

# The traditional material and techniques used in the conservation of Nepalese historical monuments

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## SUMMARY

The Science of Architecture (called Vastusastra) in Nepal had originated from the old age experience which the people had gathered in the whole of SAARC region. There are many books on ancient architecture still preserved in the libraries of Nepal. The basic guiding principles of building and repairing any structure in the historical past had been followed from those ancient books dealing with architecture. Nepal indeed had also developed its own architectural types befitting its own geographical, social and physical needs. The most important features of Nepalese architecture is that they contain vast number of inscriptions mostly in Sanskrit, Nepali and Newari languages. Those inscriptions thoroughly describe the methods being followed during the construction and repairs of its monuments. A small picture of those works have been reproduced here.

## An Introduction of South Asian Architecture

Vastusastra or silpasastra is a science of Architecture used in the broader sense meaning anything whatsoever built or constructed. Kautilya (Arthasastra, 61, Prakarana-Grihavastukam) defines architecture as building of house, land, garden, embankment of river and ponds (Griham, Kshetraramah setubandhas tatakamadharo va vastuh). In the Dauderpur copper plate inscription of 5th century A.D. belonging to Buddhagupta, there is reference of Vastu (Devakuladvaya metat kosthika dvayancha karyitum...vastuna...Dau-miti) meaning for appropriate building ground. In the Rigveda the God of architecture (Vastudevata) has been named as Palastrodeva (Rolamba, Kathm. No-14, 1990). In the Chhandogya upanishad of Taittereya Brahmana architecture is called as Devajanavidya.

The Pali literature, calls it vattu-vijja (Vastu-Vidya). Yuan-Chwang (Beals, 1981, 78) mentions about Silpa-Sastra among the five vidyas taught in India. The Tibetan scholar Bu-Ston refers about Silpa Karma Vidya and recommends a monk to learn it. (S.K. Dutta, Buddhist Monks and Monasteries of India, 1962. P. 323). The Vastu sastra strictly followed the standard measurement and a system of proportions. The Brihatsamhita (Commented by Utpala) informs us about the knowledge of architecture which came to be known through generations of artists (param-pariyena yatam), beginning from Brahma, the first creator, The Epic literature, Mahabharat (Narayaniya Section) narrates about seven teachers (Sapta Risis also called citra-Sikhandis) including Bhṛigu, Atri, Vasistha Visvamitra and Maya. Similarly, the Matsya-purana refers about eighteen and the Manasa names thirty-two fathers and expounders of architecture (Vastusastrapadesakah). Various information about Vastusastra have been found from the Vedic literatures, Epics, Puranas, Jyotis books, Buddhist literature and the ancient Sanskrit dramas. The Greek ambassadors, Chinese Buddhist pilgrims, Mughal historians, the biographical books like Milindpanho, Harshacharita, as well as the great number of inscriptions from the South Asian Countries (dating from 3rd B.C. to 18th cent. A.D.) feed us information and period-wise picture of various types of architectural complexes which existed in the South-East-Asian region. As already been mentioned that architecture was one of the popular subjects in the universities of Takshasila, Nalanda and Vikramsila. The Lalitvistara mentions about a school of architecture near Kapilvastu city.

In the earlier period only four types of experts on architecture existed. They were the Architect (Sthapati) Draughtsman or Designer (Sutragrahi) who was expert on rekhajyana, expert on the Law of Proportion and Paintings was Vardhaki, and the stone mason and engraver has been called Takshaka. To this list can be added few more names of experts engaged in the works of Vastu. They are Navakammaka (architects mentioned in the Buddhist inscriptions of Amaravati, Nagarjunkonda, and South-western caves of India, Stone-Masion (Pashnika inspt. from Amaravati stupa, (Sailavaddhaki, Silakarmak-(Bharhut, 2nd cent. B.C.), Sila-kottakas of Pali literatures, Sailakhanakah of Kautilya Arthasastra, Mahabaddhaki (Carpenter also called Tvasta), Gahapati-Sippakara, Ittaka-Vaddhaki and Tacchaka. Later on, we find mentioned about Dakarmi (brick-masion): Dantakara (bone-worker), Chitrakar or Rangakarmi (painters), Vajrakarmi (masion for plaster works), Silpakara (sculptor), Kamskar (bronze-smith), Tamrakara (copper-smith), Kasthakar or Sikarmi (carpenter), Kammar or Nakarmi (iron-smith), Sirakara (engraver) and awal (T.C. tile worker). The Jain book Avasyakchurni (J.C. Jain, Prakrit Sahitya ka Itihas, 1961, 249-250), mentions Chitrakara and Karmakara among the five important silpakaras. The Arthasastra (Vinayadhikarana, Trayisthapana) recommends that the Sudras apart from other works, should adopt the work of the Craftmanship (Karukusilava karama). One of the inscriptions of King Prithivimalla of Western Nepal dated 1471 A.D. mentions about the removal of all the taxes from the architects (Sutradharakanam sarvakarastena...tyakta, -Yogi Naraharinatha,

Itihas Prakasha, II,1).

It has been already mentioned that the ancient Hindu and Buddhist science of architecture (Matsya Purana, suprabhedagama, Manasara, Jataka, Chullavagga, and Mahavagga) strictly followed the measurements (Vastumana). They have been divided into six divisions called Mana (Height), Pramana (Breadth), Parimana (width), Lambamana (perpendicular measure), Unmana (thickness) and Upamana (interspace between two parts). There are few other measures too called ghanamana (Measurement of exterior), Aghanamana (measurement of interior) and Talamana (comparative height). The measurement were taken from yard stick (human hands-hasta), as well as Measuring Rod (danda) and string (rajju). Often we come across the words like Tala or Bhauma (Storey-Dvi-Tal, or Sapta Bhaumaka), the Courts (pura-Angan-pragana, or Chatvar) and Pura Salas around a court. Dvi-Sala, Tri-sala, Chatuh-sala).

The vastusastra have important contents like Testing of Soil, Classification of buildings. Laying of foundations, Pedestal, Bases, Canals, Drains, Columns, Platforms, Railings, Windows, Arches, Doors, Necks, Tops or finials, Towns, Villages, Courts, Mandapa, Gate-houses, Public-Halls, Inns, Palace, Fortwalls, Bastions, Theatre halls, Roads, Plaster works, Paintings and Gardens. The first urbanization in the South Asian Countries started between 5000-1600 B.C. when we find cities like Mohenjodaro, Harappa, Kalibanga in the Indus, Sarasvati-Drishadhavatinbasin. The other sites of this civilization have been found are Lothal, Rangpur and Surkotda in the South-Western coastal region of India. They had well planned cities with fortification-walls, bastions, rulers city, houses with open

courtyards, open air baths, granary, brick-lined sacrificial altars, platforms, drains, well, big-hall, cemetery, and gateways. all made of either mudbrick or burnt bricks. Their cities were divided into different parts through three to six streets or lanes running East-West and North-South. The second urbanization in this zone came during the Buddha and Maurya period, between 600-300 B.C.

Lord Sakyamuni Buddha during this period advises the laity for the gift of five kinds of dwellings (panchaleñani) to the monks. They have been described as Vihara, Addha-yoga, Pasada, Hammiya and Guha (Chullavagga, VI, 1-2; Mahavagga, I, 50,4). These architectural complexes have been nicely and clearly elaborated by Buddhaghosa in his Pali books. Emperor Asoka (270-236 B.C.) was a builder of many types of structures. He had built temples (at Lumbini, Bodhagaya, Bairat, Sanchi & Saranath), Rest house (P. Ed VII), wells, water houses, Monasteries, Road-lined with trees, gardens, cave-dwellings and about 84000 Stupas, with well burnt bricks, in the whole of Jambudvipa. Kautilya Arthasastra (1st A.D.) gives us a lot of information and rules about the science of architecture.

In Nepal (Specially in the Kathmandu Valley) the urbanization came with the Lichchhavi rule beginning from 4th to 5th cent. A.D. when for the first time we find different types of structural monuments being constructed here, The architectural complexes found its variety of expression in typology and quality in designs as well as superiority in the raw materials during the Malla period. This was the period when the valley become materially very rich with the growth in trade with India and Tibet. The picture and information we gather from the Lichchhavi, Malla and

Shaha periods can be marked throughout the existing architectural types, from large numbers of inscriptions, equally from a great volume of manuscripts deposited in the government libraries and personal collections.

To prepare a geographical base for architectural development the country (Desa or Rastra) had been divided into different divisions called Bhukti (province 'Nepal Bhuktau', a Lichh, inscp, dated 705 A.D.), Vishaya and mandala (District), Dranga inhabited by both urban and rural population), Tala (a Geographical unit under dranga) and Grama. The later development of township have been named as pura, Pattan and Mahanagara. Within these geographical units or areas we find large varieties of architectural complexes. They can be mentioned as—Temples (called by the terms—Devagriha, Devalaya, Math, Gandhakuti, Granthkuta and Deval). Palaces (Raja Prasada, Rajakula, Managriha, Kailashakutabhavan, Bhadradhivasa and Rajavasaka (Sivadeva II, 707 A.D.), Forts (Kotta), Moats (Parikta), Gateway (Rajadvara, Pratoli) Mandapa, Mandpika, Independent pillars (Dharmastambha, Yupastabha) Pillars as carriers (Kings statues or Vahanas of Gods) Theatre halls (preksha, Rangasala, Ranga mandapa, Rangamahar, Visukadassan sala, Nata Samaja sala), Agnisala (Andisala), Theatre platforms (Dabuli), Inns (Annasala), Satra-sala, Sattala, Dharmasala), Resthouses (Pattasala, Bharavisaramana sala, Visramasala, Thati, Pati), flower gardens, Aramas, Vana, Toll house (Sulka Sala), Pannayasala (Apana), Asrama, Kuti (Kshawm Kuti, Vatakuti), Ponds (Pushkarni; Khataka, Jalasaya), wells (Kupa, Prapa), Water-houses (Sala-Pranali, prapa, Toyapranali), Jaladhenu (Stonewater storage tanks). River-Barrage (Setu). Water channels (Tilamaka, Lakhamaka, Dhala, Kulo), Stupa (Thupa,

Chaitya). Monastery (Vihara, Vahi), Agama-ghara, Cemetary (Smasana), Oil Mills (Tailya sala), Copper factory (Tamrakuttasala), Wine factory (Madyasala), Hospital (Arogyasala), office buildings (Adhikaran sala), well with water drawing wheels (Yan-trodpanam), Stonehouse (Silagriha), Roads (Path, Marga, Rathya), Courtyards (Angan, Prangan, Nani, Pura), Supasala (a kitchen house—Yakshamalla, Inscpt. A.D. 1445) and Dana sala (House for charity). The Nepalese temples both Hindus and Buddhist have been wrongly called by some Europeans as pagodas. Actually there are three types of temples in Nepal. Among them one belong to the Sikhara style and called by different names such as, Sikharakara, Gandhakuti, Granthakuta, Rath, Mandalayana—the circular or octagonal temple of Narendradeva, Patan, 661 A.D.), Math and Mandir. The second type of temple with multiple sloping roof covered by either T.C. tiles, or copper sheets are called, chhatrakara, Polala, Tallakara and Patalakara (Prasada sa chakara panchapatalaih—Sankhamula Inscpt dat d 1730 A.D.). The Third class of temples were those which were made in Mandapa style, the roof with wooden beams and rafters supported upon four pillars either of stone or wood. All the Vishnu images carved in sleeping pose (Jala sayan murtis) had mandapa style of temples. The Lele inscription of Sivadeva dated A.D. 604 informs about this style of temple (Simha mandapa Bhagavad Vasudeva).

#### The Earliest Examples of Repairing Monuments

The Atharvaveda contains a prayer for the stability of a house at the time of its construction, Similar expression we find from an inscription dated A.D. 468 where the queen.

of Manadeva building a Siva temple narrates that the beautiful building has been built very strong (Shreemat Sansthana Rupam Bhavan miha-dridham karyitva nurupam). Still due to age factor the monuments get damaged. Lord Buddha has very rightly remarked that decay is inherent in all component things (Mahanirivanasutta, quoted by Patil, Kushinagar, ASI, 7). The Lord compares his own old body with an old cart as he says; Just as a worn out cart can only with much additional care be made to move along, so is the case of old historical buildings, Sakyamuni again gives a similar example, of an old thatched house with his old body. He says 'as the old thatched house becomes old its rafters become irregular and are dislocated' (Jarasataya gopaniyo alugga bilugga bhavanti-Majjhim Nikaya, I, PTS, Edit 188, P, 245). A very fine example of repairs of a water reservoir (Sudarshan Tadakam) which had been originally made during the time of Chandra Gupta Maurya (324-300 B.C.) and Emperor Asoka (273-236 B.C.) in Girinara India had been repaired in the 2nd cent A.D. by Rudradaman, who was governor. The canal had mud embankments (Mrittikapali) and was repaired with strong joints (Nisandhi vaddha-dridha) and was erected in a line (Sarva-Palikatva). It is said that the barrage with the running water canals were nicely made (Setubandhanopa panannam, pranaliparivahamidha vijanam). The inscription describing about the cause of destruction says that a great storm had destroyed the stone embankment and even uprooted the trees along with creepers (Vikshipta jarjarikritavajirn kshiptasma-vriksha-gulma-latapratana), which were raised over the emkankments. Another example of repairs come from Hathigumpha (India)

dated 1st Cent B.C. by King Kharavel who had repaired and re-erected (Patisankharayati, Pati Samthapanam) the palace (pasadam), gateways (Gopura) fort wall (Pakara), pond with thatched pavillion (Tadagpatio) in the city of Orrisa (Kalinga Nagara). Similar example can be placed here from Kathmandu, Sikubahi, dated A.D. 576. A group of clay images (Matarah Mrimmayastah) were built along the confluence (Sandhidesh) of rivers Bagamati and Manimati were badly damaged, their hands and legs were broken as they became old (Kalakramena chirantanyati visirna bhagna patita parnipadah). One of the Government officials of the period named Babhruvarma was very anxious and eager to repair them (Matrinam Pratisankara chintit). But he suddenly died and repair works was done by his brother's religious wife who made the mother goddess in stone (Devyo matarah Sailyah Karita).

#### The words used for destruction and repairs

The different words used for destruction or damage of monuments in the literature and inscriptions are Bhagna, phutta, Vinasta, Jarjarikrita, Hinabhaga, Visirna, Bhetilavirnatam (in Pali), Vibheda, Jirna, Jaryabhuta, Shirna, Olaggu-bilaggu (in Pali), visammam, Visama (Anguttora-Nikaya), Hinabhaga, Patila, Dhvansita. The repairs or reconstructions have been called in sanskrit language by various names. They are Pratisamskara; Patisantharana (Nasika cave Inscpt. 2nd A.D.) Patisanbhara, Sanchaskrita, Samakarita, Sammama, Samadhana, Patisanthapana (Kharval inscpt. 1st. B.C.) Rakshita (Sarnath, Inscpt. dated 1114), Samadhana, Samarakshya, samatamkritva, Samavardhya (enclosed), Jirnioddhara, Jirna Karoti Nava-

kama, Agnidahoddhara (S.K. Dutta. Buddhist Monks and Monasteries, 1962, 42, Inscpt. dated A.D. 999).

In the inscriptions of Nepal we get various descriptions of repairing canal, temple, water pond, roof (Chhadi), stupa, monastery, road, water house fort, Icons and Mandapa. An inscription from Kathmandu dated A.D. 1419 describes about the different stages of repair works which were carried out to a temple of Narayana at Lubhu. The whole temple had to be reconstructed which took five years to complete. According to description they first made the plinth (Pada sthapana), then door frames were made. Thereafter reconstructing the whole structural walls (Grabha bhittaya) they made the circular wooden member called Chulika, to hold the rafter. There upon the finials (Sikha ghatair-vibhusita) were finally surmounted and flags were posted.

#### Types of Repair works

The repair work can be put under several headings such as (1) Part repairs (2) Covering the earlier structures with New encasing (3) Total rebuilding in the old design with new materials (4) Yearly repairs (5) Change of style while repairs (6) cleaning, plaster and painting works.

#### Part Repairs

There are many example of only part repair or repairs of the damaged portion called khanda phutta jirnoddhara in the inscription of Nepal. This is the best method of conservation and it is always advisable to repair the damaged portion only.

The Lichchhavi inscription dated A.D. 508 speaks of King Vasanta-deva who had donated lands for the repairs of damaged portion (Pranalyah khandphutta Pratisams-

kara) of the water house. There is another inscription dated A.D. 533 which mentions about the similar donation for the part repairs of the five Saiva temples in the Pasupatinath area. A copper plate dated A.D.1684 (Shakya, No. 57) discloses that the wooden pillar had been replaced by stone pillar.

#### Coverage with New Structure (Achhadana)

Many stupas in the SAARC countries from Taxila, Sanchi, Sarnatha, Kushinagar Tilaurakot (Kapilvastu, Nepal) have been found encircled by new circle of structures when they became old. There was a small stupa inside the big colossal terraced stupa at Lauriyanandanagarha (Debala Mitra, Buddhist monuments, 1979, photo 41). This way original stupa gets enlarged many times. Perhaps the same type of Achhadana had been mentioned in the Nigalisagar pillar inscription of Asoka, which enlarged the stupa into twice the original size (Konakamanasa thube dutiyam vadhite) around 256 B.C. Perhaps this is the earliest example of repair works in this sub-continent.

#### Rebuilding and Addition in the structures

When the historical monuments are burnt or collapsed due to earthquake they need to be rebuilt in the similar style. Sometimes another style of building has been built in the place of older building. Svayambhu chaitya is one of such example which had been built during the Lichchhavi period but now it is in the shape of a very late 19th century style. The Ranas have also changed the shape and style of temples after the great earthquake in 1936. At Kumvesvara, Patan, there was only a shade (Prasada rahit Avash matra sanchhanam) which had been replaced in A.D.

1367, by beautiful temple with a toran gateway (Ramaniya prasadam hi satoranam).

#### Yearly Repairs Monuments

There are many instances where we find that lands had been given to the structure for their yearly repairs. The inscription of Jayadeva II (dated 715-729 A.D.) describe about the yearly repair of roof and painting of balconies of palace named Kailashkutabhavana. One of the inscription of King Vishnumall dated A.D. 1716 records about the yearly repairs of the fort of Tistung by the people of the place including the government officials.

#### Change in Design During Repairs

There are few such examples where the decision of total change in the design had been taken in the historical past. An old Buddhist temple from Sankhu named Bajrayogini which had been built in the sikhara style was changed by king Bhaskarmalla (in 1689 A.D.) and a temple with three slopping roofs (Galakuta Devera piyava svatapalio devara dangava). Similarly, after the great earthquake during 1936 the Ranas repaired many temples in the style of Mughal and Rajputs of India.

#### Maintenance and Paints of Monuments

In the Buddha charita (III. 30.33) Asvoghosa says 'old age destroys everything including beauty.' Kautilya (Arthashastra, Ratnapariksha) recommends the polishing and maintenance of old stones. The inscription of Nepal discloses the method adopted for the proper keep-up of the old buildings. The Handigaon inscription dated A.D. 608 mentions about the sweeper women (Sammarjayitrayah) in the palace of Kailashkuta bhavan. Similarly, the inscription of Narendradev dated A.D. 658 tells us about the maintenance of the roads (Marga Sanskarartham), painting in the court of Lokapalavami. The Patan

inscription of the same king dated A.D. 661 recommends to paint (Upalepan), Cleaning (Sammarjana) and repairs (Pratisamskara) of the circular or octagonal temple of Vajresvara. The medieval inscription of King Rudradev dated A.D. 1149 informs us about the repairs of the roof of a shade and money donated to the trust responsible for cleaning and maintaining of roads (Margaunmarganogsthi). Painting the temple with five colours has been recorded in the inscription of Vajrabhattarak temple at Gorakha. The Sanchi toran inscription informs us about the decorations (Rupakamma) done to the stupa, whereas the Mahasakuludayi sutanta of Majjhim Nikaya describes about the polishing (Suparikarma) of jewellery. Similarly, the polishing of the Asoka pillar have been a subject of great admiration to the Chinese pilgrims during 5th-7th A.D. Itsing (7th A.D.) describes the method of polishing over the pillars at Nalanda. We have a beautiful picture of decorated chambers of prince and princess which were adorned with sandal oil, flowers, Painted scrolls, filled with scent of flowers. (Alamkata sirigabbhesu with gamdhadama pupphadama and dhupadama-B.C. Sen, Studies in the Buddhist Jatakas, 1974).

#### Causes of Decay

Most of the ancient monuments of this region were made from organic materials like timber, grass, clay, leaves and bamboo. They had a limited period of duration, naturally the structures needed yearly repairs and extra care. We can divide the causes of decay into three broad divisions—Age factor, Natural calamities and Human or animal agencies. It is but natural that after certain period of time when a structure becomes old (Jarasala, Kalakramena chirantanayati) they get

damaged or they are collapsed. The natural calamities like flood, earthquake, cyclone, excessive rains, rise in the flood water and germination of trees over the old monuments are also one of the major causes of damage for the monuments. Apart from these causes, the human as well as the animal being also inflicts serious destruction to the ancient buildings. In Kathmandu valley, Mughal general Samasuddin Ilyas had attacked the Hindu and Buddhist religious establishments and burnt whole of the city around A.D. 1336. This has been recorded in many inscriptions the Pimbahala inscription dated 1364 A.D. of Madan ramavardha and elsewhere. A Beautiful example of damage of a pond and a pavilion on the embankment has been depicted in a Jain book. Where a group of forest elephants came and destroyed the pavilion, the flowers of the pond and the animals of the pond. (Harthijuham vinattam Talagapali bhetila - Dr. Jagadish Chandra Jain, Prakrita sahya ka Itihas, 1961, 24) The kautilya Arthasastra (Rajabhavan Chapt.) refers about the traditional ways and means for the protection of palaces against fire.

#### **The Managing Agencies for Repair Works and Mobilization of Resources**

Enough has been said about the different types of technical personnels involved in the construction of the historical buildings. Actually they were the people who worked for the repairs of the monumental buildings too. Though there are some special terms mentioned about the agencies or people who used to mobilize the repair works. They can be divided into four classes - Private individuals, Trust (Gesthi) or Village panchayats, Religious organizations of the Hindu and Buddhists and lastly, the government

agencies.

We have several examples of individuals who did the construction as well as the repair works. Such persons were very rich and major among them come from trading community, high officials of state, or the King and his family members. There are many such examples of repair works done by trust members (Svajana gosthikadhinam Kritva kshetram dattam-Pasupatinath Insept. A.D. 533), Village panchayat or religions organizations. Mostly landed properties to carry out the repair and religious works were donated which were called "Akshayanivi" (everlasting property). Sometimes cash money are also provided for these works. There are many examples where the kings had donated all the taxes of a particular village or collected from the whole Dranga. The management and repair works of Matindevkula (Temple of Mother goddess) in 612 A.D. and Siva temples named Surbhogeshvara as well as Laditamaheśvara has been given to local village panchayat in A.D. 617 by King Amsuverma. The inscription of Narendradeva dated A.D. 640 reports about the creation of a trust of Pashupat saivas (Dharmika gananamati sristam...pasupatanam Brahmana) and donated all the taxes to them for the repair and maintenance of temple of Siva Vajresvara. Similar inscription of King Sivadeva II dated A.D. 671 speaks about the donation of whole village for the repairs of Siva temple, water house and to the monastery of Buddhist community.

Pliny reporting the state of affairs being managed during the period of Chandra Gupta Maurya (324-300 B.C.) says that the roads in those days were under the charge of an officer responsible for the upkeep and the repairs. Similarly, during the rules of Emperor



Asoka (273-236 B.C.) there was an officer called Vrajabhūmika (RE XII) who was in charge of repairing and maintaining the garden, well, water houses, and rest houses (R.K. Mookherji, *The Age of Imperial Unity*, 1968, 67, and 81). In Nepal our inscriptions refer about Mathpati, Chhenbhadel (derived from Grihabhandagarik-repairer of structural buildings), Mathpati (Regmi IV, 31), Viharapati, Devadasa and Devadashis, Uparakshit (Luders, *Inscpt. No. 1100-Karle cave*), Gandhakuti-bharika (Luders, *No-989, Kanheri cave*), Chitayidar (who maintained Inns), and Sattalnayaka (Regmi III, 8, A.D. 1445). There is an interesting and clear description in a copperplate of King Rana Bahadur Shaha dated 1798 A.D. where the job of the Chhenbhadel has been enumerated. It lays rules and the duty of officer for the building and repair of temple, Inn, Palace and rest houses. He is asked to repair all the damaged portions, cracks and leakages of temple, inns and to take care of gardens. The management of the donated land to those monuments was also included in his duty.

#### **Protection of Monuments with Natural Heritage**

Many of our monuments are built among the forest and natural heritages as well as on the hill tops. These temples and stupas are quite far away from the city or villages. The state in all the phases and periods of history in Nepal had earnestly tried to protect these monuments surrounded by the rich natural heritage. We have already noted that forest and gardens had been included in the list of architecture and Kautilya (*Arha. chapt, XX*) insists upon preserving and growing of forest of many kinds like-Tapovana, Dravyavana, Nagavana and Mrigavana. He has also

recommended the Kings to develop reserved forest with deers and antelops for pleasure trips (Mrigabanam viharartham Rgyah Karayet). In the Buddhacharita and pali literatures also we find the reference of many important gardens. Lumbinivana was one among such gardens where Lord Sakya muni Buddha was born in 625 or 563 B.C. Most of the ancient monasteries like Benuvana, Mrigadava (Sarnatha), Amravanarama, Jetavan vihara, the Banyan Groove Vihara (at Kapilvastu) were built within the gardens of different kinds. Inside the Kathmandu valley, which had been the capital city of Nepal since the first Lichchhavi King Manadeva I (A.D. 464), we find this king erecting a victory pillar before the Vishnu temple at Changu-narayana. During the rule of King Shivadev I (A.D. 590-604) Village and agriculture within the forest were allowed but selling of charcoal and firewood were not allowed. An officer called Vivaskaradhikrita was posted there to look after the forest. The Minnath temple inscription dated A.D. 726 also refers about forest and criminals taking hide inside the forest area. During the Malla period (A.D. 14th-18th) the effort to protect the forests around the temple and monumental areas had been still increased King Jaggajayamalla protected the forest of Changu with a better zeal. He had also imposed cash fine against cutting the green trees. Similarly, the forests and the temple of Svayambhunath, Gokarna, Sankhu, Chobhar (around the Ganesh temple) and the forest inside the Kirtipur fort (A.D. 1727) were cautiously protected.

#### **The Principle of Repair and Restorations**

It is to note that the repairs or Conservation of the historical buildings were being

done under some strict laws and principles. The vastusastra have also laid some regulations on this subject. It is to be known that the king of Lichchhavi and Malla periods were well versed in the vedas, smriti books. Epics, Purana, even Visnudharmottara purans and the Agamas. Names of Manu, Yama, Brihaspati can be found in the inscription of Anuparam gomi (A.D. 533-540). An Inscription dated A.D. 1546 mentions about the visnu image and temple which had been built according to the measurements and laws of Vishnu Dharmottarapurana (Regmi, IV, 25). The inscription of Amsuvarma dated 609 A.D. refers about the repairs of Kavach and Garuda (Vehicular bird) of Vishnu. The repairs were done strictly on the old models (Tesam Nidarsanam vapyā). Another inscription dated 1492 A.D. refers to the repairs of

the temple according to the conservation rule (Jirnodhara vidhananesmim). An inscription dated A.D. 1604 from Patan discloses that the temple of goddess Bhavani had been repaired closely observing the old temple (Sadanam Puratanama Nirikshya Jirnodhara chakara). The Law of repairs has also been referred (Jirnodhara Vidhana) in another inscription dated A.D. 1634 (Ancient Nepal, Dept. of Arch. No 13, P. 37) and in the inscription dated A.D. 1387 (Regmi, III, P. 46- "Agamokta-Vidhanena pratistha Kriyate). All these examples clearly indicate that the system of building and their conservation in the historical past were done on very scientific line following the old models and as laid down in the ancient books dealing vastusastra in Nepal.