their works a permanent form. So, they chose terracotta works for their beautiful temple architecture and decoration (Bandyopadhyay, 1965).

Causes of Deterioration

Several agents are responsible for deterioration of cultural property. The main agent among them is age. With the age everything become old and deteriorates easily. Sanpaolesi (1972: 109) described that "every building has its own life cycle and grows old with the ageing of its component materials. Its life cycle is affected by its location and the purposes for which it has been used." The factors of deterioration are broadly divided in two groups – intrinsic and extrinsic.

1. Intrinsic factors

- a) **The geo-topographical location** of the building is most important factor of deterioration. This controls the climatic condition of the building and the resistance power and the susceptibility to deterioration of its materials.
- b) **Material of the building** is one of the important factors. Terracotta, bricks, stone, sandstone, marble, etc. – the different building materials denote that how much the building is prone to decay. The faulty materials often led the building towards deterioration.

The nature of the ground has also a role to deterioration. The ground types, i.e., the soil type on which the building is situated have to be considered as a factor. The stability of the base foundation of the building depends on the soil nature.

2. Extrinsic factors

- a) **Physical factor** is the most important factor of deterioration. Different natural agents (temperature, humidity, wind, water) are responsible for physical deterioration of building. Due to temperature variation exfoliation is dominant in tropical region. In this region combined action of heat and moisture is observable. Wind action is mainly found in coastal region.
- b) **Chemical factor** mostly affects the stone architecture. Oxidation and carbonation of metal and stone objects are dominant in humid tropical region. Action of these factors is less observed in West Bengal as most of the architectures are made of either brick or terracotta.
- c) **Biological factor**, especially the botanical factor is a common phenomenon of tropical region. Growth of plant causes severe damage to the built heritage. Plant root is very dangerous as it enters the wall and crack it to be broken. Various microorganisms, like fungi, algae, lichens, are also found on the buildings walls. Termites, insects, birds and certain species of rat also take part to the deterioration.
- d) **Natural calamities** include different natural disasters. Different types of natural disasters happen in West Bengal every year. Tropical cyclones, deep depression in Bay of Bengal, norwester, flush flood are important among them. These calamities can destroy a building totally or partially. Earthquake

is not so frequent in this state but some devastating earthquakes of past left their marks on some heritage buildings.

e) **Human activity** on heritage building sometime changes their originality. Addition-alteration, transformation, renovation, etc., can be led to the decay of the aesthetic value of the building.



Damage by a banyan tree on
Lal Masjid



Dome of the Katra Mosque, Murshidabad,
might have broken by Earthquake

Apart from these, according to Gairola (1968:139), the main deterioration factors of cultural property in Indian subcontinent are:

The agencies that cause deterioration of monuments in this region are: (a) lichens, algae and fungi; (b) higher vegetation; (c) sea salts carried by winds in coastal areas; (d) salinity absorbed by the structure through capillary action from the soil; (e) leaching-out of the soluble ingredients of the stone by rainwater (f) attrition caused by winds carrying and dust; and (g) foreign accretions of various kinds of greasy matter, soot, smoke, paint and the excreta of animals and birds.

Deterioration of Cultural Property in Relation to Climate

For centuries cave paintings, copper and bronze objects, archaeological remains those have always been remained in same place, have never been travelled or excavated can be in a good condition. But when they are unearthed or exposed to the atmosphere, the physical condition of the object could be damaged within a few minutes. The role of climate is almost universally considered as the main factor accelerating the decay of cultural property. The effect of climate is more prominent in the tropical zone than at higher latitudes (Coremans, 1968). The main features of tropical climate, i.e., high temperature and high humidity have an adverse effect on cultural property.

Effects of temperature and humidity

The main characteristic of tropical climate is the combination of high temperature and abundant moisture. This condition accelerates the chemical weathering and helps to the biological attack. Different biological growth like fungi, algae, mosses, and lichens are ideals at the temperature of 25°C-30°C and a relative humidity of 70% or higher (Coremans, 1968). This climatic condition is also favourable for various bacteria, fungi and insects growth. In the higher altitude of tropical region (e.g., Himalayan region) temperature can drop under the freezing point. In this condition the abundant moisture of air freezes and causes damage to cultural property by frost action. Moisture of air includes all types of precipitation (rain, mist, hail, snow) and also humidity. Heavy rainfall is a common phenomenon of tropics. In India monsoon and retreating monsoon caused severe rainfall throughout India. Flood is a common occurrence of north and north-east Indian states.

Problems of Conserving in Tropical Climate

1. **Heavy rainfall** is a main character of humid tropical climate. North and north-east India receives heavy shower throughout the monsoon. High humidity cause conservation problem to the organic object, stone sculpture and painting (Jeyaraj, 1995). When each fall of rain is followed by bright sunshine which rapidly heats monuments and evaporates the water absorbed; the constant changing from wet to dry, from cool to hot, combined with the mechanical effect of rain beating down on roofs, vaults and walls, eventually results in considerable degradation (Coremans, 1968:33).
2. **Growth of vegetation** is another major problem of conservation in tropics. High rainfall results high vegetational growth. "The pipal tree (*Ficus religiosa*) in particular is a great enemy of masonry buildings, once a seed of this tree is germinated in the interstices of a building; its downfall is only a question of time" (Barthakur, 1995:21). The roots of vegetation go deep inside the walls or base of a building and the cracks are become larger to destroy the building.
3. **Soluble salt** is another problem of this region. Efflorescence is often found on the surface of the brick architecture. As geologically almost the entire north and east India was once formed a sea before the rise of the Himalayas, percentage of salt in the soil of these areas is high. Due to humidity and dampness with the evaporation of water contents, salt get crystallized (Joshi, 2008).
4. **Water logging** is a common occurrence of West Bengal every year. The excessive rainfall in monsoon caused flood in most of the districts. Temples of



Damaged Terracotta Figure,
Radhagobindo Temple, Bishnupur

Bankura and mosques and minarets of Maldah face water logging for more than one month in every monsoon. It causes shrinkage of foundation and sometime partial collapse.

5. **Human vandalism** is also a challenge to protect cultural property. This problem doesn't fall under any climatic condition but it is a universal problem. According to Chauley (2008:65), human vandalism is a ... new trend is growing rapidly like a disease among the youths of modern times, inscribing names and other details on the surface of the temple wall, on sculpture and different parts of the temples, thus making the temples look ugly and indecent.

Conclusion

We see the cultural property and heritage buildings of our country in this present state due to several conservation and restoration work. The temples and mosques under the ASI get conservation treatment except those hundreds of them which are not undertaken by the ASI or any conservation organisation are in bad condition. Most of them are decaying for extensive vegetal growth on them. They also need some conservation works on them to survive in this tropical climate.

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Challenges and Trends towards the Integration of Social Science Research – Role of Museums in 21St Century

PUSPA DAS

Abstract

Indian society is said to be a synthesis of diverse social and cultural elements. In all societies of the world education as an instrument of socialization is also considered as a powerful catalyst for social change. In the Indian context, education has an added importance not only for the speedy socio-economic progress, but also as the most effective changing agent and the pivotal factors for the up keep of the democratic set up and emotional integration of the country. Museums document social relationships represented in the languages, music and song, agriculture, architecture, contests of skill, visual art, religions, dramaturgy, educational systems, scientific disciplines, and the many other practices that symbolize those relationships. In present situation, museum plays a significant role in our society because they depict meaningfully the culture and community. Social changes in India can be explained in terms of co-existence of tradition as well as modernity and its continuity and change.

Keywords

Discrimination, Socio-economic Changes, Community, Modernity & Continuity.

Introduction

Sir Winston Churchill stated "we shape our environment, and then our environment shapes us elegantly illustrates the relationships within a society, the way that society shapes its environment and vice-versa, the impact of that environment on those who live and work in it and give its shape." The combination of requirement and conditions which changes through time and differ from place to place according to social, cultural and intellectual environment. All societies are constantly in transition and no doubt always have been such the case in India through the uniformity and continuity which may seem more absolute than they have been in fact. Outsiders think of Indian society and civilization as expressed in and bound by ironclad unchanging social system called the Caste system in which each group has it

special *Dharma* or way of life, which has been unchanged for millennia. There can be no doubt as to the partial truth of this conception. Certainly ever since the formulation of the 'Law of Manus' there has been a model for the tight separation of different levels of society, both in the privilege and function.

India is a pluralistic society. It is rightly characterized by its unity and diversity. A grand synthesis of cultures, religions and languages of people belonging to different caste and communities has upheld its unity and cohesiveness despite foreign invasion and the Mughal and the British rule. National unity and integrity have been maintained even through sharp economic and social inequalities have abstracted the emergence of egalitarian social relations. It is this synthesis that has made Indian and a unique massive of cultures.

India is said to be a synthesis of diverse social and cultural elements. It is a synthesis of the Aryan and the Dravidian Cultures. The unity between the village, the family and the legal system was the outcome of this synthesis. The culture of India was moulded throughout various era of history, all the while absorbing customs, traditions and ideas from both invaders and immigrants. Cultural practices, languages, customs and rituals are example of the co-mingling over centuries. In modern days, in spite of this unique cultural diversity, the whole country is bound as a civilization due to its common history, thereby preserving the national identity. India was the birth place of religious systems such as Hinduism, Sikhism, Buddhism, Jainism, which have a strong influence not only over India, but also the whole world. The culture of India was influenced by the foreign culture particularly Persian, Arabic and Turkish Culture. Influence came in the form of religion, languages and dress. The synthesis has created continually from the ancient period till today – continuity from the time of Mohenjo-Daro (2500 BC) through Jainism, Buddhism, Islam from the time of British rule to post-independence India. One finds the process of assimilation and synthesis in the fields of art, paintings, music and religion, etc.

The Indian society before independence was mostly traditional, agrarian and suffering from Casteism, Communalism and other social evils. After independence, the constitution of India declared the nation to be sovereign democratic republic; socialism and secularism were also adopted as the guiding philosophy of citizen life and government activities. In this new direction, education was regarded as a potential instrument of social change and powerful means modernization. In all societies of the world, education as an instrument of socialization is also considered a powerful catalyst for social change. It is also considered powerful medium for removing prejudice and discrimination in societies torn by communal and racial conflicts. In the Indian context, education has an added importance not only for the speedy socio-economic progress, but also as the most effective changing agent and the pivotal factors for the up keep of the democratic set up and emotional integration of the country.

Social change in India can be explained in terms of co-existing of tradition, modernity and continually change. Factors of social change are demographic, technological, economic, cultural, legal and political. The problem of over-population has hindered economic development. Industrialization suffered from lack of proper direction because of the harm done to industrial growth by the British Raj. Cultural changes are faster than economic changes.

Social science mostly deals in the question of change – social, economic, cultural, or political. Until some time back these engagements were envisioned primarily in the framework of “modernization” and “development”. M N Srinivas, India’s most celebrated sociologist, for example, identified three core processes of social change – Westernization, modernization and secularization – through which social scientists ought to make sense of the changing Indian society. Museums document social relationships represented in the languages, music and song, agriculture, architecture, contests of skill, visual art, religions, dramaturgy, educational systems, scientific disciplines, and the many other practices that symbolize those relationships. At present scenario, museum plays a significant role in our society, because they beautifully analyse the culture and their community. When visitors visit museums then they communicate to their past by depicted exhibit through the museum gallery. Museum also carries past for future generation. Museum is one of the necessary components of a society’s development

Social inclusion is a new terms. Many of the groups and communities currently under-represented among museum visitors are believed to be excluded from mainstream society. It is important therefore, to understand this political concept and the way in which it is driving museum agenda. Gradually, the term comes to represent the process of social disintegration rather than what was seen to be more limited concept of poverty. Social exclusion is something that can happen to anyone but some people are significantly more at risk than others. Research has found that people with certain backgrounds and experiences are disproportionately likely to suffer from social exclusion. The key risk factors include low income, family conflicts and school problems, being ex-prisoners, being from an ethnic background, living in a deprived neighbourhood in urban and rural areas, mental health problem and disability. The high profile of the social exclusion agenda has molten that museums and museum bodies worldwide have to respond protectively to criticism that they cater only for a privilege, affluent minority in society specially women in Indian perspective on 21st century’s scenario. In present situation, museum plays a significant role in our society because it depicts meaningfully the culture and their community, which are in verge of extinction day by day of a society’s development.

Objectives

Social change occurs in the structure and culture of a society through internal and

external factors. The structure of a society refers to infrastructural facilities, their distribution among people and people's access to them. The culture of a society consists of tradition, religion and norms of living and behaving with each other's. Since the structure and culture of a society's are static. Social change is an inevitable process. Social change can be upward and downward, linear, multilinear and cyclical. Social change can occur in the form of progression or aggression. Thus, social change refers to shift in the structure and culture of a given society. Generally, society change is value neutral but sometimes it occurs in the forms of ideological expressions and of a conservative or a radical nature change is also cumulative, particularly in the field of Science & Technology. Besides being cumulative and evolutionary, change is also a cyclical and curve like phenomenon. Since tradition and modernity co-exist, continuity and change are empirical facts of social life. Tradition and continuity co-exist because all societies and those need a certain amount of stability and social checks. Modernity and change are required to attain a new level of knowledge and technical know-how to meet changing demands and challenges. In this condition, social change, social tensions and conflicts are caused by different values and interests of the old and the young, the educated and illiterates, the town men and rural folk. This research paper is based on some socio-cultural factors, which are direct or indirectly involved in perspective of Indian rural and urban growth and development. These objectives are divided into two parts like,

A. Social factors –

- ✓ Demographic condition
- ✓ Technological Development
- ✓ Economic condition
- ✓ Cultural transformation
- ✓ Legal and administrative
- ✓ Political involvement

B. Social inequalities –

- Paradigm shift from joint family to nuclear family
- Influence of modern technology with urbanization
- Superstition
- Orthodox nature of people
- Massive involvement of religion
- Generation gap to pass out experience
- Least government intensive

Methodology

The research paper is based on empirical research, which relies on experience or observation. It is conducted on the current trends of growth about the rural and urban population development. The study involves a pre-field stage and post-field stage of comparative study on correlation of urban and rural population and their changing socio-economic and cultural situation. Some measurement scales were used in the study. The researcher collected data from last two censuses of 2001 & 2011. Table 1 shows that the total population of India increased by about 3% in ten years. Table 2 shows the rural-urban population difference between 2001 & 2011. At this time rural population decreased by almost 3.5% but urban population increased by 4%. Table 3 depicts that India's total literacy rate increased due to technological advancement and other factors. The difference between 2001 & 2011 literacy rate is 10%. But one thing is not clear today why male and female literacy rate difference still continues? This interrupted the development of policy of India. The Researcher studied the literacy census (Table 4) very carefully and found out the gap with various reasons. Total rural-urban male and female literacy difference is between 10% in 2001 and 2011. Male and female rural-urban literacy rate are quite different due to some reasons. Rural-urban female literacy rate 2001 was 46.13% and 72.86%. This difference has been almost 29% among literate people. But 2011 rural-urban census shows the difference as 58.75% and 79.92%. Today, rural female literacy rate is not more than 60%, whereas urban female literacy rate increased by almost 80%.

Table 1: Population census of India

Year	Total population	Male population & %	Female population & %
2001	1027015247	531277078 (51.7)	495738169 (48.3)
2011	1210193422	623724248 (52.0)	586469174 (48.0)

Table 2: Rural-Urban Population

Year	Total population	Rural Population & %	Urban Population & %
2001	1027015247	742,490,639 (72.18)	286,119,689 (27.82)
2011	1210193422	83,30,87,662 (68.84)	37,71,05,760 (31.16)

Table 3: Male–Female Literacy population (7+ ages)

Year	Total Literacy & %	Male literacy & %	Female literacy & %
2001	560687797 (64.84)	336533716 (75.26)	224154081 (53.67)
2011	778454120 (74.04)	444203762 (82.14)	334250358 (65.46)

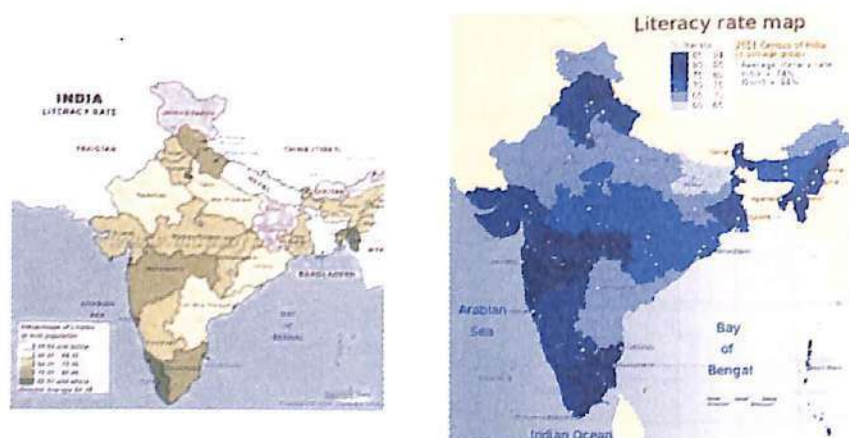


Figure 1 : Literacy map of India 2001 & 2011

Table 4: Urban & Rural male-female literacy rate of 7+ ages

Year	Total literacy rate	Person	Male	Female
2001	Total	64.84	75.26	53.67
	Rural	58.74	70.70	46.13
	Urban	79.92	86.27	72.86
2011	Total	74.04	82.14	65.46
	Rural	68.91	78.57	58.75
	Urban	84.98	89.67	79.92

Findings

The findings reveal that the socio-cultural factors definitely influence the rural and urban population pattern and their behaviour. However, it is also observed that the nature of these factors and their influence is as such that appropriate structural interventions can make all these socio-cultural attributes playing a favourable role for growth and development of the Indian society. The concept and phenomena of education is of modern origin, not only in India but also in the developing countries and west. In India too, contemporary education draws from western origins. According to Yogendra Singh, in India, the traditional content of education was esoteric and metaphysical, its reach was limited to upper castes and its organization was ascriptive. Modern education, on the other hands is rational and scientific and open to all groups on the basis of merit education is seen as the most influential agent of modernization apart from industrialization and urbanization in India (Singh, 1973). Social behaviour is governed by the norms and values of society, which are

crucial components of its cultural traditions, continuity and over generation. Thus socio-cultural factors refer to social behaviour of individuals or groups as governed by their culture. But in Indian perspective socio-cultural development is interrupted by the various reasons. While examining the current scenario, it could be noted that last two censuses across the whole country. India, however is still trying to progress itself but some problems are there, such as –

1. Gender Discrimination :

Perhaps the sharpest and most common forms of educational disparity in India is based on gender differentiation. Still, discrimination faced by girls in enrolling and attaining school is rooted in the wider socio-economic and cultural context, which sustains such gender inequalities. Women in India, occupy a low status, which is measured in terms of lower literacy levels, lower employment rates, lower wages of equal work, poor health and nutritional status and high infant mortality levels. The negative attitude of parents towards the girl child and her education is one of the major reasons to low female literacy rate in India. In most of the families, boys are given priorities in terms of education because Indian tradition said that the sons are regarded as 'economic assets of his family' but girls are not treated in the same way.

2. Caste :

A major source of inequality in Indian society is bound by castes system, which divided society into endogamous groups and arranged in a strict hierarchical order. Castes are ascriptive groups into which people are born and where they remain, with little scope of individual mobility to a higher level of social status. The institution of castes, which is unique and the primary basis of social stratification. In India, it has been identified as one of the most important factors for the existence of inequality in education. In traditional Hindu society, education was centred on religion and access to only upper castes communities. It was denied to women and lower castes that lived in poverty and were hence educationally deprived.

3. Poverty :

Poverty is the root cause of many problems in India also impact for the low female literacy rate. More than one third population in India is living below poverty line.

4. Religion :

The religious beliefs and practices of a community can largely impact the overall attitudinal and behavioural profile of an individual or group. In Indian context, religion has a sway over people's minds and exerts a great influence over the behaviour. The motivation and attitudes of the people towards

education are also moulded, to a large extent by their religious belief. Vaidyanathan and Nair stated that religion is an important socio-cultural variable, which significantly influences school participation especially in female child. (Vaidyanathan and Nair 2001).

5. Rural Indian Condition :

In most of the rural areas lack of easy accessibility to school is another reason for low female literacy rate. Parents do not prefer to send their daughters to schools if these are located at a far distance from their village and girls participation in schooling is lagging behind that of boys, the gender division of labour which confines the child to the domestic realm, the problem associated with menarche, restricting the girls movement and thereby affecting continuation of her schooling, the practice of early marriage, the kinship pattern of patrilocal village exogamy and the system of hypergamy and dowry.

6. Family involvement :

When a girl or a woman is not educated, it is not only she suffers but her entire family has to bear the consequences of her illiteracy. It has been found out that illiterate women face more hardships in life than literate one. They have high fertility as well as mortality; they suffer from malnutrition and all other health related problems. In a survey, it has been found out that infant mortality is inversely related to mother's education levels. In such a scenario not only women suffer but also suffer their children. Lack of education means lack of awareness. Illiterate women are not aware of their rights. They simply know nothing about initiative taken by the government for their welfare. Illiterate women keep on struggling hard and bear hardness of life, family and even their husbands.

7. Urban Agglomeration :

India is growing rapidly, be it in population, in economy, in number of vehicles or in corruption. The recent census data (Table 3) show for the year 2011 that we are 1.21 billion people, nearly 17.5% of the global population, making every sixth person in the world an Indian. We are only next to China in total population, which is contributing 19.4% to the world population with 1.341 billion people. Our population has increased over five times in the last 110 years from 0.24 billion in 1901: About 181 million people have been added to in the last decade, with a decadal growth rate of 17.64% and annual growth of 1.64%, while China has a much lower decadal growth rate (5.43%) as well as annual growth rate (0.53%). For the third consecutive decade, the growth rate is declining, posing a question whether the nation's population is stabilizing? Although the urban population growth rate is greater than the rural population growth rate, the sheer magnitude of the existing rural

population still accounts for 68.84% of the country's population. While falling agriculture produce and poverty-induced migration from rural to urban areas has been traditionally ascribed for urban growth, recent studies suggest that organic urban growth is also contributing significantly to the high rates of urbanization and not rural-to-urban migration alone.

Results

The findings show the analysis of data which were collected from the authentic sources. But the effects of results will be an up gradation for the further growth and development of Indian society. Researcher discussed about the some points findings of the paper. These findings are reliable information about the society change. If we develop our society then we first take our country transform into increased literacy rate. Museum is one of the social instruments which are performing remarkable job in 21st century's scenario.

All over the world, museums are generating a variety of offerings and approaches for serving as agent of wellbeing and vehicle for social change. Museums have aimed to influence public knowledge, attitude and behaviour, deliver public health and welfare campaigns, reduce stigma and bias, empower citizen and communities and mobilize others forms of social action and change. Some museums seek to work with the issues of greatest concern to society as an active supporter and vehicles of social change. Museums like all institutions are embedded in society and have responsibilities to that society to meet its standard of justice. There is increasing interests in the potential for museums to take up an explicitly activist moral standpoint on human rights issues and to engage visitor's in debates pertaining to social justice. Museum and its galleries serve as focal point for communities and as inclusive spaces. They provide opportunities which help people to explore issues of identity. Through creating exhibitions and events with these groups most excluded from society. Museum creates feeling of belonging and social and cultural inclusion. Museums help de-stigmatize mental health issues by presenting people's experience as a part of normal local life. The best museum displays aim to simultaneously serve children especially girl who suffer more than centuries and adult from novice to expert. Museum could rethink the way that they allocate their space with less occupied with fixed displays and more available wider range of activities for workshops, for short term pop-up displays, for performance and discussion for people and groups come together. Perhaps, museums' relatively informal social spaces and more formal display spaces could sometimes be combined together.

The potential of museum is both in formal and informal learning and alternative space for learning where children and adult can step outside of their usual ways of acting and interacting. All museums know that they are fundamentally there to support learning and stimulate thought and reflection and surely all museums should

be inclusive; constantly seeking out new audiences and engaging with the widest possible range of people. Falk (2001) have stressed important role of 'free choice learning' in the public understanding of science that is learning from school educational experiences.

Science museums and science centres of India are doing tremendous good job. They are arranging the programmes for the visitor's inside or outside the museum. National Council of Science Museums is the headquarters of science museums and science centres that create mass awareness of science throughout the societies. It is not always possible to draw newer audience to a museum for a number of reasons. To reach outside people, museums often conduct various programmes which are directly or indirectly related to the particular museum contents. These are known as "outreach services." Outreach services of a museum include – school loan services, travelling exhibitions, mobile exhibition, museobus, discovery dome, virtual outreach programmes, distance learning programmes, etc. Science museum and science centre are also collaboration with social organization in India like, Unnati, a social NGO work for Rajasthan especially in interior of the village like Social Inclusion and Empowerment aims to invoke the social justice principles among the civil society actors and governmental organizations involved in social development.

Conclusion :

In the beginning of 21st century, global socio-economic conditions continue to induce specific intra and inter urban migration. More people than over before reside in urban area and as a consequence many contemporary politics are now more culturally diverse than at any earlier times. Social change in India can be explained in terms of co-existence of tradition as well as modernity and its continuity and change. It occurs in the structure and culture of a society through internal and external factors. All societies need a change in stability and social checks. Modernity and change are required to attain a new level of knowledge and technical knowhow to meet the changing demands and challenges. Social tensions and conflicts are caused by differentials values and interest of the old and the young, the educated and the illiterate, the townsmen and the rural folk. National integration is dependent upon structural, cultural and ideological congruity and harmony among different sections of Indian society. The values and norms stated in the constitution of India through proclamations about democracy, secularism and socialism provide basis for national integration. Equality demands equal opportunity for all sections of society and more so for the depressed groups of people. Absence of discrimination based on ascriptive criteria such as caste, parentage and heritage and normative considerations like pollution – purity are the cultural prerequisites of national integration. Ideological differences are natural in Indian society because of its structural and cultural complexities, but a certain level of consensus about 'national

goals' is also basic for keeping people together as a nation. Museum is a social instrument so they can increase their social sustainability by depending and diversifying these relationships, aiming to reflect the diversity of society in all that they do. Museum must return to being learning hubs, not destination attractions only then will be sustainable one of the long-term sustainability is becoming more socially responsible in Indian scenario.

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Case Study on Mycoflora at Bankim Bhavan Gaveshana Kendra, Naihati

TANUSHREE CHAKRABARTI

Abstract

The aim of the study was to evaluate the prevalent species of aeromycoflora in the indoor environment of the Bankim Bhavan Gaveshana Kendra, a research centre registered in the Ancestral House of Sri Bankim Chandra Chattopadhyay. The surroundings area of the museum is warm, humid and polluted. Air sample was collected from the museum galleries by culture plate exposure method with Potato Dextrose Agar (PDA) media. Sample also collected from the surface of some artefacts and archives by swab method. Fungal colonies that formed after an incubation period were determined on the basis of micro and macro morphological characteristics. In this investigation among all the trapped fungal forms have been proved to be destructive to art objects and also some are allergic in nature. The variation in the number of fungal colony was observed in the rainy season. The results of this investigation appeared to be quite significant for taking corrective measures.

Keywords

Bioaerosol, Aeromycoflora, Mycological Spores, Swab Method, Bankim Bhavan Gaveshana Kendra.

Introduction

Bankim Bhavan Gaveshana Kendra has an educative museum, an archive rich with several thousand paper documents, manuscripts, etc. The building – built by Bankim Chandra in 1866, as his resting and reading house, i.e., drawing room, 'Baithak khana' – has three rooms, made by clay and mud. At the entrance there is a big room. At the south there are other two small rooms. One room was used as reading and writing room of Bankim, another one known as 'Tosa Khana.' The Heritage site was almost completely devastated and reduced due to the lack of maintenance and weak configuration. The conservation and maintenance of this ancestral house was handed over to the Bangiya Sahitya Parishad from 1940. But it was not possible for them to take proper care for Bankim Bhavan, Naihati. Due to

lack of maintenance and sort of space it was not possible for the authority to develop a fixed full-fledged personalia museum at the ancestral house. In 1954 the trustee board handed over the Bhavan to the State Government. Then with the help of Architecture Department of Jadavpur University, the authority of Bankim Bhavan started the necessary restoration and conservation works.

Collection

The Bankim Bhavan Gaveshana Kendra has an educative museum and archive rich with several thousand paper documents, important manuscripts, photographs of Bankim family members, oil paintings, chessman, turban of Sri Bankim Chandra, Shawl and many other invaluable historical things collected from family members of Bankim Chandra, Mahamahopadhya Haraprasad Shastri, Samaresh Basu and other literary source of Bengal. Another invaluable collection is 41 records of the Bande Mataram song sung by Rabindranath Tagore., Pt. Omkarnath, Meghubai Kurdikar, Dilip Kumar Roy, M S Subbulaxmi and others. Most of the manuscripts and books were being digitized and laminated. Rudimentary care has been taken for conservation. In 1999, the damp clay wall of the drawing room by was covered by marine ply board and direct reflection of light on the artefacts and the archival materials was replaced by new lights. Appropriate and safe environment are not provided for the collection of both storage and display

Cause and Assessment of Deterioration

The high temperature and relative humidity of the surroundings of the museum combined with urban population, bad building construction along with high rate of vibration due to the railway transport cause serious threat to the museum building and the objects. The composition of museum materials is both organic and inorganic in nature. Most of the manuscripts are written on hand made papers with blue or black vegetable ink. The portrait of Sri Bankim Chandra Chattopadhyay was done on wooden panel with vegetable dyes. Vertical light covered by wooden box is used for illumination so that the damage of artefacts caused by direct light is controlled to some extent. Silica gel is used for controlling humidity inside the showcases. Photographs are laminated and displayed at the entrance of the drawing room hall of the museum. Recently the authority arranged conservation treatment of the original shawl of Bankim with the help of NRLC, Lucknow. But the conditions of most of the objects are not good. Some documents and letters are brittle and colour of ink is faded in most of the cases. Most of the artefacts especially organic in nature are suffering from biodeteriogens as mycological contaminations though specific studied information about the presence of airborne fungal spore and rate of infestation of the museum objects, documents, photographs, books, etc., by fungi was largely lacking. The researcher studied critically about the problem of conservation and restoration of the invaluable objects and documents stored in the

museum; made Air Sampling from the galleries; collected samples from the surface of some artefacts by swab method and studied potential biodeteriogen of that environment. The researcher collected samples from the turban of Bankim Chandra, some photographs, portrait of Bankim Chandra, manuscript, wooden bed and dressing table used by Bankim and his family members. From the study the researcher found out some potential biodeteriogen present in the culture media. The aim of the study was to identify threatening fungal agents for destruction of the museum material.

Geographical and Climatic Condition

Naihati is located at 22.9°N latitude and 88.42°E longitude. It has an average elevation of 15 m. (49 feet) from the sea level. The city is on the eastern bank of the river Ganges. The museum is situated just beside the railway tracks. Bio-climatically, Naihati falls under humid tropic zone. The climate is primarily hot and humid in summers and cool and dry during winters. Temperature ranges from 21°C to 32°C of which the minimum occurs in the month December/January and the maximum is found in the months of April/ May. In the summer temperature goes as high as 40 degree Celsius. The annual precipitations range between 135 to 150 cm (minimum in November to January & maximum in July/August).

Materials and Methods

This is a descriptive analytical study on biodeterioration of museum objects, mainly by fungal genera. Based on statistical calculation, 26 samples were collected from air in different galleries, surfaces of books, painting, photographs, wooden furniture; shawl; *punthi* (manuscript) and turban of Sri Bankim Chandra were examined for the presence of fungi. Sampling was scheduled to perform during 10th June, 2013 to 25th June, 2013 during noon. Open culture plate method was used for assessment of fungal spores in the air of different galleries and moist sterile swabs used for collection of samples from surface of different objects.

The plates containing Potato Dextrose Agar and Chloramphenicol were put on a height of 1.5 m. from the floor in the galleries for 1 hour (1 pm – 2 pm). Then, the plates were closed, labelled, and transferred to laboratory. All the plates were put in an incubator at 25-30°C and examined for fungal growth for 20 days. Mould fungi grew on culture media were identified by macroscopic and microscopic standard procedures. Finally after determining species and number of fungi colonies data were entered, studied and analysed statistically.

Observation

After 10 days incubation of the air sample fungal colony was flourished on petri-dishes. The texture and colour of fungal colonies were changed after certain period of time. The samples which were collected from different objects by swab method

were cultured on PDA and after 10 days incubation the colony formed in different shape, colour and texture. The fungal species were identified by their morphological both phonetic and phenotypic features and reproductive characters. The colour, texture of fungal colony, structure of mycelium (septet or aseptet), sporangial position, shape, etc., were studied under compound microscope. Fungal types were identified day to day. Fungal types were identified to genus level, some of them up to species level. The temperature and relative humidity were recorded on different experiment dates.



Some of the Isolated Fungal Colonies in Museum Gallery



Sample from Bed of Bankim

Sample from Photograph

Sample from Manuscript

Some Fungal Colonies after 10 days incubation

Table 1. Temperature and Humidity on various sampling dates (Source: India Meteorological Department, Regional Meteorological Centre, Alipore, Kolkata 700 027):

Date	Temperature (°C)		Humidity (%)
	Maximum	Minimum	
10/06/2013	36	26	89
12/06/2013	31	27	94
17/06/2013	37	28	75
20/06/2013	35	27	79
25/06/2013	31	26	89

The humidity is very high as above 75%. So, there is a good conformity in the number of mycological species. Generally, fungal count is high in polluted environment but in this study, the presence of high number of colony forming fungi in the site was due to high rate of humidity along with lack of efficient maintenance probably. Different fungal spores were found in this work, among them there were also some sterile types.

Table 2. Total day count and percentage contribution of fungal colony on culture media:

Fungal Types	Date of sampling					Total	Fungal Colony Count (%)
	June 10	June 12	June 17	June 20	June 25		
	No. of colony						
<i>Alternaria</i>	2	-	3	1	1	7	6.73
<i>Aspergillus niger</i>	1	1	2	-	2	6	5.82
<i>Candida albicans</i>	3	2	-	-	1	6	5.82
<i>Chaetomium</i>	-	3	2	1	1	7	6.73
<i>Cladosporium</i>	1	3	1	-	-	5	4.97
<i>Curvularia</i>	2	1	3	-	1	7	6.73
<i>Drechslera</i>	-	-	-	1	1	2	2.70
<i>Fusarium</i>	3	2	-	-	1	6	5.82
<i>Mucor mucedo</i>	2	3	3	1	-	9	8.13
<i>Neurospora</i>	-	1	-	1	1	3	2.88
<i>Penicillium</i>	1	1	2	3	1	8	7.69
<i>Rhizopus stolonifera</i>	-	2	2	2	1	7	6.73
Sterile mycelia	2	6	5	3	2	18	15.67
<i>Trichoderma</i>	1	-	1	-	1	3	2.88
Unknown	1	2	-	2	1	6	5.82
Total	19	27	25	15	15	101	46.93

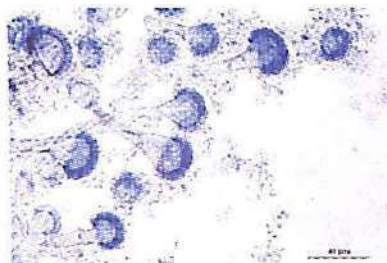
Results

The results show that the rich number of fungal flora present in the indoor air. The variety and number of the fungal flora proved that the presence of high humidity within the galleries of the museum. The growth, maturation and germination of fungi largely depend on temperature, humidity and pH. The growth and germination of microorganisms depends on the environmental condition and nutritional source. Most of the objects in the museum are organic in nature. So various fungi mainly

which specifically germinate on wood, textile, manuscripts, book, etc., are found from this experiment.



Aspergillus fumigatus



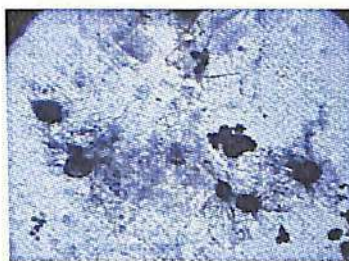
Aspergillus flavus



Aspergillus niger



Mucor mucedo



Chaetomium globosum



Penicillium notatum

Some of the fungus from isolated culture media

Conclusion

The present study shows that the Bankim Bhavan Gaveshana Kendra harbours various species of destructive fungal genera due to uncontrolled environmental condition. The negligence of environmental control, improper maintenance of the museum become the good source for the destructive and deteriorative agents like fungi they may cause serious threat to the invaluable objects silently. Certain corrective measures, proper maintenance, and controlling the temperature and humidity can reduce the frequency of mycological spore density in air and on objects. Installation of exhaust fan in the galleries can reduce the chance of fungal spore on objects. Air filtration, good ventilation and use of vacuum cleaner can improve the environmental condition. Environmental control is most important for the longevity of the museum collection where they are stored and displayed. Monitoring and regulation of the environment are essential for preservation of the heritage of this museum.

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Museum Communication and Modern Mass Media in India

RITUPARNA CHATTERJEE

Abstract

Mass communication that can be described as “public communication transmitted electronically or mechanically” takes place by using mass media. Mass media includes newspapers, television, radio, films, websites, etc. Marketing and public relations are the two essential tools of communication. These factors are given less importance by the museums in India. They are losing their importance in modern society. This paper highlights the current situation in India and contains suggestions that the museums may consider in overcoming the aforesaid situation.

Keywords

Mass Media, Marketing, Public Relation, Museum Communication.

Mass Communication

Mass Media refer to the channels of communication, that transmit information in some way, shape or form to number of people at a time. Mass communication takes place by using mass media. It produces and delivers messages for mass audiences at a time. By this process individuals can receive messages even sitting comfortably at home. It is one way process, where only the audiences or the receivers are present and not the creators or the source. For this purpose different medium of mass communication are used. Generally, mass media include press, cinema, radio and television. However, signs and hoardings, books, magazines, pamphlets, folders, posters and exhibition or exhibition-cum-sale are also considered as mass media. Internet, mobile phones, iPod and iPad must also be added to the list as these have immense possibilities for creating the illusionary as well as potential virtual world. According to Sydney Head the term mass communication includes the following :

- (a) Relatively large audience
- (b) Fairly undifferentiated audience composition
- (c) Some form of message reproduction

- (d) Rapid distribution and delivery
- (e) Low unit cost to the customers.

Public relations consider mass media as a communication channel, by which it interacts with the public and provides information to build public trust and mutual understanding. It has been revealed that National development and development of mass communication occurs simultaneously. In the process of modernization, mass media performs three roles:

- ✓ The watchman function
- ✓ The policy function
- ✓ The teaching function

Mass communication theory help us in understanding the ways the audiences use the mass media and probably provides valuable information about desired uses of the media. The area of mass communication theory that provides such information is known as "uses and gratifications." Certain features of museum communication resemble that of mass communication. As for instance, exhibition is a medium of mass communication. Like mass media, it is also one way process as the exhibition team remains out of scene and only the visitors are present.

It has been said that about 35,000 years ago, human began to exchange thoughts through speech and they started writing only 6000 or 7000 years ago. India, the cradle of an ancient civilization has been a centre of religious, philosophical, literary and learning from very early times. Before the establishment of colleges and universities like Purushapura (in Pakistan), Nalanda (in Bihar) and others, traditional beliefs and ideas were delivered orally. The "wandering mendicants known as Parivrajakas or philosophers who went from court to court, brahminical priests and story-tellers belonging to several castes" spread a common set of traditions all over India. The ancient oral traditions of India gave vigour to begin reading, mainly related to the rise of awareness about timing units and pattern in speech. The scripts used in Indo-Aryan and Dravidian languages owe their origin in the ancient Indian script *Brahmi*. The systematic use of writing in Brahmi was scarce until the 1st century CE, when the Buddhist monks in Sri Lanka began writing down the so far orally composed and transmitted teachings of Buddha. The practice of oral composition, learning and recitation were mainly restricted to the priestly caste. But still the influences were noticed in the entire learning system and permeate all walks of life amongst the Hindu people. The link between written language and the ordinary people was indirect. It was mediated by only a few literate individuals. In India, the use of writing dates back to 2550-1900 BC, i.e., during Indus valley Civilization. The Indus Valley people, whose linguistic-racial origin is unknown, were literate and used writing. There is no consensus about the type of writing system and the language used by these people. The use of Brahmi and Kharosti scripts was first noticed in

the Asokan inscriptions in 3rd century before the beginning of the Christian era. Brahmi flourished and gave rise to the modern Indic scripts. The Rigvedic people, who are supposed to have followed the Indus Valley people, were mainly pastoral and preliterate. They were indeed creative and scholarly people, but they preferred the oral mode of learning and composition. There is a consensus that there is no clearly interpretable reference to writing in Vedic literature. It has been assumed that writing was used as a means of recording information, mainly to mark objects rather than to record literature and science. All the mass media mentioned above disseminate messages in several ways. They delivered the messages appropriately according to the requirement of sections of the society. But since nothing in this world could be 'Perfect', therefore mass media too suffer from several draw backs that would be discussed later.

Litho, wooden block printing and mechanical printing presses using movable types (first in china, then in Korea and finally in the Germany of Johann Gutenberg) came into existence in c.1450 AD. The letterpress was established by the Portuguese in 1556. The lithographed and manuscript newspapers came into existence in later centuries. However, the revolutionary technological developments occurred in the field of mass communication with the beginning of the "era of telecommunication". The major inventions were:

- Telegraph (1844)
- Telephone (1870)
- Wireless (1896)

Radio, television and film evolved in the 19th century AD. Both radio and television played great role in spreading education to the mass. These were followed by the discovery of satellite communication, video display terminals (VDTs), video cassette recorders (VCRs), videotext, teletext, facsimile (FAX), closed circuit TV (CCTV), community antenna TV (CATV) or cable TV, Virtual Reality (VR), e-mail, i.e., electronic mail, the Internet and other telematics, computerized and multimedia systems of communication. The Information Age or Computer or Digital Age began with the advent of personal computer in 1970.

Radio broadcasting in India began in 1927 by the Indian Broadcasting Company with headquarters in Bombay and transmitters in both Bombay and Calcutta. In 1936 All India Radio (AIR) came into existence. The name, 'Akashvani', was used for the first time in the year 1957. At present AIR broadcasts different programmes on music, education, sports, news, etc. In India a television centre was established for the first time in New Delhi by All India Radio in collaboration with UNESCO on September 15, 1959. It was an educational experiment. Programmes were meant mainly for high school students, to install community sets, to offer an opportunity to the farmers to watch television and exchanging their views regarding the

programmes by setting up tele-clubs. Later on ETV or educational television to provide formal education was set up. A general service programme was introduced in August 1965 and this was followed by Krishi Darpan programme in 1967. In 1972 and 1973, a TV station in Mumbai and a relay centre in Pune were set up respectively. In April 1, 1976, television was separated from AIR and a new unit Doordarshan came into being.

Museum Communication and Mass Media

Communication is one of the major tasks of the museum's overall function. The term *communication* signifies all the methods, using which museums interact with the visitors emphasising informal *education*. Museum communication includes the following three broader services:

- Interpretive services: Display/ exhibition, publication, talks to local organizations and guided tours.
- Information services: All-those services provided *on demand* for individual visitors over telephone or in other ways.
- Educational services.

Mass media in a museum helps in information collection, information retrieval and exchange of information; helps in publicity and advertising; helps in mass education and entertainment; and helps in the development of museums. Museums can communicate with the mass by answering telephone calls, providing learning experiences related to the school curricula, organising role-playing session for small group of school children, entertaining activities using digital media, print media and electronic media. That is to say, museums must take help of mass media and promote different aspects of mass communication emphasising marketing and public relation.

In museums, there are many common features to most forms of mass communication. However, it must be mentioned that the mass communication is basically a one way process and its utility depends completely on feedback from the target group. It is not easy to get immediate feed backs from the target, as only one party, i.e., the audience are apparent not the creators. The success completely depends on the expertise of the creators of the presentation that always comprise a team of professionals with specific expertise. Here; the public relation officer of a museum plays a vital role. It is his or her responsibility to communicate with entire society individually or utilising all the opportunities provided by the mass media in cooperation with the other members of the museum. As defined by the British Institute of Public Relations, PR is 'the planned and sustained effort to establish and maintain goodwill between an organisation and its publics'. Here 'public' refers to all those people and organisations that have interests in the museums. Public relations include multiple marketing tasks such as:

- Building or maintaining image
- Supporting the other communication activities
- Handling problems and issues
- Reinforcing positioning
- Influencing specific publics
- Assisting the launch of new exhibitions, facilities, etc.

However, availability of both human and financial resources must be taken into account.

At present, museums are using major national or regional newspapers mostly to publish advertisements related to jobs or special events like seminars or special exhibitions, tenders in a simple as well as in an unattractive manner. Some of the renowned newspapers are Times of India, The Telegraph, Anandabazar Patrika, etc. On the other hand, reviews or news on different issues related to museums. The Times, UK, Frankfurter Allgemeine, Germany, etc., are some such newspaper. News coverage or reviews are scarcely made by both print and electronic media. So far publications are concerned some of the major museums in India publish books, catalogues, picture postcards, leaflets and posters. Some of the books and catalogues published by National Museum, New Delhi are Kushana Sculture from Sanghol, Kangra Paintings etc. Indian Museum, Kolkata, Government Museum of Chennai, Chennai, etc., also have publications. Salarjung Museum, Hyderabad has been found to be opted for e-books rather than hard copies. In this context, it must be mentioned that none of the museums have any current publications except posters and folders, creations of which depends completely on the exhibitions and events organised. Added to this, it has been observed that they lack choices. Most of the publications have been made for the well educated people. There are almost no choices for the commoners and the children.

The post-world war period mostly saw creation of documentary or art films. But the authorities of the museums like Louvre, the Hermitage and Musee d' Orsay museums began to produce feature films. They have asked the prominent Directors like Alexander Sukurov for *Russian Ark* (2002), Olivier Assayas for *Summer Hour* to and Hao Hsiao-Hsien for *Flight of the Red Balloon* (2008) to develop views on the space and mission of the museums. The topic of the museum in the film may include some of its architectural features, as for instance, museum is a place of silent objects, guided tours, etc. Another popular film is 'Night at the Museum'. It has been made on Smithsonian Museum. It is followed by two other films titled 'Night at the Museum: Battle of the Smithsonian' and 'Night at the Museum 3'.

Beside cell-phone, cinema and DVDs watch on small computer screen, the museum auditorium provides cinema an atmosphere, ritual and careful programming. Despite the differences between cinema (is about voyeurism and

museum depends on exhibition) the siding with the art museum, brings status and legitimacy to the mainstream cinema while siding with fictional cinema, the museum becomes intriguing thanks to the vision of a strong director. However, this approach is yet to be developed by the authorities of museums in India. However, very short films have been organised by some of the major museums in the country. As for example, Kashmir in Indian Poetry, etc., are some of the films shown at National Museum, New Delhi. However, a rare instance may be cited here. A gallery of Rijksmuseum, Amsterdam has been focused in a scene of a mainstream Bollywood movie titled Hum Tum in 2004.

In the words of Patricia Deiser and Vincent de Keijzer, the WEB offers unlimited opportunities in engaging and interacting with the different segments of the society. This can be done by online interactions from being within the walls of the museums. Again, Chester Burger opined that because of the development of Internet as a mass media, communication will become more personal in nature. In fact, due to such a development communication is increasingly replacing the need of going from one place to another. In this context, it must be mentioned that the major museums in India like National Museum, New Delhi, Indian Museum, Kolkata, Science City Kolkata, Government Museum of Chennai, etc. are maintaining websites. Some of them are even using social networks too. But all they are doing is limited in nature. Surveys revealed that the museum's websites and also the account on social networks are not regularly maintained. Moreover, website designing are not up to the mark. In fact, museums in India are using few social networks, mainly, Face book and Twitter. But there are several other websites which could be used for the purpose. As for instance, LinkedIn, Flickr, Quora, Google+, Pininterest, etc. These social networking website not only disseminate messages but actually promotes the organisations. The application of virtual reality (VR) on websites is also absent in true sense. Online tours are offered by Louvre Museum, Paris and Metropolitan Museum of Art, New York.

Mobile apps and iPads have become very popular. These could be another good as well as effective tool for museums to promote themselves reaching the mass at any time of the day. American Museum of Natural History, New York, has already used these services. Unfortunately, the museums in India have kept themselves aloof from the opportunities provided by these modern technologies. However, the technologies mostly used by them are interactive displays that include digital kiosks and synchronised models.

Conclusion

Most of the renowned museums in the world have utilised the service of mass media like print media, television, radio, Internet, intranet, mobile phones, iPods, iPads, films and other digital technologies. They have become successful in attracting visitors around the world by offering services through mass media. They

are even competing with other profit making organisations of entertainment. On the other hand, major museums in India are using them partly. Major museums in India have organised exhibitions, seminars, lectures, workshops, training programs and film shows for museum goers. This reveals that museums in India are using mass media but in limited way. As a consequence, the information is not delivered to the people beyond the boundaries of the institutions. In the age of information and technology, many in the Indian society are still unable to operate computers. To reach all these people, museums have to use those media of mass communication which can be accessible by all. In this regard, mention may be made of radio and television. Museums can use these media of mass communication to communicate to the society. Unfortunately, in this regard much effort has not given by museums in India. Programmes on electronic media are not very common. Occasionally, news coverage is done by news channels such as NDTV. On the contrary, programmes like *Museums of Curiosity* have been broadcast by BBC Radio 4 and a television series named *Great Museums* have been telecast by Public Television in USA. Added to this, museums are not even taking complete advantage of Internet. Websites are not well maintained; website presentations are also not up to the mark. Websites could be made interactive in nature. Gaming features could be added to them. Here, mention could be made of websites of Acropolis Museum, Athens and British Museum, London. Acropolis Museum includes an online digital game titled *Color the Peplos Kore*. Museum Run, Little or Large, etc., are the online games offered by British Museum. Moreover; social media are now playing a vital role in the society. People belonging to different age groups have joined Facebook, Google+, Flickr, etc. These are the websites where people can share photos, ideas and information. It has been already mentioned that some of the major museums in India have linked their websites mostly to Facebook and twitter. Museum professionals must also join websites like LinkedIn and Quora more frequently. No registration charges are required to become basic users. But the scene is just the reverse in case of Indian museums; virtual reality, mobile apps, etc., are not in vogue. Mention could be made of Google Art Project. This is an online platform where online tours of museums are available. Museums may get financial support from the Corporates. A report of a roundtable discussion on the theme *Re-Imagine Museums and Galleries: UK-India Opportunities and Partnerships* organised by British Council in October, 2014, suggests Schedule VII of the new Companies Act in India lists culture as activities prescribed under Corporate Social Responsibility (CSR). Art and heritage museums may take help from the Corporates in this matter. It is also the duty of the museum personnel to maintain good relation with film makers, journalists, station directors of both television and radio stations to sell their museums. Marketing and public relations are the two essential tools of communication. Museums in India must adopt these two aspects for the benefit of their organisations.

In conclusion, it could be said that to meet these challenges, museums in India need to concentrate on the following areas:

- Understanding the goal of the museum and deciding the information to be disseminated.
- Identification of the target audience and judging their educational background and level of understanding.
- Promotional activities to be performed such as advertisements, news coverage, reviews, etc.
- Maintaining good relationship with the Press and keeping them informed of all developments, programmes and events regularly.
- Discussing with the film directors, station directors of both television and radio stations about the kind of programs that could be organised or films to be featured taking into account of museum's goal and level of understanding of laymen.
- Creation of corporate identity and maintenance of public relation by active participation on social media, in interactive programs on television and radio, giving interviews to print media, etc.
- Ways to make complete use of Internet services such as maintaining good websites, etc.

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Ganesha in Indonesian Art – a Brief Study about His Mythological Concept and Iconographic Features

SUMANA DUTTA

Abstract

Ganesha is one of the best-known and most popularly worshipped deities in Hinduism. Although he is known by many other attributes, *Ganesha*'s elephant head makes him easy to identify. His worship has been quite popular in Indonesia and still a living tradition in Bali. The main purpose of the study is to bring out the resemblances and iconographical traits of *Ganesha* images belonging to the India and Indonesia under review. The resemblances may indicate the provenance of the impact from which Indonesian images take their form and the innovations may point out the local genius.

Keywords

Ganesha, Indonesia, mythology, iconographical traits, features.

Introduction

Ganesha is one of the most well-known Hindu deities. His worship at the beginning of all rituals has made him popular than many other divinities. Worship of *Ganesha* has transcended the frontiers of India. The discovery of *Ganesha* image at Sakar Dar in Kabul, assigned to the middle 4th century AD on the basis of its iconographical peculiarities has thrown significant light on the worship and popularity of *Ganesha* not only in India, but beyond its frontiers in the early Gupta period. A large number of his images are known from various countries like Indonesia, Burma, Thailand, Cambodia, China, Japan, Nepal, Tibet, Ceylon, Mongolia, Afghanistan and Central Asia.

The deity is popular not only in India, but in Indonesia also. The discovery of numerous images of *Ganesha* indicates that his cult was very strong in Indonesia during the classical and post-classical period, i.e., 8th-15th century AD. The mode of worshipping *Ganesha* in India and Indonesia, too, has got similarities. The devotees bow to the god and make use of flowers in worship. It is mentioned in the *Bharata-yuddha*, an old Javanese text dated 12th century AD, that Hastinapura palace had an image of *Ganesha* covered with flowers. The iconic form and physical features of the god, in some cases have much in common with those from India. He is

shown as having corpulent body and pot belly and of course the god is also elephant-headed. The attributes held by the god are commonly a bowl, broken tusk, rosary and battle axe. However, it is to be noted that in India the bowl is invariably shown with sweet-balls, i.e., *modakas* whereas it is empty in Indonesia. In a few cases in Indonesian sculpture, the god is also seen to have other attributes like *pasa*, *padma*, *sankha*, etc. In Indonesia all images of *Ganesha* are four handed. But in India the number of hands may be two, four, eight, ten and even more. In Indonesia most of the images of the deity are shown as sitting and a few as standing, but in India we have seated, standing and even dancing types.

Mythological Concept of Indonesian *Ganesha*

There is no Indonesian legend narrating how the god became elephant-headed. The old Javanese manuscript called *Smaradahana*, the only text of Indonesia narrating *Ganesha's* birth tells us that *Ganesha* was born having elephant-head originally. The story is like this. When *Uma* was in pregnancy, other gods who came to pay *Uma* a visit, brought with them *Indra's* elephant, an animal of terrifying appearance. At the sight of it *Uma* was awfully frightened. So much was the impact of the sight of *Airavata*, *Indra's* elephant, that when she gave birth to a child, it appeared to have a head like that of an elephant. *Shiva* declared its name *Sang Hyang Gana*, who will be the remover of obstacles and destroyer of the enemies of the gods. How the god is treated as the remover of obstacles, tradition surviving in Bali may explain, for the name of the god still appears in the ceremony called *Rishigana*. It is performed whenever a disaster like flood, earthquake, mountain eruption, etc. occurs in the region. In this ceremony *Ganesha* must be present not in the form of an image but as a motif on a white flag. The pole of the flag must be made of a yellow bamboo. The white flag with *Ganesha* motif is also used in the ceremony called *Nangluk-merana*, which is regularly performed twice a year for killing plant diseases. Another tradition coming from Bali is that in few cases, the god is worshipped by those whose profession is witchcraft. In this case, the god is regarded as the curer of illness. A legend from India associates the god with the cure of physical diseases. The *tantrika* form of *Ganesha* images from Indonesia is characterized by skull ornaments adorning the god lavishly. Even the pedestal has been bedecked with such ornamentation. The usage of the ornamentation is regarded due to *Ganesha's* relationship with *Shiva* who, too, wears a garland of skulls in some of his forms. This skull ornamentation in Indonesia is indicative of the *tantrika* nature of a god. As the placement of the god, he is supposed to occupy the confluences of the rivers, river-crossings, cross-roads and other vulnerable spots besides his permanent place at the rear of a *Saivite* temple.

Ganesha in Indonesian texts

In Indonesia, there are some royal charters and texts like the *Smaradahana*,

Sumanasantaka, *Bhomakavya*, *Bharatayuddha*, *Arjunavijaya*, *Shivaratrikalpa*, *Tantupangelaran* and *Koravashrama* which refer to *Ganesha*. The texts use the so-called 'kavi' or 'old Javanese language', which is the ancient local language and shows the impact of *Sanskrit*. Indonesian texts contain comparatively less information about the god. The possible information that can be collected from the texts, are his epithets, a little about his nature and very scanty account of his iconographic traits. Only in some hymns dedicated to him, we find more information about the god. *Smaradahana* is the only work giving a detailed account of *Ganesha* especially in its second section. This work is ascribed to 12th century AD. It chiefly consists of two sections, each of which bears a different account but they are still connected with each other. The first section mentions the dispatch of *Kameshvara*, the god of Love, to awaken *Shiva* from his meditation, who then set *Kameshvara* on fire. And the second section tells about the birth of *Ganesha* and his fight against *Nilarudraka*.

Ganesha in Inscriptions

The names of the god are available in many Indonesian inscriptions also, but his other details are absent. In the charters like *Wuatan Tija* (880 AD), *Sugih Manek* (915 AD) and *Gilikan-I* (dateless), the god is called *Vinayaka* instead of *Ganesha* or *Ganapati*. In the charters of *Sangguran* (928 AD), *Saranan* (929 AD), *Juru-Juri* (930 AD), he is called *Sad Vinayaka*, and *Sad Vinaya* (without 'ka') in the charters of *Wimlasrama* (without dating), *Cane* (1021 AD), *Kudadu* (1294 AD) and *Tuhanaru* (1323 AD). In the charters of *Gulun-gulun*, *Linggasuta* and *Geweng* which are assignable to 929-930 AD, the god is called *Ganapati*. Relying on the work of Kern, H B Sarkar says that *Sad Vinayaka* referred to in the *Sangguran* inscription is a name of *Ganesha*. The same opinion is also held by Sedyawati. The names of the god are available either in the *mangala* (introduction) or *Sapatha* (oath), sometimes in the last sections of the charters. When present in the *Sapatha*, he is in group with other deities, invoked as a group of vouchers. Only in the *Ratu Baka* inscription the name of the god is not available in the *mangala*, neither in the *Sapatha* nor is he invoked as a voucher, but the god is described as *Pratyaksa Devata* (visible deity) who is empowered to stimulate the righteousness and to remove the evil.

Ganesha in the Hymns

Unlike in the texts and epigraphs mentioned above, in the *Hymns*, *Ganesha* is elaborated rather in details. In the *Sarasvati stuti*, the god is referred to as a 'destroyer of all obstacles', being worshipped even by the gods. In the *Gana stava*, the god is referred to as 'remover of world's obstacles' (*jagad-vighna-vinayakan*). He is also clearly described in his iconic form of an elephant, having bulky body (*hasti-rupam maha-kayam*), dwarf with locks matted, short neck and big belly (*Vamanam jatilam kantam, harasva-grivam mahodaram*). The other iconic traits mentioned in the *stava*

are, among others, his three eyes and one tusk, a sacred thread consisting of serpents, holding his own tusk, noose and elephant's hook. Besides, he is profusely adorned with jeweled-ornaments (*citra-ratna-vicitrangam, citra-mala-vibhusitam*). In the *Ganapati stava* (stanza-1), too, the god is referred to as 'destroyer of all obstacles'. Moreover, he is the cause of all affairs to succeed. Remarkable to notice is that the *stava* (stanza-3) also mentions the existence of six *Vinayakas*, i.e., *Amoda, Pramoda, Sumukha, Durmukha, Avighna* and *Vighnakartar*. They are regarded as six aspects of *Ganesha's* powers. These remind us of the six *Vinayakas* as mentioned in the Indian texts, in which they also have the same names. Besides, there are also in Indian texts six *Vinayakas* with different names, i.e., *Riddhida, Siddhida, Kamada, Vighnaha, Pramodi* and *Chaturthi-vratakapriya*. Indonesian texts, inscriptions and *Hymns* refer to *Ganesha*, but there are no details of his birth, lineage and activities, as we find in their Indian counterparts. This is quite natural as *Ganesha* is a cultural import in Indonesia from India. In Indonesian thought and art, however, the nature and character of the god shows some deviations from his Indian counterpart. This was natural as the god had to adjust in an alien culture and environment.

A. Physical Traits of Indonesian *Ganesha*

The outstanding physical characteristics of *Ganesha* are his elephant face and corpulent body. These are described in different texts. These physical features are displayed both in India and Indonesian sculptures. In only a few cases, however, one may find the slim or elongated *Ganesha* both in India and Indonesia. These, however, seem to be the result of the carving of the images by sculptors having individual susceptibilities. To compare the physical features of Indian and Indonesian *Ganesha*, the following details are of importance to take into account.

1. Trunk

The North Indian *Ganesha* images show that the bone of the nose is projecting in some cases (Fig. 1) while in others it is triangular (Fig. 2). However, the triangular projection of the nose bone is a feature which is shared by eastern sculpture also. In southern sculpture, this projecting feature is less emphasized. This disposition of the trunk of Indian *Ganesha* has been studied by Shivaramamurti. The *Ganesha* of the Kanarese district has the entire trunk turned to the left with a curve at the tip which rests on the bowl of sweets. The *Ganesha* from Tamil Nadu has a trunk with most of its length running down vertically on the paunch of the god and finally it curves to touch the sweet in the left palm. The trunk of the *Ganesha* of the Odisha School sometimes twirls slantingly and sinuously towards the bowl in his left hand. Besides, the northern Indian examples have a thick and heavy trunk while the examples from Tamil Nadu possess slim and light trunk. Images from Bihar and Bengal reveal that the trunk of the god is sometimes heavy like those of North

Indian images, or less heavy and even resembling that of *Ganesha* from Tamil Nadu. The trunk of the god in Odishan images, however, appears to be short. The sculptures from other regions like Haryana, Kashmir, Rajasthan, show the trunk of the god in conformity with the North Indian tradition. The appearance of the heavy trunk belonging to mediaeval sculpture may be traced back to the Gupta period. In the Indonesian sculptures, the Central Javanese examples, all images of the god turn their trunk to the left side touching the bowl held by the left hand. Taking the disposition of the trunk, we tend to compare the Indonesian *Ganesha* with *Ganesha* from Tamil Nadu. However, in view of the appearance of the trunk, the *Ganesha* images of Indonesia generally look like those from North India, i.e., the god has a heavy trunk. But in a few examples, the god also has a slim trunk like the god from Tamil Nadu.



Figure 1: The North Indian *Ganesha* images show that the bone of the nose is projecting in some cases.



Figure 2: Triangular projection of the nose bone.

2. Tusks

The god has either right or left tusk broken. Sometimes, however, he is shown without a tusk or having two tusks. The shape of the tusk is generally stumpy, sometime long and slim. This variation occurs everywhere. Hence, it is very difficult to distinguish *Ganesha* geographically, an exception of the god coming from Tamil Nadu, who has the tusk resembling a newly sprung up one, or just peeping out from his face. In the Indonesian sculptures, however, the tusks of the god are shown clinging to the trunk and in most of the images, the tusks are disposed parallel to the trunk hanging down vertically.

3. Eyes

The eyes of the god belonging to Indian and Indonesian sculptures are generally positioned slantingly on the sloping surface of his face resembling those of an elephant (Fig. 3). There is, however, no stereotype mode of carving the eyes. Hence it is difficult to distinguish the images of one region from another and of a certain

period from another on the basis of the depiction of the eyes. The eyes of the god are generally shown as small realistic elephant eyes, sometimes bulging, sometimes with raised eyebrows. The bulging eyes with raised eyebrows are found in sculptures from Kashmir, Madhya Pradesh, Uttar Pradesh and Bihar of the 10th century onwards. These shapes of the eyes may also be seen in South Indian *Ganesha* images from Mysore and Madras belonging to 12th century AD. Another feature which can be noted in some examples is that the small eyes are linked by an arch shaped projecting bone of the forehead. In limited number of sculptures *Ganesha* is depicted with human eyes carved horizontally on the frontal surface of the face (Fig. 4). The eyes of Central Javanese *Ganesha* also resemble those of the elephant. When compared with those of Indian *Ganesha*, the former are disposed less slantingly. Some specimens show even horizontal eyes. Taking the dispositions and shapes of the eyes, we are unable to say that the sculptures of one country have influenced the other.

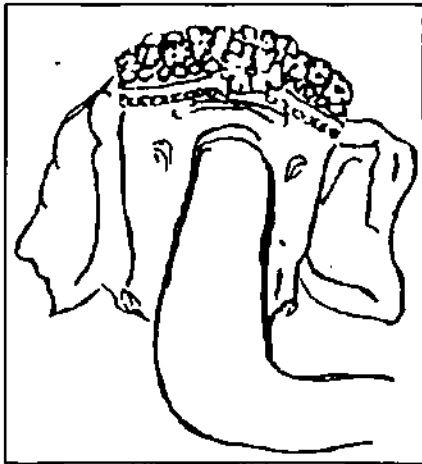


Figure 3: The eyes positioned slantingly on the face.

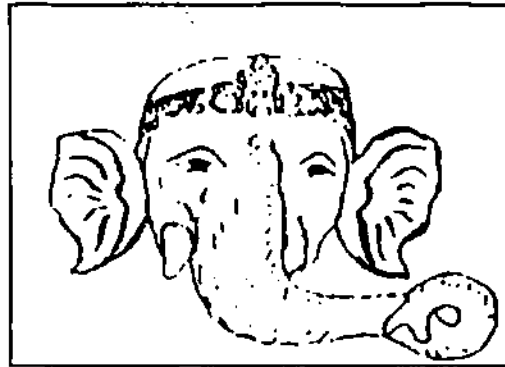


Figure 4: Sculpture depicted with human eye on the face.

4. Ears

Ganesha appears to have different shapes of ears. The commonest type shows the ears depicted realistically as belonging to an elephant. These usually look as thick and curved in the upper part and gradually thin and soft towards the lobes. This type occurs throughout the period in the different regions. Moreover, in the mediaeval sculptures, besides the above mentioned shape, also occurs another one in northern sculptures having elongated ears embellished with horizontal parallel lines. In eastern sculpture, the god shares a common feature of shape of the ears mentioned above but is characterized with pointed lobes, or sometimes with thick

ends both on the upper and lower parts. In southern sculptures, especially in Tamil Nadu, the ears of the god are wide and pointed at the lower portion and concave at the middle. The 12th century sculpture from Mysore shows the god as having less elephantine ears, i.e., elongated, embellished with multiple lines and sometimes very small. In the Indonesian sculpture, almost all of the images of the god have elephantine ears, depicted either strained or less strained. Based on this feature, Indonesian sculptors tried to follow the Gupta norms in depicting the ears of the god as natural, even though the impact of the individual expression of the artists on their work is also evident.

B. Poses

1. Seated Images

The commonest sitting pose of the god is *ardhaparyanka*, i.e., seated with left leg bent horizontally and the right vertically on the seat (Fig. 5). Very few examples show the god sitting in the reverse manner, i.e., left leg vertically bent and the right horizontally (Fig. 6). This sitting pose, especially the former, occurs everywhere in the Indian sculptures but geographically it is characterized with its regional traits. As such, in the images from East India, the left leg of the god bent horizontally is flatly disposed on the seat, with no flexion at the foot. While in the sculpture from North India, the foot is naturally bent with the toes pointed frontally or touching the seat. In the sculpture from South India, the sitting posture of the god is characterized by his pot belly touching the seat. Getty termed this sitting pose as Dravidian type. The other sitting pose shown by the god is so-called *sukhasana*. In this pose, his right leg is usually dangling down before the pedestal while the left is horizontally bent. He usually sits in this pose when he is along with his *Sakti* who is seated on his left thigh. In some other cases, the god is also seated with both legs bent slantingly. This is commonly shown by Chalukyan mediaeval sculptures.

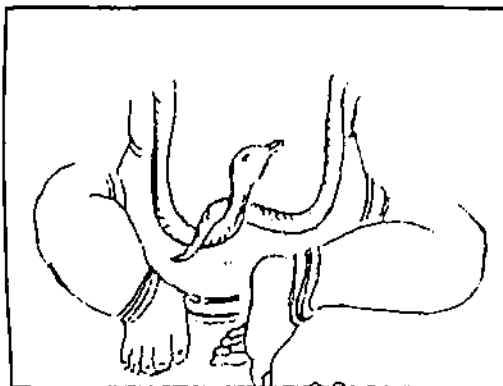


Figure 5: The commonest sitting pose –
ardhaparyanka

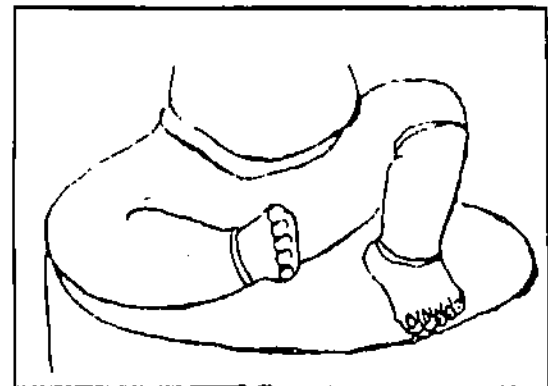


Figure 6: The god sitting in the reverse
manner.

The sitting pose of Indonesian *Ganesha* is incomparable with that of Indian *Ganesha*, for he is typically seated with both the legs horizontally bent before him and the soles of the feet touching each other (Fig. 7). This feature is shown by almost all examples of seated *Ganesha* from Indonesia. In India, however, no example shows this feature, except two images, one of which is found in the early Pallava panel from Andhra Pradesh, while the other, which is of terracotta, is found from Varanasi. It is datable to the 6th century AD.



Figure 7: The sitting pose of Indonesian *Ganesha*.

2. Standing images

In the Indian sculpture, the standing *Ganesha* occurs throughout the period and in different regions. This is not the case in the Indonesian sculpture. In Central Java, there is only one standing *Ganesha* discovered so far. The god peculiarly stands on the left leg while the right is bent and placed behind the other as if performing penance. This image is now preserved in the National Museum, Jakarta. In the East Javanese and Balinese sculptures belonging to *circa* 13th-15th centuries AD standing *Ganesha* is rather common. Indian sculptures, in northern part of India, it is a common feature that while standing the god rests one of his hands, normal right to left, on the long handled axe placed vertically on the ground. In the South Indian sculpture, however, the god has no axe to rest his hand on. It should be mentioned that an axe is unusual attribute of the god from South India, especially Tamil Nadu. In the sculpture from Odisha, the god is represented standing like that of northern sculpture, i.e., he rests his hand on the upstanding axe, but his back hands are typically disposed as lower than the normal ones. This feature occurs once in Kumbhakonam also.

3. Dancing Images

In the Gupta period, dancing *Ganesha* is very rare. In the mediaeval period, however, there are numerous images of dancing *Ganesha*. The god has been depicted in various dancing poses distinguishing him geographically from the sculptures of one region from the others. In northern parts of India like Madhya Pradesh and Uttar Pradesh, the god usually figures as showing the so-called *chatura* and *lalita* poses of dance. The dancing pose of *chatura* is disposed like this: the torso leans towards left, the left leg slightly raised stretches towards left, while the right leg supporting the weight of the body stretches forward. The *lalita* pose of dance is the opposite of the *chatura*. The poses of hands, especially the normal ones, whether the god is in *chatura* or *lalita*, invariably display any two of the dispositions mentioned below.

- a. The arms, usually the normal right one, may bend horizontally to the level of the upper torso with the elbow sometime slightly raised up (Fig.

- 8) and the hands are held in *hamsasya*, *kapittha* or *abhaya* pose (Fig. 9).
- b. The arms may be in *lolahasta* while holding *uttariya* or nothing (Fig. 10).
 - c. The normal right arm stretches forward in *abhaya* pose (Fig. 11).
 - d. The normal left arm is *katyavalambita* (Fig. 12).
 - e. Either right or left arm is something like *gajahasta* poses (Fig. 13).

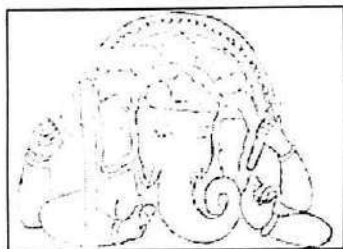


Figure 8: Dancing pose of the god.

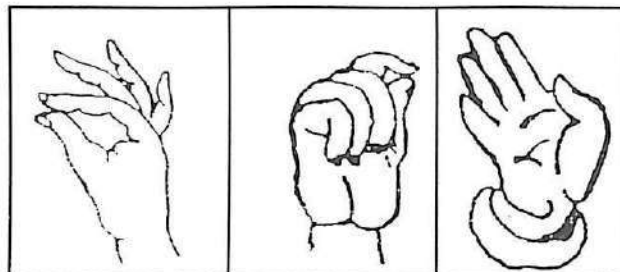


Figure 9: Hands held in *hamsasya*, *kapittha* or *abhaya* pose.



Figure 10: *Lolahasta*.



Figure 11: *Abhaya*.

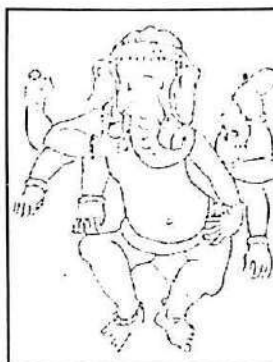


Figure 12: *Katyavalambita*

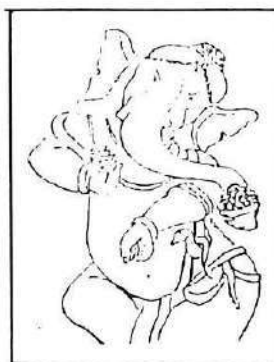


Figure 13: *Gajahasta*

The *chatura* and *lalita* poses of dance also occur in the eastern sculpture, such as Bihar, Bengal, Odisha and Bangladesh. Especially in the images from Bihar, Bengal and Bangladesh, however, the dancing pose of the god is characterized by his normal left hand stretching diagonally upwards (Fig. 14). This hand pose may also be seen in one image from Thanjavur, Madras, but the right leg of the god is disposed with its sole bent at the toe and visible frontally. In the Chalukyan sculpture, the god dances in *ardha-sama* with the raised left leg typically bent almost touching the other one. This pose of dance continues in the subsequent period. It should be mentioned that in the sculptures from East India, the god commonly

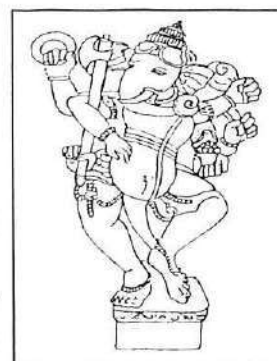


Figure 14: Left hand diagonally upwards.

dances on his vehicle mouse, as it is attested by one image from Dinajpur now preserved in Asutosh Museum of Indian Art, University of Calcutta and some others from Odisha. This feature also occurs in the sculpture from Hallebid, Mysore, though Shivaramamurti has observed that the tradition of *Ganesha* dancing on his vehicle, the mouse, like his father on the bull, is a special characteristic in the realm of the Palas.

In the sculptures from Indonesia, it is intriguing that the dancing *Ganesha* does not occur. This is probably due to the tradition that his master *Shiva* has never been dancing throughout the period of Indonesian sculptures. It is, however, remarkable to note that no deity is represented as dancing in the sculptures of Indonesia. In some reliefs of Borobudur and *Prambanan Shiva* temple, Central Java, one may notice some dancing figures but they are representing the common beings or the subsidiary heavenly beings.

Some Features of Indonesian *Ganesha* Images

1. *Ganesha* from Central Java, East Java and Bali shares the common features of sitting posture, the attributes and the mode of holding the attributes. In some cases, they also bear common dress and ornaments. This feature reveals that the Central Javanese tradition is still retained in the sculpture of East Java and Bali.
2. *Ganesha* having bulging eyes giving a furious look is the Eastern Javanese creation followed by Balinese. In Central Javanese period, this feature is not yet found.
3. The god which figures as having skull ornament and is invariably crowned with *ratnamukuta* and *kiritamukuta* is the Eastern Javanese sculpture. In the Balinese sculpture, however, the god is typically crowned with lotus petal like headdress. In the Central Javanese sculpture, these ornaments are absent but *jatamukuta* is there.
4. The so-called "*Majapahit-aureole*", a *prabhavali* surrounding the god, is also a creation of Eastern Java.
5. The god holding two bowls in his normal hands is found only in the sculptures from East Java.
6. *Parashu* in the form of tulip is seen only in the Eastern Javanese sculptures.
7. The paired attributes of *aksamala* and *parashu* by extra left and right hands respectively are common in the Eastern Javanese sculpture, while in the Central Java, they are constantly held in the extra right and left hands respectively. In this case, Balinese sculpture tends to follow Central Javanese tradition.
8. The god wearing earrings and earpendents are found in the Eastern Javanese sculpture. In the Balinese sculpture, too, the god wears earrings. In the Central

Javanese sculpture the use of these ornaments is not traditional.

9. Standing *Ganesha* is common in the sculptures from East Java and Bali. In the central Javanese sculpture, there is only one example showing the god standing peculiarly as if practicing penance. *Ganesha* of Eastern Javanese and Balinese sculpture is standing in *samabhanga* but differs in the way of wearing the scarf. In the sculpture from East Java, it is flaringly suspended on either side of the hip of the god while in Balinese sculpture it is treated as crossing on the respective thighs of the god resembling *urudama*, visible frontally.

Conclusion

In Indonesia, *Ganesha* made his first appearance during the 7th-8th century AD. Though trade and cultural relations between India and Indonesia had started around 2nd century AD and the cultural impact of India became quite dominant during the Gupta period, the tradition of *Ganesha* worship could not become a part of the cultural and religious impact because *Ganesha* himself was in a state of emergency as a popular deity in those centuries in India. The period of 7th-8th century AD marked proliferation of his images in his native country and it does not seem to have taken him long to travel across the seas. To sum up, besides carrying on Central Javanese tradition and creating the new one, Eastern Javanese sculpture is seen to have taken the Indian features directly from that country. The Balinese sculpture followed the Eastern Javanese tradition besides having its own distinctions and innovations. This shows the continuity of direct relations between India and Indonesia, Java in particular, in different periods.

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Attempt to Establish a Heritage Museum at Chandraketugarh

BASUDEB MALIK

Abstract

For several years Chandraketugarh has been frequented by archaeologists, historians and interested people. Many seminars have been organized, several articles have been published. Adequate coverage in print and electronic media is being made on it. It was realised by eminent personalities that such an important archaeological site of Bengal should have a proper museum to showcase its rich historicity and heritage. After so many years, the West Bengal Heritage Commission gave a serious thought to establish a museum. Once exposition through a museum of international standard is made at Chandraketugarh, viewers from near and far places would be benefitted from a deeper understanding of the rich urban civilisation of Bengal

It is a well-known fact that the earth of Chandraketugarh contains a rich treasure of artefacts which dates back to more than a couple of thousand years. It is situated (Lat. 22°42' Long. 80°41') about 50 kms from Kolkata in the north eastern direction in North 24 Parganas district. A H Longhurst first explored the site. Subsequently it was done by Rakhal Das Banerjee and finally by Kalidas Datta, P C Dasgupta and D P Ghosh. The site was excavated by Kunja Govinda Goswami of Asutosh Museum of the University of Calcutta from 1956 and continued up to 1965-66. For over sixty years the site has been frequented by archaeologists, historians and interested people. Many seminars have been organized on Chandraketugarh. Several articles have been written and coverage in print and electronic media has been made on it. It was realised by many that such an important archaeological site of Bengal should have a proper museum to showcase its rich historicity and heritage. But so far a museum under the central government or state government control did not come up at Chandraketugarh. The Archaeological Survey of India, which protects the monument at Chandraketugarh, could not establish a museum, may be, due to several reasons. After so many years, the West Bengal Heritage Commission gave a serious thought and set the ball rolling to establish a museum. It was true that archaeologists and historians were earnest about establishment of a museum here, but how would it be possible? The area, once a remote village, has become a

thickly populated place. The surroundings of the archaeological site are cultivable land which is a strong possession of the villagers. There are also different sections of people who have their own opinions about creation of the museum. In spite of these reasons, it appears that there was a lack of concerted effort for establishment of a government museum. The Heritage Commission and the Archaeology Department of the Government of West Bengal visited the site in January 2012. The idea of setting up a museum had become stronger due to the rich repository of art in the form of terracotta figurines, unearthed at different times through excavation and chance finds from the site. The Commission could easily assess the aesthetic value of numerous beautiful terracotta figurines of the Sunga-Kushana period. The height of this advanced urban civilization was understandable from the excellent art pieces produced by local artists. The feature of the figures of art was found to be flattish rather than in full round. The artists produced these art forms both by hands and using moulds, sometimes both the techniques were applied together for making a figure. This technique was common in the Kushana and Satavahana periods in the west

It was realized by the Commission that such a prolific civilization can never be understood by the common people unless the innumerable number of terracotta figurines, potteries and other artefacts are showcased through a museum of international standard at Chandraketugarh. Also it was kept in mind that such a museum cannot be set up in Kolkata or in anywhere else; it has to be at Chandraketugarh, the epicenter of the ancient civilization of Bengal. So after visiting the site the Commission approached the State Government Public Works Department (PWD) to arrange a piece of land for the museum. So long, it was really tough for other agencies to find out a land for this. Soon a piece of land could be identified with the help of the district land record department. Plot no. 1408 was earmarked which is the stack-yard of the PWD located on the Barasat-Basirhat highway and a portion of the stack yard measuring about 38.30 *kottahs* was relinquished for setting up the museum. Subsequently, a detailed project report, amounting to rupees two crores for the museum, was prepared submitted to the Archaeological Department of the Government of West Bengal. An amount of 35 lacs of rupees was kept in the budget proposal of the government initially for this purpose. So far, from the progress of the file in the government, it can be assumed that very soon the foundation stone for Chandraketugarh museum may be laid.

It must be mentioned that the excavation conducted by the Asutosh Museum under the leadership of Kunja Gobinda Goswami revealed a large number of artefacts now kept in different places like the Asutosh Museum, Indian Museum, State Archaeological Museum, Bangiya Sahitya Parishad Museum, etc. A few private museums located nearby the site also have impressive collections of artefacts. Efforts must be taken to acquire artefacts from these museums to establish the

new one. So far the private owners of the locality have assured to donate artefacts in this cause. It is believed that if a museum is established here with the government initiative, these private collectors would be the major contributors to create its collection.

In regard to the display of the museum it may be kept in mind that there should be a section of thematic presentation through dioramas, models, posters, etc., to depict the civilization of Chandraketugarh as an important port town of trade on the river bank of Vidyadhari since the pre Christian era. Models of Khanamihirer Dhibi and the Fortified Rampart Wall should also be kept on display. However, the most important and attractive display should be the excellent terracotta art of Sunga-Kushana and Gupta periods since there is no dearth of terracotta figurines and potteries from the site. There is also a point to ponder that at least in the 3rd century BC Chandraketugarh was the centre of a well developed urban civilization whereas, today's Kolkata was covered with jungle during that period without any trace of human civilization. Therefore, it is believed that through a proper exposition of the artifacts of Chandraketugarh through museum, such an important civilization of Bengal can be truly projected to the whole world and compared with other ancient towns of North India from a historical perspective.

Also, it should be considered while setting up the museum, qualified staff members with museology back ground should be engaged. Only then it can perform its activities in a befitting manner to match international standards and become useful for the society as a whole. The visitors should see the following at Chandraketugarh:

1. The brick built structural remains known as Khana Mihirer Dhibi (many scholars believe it as the remains of a Gupta temple).
2. The earthen rampart popularly called as *Singher Anti* that fortifies the town.
3. The heritage museums and private collections located here.
4. The *Lal Masjid* site at Haroa which was probably a Buddhist monument originally.

History

The place name Chandraketugarh is derived from the legend which resolves around a local Hindu King who might have flourished during the medieval period. A tract south of Berachampa, nearly seven miles long and one mile wide may be considered the immediate environs of Chandraketugarh. K G Goswami's excavation for about a decade brought light to seven successive occupational levels starting from the pre-Mauryan to Pala-Sena Period. The dating of the site has been made in the following sequence:

Period I	: Pre Maurya. C 600 – 300 BC
Period II	: Maurya. C 300 – 200 BC
Period III	: Shunga. C 200 BC – 50 AD
Period IV	: Kushan. C 50 – 300 AD
Period V	: Gupta. C 300 AD – 500 AD
Period VI	: Post Gupta. C 500 – 750 AD
Period VII	: Pala, Chandra, Sena. 750 – 1250 AD

Ancient Association of Chandraketugarh

Tamralipta and Gange were two port cities of ancient Bengal as identified by Professor Nihar Ranjan Roy. In his writing, Professor Roy identified the port city "Gange" with the site Chandraketugarh. According to him,

... there was another port city in ancient Bengal, namely Gange apart from Tamralipta. It was known to the anonymous author of the Periplus of the Erythraean Sea (Circa 3rd quarter of the 1st century AD) as well as Ptolemy (Circa middle of the 2nd Century AD) It appears that Gange does not seem to have left any mark on the memory of the people nor any trace in our tradition, literary or historical. Contemporary archaeologists and historians have already identified Gange with the remains of the port city at Chandraketugarh." (1977: 207).

In this connection, the records left by Greek and Latin authors may be considered as important and valuable evidence in respect of the existence of the two cities in the lower gangetic valley. Diodorus Siculus (49 BC – 14 AD), Quintus Curtius Rufus (1st cent. AD), Pluturch (1st cent AD), Strabo (1st cent BC to 1st cent AD), Pliny the elder (23 AD – 79 AD) named two kingdoms as PRASII and Gangaridai. The former may be identified with Magadh while the latter with lower Bèngal. The final part of the course of Ganges flows through the Kingdom of Gangaridai (Haque: 2001: 55).

Another port city of ancient Bengal was Tamralipta, known as Tamluk today, of East Medinipur, which yielded similar type of antiquities in comparison with Chandraketugarh. Professor Goswami was of the opinion that Chandraketugarh represented the market town of Gange of Periplus and Gangaridai of Ptolemy. Professor Roy and Professor Mukharjee also had similar views.

The excavations revealed the fact that Chandraketugarh, during its flourishing period was a well developed urban center comparable to many contemporary North Indian sites like Ahichchitra, Mathura, Kausambi, and such other places. The excavations yielded rich treasures of antiquities consisting of structural remains, potteries, terracotta figurines, ivory, wood and bronze sculptures, seals and sealing, coins, etc.

Structural remains

Apart from the stupendous religious structure built during the Gupta period at Khana Mihirer Dhipi, we are yet to come across any structure related to administrative authority. But the evidence of a rampart wall suggests the existence of a fortified city as an abode of the ruling authority. It was built of heaped earth having two structural phases. The earlier was constructed in circa 1st cent. BC while the latter was built in 1st cent. AD.

From Gupta period onwards, in addition to *kachchah* houses, burnt brick structures in regular alignment, possibly belonging to the wealthy section of the society were found in Itakhola, an archaeologically potential site situated nearby. A small square wooden enclosure, made of tightly joined horizontal plans reinforced by beams at the bottom and supported by wooden logs for storage of paddy have been noticed at Khana Mihirer Dhibi in the level of the early Christian era.

Ceramics

Chandraketugarh has yielded a wide range of ceramics lasting for more than a 1000 years. The earliest among them are a few pieces of painted grey-ware of coarse variety, supposed to be associated with post Harappan culture during 6th - 7th century BC. The pre-Mauryan period was also characterized by occurrence of Northern Black polished ware which was continued during Maurya-Shunga period. The Kushana levels were mostly characterized by Rouletted ware, spouted cups, grey bowls and dishes, both of plain and stamped variety, red slipped stamped vases, and grey narrow necked cylindrical vases were found too. In the Gupta level, grey and black pottery, sometimes with stamped designs, were found. The mineralogical study of clay of Rouletted ware suggests its origin at Chandraketugarh – which provoked the scholar to assume that pottery as commodity or containers were regularly exported to Arrikamedu from Chandraketugarh.

Coins

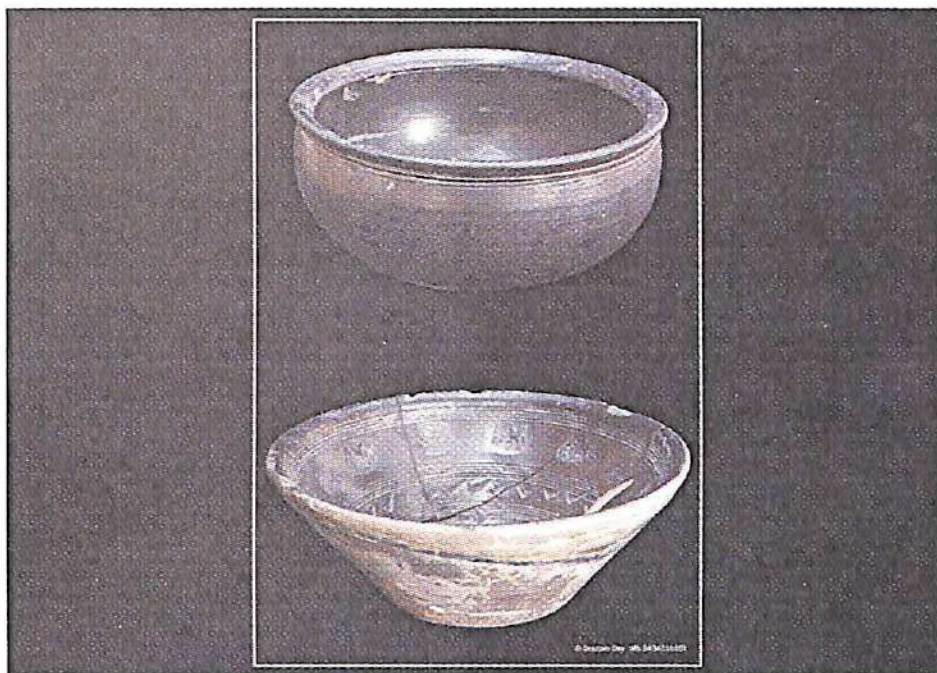
Punch marked silver and copper coins are recovered from early occupation levels, mostly from the Maurya period and often in association with NBP ware. The silver coins are few in number. Most of the punch marked coins are known to have ship motif. A few copper punch marked coins bear the symbol of an elephant, fish in pond, sun and wheel, while in other instances, group of human on the obverse and a peacock on a hill on the reverse.



Khana Mihirer Dhibi, structural remains, probably of a temple of the Gupta period



• Beaded ornament with semi precious stones



Pottery from Chandraketugarh



Pottery from Chandraketugarh



Terracotta plaque



Terracotta plaque

Notes on a publication about the Ecomuseum Le Creusot-Montceau

HUGUES DE VARINE

At the end of 2014, I published on my personal website www.hugues-devarine.eu an e-book titled "*Mes aventures à l'écomusée de la communauté urbaine Le Creusot-Montceau, 1971-2014*" (in French only), where I recounted over 40 years of that unforgettable experience. While I was still Director of the International Council of Museums, I had been involved in what I called the "invention" of a completely new form of museum, following a proposal from the mayor of Le Creusot, who said he wanted a museum for his town, but was not able to define its aims or its programme. Le Creusot was then an industrial city of 30.000, one of the oldest and most famous sites of the French Industrial revolution, founded at the end of the 18th century. It had been subjected to a very strict and systematic paternalistic rule by a family, the Schneiders, competitors of the German Krupps. They made cannons, ship engines, locomotives and, more recently, nuclear equipment. Around 1970, the Schneider family tree was extinct and the company became an anonymous multinational firm, Creusot-Loire, which abandoned all its non-productive properties and activities. The château of the Schneiders and most public services and equipment were transferred to the municipality and part of the château was reserved for the future museum.

A team of four volunteers, Marcel Evrard, who became the first director, Dr Lyonnet, a radiologist from the local hospital and cultural activist, Dr Combier, another MD, member of the municipal council, and me, decided to accept the challenge and to begin the preliminary approach towards a museum. But which museum? There was (fortunately) no existing collection; we were neither museologists nor museographers. First we studied the context and met a sampling of local leaders, and we discovered that the working class majority was not interested in museums: they gave priority to labour conflicts and social progress. After a few days of consultations and debates, we found that there were two essential topics which should be tackled by a museum: (1) free the population from 130 years of paternalism and liberate their self-esteem and the pride of their role in the glorious history of the local industry; (2) help give a cultural, social and economic identity to the recently established "urban community", an administrative territory made of 16 municipalities, including Le Creusot, but also Montceau-les-Mines, a coal-mining community with a similar history, 35 km to the south. And of course we decided to do it by mobilizing the total heritage, cultural as well as natural, material as well as immaterial, and

giving it its historical, technical, cultural value. We decided also to avoid acquiring a substantial collection. Heritage elements should be, as much as possible, left *in situ*, under the responsibility of the communities, their members and local interest groups.

For the new museum, the 70s were the most active and innovative: since there were no models or references, we had to invent our principles, our methods, our relations to heritage and to people. We recruited local people, with various qualifications but without museum experience. We worked mostly at three levels: (1) heritage inventories, in each town or village of the community's territory, through collective research by the people themselves, with restitution of the findings in makeshift exhibitions addressed to local visitors; (2) theme exhibitions at headquarters (the former château of the Schneider's family), which began to tell the story of the various activities, past and present in Le Creusot and the rest of the territory, including mining, agriculture, ceramics, the industrial canal, social struggles, etc.; (3) creation of a comprehensive documentation centre covering all aspects of territory, all scientific disciplines and a large photographic collection.

Until 1984, the museum (which was called officially ecomuseum in 1974 and organised as a non-profit association) made progress in all directions. Several local units, created by local groups with technical help from the ecomuseum, presented their sites and heritage traditions as "antennae" on specific locations throughout the territory: a canal museum, a mining museum, a school museum, each one being managed by a local NGO. Social housing and typical industrial buildings were protected, observation trails were created, negotiations were held with enterprises for safeguarding the landscape, the old Schneider Archives were saved and put under the care of the National Archives. Scientific research opportunities were offered to up to 10 university field teams, on various subjects, with the help of the ecomuseum and interested local people or groups. A National Institute on the Industrial Civilisation was established with the help of leading historians. During all that period, the museum was frequently visited by museum people from all over the world and, in many instances, ecomuseums were established in these countries on patterns inspired by "Le Creusot", as visitors said to simplify the rather complicated name of the museum. Sweden, Norway, Mexico, Brazil, Japan, Spain, were influenced by visits to Le Creusot.

In 1984-1985, a double crisis occurred: the Creusot-Loire company defaulted, leaving thousands unemployed and opening a ten year reconstruction period, while the ecomuseum knew an internal turmoil: the founder and director, Marcel Evrard, was obliged to resign and was replaced by directors appointed by the government from Paris. Many members of the team left and there were huge financial difficulties, until 1989. Then one of the earlier technicians came back and accepted the post of director. Patrice Notteghem restored the ecomuseum within its fundamental

principles and developed a new policy, still very much community-based, but accepting the existence of a collection which had been growing up in previous years, through gifts, occasional acquisitions, remnants of temporary exhibitions. From that time, the collection became a real burden for the ecomuseum: storage of heavy pieces of foundry, conservation, labelling, new acquisitions for two specialized collections (cut-glass pieces from the 18th century Queen Glass factory and industrial security posters), compulsory standards imposed by the central museum administration in Paris, and so on.

But activities were resumed: several great exhibitions were made, the dynamism and creativity of the NGOs responsible for the local antennae were encouraged and rewarded by a larger autonomy, a new community-based heritage inventory was launched with the participation of school and high school children, a new antenna was created in a dilapidated ceramic factory restored by apprentices recruited from unemployed inhabitants, an active role was played in the creation of a National Federation of Ecomuseums.

During the years 2000, the growing financial difficulties due to decreasing support from local governments and the traditional hostility of the National Museum Administration, led to the necessary transformation of the ecomuseum from an independent non-profit association to a new *ad-hoc* department of the public administration of the Urban Community Le Creusot-Montceau. The collections became public property and are now managed by a professional curator who has no roots in the territory and concentrates mostly on revising and professionalizing the inventory of the collections.

In the last two years, members of the old ecomuseum association were trying to organize a new community-based programme, in order not to duplicate the ecomuseum which will remain sole responsible for its collections, but to serve the heritage remaining *in situ*, with the help of the inhabitants themselves.

My book tells the story of my relationship to the ecomuseum, its territory, its population, its directors and the members of the scientific and technical staff. I have been one of its founders, then I was part of the staff in 1973-1974, then only a friend and occasional voluntary participant from 1975 onwards. I became chairman of the board of the ecomuseum in 1993 until 1995, and remained on the advisory scientific committee until now. This book is a subjective account of the evolution of the project, organised in chronological order. Twice I draw personal conclusions and lessons of this history, first after the end of the "heroic" period (1984) and second after the municipalisation of the museums, which is really the end of the "ecomuseum period".

I very much regret that there is practically no literature on this ecomuseum in English. Only Peter Davis, in his book "*Ecomuseum, a sense of place*" and Kenneth Hudson in various articles have written an exterior point of view about it. Today,

after all the changes which happened in the ecomuseum and in the territory (landscape, urban planning, housing, industrial activities, the end of the mining exploitation in 1992), it is difficult to understand the reality of these 40 years of invention, crisis, adaptation, succession of directors and administrators. I tried to leave my own testimony, like an archive, hoping that other former staff members and volunteers will follow my example. Maybe someday a researcher will collect all data and memories and write a scientific and objective report on this ecomuseum. Let's hope.

To the English speaking friends and colleagues, I can only offer to accompany their visits to the territory, whenever they pass through Burgundy, and to show them the various sites which help reconstitute and explain this fascinating story. You are welcome to visit le Creusot and its region, but please send me an email in advance.

Instructions for the Contributors of Papers

1. Journal of the Department of Museology, published by the University of Calcutta, is a refereed journal having ISSN for the Museologists and museum professionals, including students and research scholars.
2. Museology being multi-disciplinary in nature, contributions of papers from the related disciplines of natural & social sciences, and art & humanities are also welcome.
3. The papers must be original with supporting references not published before or not under consideration for publication elsewhere.
4. The papers should be written in MS-Word (1997-2003) Document format, in A-4 size pages with 'Normal' margin.
5. Language, grammar, spelling and expressions must conform to the UK English only.
6. The papers are to be written in 'Arial' Font, 1.5 line spacing must be maintained throughout the document; paragraphs are not to be indented, separated by double spaces.
7. Except the heading and contributor/s' name/s, texts must be aligned 'Justified'.
8. Heading/ Title of the paper must be aligned 'Centre', in 16 point 'Bold', first letter of each word in capital. Name/s of the contributor/s is/are to be inserted below the Title, in 14 point 'Bold, Italics' and aligned 'Centre'. Position/ designation of the contributor/s should be given as footnote on the first page itself.
9. Sub-headings are to be in 14 point 'Bold', aligned 'Left'.
10. Rest of the texts are to be in 12 point 'Regular'.
11. Direct quotes of less than 40 words should be in double-quotation marks in 'Regular' Fonts. Quotations more than 40 words should be in separate paragraphs, indented from both sides, without any quotation mark, in 'Regular' Fonts.
12. Proper and complete references must be given for all the quotations and citations, printed or online.
13. All references must be in 'Author-Year' style following the American Psychological Association (APA) Referencing Guidelines (6th edition or later).

14. End Notes (**not Footnotes**) may be used, if essential, in the texts following compatible guideline.
15. The papers should be limited to maximum 5000 words.
16. An abstract of not more than 100 words and with maximum 5 key-words is needed to be incorporated at the beginning of the paper.
17. Photographs/ sketches (600 dpi), charts, graphs, tables, etc., are to be sent separately with proper labelling.
18. Acceptance or rejection of papers and required modifications in the title/ text are sole discretion of the referees and shall be binding upon the contributors.
19. Major modification/s may be communicated to the contributors if time permits. Final acceptance of a paper shall be decided by the Editorial Board.
20. Interested persons in contributing papers to the forthcoming issue of the Journal (Volume 13) are requested to submit their papers through e-mail to supreochanda@gmail.com positively by **31st October 2016**.

