

# Conservation of Historic Monuments in Lahore: Lessons from Successes and Failures

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## Abstract

*A number of conservation projects including World Heritage sites are underway in Lahore Pakistan. The most important concern for conservation of these monuments is to maintain authenticity in all aspects. Although we conserve, preserve and restore monuments we often neglect the aspects of authenticity from different angles. The paper will focus on three case studies built around 1640's namely Shalamar garden, Shish Mahal and Jahangir's tomb. The first two sites are included in the World Heritage List while the third one is a national monument and has a potential of being included in the world heritage list. Each one of these monument has a special quality of design and decorative finishes and its own peculiar conservation problems which need innovative solutions. The proposed paper will briefly discuss the history of architecture of these monuments, their conservation problems, and techniques adopted to revive them to the original glory. To what degree the government is successful in undertaking authentic conservation and restoration is examined. The paper draws conclusions with respect to successes and failures in these projects and sees to what degree the objectives of authenticity have been achieved.*

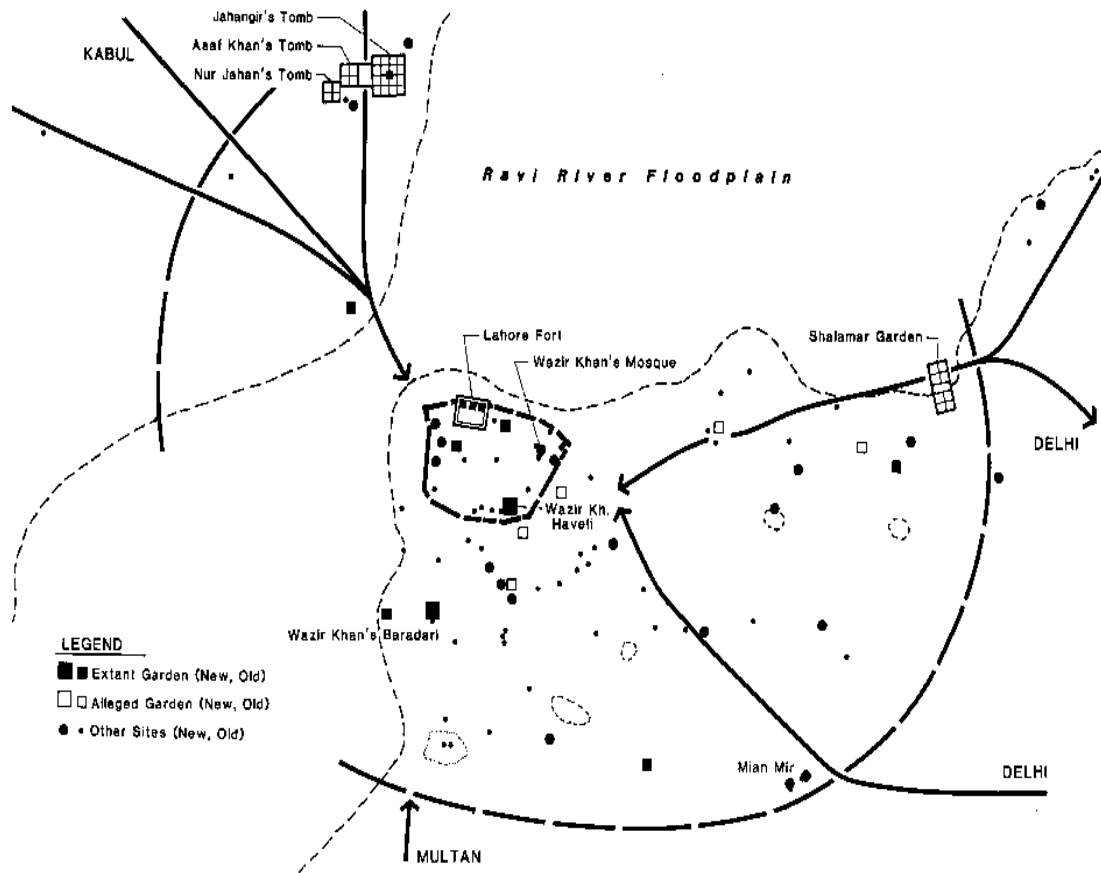
**Key Words:** Authenticity, World Heritage sites, Mughal period monuments, conservation in Lahore, role International agencies

## 1. Introduction

Lahore, cultural capital of Pakistan, is one of the most important centers of architecture (Figure 1) particularly during the Mughal period (1626-1749). The monuments built in Lahore present the culmination of local and Central Asian tradition resulting in a most powerful independent style [1]. A number of these monuments are facing a host of problems caused due to human neglect, environmental degradation and other factors such as aging and natural decay. In the last few years Department of Archaeology, Government of Pakistan undertook a series of conservation efforts to save these monuments. This paper is divided into three parts. The first part discusses the importance of authenticity in conservation followed by case studies of three projects. The final part gives conclusions and recommendations.

## 2. Authenticity and Conservation

Authentic conservation needs research documentation and commitment for excellence. Conservation without authenticity is meaning less. Authenticity has several facets and each one of them has its role and meaning in conservation. In any conservation project there may be three areas where one has to be very careful to look into the different aspects of authenticity. These aspects are to maintain, to preserve, and to safeguard authenticity. If these aspects are taken care of then one can say the conservation action or process is authentic. Even authenticity has different levels. In the first degree one gives full respect to authenticity and undertakes minimum action. In such case the actions are restricted to preservation and consolidation. This requires complete documentation to diminish the possibility of deviation from the original concept of the monuments and its finishes.



**Figure 1:** Map of Lahore showing historic gardens (after James L. Wescoat)

The second degree is moderate authenticity. Restoration and rehabilitation fall in this category. Although in restoration (Figures 2 & 3) authentic information is required to undertake any job but sometime historical materials and level of craftsmanship are not available to undertake such jobs. In adaptive reuse sometimes changes are required to be carried out which may change its original appearance. But in these actions it is important to undertake decisions which safeguard originality and authenticity.

In the third degree there is a limited regard for authenticity. This is usually experienced in reconstruction projects. In dealing with such sites sometimes materials are not authentic or workmanship is not up to the mark. In most of the projects neither the materials are of the same quality and nor the workmanship is of requisite standard. Therefore the overall

quality of work remains substandard. Another reason for such work is lack of commitment to and supervision of the work.

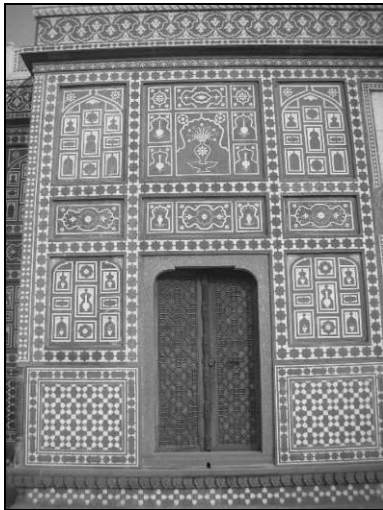
Conservation projects draw our attention to the following aspects of authenticity in order to preserve architectural values and they need serious efforts and commitment in the areas of research, investigation, and site supervision.

## 2.1 Aesthetic authenticity

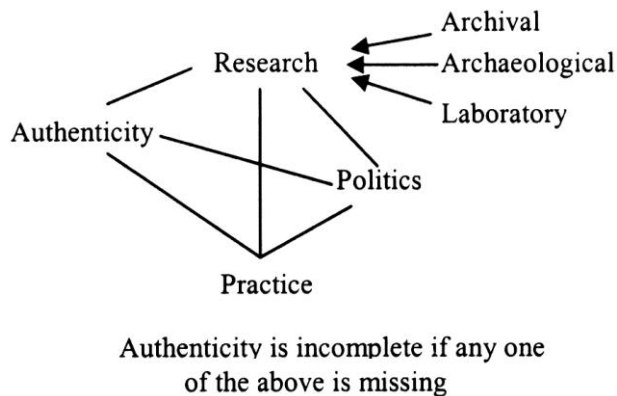
Conservation work will not be considered accurate if it is aesthetically unauthentic. The color, texture, size of finishing material, and workmanship must be similar to the original one. If some modern work is done that should be clearly indicated and differentiated from the original work. Aesthetic quality deals both visual and artistic (design) aspects and all interventions must match with the original.



**Figure 2:** Shalamar garden upper terrace



**Figure 3:** Detail of inlay work of Jahangir's tomb



**Figure 4:** Relationship of authenticity with research, practice, and politics

## 2.2 Sensory Authenticity

Whatever the work is to be done it must have similar environmental, thermal, and other sensory conditions (feeling of comfort or discomfort to human body). If it is not compatible environmentally and aesthetically correct it will not be considered an authentic conservation. The thermal, acoustical properties of materials must be similar to original one. The use of cement for example neither produces same sensory, environmental nor visual experience.

## 2.3 Historic authenticity

Historical values and history must be preserved in all interventions. Only those structures or later interventions may be removed which are aesthetically inappropriate, structurally weak or creating obstacles to its use and originality. The intention should be that all phase of history must be preserved. At the same time historical materials and methods of constructions may be used and this needs both laboratory and archival research from the original sources. For garden conservation archeo-botanical studies are required to identify original plants.

## 2.4 Scientific authenticity

All interventions must be scientifically and technically correct (e.g., the same or close use of materials, methods and techniques of construction). This is an area where extensive laboratory work is required. Efforts must be made to undertake the entire work scientifically as close as possible to the original construction.

## 2.5 Socio-cultural authenticity

The socio-cultural values should be preserved in all conservation work (all types of values must remain unaltered).

## 3. Case Study

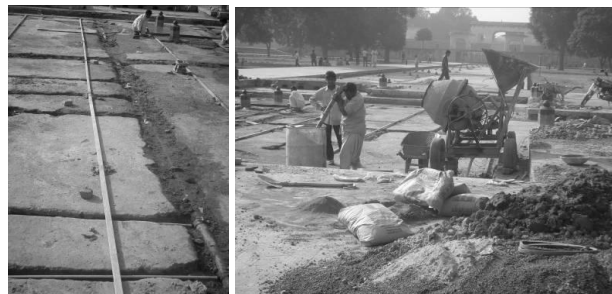
### 3.1 Case study I: Shalamar Garden

Shalamar Garden is one of the finest Mughal garden of South Asia. It was built by Shah Jahan (r.1628-58) in 1641- 42. Shalamar comprised of three terraces. The lowest and middle terraces are known as *Bagh-e- Farah Bakhsh* (Bestower of Delight) while

the upper terrace is called *Bagh-e Fayz Bakhsh* (Bestower of Bounty). The upper and lowest terraces are divided into *chahar baghs* (four fold garden). The lowest terrace was meant for the general public, the middle was used by king and courtiers while the upper most terrace was used by the royal family. The garden contained most elaborate water system then any other garden in the subcontinent. It is spread over an area of 40 acres. One of the most important features of Shalamar, besides long *khyabans* (walkways), is its water system. The water system includes long canal starting from upper terrace fall over a *chadar* (cascade) in the middle terrace. Here, water accumulates in a large *abgir* (tank) and overflows fall into *chini khana* (china room that consists of niches which contained bottles, vases and like) and then the canal traverses the lowest terrace and leaves the garden from the north wall. [2]. To feed the water to the canals the water was drawn from river Ravi. However, the water supply to 300 fountains on all three terraces was supplied by two wells located on south and west side of the garden.

The garden got severe damage during Sikh period (1749-1849) and remained neglected during British (1849-1947) period [3]. From the time of its construction the level of surrounding ground was raised resulting seepage of water into the garden. The perimeter wall was also got severely damaged. This require proper disposal of storm water from the catchment area. If adequate measures are not taken, the wall may collapse. The terracotta pipe supply of water to the fountains gets blocked due to the accumulation of silt. Similarly brick on edge pavements of long *khyabans* deteriorated with the passage of time.

Being a World Heritage site one of the first tasks undertaken jointly by the Department of Archaeology and UNESCO was the appointment of 'expert group' to prepare two separate master plans for the conservation of Shalamar Garden and Lahore Fort. Unfortunately the majority of the members of this team did not have prior experience of conservation. Therefore, the master plan remained incomplete in many respects. In particular there was not an adequate study on plants and planting design both from primary sources and from archeo-botanical perspectives.



**Figures 5 & 6:** The laying out of G.I pipes in Shalamar garden

To improve the quality of grass cover a soil improvement programs was chalked out. Instead of adding fertilizer to the soil, a 6 inches deep layer of top soil was replaced with a fresh one. In this process some of the existing plantation quite close to the one mentioned in original sources was cut down. In this way beside the wastage of huge money spent on the replacement of soil, some of the important archeo-botanical evidences were destroyed.

The water supply to fountains on different terraces was originally provided through a network of terracotta pipes embedded in brick masonry laid in lime mortar. With the passage of time the pipes got blocked due to accumulation of silt. Therefore, it was decided to remove the blockage and restore the water supply system. It was not clear the point of blockage of pipes. The around masonry pipe was so hard that it could not be removed to detect leakage. In the 1970's the services of Pakistan Atomic Energy Commission were hired to trace the blockage by introducing florescent liquid in the pipes and trace its path from ground surface. This system did not work as the blockage points were numerous and brick masonry was hard that it could not be dismantled. Therefore the only alternative was to install a new 4 inch diameter pipe parallel to the original system.

This new system lasted only 40 years. The pipes rusted and started leaking again particularly at joints. The floors started settling. Therefore, The Department of Archaeology has launched a project to replace defective pipes with new G.I Pipes. This new work was undertaken without undertaking research on traditional water supply systems. The base was executed in lime concrete with the addition of cement mortar. The historical life of terracotta pipe is much longer then the G.I Pipe but no research was

undertaken in this direction. The new construction is not sustainable and therefore this process will be repeated after every 50 years.

The work on the pavement of walkways leading to *Arz Begi* was substandard and a variety of grinders were used to level the floor. This process eroded the strong and properly burnt top layer of bricks. Moreover, instead of lime mortar cement sand mortar was used as binding material. There are serious challenges of authenticity in the conservation and restoration work in this important project. The problem of authenticity lies not only in the use of original material but also in the poor workmanship resulting unsatisfactory physical appearance.

### 3.2 Case study II: Shish Mahal

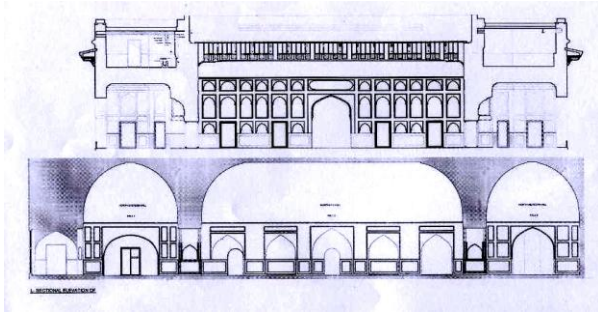
The second case study being described here is that of Shah Burj (commonly known as Shish Mahal) located in the north western corner of Lahore Fort. This project was initiated by fourth Mughal emperor Jahangir and completed during the reign of his son Shah Jahan in 1631-32. The most important feature of this monument is the mirror mosaic work (*ayina kari*) applied on the walls and ceilings of all interior spaces [4]. These convex glasses were fixed in *guch* (gypsum) plaster. The ceiling comprised of a layer of gypsum plaster applied on wooden lattice structure supported by wooden beams. The seepage of water from the roof and termite attack, the beams got deteriorated; therefore, the ceiling started losing its connection with the lattice structure. There was enormous challenge before the conservators. The Department of Archaeology undertook a conservation and restoration project with the financial assistance of NORAD and UNESCO. After the expert advice it was decided that a new grid of wooden beams may be constructed to transfer the load of ceiling to new structural system. The original ceiling of *guch* left its contact with the wooden lattice structure 1½ inch apart on each side. The lattice structure was later repaired at places with bamboo strips. It was decided to lay stainless steel wire mesh over the existing ceiling and then tie them up with wooden beams. Once this is done then a layer of *guch* mortar was spread over the mesh so that old and new layers become monolithic. The entire load was transferred to wooden beams placed above the wooden grid (Figures 7, 8 & 9).

It may be mentioned here that during the conservation operation, sheets of polystyrene were placed under the ceiling to support the structure which was removed after the completion of the task. It was found that this experiment was partially successful. At some places the ceiling got fixed while at other places it fell down. Looking into the conservation process, it was found that two factors were responsible for the partial failure of this process. Firstly, there was not adequate pressure from the base and secondly the upper surface of the *guch* plaster was not prepared adequately to make proper adhesion of new and old plaster. As a result the two surfaces could not become monolithic (Figure 10). There was not adequate supervision during the execution of work. A high level advisory committee was formed by the UNESCO but none of them had any practical conservation experience. However Pakistani specialists who had sufficient experience were not considered in the conservation work.

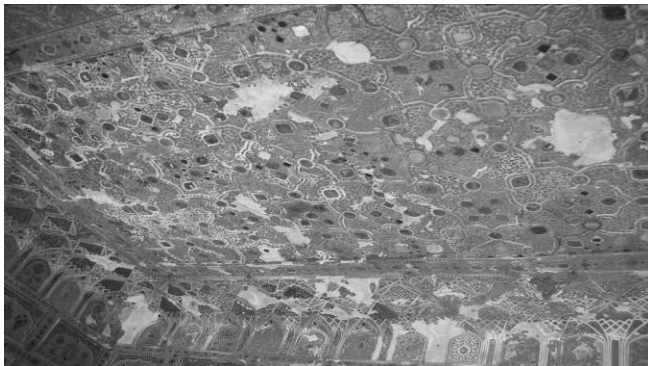
### 3.3 Case study III: Jahangir tomb

The final case study deals with the tomb of fourth Mughal emperor Jahangir built soon after his death in Kashmir in 1627. The tomb was built between 1627 and 1637 in the middle of a *charbagh* on the right bank of river Ravi [5]. The tomb was set on a platform (*chabutra*) which in turn was placed on a monumental podium (*takhtgah*) with corner minarets. The tomb was clad with red sandstone inlaid with white marble. The plan is such that each quarter is further subdivided into *charbaghs* with the help of paved walkways with a water channel in the middle. At the intersection of walkway lies raised fountain basin. The overflow of water from these basins falls in to the water channel in the form of cascade.

A number of floods from river Ravi damaged tomb quite seriously and washed away the south eastern corner of perimeter wall. The garden as well as tomb remained neglected and no serious effort was done to restore the original features. The stone got deteriorated due to fungus, moisture content, air pollution and human neglect. It is now being replaced with the new one. The brick on edge pavements got deteriorated and the vegetation on the rear side of the garden vanished [6].



**Figures 7, 8 & 9:** Section of Shish Mahal



**Figure 10:** Portion of ceiling after restorations, the damaged areas are visible



**Figure 11:** Panels of stone inlay before conservation



**Figure 12:** Panels of stone inlay after conservation

In 1986, the master plan for the conservation of the Jahangir tomb was prepared and actual work started around 1990 [7]. One of the major tasks was replacement and repair of damaged and partially damaged red sandstone cladding inlaid with white marble. This work began from the western façade (facing the main entrance) and then continued clock-wise (Figures 11 & 12). At present the work on the northern façade is in progress.

This work was commissioned on a contract basis. Although in repairs and replacement of damaged blocks, original material is being used some of the craftsmen are not properly trained. At the same time no measures were taken for the regular training of craftsmen, therefore quality suffer [6]. This work was

taken with the help of few hereditary craftsmen. The red sandstone which was originally imported for Badshahi Mosque in 1990 and latter borrowed for the Jahangir's tomb is about to finish now. It will now be imported directly from India or via Dubai. The procedure to import anything from India is complicated

In the repair of floors cement concrete base is being used whereas as originally lime concrete flooring was used. Since cement mortar deteriorates much rapidly then lime mortar therefore, it has a shorter life span.

#### **4. Conservation in Lahore**

Since independence (1947) a number of projects were undertaken by Department of Archaeology in Lahore but few significant lessons have been drawing for authentic conservation of future projects. The main reasons were lack of research on construction and binding materials, inadequate training of professional staff and workers, unattractive environment and working conditions and inadequate government support for conservation of heritage. Although Department of Archaeology established a Pakistan Institute of Archaeological Training and Research in Lahore practically it is dead organization.

Composition of mortar mixes in Shalamar and Jahangir Tomb varies from one another and no effort has been made so far to make comparative study on the strength and weaknesses between the two mortars. In Shalamar Garden ordinary Portland Cement is being mixed in lime mortar which has completely different physical properties compared with lime mortar. Lime is slow setting while cement is quick setting, lime repel heat while cement absorb heat.

Conservation is a highly practical and technical work. It needs complete knowledge of theory, understanding of technical issues and therefore, require innovative solutions at certain areas. At present none of the member of National Committee constituted by UNESCO has any practical experience in conservation nor do they visit the site. In order to maintain authenticity thorough documentation is required at each step. This includes all types of photography (still, video), preparation of drawings for future reference. Periodical publications may be

brought out showing the successes and difficulties for future guidance and education. The Master Plan Committee had similar problems but could not set proper guidelines for the conservators.

Politics and political institutions can play a positive role in authentic conservation. They can help motivate people, support government institutions in achieving practical work to a desirable quality and raise sufficient funds for conservation. The current situation indicates that political institutions have not been playing a positive role in conservation. There is not a single case where citizens came together to save their monuments. In Lahore Global Heritage Fund Pakistan has been created to raise fund for the conservation of Asif Khan Tomb Lahore, but after the lapse of around five years no practical work could be started on the site. As a consequence, the project was abandoned due to the lack of interest.

Supreme Court of Pakistan ordered the government agencies to remove encroachments around historic monuments including Shalamar garden and Jahangir's tomb. In the meantime senior judges of the Supreme Court declined to take oath under the PCO and they were sacked. New judges appointed in the court did not take any interest in this matter, although money for the compensation was set aside to pay the affectees of this decision. This was the first time in the history of Pakistan that such action was taken. It was hoped that once such action is taken in Lahore, it will become precedent for the other cities to follow. At the same time the former Government, backed by the President, deliberately delayed the demolition process to gain political gain but even then they could not win the election.

Because of heavy political interventions and backing by public representatives the wrong practices of contractors could not be discouraged. Generally there is a constant pressure on the Government officials to take lenient views of the substandard work. It is also unfortunate that UNESCO's quality standards are implemented differently in developed countries and underdeveloped countries.

#### **5. Concluding Remarks**

A serious shortage of skilled craftsmen has been observed at all conservation projects. This shortage



occurred due to the limited conservation activity in the past. As a result most of the craftsmen left their profession and engaged some other activities. It is, therefore; recommended that practical training of professional staff working on conservation projects may be made mandatory. In all these projects university students are not involved at any level. The involvement of students would not only help them to learn from the field but will also prove an asset for the future times.

From the above case studies it becomes clear that sufficient research is not carried out before the start of conservation projects. The field investigations, laboratory and library research must be made mandatory both at the time of preparation of conservation plan as well as implementation of the project. The work may not be commenced until the basic research is complete. At present the work is either carried out on the verbal instructions of the concerned authorities or left at the discretion of the contractor. Even the World Heritage Sites of Shalamar Garden did not have complete documentation of physical evidences since the inception of the project.

Conservation management plan for all the above mentioned projects did not exist. In this situation some shortcomings appeared in both Shalamar garden and Shish Mahal soon after the completion of certain task. By this time there were neither financial resources nor professional expertise available to carry out such minor tasks. Problems like leakages, improper mortar joints and sometime uneven flooring cause some serious problems. The management plan must ensure adequate manpower and financial resources for the continuous repairs and maintenance of the project. It is further suggested that some technical staff may be retained after the completion of the project because of their practical knowledge of methods and techniques of conservation. The work on the Shish Mahal has finished but scaffoldings are still there owing to some old problems in the ceiling. These problems could have been solved if there would have been a management plan with some funding associated with it.

The technical staff of the Department of Archaeology deputed on the above mentioned conservation projects were not trained in the area of

project management. Therefore, all the projects could not be completed on time. These delays are seen due to absence of long term and short term targets. For future conservation projects it must be ensured that technical staff must be trained with modern project management techniques if they are adequately trained before. The training of junior staff by them, maintenance of record of events and activities, arrangements of daily and periodic meetings with concerned staff and recording of minutes are extremely essential for the conservation project. Prior to the beginning of new events or on the appearance of some technical problem conservation notes may be circulated which highlight subjects like methods, cautions and problem solving techniques. In the above mentioned case studies proper management techniques were not followed. As a result there is very little information/record available on conservation projects carried out in Pakistan.

Detailed notes and measure drawing for each task during the life span of the project may be prepared regularly and kept in the Pakistan Archeological Training and Research for research purpose. Although this organization was created within the Department of Archaeology but from the years it is a dormant organization. It has neither qualified staff in research and training but it is also poorly funded. Therefore, no fruitful results are being received because of lack of coordination between the two organizations in spite of the fact that both the organizations are located in same premises.

It has been observed the while the new G.I pipes were laid out on the lowest terrace in Shalamar Garden but there were not any working drawings available on the site indicating the location of conduits and fountains. The preparation of comprehensive drawings must be made compulsory for each project. Until or unless we will not learn from the mistakes we cannot proceed further.

Conservation is an ongoing process. It must not be limited to a specific time or a project. Therefore, all related activities must continue simultaneously. If some aspect is left week or does not receive adequate attention during the project time, it must be implemented subsequently. At both Shalamar Garden and Jahangir's tomb no proper studies of plant



material, both from books and from the site, were carried out. Authentic conservation of the gardens cannot be perceived without original planting design and this task can be fulfilled now.

Architectural conservation may be a part of environmental planning and management and vice versa. Conservation plan must address the problems at macro level even beyond the site. Today noise and vibration of heavy traffic and all kind of environment pollution is affecting historic monuments. Illegal constructions and road expansion projects are encroaching the open spaces around these monuments. Even the historic water reservoir serving the Shalamar Garden was bulldozed for road expansion. In the light of these problems the catchments areas must be clearly defined and preserved to save these monuments from external pressures.

Looking into these facts it is strongly suggested that a balanced and comprehensive approach may be followed for conservation projects. This includes, thorough documentation, complete research, trained and committed professional staff, qualified professional advisory committee and periodic publications on the successes and difficulties encountered during the conservation project and solutions sought to overcome such difficulties.

## 7. Acknowledgement

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