

# Conserving the Cultural Heritage of Banaras: Application of Information and Communication Technology

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## *Abstract*

*The universe is an artifact, the work of the cosmic architect. Culture is also an artifact, the product of human nature and thought. Items of cultural heritage include the ecosystem, the conditioned natural resources, its inhabitants, their creations like text, image, sound, performing arts, sculptures and buildings, built in spaces like mohallas, ornaments, utensils and the like as well as the knowledge related to them. Banaras embeds the sacred geography of India into a microcosm, superimposing the features on physical spaces. This is built up or created from the sweat and blood of the common people. But a minority who draw benefits in the name of industrialization, tourism and development are destroying the heritage. The paper argues that heritage conservation is common man's requirement. Banaras is the most important heritage city of the world that needs immediate attention for conservation. The paper views that principles and techniques from library science and ICT can support conservation activities at Banaras especially to document, watch and manage, create awareness on the city and its natural resources, knowledge, text, images and a wide variety of artifacts of great value, as well as the built-in spaces that could sustain quality life in the city.*

**Keywords :** *Conserving the Cultural Heritage of Banaras: Application of Information and Communication Technology*

## INTRODUCTION

Banaras is the name used in common parlance for the city, which is also known as Kashi and Varanasi that is located along the north bank of the

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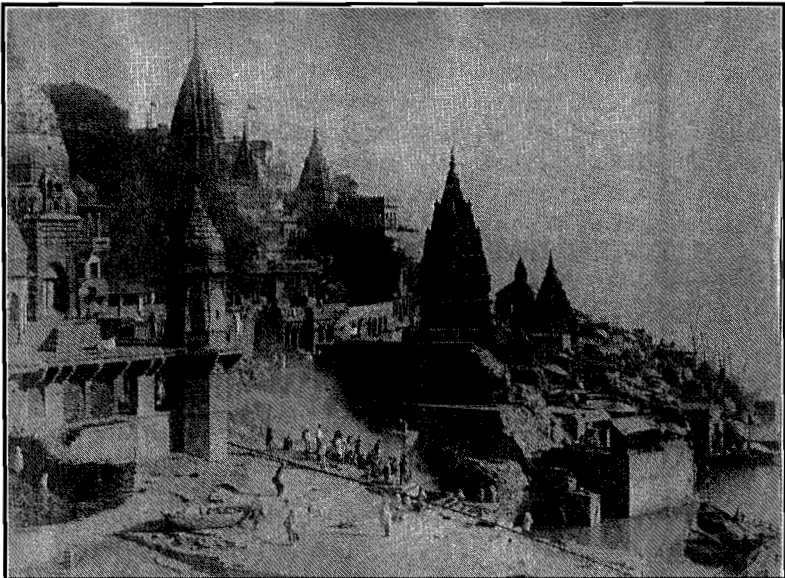
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Ganges River. The city is called Kashi in almost all Hindu scriptural references. In mythological terms, Kashi is associated with the deity Shiva, and within the Hindu religious tradition, it is the place where people come to die, since dying at this site ensures spiritual salvation.

The city of Banaras has grown along the arc of the Ganges, with the river as a focal point in one direction and growth of the city taking place in a semi-circular direction. The city has a radial development pattern with areas like Banaras Hindu University, Manduadih, Sheopur and Sarnath emerging as new growth centres.

Architecture in the old city area dates back to Afghan invasion, while in the central and new city it is less than 150 years old. In the 2nd century, for the first time we find a description of Dashashvamedh Ghat with reference to the great horse sacrifice ritual performed by the kings of the Naga dynasty. During the Gupta period (3rd to 6th century), the ghats became the centre of economic and cultural activities. By the 17th century the ghats became prominent in the overall arena of Banaras. The palatial buildings along the ghats were built under the patronage of the Marathas during the 18th-19th centuries. Even in 19<sup>th</sup> and 20<sup>th</sup> centuries, many ghats were reconstructed, renamed and reshaped.

During the period between the late 18th and 20th centuries, along the riverfront many ashrams, Sanskrit schools, temples, and pilgrim rest houses were built by principalities of different parts of India, such as the Peshvas of Pune, Holkar of Indore, and Scindias of Gwalior, the Bhonshalas of Nagpur (Maharashtra), the Sursand, Bhabhua and Darbhanga estates of Bihar, the Rani Bhavani of Bengal, and the kings of Nepal.



The old city of Banaras extends about two kilometers back from the river and is a maze of alleyways and streets. The area contains Muslim quarter, most of the temples, mosques, ashrams, the vegetable shops and tourist accommodation. The central and new area houses banks, cinemas, administration, railway station and the world famous Banaras Hindu University (BHU). It attracted a major migrating population and the city started to grow in all directions. The British stayed in an area, which is now called the Cantonment.

The ghats of Banaras are central to its religious life. These are defined segments of river frontage between thirty and two hundred yards in length. Most have been constructed as a series of stone terraces and stairs running down into the Ganges, and several are important places of pilgrimage.

### **An antique Picture of Manikarnika Ghat (1880)**

In the city's creation myth, Shiva, the material form of an immaterial Brahma, together with his female consort Parvati, created the sacred area of Banaras. Shiva then created Vishnu, and the austerities that Vishnu performed by the side of the Manikarnika Ghat was instrumental in creating the universe. It is one of two pre-eminent cremation grounds in the city, as well as the mythical centre of its creation. The city has an intimate relationship with the river, and many volumes have been published detailing the place of the city and the river in Hindu myth and religion. The claims for the antiquity of the city draw great veracity from the presence of the river. Most visual representations of the city are also given from the river, allowing the river and the city to be further entwined in the symbolic imagination.

Mark Twain, the English author and litterateur, who was enthralled by the legend and sanctity of Banaras, once wrote "Banaras is older than history, older than tradition, older even than legend and looks twice as old as all of them put together"

Banaras is the microcosm of Hinduism, a city of traditional classical culture, glorified by myth and legend and sanctified by religion. It has always attracted a large number of pilgrims and worshippers from time immemorial. To be in Banaras is an experience in itself, an experience in self-discovery, an eternal oneness of the body and soul. To every visitor; Banaras offers a breathtaking experience - the rays of the dawn shimmering across the Ganges, the high-banks, the temples and shrines along the banks bathed in a golden hue, soul stirring hymns and mantras along with the fragrance of incense filling the air and the refreshing dip in the holy waters gently splashing at the Ghats. Banaras is a place where experience and discovery reach the ultimate bliss. Banaras is also renowned for its rich tapestry of music, arts, crafts and education. Some of the world renowned exponents India has produced in these fields were schooled in the city's cultural ethos. Luminaries apart, Banaras abounds in the art of silk weaving, an exotic work of art which manifests itself in precious Banaras Silk

Sarees and silk brocades which are cherished as collector's items across the world today.

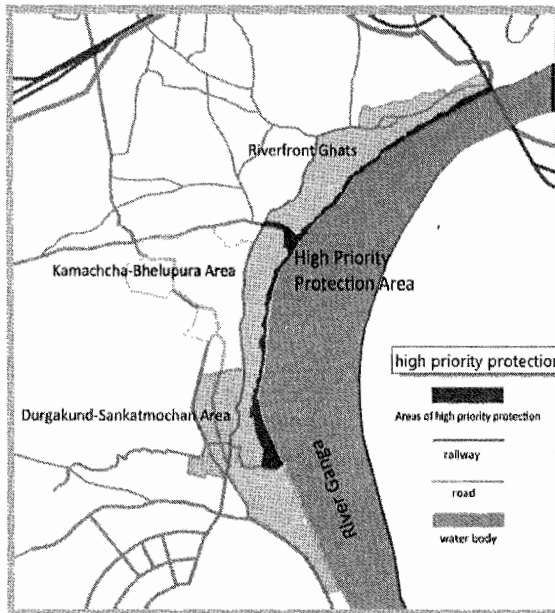
James Prinsep prepared the first map of Banaras in 1822, showing the development of the city. It was a well-planned city then. Over a period of time, the city's development has resulted in total disturbance to the original plan. When the need was felt to regulate the development, there are markets, industrial establishments and new places of worship in all important sites. The rapid urbanization without forethought witnessed since 1950 in Banaras has accelerated the pace of change in all aspects of life. Banaras got exposed to strong extraneous and fast-growing agents of change that disturb the delicate balance that exists between the physical, social, cultural and ecological aspects of the heritage city. In the name of development numerous heritage structures were destroyed. Now the development especially for tourism is very fast and the remaining architectural heritage could well be lost before any conservation effort could be started. Tourism is seen as the potentially most promising industry in Banaras. Many historic buildings along the riverfront are getting converted into hotels. This will destroy the very resource for tourism, which is the personality of Banaras. In the name of development, especially with regard to tourism, old structures are being modified or demolished even where structures are made of stone and are not weak. Recent construction work and events in the old city centre reveal that even when ownership is in a single proprietor's hands, they prefer rebuilding rather than renovating. The modification of urban spaces in the old city centre of Banaras could also negatively and irreversibly alter the religious and cultural life for which the city is sacred and destroy the tourist attractions – both of which are the major sources of earning for its population. The existing legislation is unable to prevent destruction or alteration of open spaces, even inside temple and very ancient palace complexes, many of which are privately owned. These constructions are increasingly suffocating an already thickly populated and constructed area. The population growth is also over burdening the carrying capacity of the urban environment and the river eco-system and unplanned mass tourism could potentially have a hard impact on the cultural carrying capacity of the old city centre. Social hygiene and sanitation methods too are beginning to bend under the pressure of population.

The globalization, pace of human life and compromise on tradition has started taking its toll on Banaras. Textiles produced at mills are preferred over traditional hand loom products. Handicrafts have been replaced by machine made decorative items. Traditional music of Banaras finds it difficult to attract listeners. Extra ordinary architectural sites are being demolished to give place to modern match box style buildings. Banaras is fast losing its heritage. Artisans and weavers with their magical fingers are forced to change occupation. The city with great history and heritage seems to be fighting a losing battle for continuation. Organisations like Banaras Heritage Foundation, Kautilya Society, Intach etc. are putting some effort to sustain the heritage that is Banaras and

ensure its continuity. Information and Communication Technology can support and supplement such efforts by documentation, support planning, management, conservation or recreation of traditional systems and spaces, generating awareness and interest in conservation etc. This paper is an attempt to understand such possibilities.

### Inspiration and Limitations of the Study

The paper is based on first authors' experience at Banaras during his PG Studies at BHU when he was a student of Prof. Yogendra P Dubey. It is combined with the knowledge and experience of the both authors in using ICT for heritage conservation. The first author still remembers his first meeting of Prof. Dubey at the portico of the building, which housed the Library and Information Science Department of BHU at that time. The way in which the Professor came towards the students standing at the portico with his old bicycle, the love he showed to the students who were there and the respect the students have shown to the teacher is the first instance, which generated an interest in the culture of Banaras. At that time the author felt, as an outsider but before long he also became a part of all that he witnessed. Banaras became dear to him than his own village. He returned from there with wish to go back but could not fulfill that wish. But with the strength he got from Banaras and the revered teachers like Prof. Yogendra P Dubey and his colleagues in the profession he never turned back. Every day in every step he climbed in the profession he thought again and again about Banaras and the teachers with love, admiration, respect and gratitude.



Areas of High Priority for Conservation in Banaras (Source: INTACH)

We have to acknowledge the involvement of Dr. Ram Avathar Oja, Sri. Romesh Chandra Sharma, Dr. Rakesh Bahadur, Sri. A Somanathan Pillai, et al which enabled the explorations into many closed heritage items and also helped to get the image the authors have about Banaras. In their houses as well as that of many others in Banaras and nearby villages the author lived like at his own house and explored the surroundings during those days. They took him to many heritage sites and buildings, which remained in private compounds. Many were in dilapidated condition. Tourists or even locals were not aware of what existed inside those closed gates. Still the author remembers the deserted Siva Temple with numerous big Sivalingas, the Sarasvathi temple with beautiful idol of the Goddess carved in marble, the Kali temple with the idol in black stone in an atmosphere that transmits fear to every cell of the body, the palaces with mesmerizing beauty all in closed campuses. Anyone with a little historical sense can understand the value and importance of those heritage items. The state in which they existed clearly revealed that at any time those invaluable heritage items in private possession could be removed without any government or public interference. We are not sure how many of them the author could visit at that time or the unique physical spaces he experienced in nineteen eighties exit now.

This hastily prepared paper is intended to express the love towards Prof. Dubey and Banaras. The limitations of the paper are that it is prepared with one of the authors' superficial knowledge about Banaras specified above and both authors' limited experience in applying ICT for managing heritage items and developing information systems. But the basic ideas contained in them can generate interest. Our quick scanning over the literature if any generated recently on use of ICT for conservation of Banaras yielded nothing. From our experience and understanding we hope that ICT can be applied for heritage conservation at Banaras at least in the following aspects:

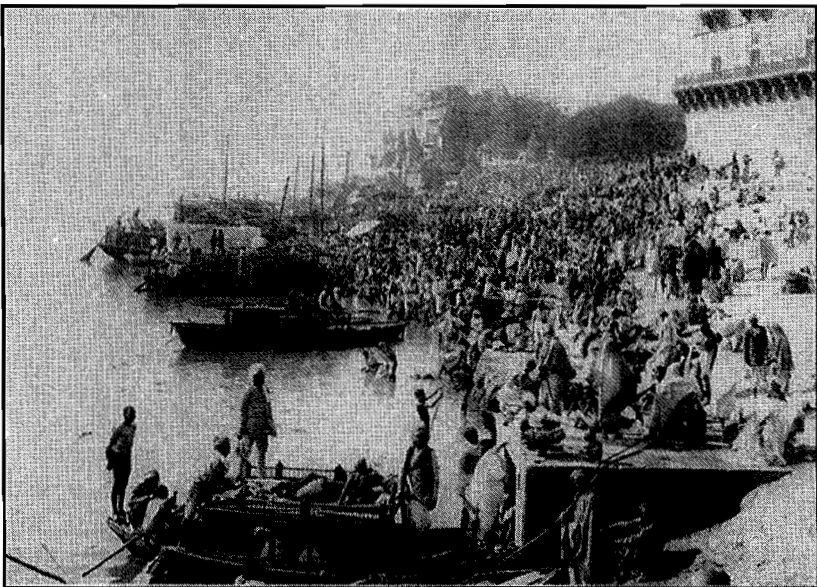
- Identification and documentation of heritage sub-zones (precincts) within heritage zones (mohallas, historic commercial spines etc.).
- Generating and managing base information on Banaras and its heritage items.
- Cultural resource mapping and inventorying/ listing/generating reports as and when necessary.
- Maintaining continuously updated databases on temples, mosques, gateways, ghats, kunds, wells, residential buildings, dharmshalas, civic buildings, and institutional buildings etc. coming to more than 75000.
- Developing and maintaining digital archives of artifacts related to Banaras heritage, including text, images, audio, video etc.
- Developing and maintaining Virtual museums and build in spaces like mohallas, galies, forts, temples and the like.

## Heritage Items

The universe is an artifact, the work of the cosmic architect. Culture is also an artifact, the product of human nature and thought. Both are strongly bonded to each other. ICT based heritage archives can treasure wide varieties of artifacts that will help to construct the tradition spanning many generations, making it accessible to present and future generations for research and dissemination through information systems. Conservation of cultural heritage of a region like Banaras include protection, strengthening and conservation of original environment including the trees, lakes, hills, buildings, their surroundings, built in spaces like mohallas, the text, paintings, music, dance and everything. Initially, it needs proper and detailed documentation. Conservation does not mean that no development should be made there. The only concern is that development should blend with environment and already existing unique built in environment and heritage items. We have no right to destroy an environment like that of Banaras, created by our predecessors, if it has no negative impact on society, and if we will not be capable to rebuild them as they are; in future. The fundamental insight is that the universe is the original, the sacred artifact.

## Development is Not Destruction

Ours was the home of a great civilization most aspects of which are still vibrant. It gives foremost priority to the development of individual and society. Our cultural heritage was fostered and sustained through commitment and affirmation of the principle of interdependence, interrelationship and the co-existence of different racial, linguistic and religious communities.



Banaras was forever Intimately Related to Ganga: An Old photograph (1840)

Hindus, Muslims, Christians, Jains and Buddhists have all contributed to what we consider as the Banaras in total. Also people from all regions of India have contributed. The Marathas have rebuilt most of the centres of pilgrimage. They built temples, ghats and religious and educational institutions. Even though his predecessors had destroyed many structures due to fanaticism, Emperor Akbar who is known for his eclectic religious beliefs rebuilt many parts of the city with love and care. Then the Rajput Jaising sponsored the reconstruction and maintenance of many temples and public buildings. So the heritage items of a locality like Banaras are the common property of the people belonging to all communities, religions, and economic and social levels. From ancient times to the present, from the great cities like Banaras to the humblest villages, the arts have been part and parcel of the functionality of life and integral to ordinary work. The extraordinary monuments and products of our arts are mainly the work of ordinary people, largely in anonymity. The people from lower strata of society develop even the sustainable science and technology and major part of knowledge. They were not the prerogative of minority elite. The makers were the ordinary underprivileged. The folk music and drama of Banaras like Ramlila, and the science of Vasthu, as well as scientific attitude and ecological sense expressed by the architects of the city for centuries which enabled them to develop the ghats of Banaras in a uniform way and construct all buildings in relationship to the river are best examples. It is the sweat of our ordinary people that bind the heritage structures and the wealthy minority has no right to dismantle them on any account. It is the elite and the wealthy that destroyed most of these heritage items, which we will never again be able to reconstruct.

### **ICT for Heritage Conservation**

Information and Communication Technologies can help to save our heritage. Like environmental movements for saving endangered species of flora and fauna, there is an urgent need for saving the endangered heritage items too. Of this in the text sub-domain, a number of books, paper manuscripts, and palm leaves, stone inscriptions and other such materials related to Banaras stand the risk of losing Old paintings sculptures and buildings in Banaras are getting degraded every day. Traditional folklore items are vanishing without any one taking interest in practicing and sustaining the art form in these days. Music is also meeting a similar fate. Even ancient life styles, numerous varieties like that we see in the different mohallas and galies of Banaras are all getting wiped out. Food habits and life support heritage systems like traditional medicine have already lost considerable knowledge. All these have one thing in common - along with the loss of physical material heritage, the knowledge content in them also are lost. In the case of the material heritage, preservation technology has been applied for a long time. But ICT based efforts concentrating on the preservation of content as well as digital replica of environment and incidents are relatively new. ICT can help to document natural resources, heritage buildings; sites and



built in spaces like mohallas etc. and create awareness about them as well as help the technical experts in managing and conserving them.

Looking from the informatics angle, expressions of cultural heritage generally fall into texts, images, video and sound categories. ICT can be used to conserve all these items. In a cultural archive material relating to different varieties in the original and in the other forms of copies are collected, classified, catalogued, preserved, displayed and made available for use. Such archives can be enriched by personal collections and cultural exchange. These archival collections can be digitized conserved, documented and made available for the purpose of research and reference. The materials that can be collected can be classified into a few categories as listed below. Details of selected sample items in the context of Banaras are discussed.

**Text:** The text information may be manuscripts in palm leaf, bark of birch, stone tablets, handwritten paper manuscripts, old printed records, etc. For Banaras such textual materials range from ancient manuscripts to modern scholarly works. There are numerous puranic sources and numerous Sanskrit works on Banaras like Kasi Khanda, Kasi Khedar Mahatmya, and the Kasi Rahasya. In most of the Indian languages there are numerous works on Kasi as well as translations of works on Kasi from different languages. Banaras is a city about which more books and articles have been published than on any other city in the world. In all Indian languages as well as in all international languages we can find books on Banaras. Numerous PhD theses on subjects related to Banaras have been accepted by Indian and foreign universities. There are also thousands of coffee table publications and tourist guides on Banaras. Government Departments at Banaras and Uttar Pradesh will be having numerous documents on trade, commerce etc. related to the British period, and various reports, gazetteers and manuals will be available in Revenue Department of UP. Old and antique books related to Banaras available at the universities in Banaras and private collections of different families and other organisations would come to a considerable number.

**Architecture, Sculpture and other Artifacts:** This group will consist of sculptures, models, plans, drawings and other photographs of heritage buildings, town plans, maps, information on earlier building materials, household articles, ornaments etc. Many important and ancient heritage buildings are under private possession like the old palace of the Kasi Maharaja on the western bank along the Ghats as well as many private palaces; temples and buildings, which are in highly dilapidated condition. Some important buildings that can be sited are Ramnagar Fort, Jantar Mantar, Kasi Visvanath Temple, Sankat Mochan Hanuman temple, Durga Kund Temple, Kalabhirav Temple, Gyanavapi Mosque, Alamgiri Mosque, and Chaukhamba Mosque etc. There are also ancient temples, halls, official buildings, residential houses of many Muslim, Christian and Hindu families, in private possession in addition to many ancient buildings owned by Government like those at cantonment. Then there are ornaments for the neck,

bangles, earrings etc. waist ornaments, leg ornaments and hair ornaments special to Kasi that are becoming extinct.

**Images:** Banaras is the subject for photographers, painters and artists all over the world for more than thousand years. There are also lakhs and lakhs of pictures used for illustration in books related to India, Hinduism and especially on Banaras. Numerous paintings of the riverfront by William and Thomas Daniels are included in the book 'Banaras Illustrated' by James Princep. Princep who came to Banaras in 1820 was an architect. He had conducted a detailed survey of the city and made hundreds of drawings of the buildings in the city. One important drawing that he made is a perfect plan of the ancient temple of Vishveswur. He also created various maps of Banaras. They are considered as the earliest accurate maps of Banaras. He has also collected information on various aspects of Banaras like the lists of castes, traders, organisations, educational institutions, etc.

The pictures and the data collected by Princep will come to lakhs and lakhs of pages. For any organisation engaged in Banaras studies or conserving its heritage, documents generated by Princep are invaluable. There are many other attempts like the Princep to document Banaras. Numerous paintings that originated in Banaras in ancient period are still available. Every hook and corner of the city bears the wall paintings of Banaras.



One of the Old Drawings on People of Banaras (1890)

A unique co-ordination of the features of the local folk art, Rajasthani, Mughal and company art depicted in these paintings is their special characteristics. From 1795-there are many dated examples of paintings. In the walls of Kali Mandir, a

private temple inside the Ramnagar Fort, numerous paintings are there. A series of paintings on Ramacharitmanas, a painting portrait of Chetsingh of 1809 AD are available in Bharat Kala Bhawan. Many old paintings from Banaras features realistic art. British Company also engaged artists to prepare paintings.

In 1824 CE an English traveler Pope Bishop Heber who came to visit Banaras has specially appreciated the paintings of Banaras produced by the local artists as well as by the foreign artists. Among these paintings there were many landscapes of the Ghats. There is a Ramayana series, executed on the walls of the Ramnagar Fort. Besides, there are numerous wall paintings with features of Rajasthani, Mughal and Company style. A few of them are on the walls of Bhonsala Mandir at Bhonsala Ghat and on Sheetal ka Akhadra subjecting God Vishnu, Shankar and Ganesh. Fifty percent of the paintings related to Banaras are assessed to be in private collections. There are numerous paintings and photographs that originated in Banaras or related to Banaras in many Hindu and Christian places of worship and ancient residential houses. Museums and private and government collections all over the world contain paintings on Banaras. Even now it is not very late to attempt a collection, documentation and conservation of such items using ICT.

**Music:** Banaras has long been famous for its music; both vocal and instrumental Banaras has its own traditional musical instruments, and music. Now the technology enables recording and conservation of such arts using ICT. Musicians like Gopal Mishra, Omkhar Nath Thakur, Ravi Shankar, Bismilla Khan, Girija Devi and numerous others have lived and worked in Banaras and kept the city alive to the spiritual aspects of the fine arts apart from their ability to entertain. Conserving Banaras heritage includes conserving their works and extending its blessings to future generations.

**Dance:** Dance forms prevalent in Banaras can be documented using multimedia technology. Most of them are ritualistic art forms and are not performed for entertainment or taught with that motive. The knowledge of practicing many of traditional items of the region is inherited only by those belonging to some families or castes and so they will immediately become extinct, as in these days of urbanization new members are not prepared to learn and practice them for it moulds their way of life also. Digitally archiving available videos on such art forms, filming performances of dance forms becoming extinct in their original settings and documenting them using multimedia technology needs to be undertaken as part of conservation projects.

**Village Life:** Documenting village life can also become subjects of interest for heritage projects on which ICT can be utilized. The people, their houses, farm utensils, dress etc. are changing fast to modern stereo type designs. In such a context, even a simple ordinary photograph like that of the children taken in 1989 from a Banaras village will become an important document for study of culture transcending the limitations of the personal relation of the author on the subject of, or the context in which the photograph was taken.



Children from a Banaras Village (1989)

During 1989 author has photographed many village scenes from Banaras, the houses, blossomed mustard fields and the farmers, the children playing in fields and many wayside temples and small structures. During a recent visit to that village, author found a totally changed scenario, the wide highway dividing the village, huge structures in the place of small beautiful houses of the farmers and modern type of dresses used by the children. Audio video and photographic techniques can be used to record and store such things through years depicting changes in a cost effective way.

**Events:** Various events that are specialty of the region can be documented using Multimedia technology and preserved for the future experience. Festivals, like those on Mahasivarathri on which a procession takes Siva from Mahamruthyunjaya Temple to Kashi Visvanath temple, Drupada Mela, Hanuman Jayanthi, Ramlila of Ramnagar, Bharath Milap, Naga Nathiya, Ganga Mahotsav etc. All these are losing their purity year by year and after a few years they will not be the same due to cultural degradation that is going on. Digital Heritage Archives on personalities, art forms, or a specific festival or ritual each covering one or more of the items can be developed on Banaras.

**Food Items:** Banaras city has, over a period of time, developed taste for food which is very authentic, ethnic and original and is not available anywhere else in the world. Even many items available in other regions have Banaras versions. All these are becoming extinct. So documenting the techniques and methods of preparation of these traditional culinary arts and food items with digital text, images and video demonstrating methods of cooking can form part

of conservation efforts. The old people of the city and villages of Banaras have the knowledge of preparing thousands of food items. Initially audio files of their oral narration can be recorded which can later be transformed into print or digital formats.

**Banaras Silk:** The city abounds in the art of silk weaving, an exotic work of art which manifests itself in precious Banaras Silk Sarees and silk brocades which are cherished as collector's items across the world today. It is the dominant manufacturing industry in Banaras. Weaving is typically done within the household, and most weavers are Momin Ansari Muslims. Banaras is known throughout the world for its production of very fine silk and Banaras saris, brocades with gold and silver thread work, which are often used for weddings and special occasions. The silk weaving industry has recently been threatened by the rise of power looms and computer-generated designs and by competition from Chinese silk traders. The thousands of traditional designs are important groups of artifacts to be conserved. A database of these designs with images and video can be developed using Java ISIS of ABCD.

**Environment:** Conservation of heritage of an area includes the conservation of the ecosystem or built in spaces specific to that area also. There are many areas mainly the mohallas and galies special to Banaras that need to be conserved or regained from recent degradation that has happened.

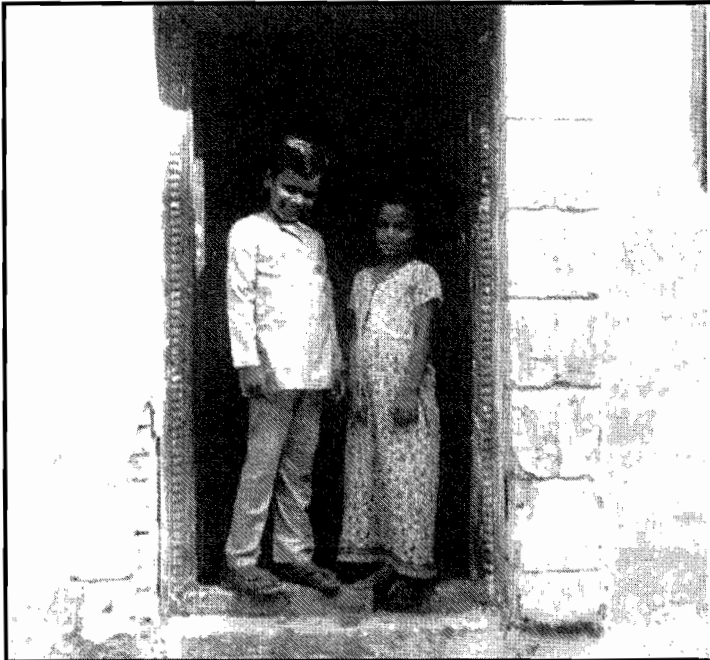
Mohallas and Galies are important in the conservation of Banaras heritage. A mohalla is a dwelling unit surrounded by galies forming a morphologically and socially coherent system. In Banarasi culture, the house cannot be separated from the mohalla, which cannot be separated from the larger socio spatial system, which encompasses it.

Apart from geographical entity, mohalla has social connotations. A mohalla could be based on ethnic groups, occupational groups or could simply be a neighborhood group. For example, Kabir Chaura was mohalla of musicians. Like that there are mohallas of metal workers, weavers, fishermen, and other professions as well as groups from different regions like Nepal, Bengal etc... Thus socio spatial system of mohallas contributed to the culture of Banaras. They have well defined interrelated physical, social and cultural environment.

The Kabir Charan Mohalla is like a small musical township. The residences of many celebrated musicians are located there. They have musical sanctity and traditions of this ancient and sacred eternal city. Musical and magical notes from assiduously trained male and female voices, from sarangies and other instruments have kept the very air of the mohalla musically surcharged. The saint and musician Kabir Das lived here. There is a math established by his followers in the central position of the mohalla. The mohalla has also strong association with Indian classical music. It attracted Kathaks, a caste of professional performers specializing in Kathak dance and practicing instrumental music. Today it survives as the only place where these musicians still live as a community. The philosophy of Kabir Das has given impetus to the rich musical tradition of the mohalla.

The mohalla was considered a sacred place. But since 1950s, development has fragmented slowly this mohalla in social as well as physical terms. Even though it was declared a cultural heritage, the harm done to this heritage space can never be set right.

However, the mohalla system continues in Banaras against odds. There is need for regeneration of the environment of mohallas, which contributed to music or other art forms or profession as a collective cultural activity. In a virtual environment using ICT, the old pure built in environment of the mohallas can be recreated and conserved for the sake of future generations. That can create awareness about them as well as help to sustain such environments to the maximum.



An Entrance to a Living Quarter from the Gali: Inviting and Serene (1989)

Instead of disturbing such built in heritage spaces, they can be environmentally developed to their original condition and used as places of attraction for tourists. The city needs to be recognized not only as an important religious centre but also as an equally important cultural, educational and trade centre. Living cultural areas have to be identified as an essential part of the city heritage. The mohallas need to be carefully explored. Analysis of the manner in which it developed, multiple facets of its social system, cultural diversity and social interaction can benefit humanity. How it creates, sustains and transmits sub cultural norms that collectively form the larger pluralistic cultural systems needs to be investigated.

A critical relationship between built form and culture has to be acknowledged. Community and the built-in environment must be seen as an integrated entity to prevent un-thoughtful interventions and encourage compatible activities. Concerns about lifestyles, and cultural practices will help to save all built spaces associated with them. A participatory approach for regeneration of cultural environment of the city that intends to promote the socio cultural value of the community as well as respects the architectural form and character needs to be adopted. This approach will make the people aware of the culture existing around them. It will encourage public participation for protecting and sustaining cultural heritage eliminating the need for external mechanisms to save it.

ICT can be applied in documenting as well as planning the conservation and sustainable development of such built-in spaces like mohallas. Many software and systems are available for this purpose. Information systems on each mohalla consisting of its history, plans, and different stages of its physical development can be prepared. Software developed by organisations like UNESCO is available for physical planning of such environments for restoration or for possible further development. Such attempts with ICT have been done in heritage sites like that of **Ankor Vat** in Columbia by UNESCO.

### **Sample Sites and Suggestions**

**Jantar Mantar:** The Jantar Mantar observatory was built in 1737 above the ghats on the Ganges, much above the high water level in the river next to the Dasaswamedh Ghat. It has a unique equatorial sundial which is functional and facilitates measurements to be observed and recorded by one person. A digital archive on its history and data collected by it since its establishment can be developed and maintained at this site.

**Ramnagar Fort:** The Ramnagar Fort on eastern bank of Ganga was built in the eighteenth century by King of Kashi with creamy chunar sandstone. It is in typically Mughal style of architecture with carved balconies, open courtyards, and scenic pavilions. The fort and its museum are the repository of the history of the Kings of Benares and their residence. The museum has a rare collection of impressive weaponry, rare instruments, manuscripts, especially religious writing etc. A precious handwritten manuscript by Goswami Tulsidas is a rare collection here. Many books illustrated in the Mughal miniature style with beautifully designed covers are also part of the collections in the museum. A digital archive and web portal of the books and other exhibits can be generated on this site.

**Ghats:** Ghats in Banaras are an integral complimentary to the concept of divinity represented in physical, metaphysical and supernatural elements. All the ghats are locations on "the divine cosmic road," indicative of "its manifest transcendental dimension."



A Photograph of Dashashvamedh Ghat (1889)

Ghats are embankments made in steps of stone slabs along the river bank where pilgrims perform ritual ablutions. Banaras has at least 84 ghats. Steps in the ghats lead to the banks of River Ganges. Important Ghats are the Dashashvamedh Ghat, the Manikarnika Ghat, the Panchganga Ghat and the Harishchandra Ghat. Many ghats are associated with legends and several are now privately owned. Many of the ghats were built when the city was under Maratha control. Cheth Sing Ghat has historical importance due to the war with British in 1781.

Most of the ghats are bathing ghats while some are used as cremation sites. The Dashashvamedh Ghat is the main and probably the oldest ghat of Banaras located on the Ganges, close to the Kashi Vishwanath temple. The Manikarnika Ghat and Harishchandra Ghat are important cremation grounds.

A digital archive on ghats of Banaras will be an important asset for conservation activists. It should collect and document data on the condition of the Ghats from earliest times to the present and should periodically update data with images and video.

**Kunds:** Various Kunds with heritage structures or adjacent temples are there in different parts of Kasi. Important ones are Sarang Kund, Durga Kund, Pushkar Kund, Pishach Mochan Kund, and their environment. All of them need to be restored and conserved.

**Kashi Vishwanath Temple:** Located on the outskirts of the Ganges, the Kashi Vishwanath Temple - dedicated to Banaras's presiding deity Shiva is an important Hindu temple and one of the 12 Jyotirlinga Shiva temples. The temple



has been destroyed and rebuilt a number of times. The Gyanavapi Mosque, which is adjacent to the temple, is considered to be the original site of the present temple. But during our wanderings, the authors have seen various other sites where also the temple existed earlier including one which was not destroyed but deserted having many huge Sivalingas in a closed private compound. The temple, as it exists now, also called Golden Temple was built in 1780 by Queen Ahilyabai Holkar of Indore. The two pinnacles of temple are covered by gold, donated in 1839 by Ranjit Singh, the ruler of the Punjab. Numerous rituals, prayers and aratis are held throughout the day which needs to be documented. This temple can become the subject for a large digital archive.

**Durga Kund Temple:** There are two temples named "Durga" in Banaras, Durga Mandir (built about 500 years ago), and Durga Kund (built in the 18<sup>th</sup> century). The temple, built in Nagara architectural style, has multi-tiered spires and is stained red with ochre, representing the red colour of Durga. The building has a rectangular tank of water called the Durga Kund. Every year, on the occasion of Nag Panchami, the act of depicting the God Vishnu reclining on the serpent Shesha is recreated in the Kund.

**The Sankat Mochan Hanuman Temple:** It is one of the sacred temples situated by the Assi River, on the way to the Durga temple. The present structure was built in early 1900s by the educationist and freedom fighter, Pandit Madan Mohan Malaviya, the founder of Banaras Hindu University. It is believed that the temple has been built at the very spot where the medieval Hindu saint Tulsidas had a vision of Hanuman.

**Other Heritage Structures:** The other important ancient structures are Annapurna Temple, located close to the Kashi Vishwanath temple and dedicated to the goddess of food, the Sankatha temple close to the Sindhia Ghat dedicated to the goddess of remedy, Kalabhairav Temple, the Mrithyunjay Mahadev temple dedicated to Shiva, etc. It is estimated that there are about 27000 temples in Banaras. A database in a standard format needs to be prepared about the temples of Banaras. JISIS software can be used in the initial phase of development of the database.

**Mosques:** Important mosques in Banaras are the Gyanavapi Mosque, the Alamgiri Mosque, the Ganj-e-Shaheedan Mosque and the Chaukhamba Mosque constructed from the period of Delhi Sultanate.

**Christian Monuments:** There are also many Christian churches, like St Mary's Church with glass paintings and half relief sculptures and British residential buildings which are heritage structures. Numerous beautiful structures which blend Indian and British architectural styles like that of the small church at Mugalsarai built by British exist in and around Banaras. Their surroundings and the structures themselves are getting altered or destroyed. We are not sure if the small church at Mugalsarai which we photographed in 1989 still exist or has become extinct.



A beautiful Christian church at Mugalsarai in Banaras (1989)

**Jain and Buddhist Temples:** There is a Jain Ghat at Banaras. Banaras is a pilgrimage site for Jains and Buddhists also. It is believed to be the birthplace of Suparshvanath, Shreyansanath, and Parshva, who are respectively the seventh, eleventh, and twenty-third Jain Tirthankars. Shree Parshvanath Digambar Jain Tirth Temple is situated in Bhelupur, Banaras. This temple is of great religious importance to Jain religion. Sarnath, a suburb of Banaras, is a place of Buddhist pilgrimage. It is the site of the deer park where Siddhārtha Gautama gave his first sermon about the basic principles of Buddhism. The Dhamek Stupa and the Chaukandi Stupa are important Buddhist structures. Buddhism and Jainism in Banaras can be subjects for large digital archiving projects which will in turn support conservation efforts.

**Banaras Hindu University:** Pandit Madan Mohan Malaviya founded BHU, in 1916. The campus was developed between 1915 and 1950. The area of the main campus of BHU is 1300 acres, having well maintained roads, extensive greenery, a temple, an airstrip and buildings, which are an architectural delight. All the buildings follow Banarasi style of architecture and have sufficient surrounding environment as in ancient Banaras. Even now the constructions adhere to the design that blends with heritage structures. It can be an eye opener to those engaged in development at Banaras for continuing their work without considering quality, functionality and beauty. The cultural degradation that is visible in present architectural designs at this heritage city as well as in its urban planning needs to be arrested. Numerous software solutions are available, which can be used to generate designs for new buildings in line with heritage structures of Banaras.

**Documenting Personalities:** Information on great men, saints, scholars, artists and administrators who lived and worked or visited and stayed in Banaras needs to be archived. Examples are ancient scholars and philosophers like Patanjali, Sankara, Ramanuja, Kabir Das, Tulasi Das, Rajas of Banaras, Dr. Sarvepalli Radhakrishnan. Indologists like William Daniel, James Prinsep, educationists like Madan Mohan Malaviya, the Kings of Kasi, musicians like Ravi Shankar and Bismilla Khan, the leaders of Bhakthi movement like Kabir and Ravidas, Travelers who visited Banaras like Baptist Tavernier, Hieuen Tsang and many others. Archives or museums can be developed on each of these personalities.



Buildings in BHU Campus: Development Blending with Ancient Heritage Structures (1989)

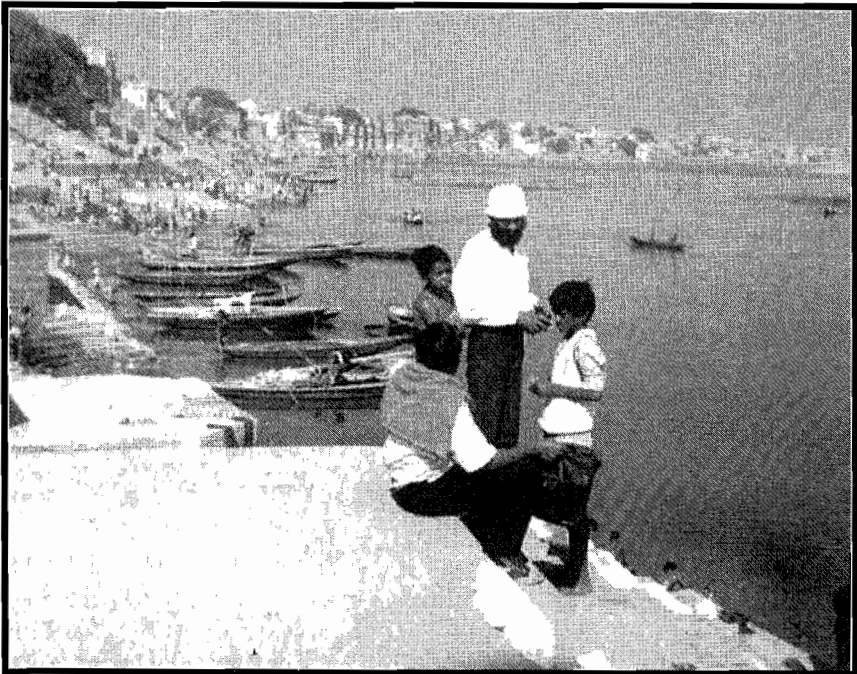


An Old Portrait of H H the Maharaja of Banaras, GCIE

Banaras has produced a large number of renowned scholars, artists, scientists and technologists dealing with most subjects coming under the universe of knowledge like Dr. Yogendra P Dubey in Library and Information Science. We are not sure if any organisation has ever attempted a database of these scholars and great men using some internationally accepted standards and software which would have helped to disseminate information on them and their work to the world. UNESCO software WinISIS and the newly launched JavaISIS and ABCD based on its principles can be used to develop databases on Banaras scholars and host them in web with search and retrieval mechanisms. Even their works could be linked to such databases.

### **Conservation is Sustaining Life**

In Banaras as discussed above, there are numerous heritage items, belonging to text, image, sound, performing arts, sculptures, buildings, etc. most of them built up or created from the sweat and blood of the common people of the region. The continuous vandalism of the greedy and wealthy minority who belongs to the economically and socially higher strata of society in the name of development, industry and tourism is erasing them very fast. What exist now is only due to mere chance. It needs to be prevented by the people because it is something indirectly related to sustenance of the common people of the region.



The God given Resource that Sustains Life of Millions:  
Ganga at Banaras (1989)

In the name of industrialization, development of trade and commerce, providing accommodation to the affluent, which is also a business, all the remaining symbols of people's culture like the mohallas are getting disturbed due to the greed of the wealthy minority. The poor man's life support system, water, air and agricultural land are all getting destroyed. Ganga water, which was having the power to purify for centuries, now needs to be purified. So preserving culture and heritage as well as the environment is not something related to culture for its own sake or the pleasure of the affluent minority. It is related to preserving the environment that could sustain the life of the majority of people of the region. It is people's need, our right.

### **ICT Application needs Priority in Conservation Efforts**

ICT can be used to primarily conserve the knowledge content of all the above-mentioned heritage items. It can bring into control data on everything that needs to be conserved in Banaras. It can also create and maintain virtual replicas of everything of current or past with their environments. It can be used also for heritage items management. In every sphere of activity knowledge or information is the major constituent that determines quality and relevance of actions. In heritage conservation projects also documentation and information systems are crucial to their proper guiding and management. In a heritage space like Banaras with more than 27000 temples, 70000 other structures and millions of artifacts scattered through all these structures, roadsides, riverbanks and the ghats without ICT and ICT experts, heritage conservation and management of the projects will be impossible. But we find that till now the government or other organisations engaged in heritage conservation have not paid serious attention to this aspect, which is one of the reasons for things remaining out of control.

### **Digital Archives and Museums**

The progress achieved in the digital technology and secondary storage media like high capacity hard disks and compact discs facilitates durable storage of information of all kinds. The hypertext and hypermedia features enables integrating text with graphics, sound, video and animation, which can be used in an interactive way. In a networked environment, the digitized information can be transferred regardless of space and time. Digitized information lasts for longer periods and can be transferred with ease to new media or format and copies can be stored at different locations to prevent loss of knowledge content by natural calamities or theft.

### **Virtual Replicas of Built-in Spaces**

Digital archives or museums are not mere mechanical store of digitized content or images or replicas of antique materials. It is a fusion of resources in a variety of forms, including services and people supporting the entire life cycle of knowledge. A digital archive or virtual museum gives hundred times more useful information and entertainment by enabling the jump from one exhibit to

related ones, and from one media to another at any point in the sequence instead of sequential journeys which only are possible inside the traditional museum. At the same time, they share common goals with their traditional counterparts.

For example, if we prepare a virtual mohalla of Kabir Chaura, we can enter it from the main road and through the galies and experience the morphologically and socially coherent system, as it existed originally. Inside it, we can also travel through time and select the year in which we want to experience the mohalla. We can witness the connecting galies, which foster the close community living. We can stand in front of the Kabir Chaura Math, which is the nucleus around which the residential quarters are built. We can witness the variety of human activities of work; recreation, commerce and informal interaction going on in the built-in space earmarked for open activities. We can listen to the music of the Kabir Panthis in the traditional open-air theatre. We can enter into any gali walk through them up to the main roads that mark the boundaries of the Kabir Chaura. In each structure by clicking the guide board we can read the history and importance of that structure. By clicking a painting in the wall of a structure we can get the text describing the subject of the painting or any related aspect. We can jump from one item to any connected item we come upon. We can also walk to the Neru Nima Tila, Kali Mandir, Hanuman Mandir and a mosque existing within the Mohalla. We can see the space set aside for bodybuilding. We can also walk to the Patrima Ka Bagh, Jageshwar Bagh, Madho Das Bagecha, where pleasure gardens for private and public recreation that existed. We can also witness the musical performances organised in these private gardens. By clicking on the door we can enter any house with their traditional courtyard. We can see the inhabitants. We can also get biography or music or images concerned with the personality we meet during our virtual tour. We can visit the private temples attached to some of the houses. By using virtual reality programmes, any built-in physical environment can be recreated in digital systems to provide the same experience of visiting that space at a specific time in the past.

The user distant in space feels like entering the mohalla or the temple inside it, move around the exhibits inside and standing in front of an exhibit in which he is interested calls for and uses information on a specific item as text, graphics, sound files, posters, video or maps. The same method can be used for a temple, a fort, a ghat, or a road and all these can be combined using virtual reality programmes and GIS like IDRISI to create a Virtual Banaras with all its heritage sites.

### **Digital Archiving Packages**

Keeping the above goals in mind, UNESCO and similar organisations working on conservation of heritage have developed various Open Source software like WINISIS, GenISIS, Greenstone, DSpace and Nitya to achieve selective access to information from digitally organised text, graphics, sound and video. Using one or more of them with GIS packages and Virtual reality solutions

we can build up a virtual Banaras. Keeping this virtual reality programme at the front end we can attach huge bibliographical databases of all the artifacts existing and further, we can attach archival full text, image, sound and video files. Some of the software solutions that can be used for various activities related to heritage conservation familiar to the authors are described below. They are developed by international organisations and are available in Open Source domains. But there may be hundreds of other similar solutions.

**DSpace:** DSpace is an open source software package that provides management tools for digital assets. It can be used to create and manage repositories or archives on any of the items discussed above

**Nitya for Indian Scripts:** Nitya a package for digital archiving developed in India, can process any Indian language and script and any piece of information can be searched out from a huge store of information within seconds. Documents like palm leaf manuscripts, handwritten paper records, old books, sound files, video files etc. are first converted to required digital formats. A database is created for the digital copies using special DBMS and records are connected to concerned digital versions of artifacts.

**E-Print:** E-Prints are a very flexible platform for building digital repositories and are recognized as the easiest and fastest way to set up digital archives and libraries.

**JISIS:** An open source database management system based on UNESCO's CDS/ISIS concepts, which can be used to create infinite number of records. JavaISIS will be a powerful tool for heritage documentation and control of date on artifacts.

**ABCD:** ABCD combines the power of earlier software CDS/ISIS, WINISIS and GenISIS. ABCD can be used to develop databases that hold infinite number of records and from them to connect text, images, video, audio and other files. It can be customized for heritage conservation projects.

**Greenstone:** Greenstone is a suite of software for building and distributing collections in digital form. It provides a new way of organising information and publishing it on the Internet.

All the above packages can be used as such or can be customized or used in combination for heritage conservation activities.

In digital archiving systems Index will contain searchable terms arranged under "Metadata" such as subject, name of creator or producer, author, etc. Formulation of metadata should depend on the type and characteristics of the collection. For example, categories of an archive of palm leaf manuscripts may be author, title, leaf number, first line, subject etc., whereas categories of an art collection can be artist, media, title of picture, collection number, or owner etc. Search can be done by typing search term or selecting them from the Index. Then terms are transferred to 'Query' area. Queries are submitted for Search and results are exhibited in the hit area. The Reference area exhibits records with

details of the item along with an abstract of content of the file, from which user can decide whether to view the file which may be manuscript, sound or video.

In respect of temples, it can be the name of temple, presiding deity, owner, location, uniqueness with respect to celebrations, festivals, structure, puja, artifacts etc. of the temple. Dublin Core as practiced for majority of the digital library projects worldwide or standards set by UNESCO for such initiatives may be adopted to set metadata. Documentation on heritage of Banaras under different categories could be made into a fully searchable metadata-driven digital archive with input from different quarters and people who think on similar lines. We wish it to be a great cooperative movement of historians, information specialists, ICT experts, artists, spiritualists and all those who believe in the ethos, values, and proud place of heritage and culture of Banaras.

### **Conservation: A People's Movement**

Lack of sense of history in our country as well as our being not proud of the heritage is what results in not respecting and protecting historic remains, monuments etc. Take the example of the British. In old London if we have a house, which is more than 100 years old, we cannot even repaint it without strictly adhering to the colors and patterns used originally for that house. No constructions that will harm the view of our old house will be permitted. There is no difference between rich or poor or place or hut for this. We need to develop such a sense and love for our heritage.

There is a need for legislation to protect all structures more than 100 years old with a view to conserve the architectural past of Banaras that was being threatened by rapid urbanization. The participation of all stakeholders including local bodies and the people is necessary to protect heritage of Banaras. State should give incentives to private owners of heritage buildings, including tax exemption, to preserve the structures. They can be given guidance in how the heritage structures can be used to generate income equal to that they may get from other developments they intend to make there. Such activities will require detailed databases of heritage structures containing also the details of the owners and their contact details, which should be at the fingertip of administration.

Though digital encoding has become the dominant way for protection, creation and dissemination of information, there are many risks with respect to technology itself, which become out of date on a fast rate and information digitized for posterity becomes inaccessible to users. Therefore, digital preservation and conservation of heritage should be based on a robust data and information infrastructure. As conservation activities are necessarily information storage and retrieval system, libraries and LIS professionals can play great roles in its conceptualization, design, storage and dissemination aspects. As digital preservation is a very big issue, individuals or institutions may not be able to take it up on their own. Guidelines, formats, standards, procedures and technology suggested by universal agencies such as UNESCO are also to be followed. Approaches based on coordination and cooperation is necessary. BHU



is in an apt position to conceptualize and undertake the work of conservation and preservation of Banaras heritage digitally by developing a prototype, by evolving standards, formats and techniques of digitization so as to pool the data in the country and share the information internationally with organisations engaged in heritage conservation. BHU should also initiate social networks to draw expertise on various aspects so that it becomes people's movement for conservation of heritage of Banaras.

All that we specify as heritage including the environment are interrelated directly and indirectly. Destruction of heritage items has close relation to indiscriminate exploitation of natural resources and systems by a greedy minority for their selfish motives in the name of development. There is no doubt that through such appropriation of natural resources a few powerful minorities have accumulated wealth whereas even today the majority of people are striving for their livelihoods by upholding the principle of sustainable resource use. So heritage conservation in truth is a requirement of the weaker sections of the society. People's movement only can achieve success and thereby a sustainable development.

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