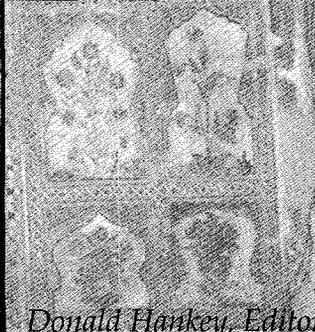


Culture in Sustainable Development

Case Study: Lahore, Pakistan
Conservation of the Walled City

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Donald Hankey, Editor

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South Asia Infrastructure Sector Unit
The World Bank



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This study has been prepared by the staff of the World Bank and international consultants. The judgments expressed do not necessarily reflect the views of the Board of Executive Directors or of the governments they represent.

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FOREWORD

The Fort and Shalamar Gardens in Lahore, Pakistan, were added to the UNESCO World Heritage List in 1981. The City of Lahore is representative of other smaller cities in Pakistan with equally valuable cultural and architectural heritage. These historic sites are important cultural, educational and economic assets that need to be assessed, understood, maintained, presented, and promoted for the benefit of Pakistan and the whole region. The value of conserving these assets is now becoming more generally appreciated.

But the survival of historic cities is more at risk than ever before. As with heritage world wide, and in particular the historic urban areas of the developing world, important monuments and characteristic urban tissue are fast disappearing under the effects of economic and physical change, rapid population growth, and poorly planned economic development. While the benefits of conservation and protection of the heritage are becoming more generally appreciated, the means of planning and achieving such conservation remains to be developed in many parts of the world.

This report was commissioned by the South Asia Infrastructure Unit of World Bank to review the processes of conservation, the related administrative organizations, and the procedures for project control and execution in Pakistan. The consultants' observations are mainly based upon research and practical experience gained in Lahore and in other countries. It is from this experience that comparative data has been drawn. It is hoped that this document will be of use to those concerned with the conservation of cultural property.

*Ismail Serageldin
Vice President, Special Programs
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Abstract

Pakistan's rich and varied heritage spanning 5,000 years represents a variety of cultural and architectural influences, each one symbolizing a valuable source of education, leisure, tourism, cultural appreciation, and research. The historic cities in Pakistan face the same danger of obliteration as heritage in other parts of the world, disappearing fast under the effects of rapid economic and social changes coupled with random urbanization. Lahore is a jewel in Pakistan's heritage. The technological, cultural, and population changes in Lahore are not compatible with the planning, form, and ancient structures of the Walled City. The central government and the local administrations are aware of the importance of integrating conservation in development planning and urban upgrading procedures. In this context the World Bank and the Punjab Government initiated the Punjab Urban Development Project. One of the project components in Lahore is the conservation of the Walled City.

This paper proposes a framework for developing a universally accepted strategy for the integration of conservation with development planning drawing upon the lessons learned from the experience in the Walled City of Lahore, and making comparisons with similar projects in other urban areas of the world. The paper examines the following elements at length: (a) background theory for such integration and the need for conservation, the principles of such policy and the administrative requirements for implementation of the project in detail; (b) conservation initiatives in the rest-of Pakistan and their importance with particular emphasis on the implications of laws and their applications, which in the case of conservation policy is more communal; and (c) the details of the experiences and conclusions of the projects undertaken in Lahore.

The paper describes the conservation experience in Tunis and Fez and attempts to draw parallels with the experience in the Walled City of Lahore in which commu-



Timber workshop on site (Shahi Hammam).

nity participation is emphasized. It concludes that the lessons learned would be important precedents for future conservation particularly in areas of funding, public participation, city and project planning, and execution. The study encourages initiating a conservation for the exchange of technical information.

Acknowledgments

The authors wish to thank His Excellency the Governor of the Punjab, Mian Muhammad Azhar, who has taken a keen interest in the conservation activities in Lahore.

Of particular importance in the completion of this study was the advice, administrative support, and transport contributed by the Lahore Development Authority (LDA). Thanks are especially due to the former Director General, Sheikh Abdul Rashid, and to the Chief Metropolitan Planner, Mr. Shaukat Jamal Khawaja, who has also reviewed the study.

The following persons and organizations are gratefully thanked for their valuable contributions and comments: Mr. Riaz Mahmood, Lord Mayor of the Metropolitan Corporation Lahore; Dr. Ahmad Nabi Khan, Director General, Department of Archaeology, Government of Pakistan; Dr. M. Rafique Mughal, Director, Northern Circle; Mr. Ihsan H. Nadeem, Pakistan Institute of Archaeological Training and Research; Mr. Saleem Akhtar Rana, Chief Administrator, Department of Auqaf; Mr. M. Waliullah Khan, Advisor to the Punjab Department of Archaeology; Ms. Sajjida H. Vandal, Principal, and Professors Ejaz Anwar and Sajjad Kausar, Federal Evacuee Trust, the National College of Arts; Mr. Kamil Khan Mumtaz of Anjuman-e-Mimaran; Mr. Zafar Omer, General Secretary, and Mr. L.A. Rehman, Lahore Conservation Society; Mr. and Mrs. Lari, Karachi Heritage Foundation; and Mr. and Mrs. Qureshi, architects, UNICON.

This paper was prepared by Gilmore Hankey Kirke Ltd. (GHK) in association with Pakistan Environmental Planning Architectural Consultants (PEPAC) under the direction of Ms. Paula Donovan, Division Chief, and Mr. Geoffrey Read, Task Manager (EMENA), the World Bank, Washington.

The international funding agencies, notably the World Bank have responded to requests for support and, with the Pakistan Urban Development Programme (PUDP)

and other projects, have contributed towards different sectors of urban infrastructure and services upgrading and conservation as part of a wider program to support rational urban growth. The projects and work of this report have been carried out with the benefit of World Bank funding.

The study was directed by Mr. Donald Hankey of GHK, and carried out in association with Syed Muhammad Irfan (PEPAC) who reviewed the text; Dr. Abdul Rehman, Conservation Adviser (PEPAC), and Mr. Kevin Tayler, Infrastructure Adviser (GHK). Field research was conducted by Mr. Ian Harper, Team Leader, who also supplied most of the photography; and Mr. Kornelis Holstein, Conservation Architect of GHK. Word processing was by Mr. Muhammad Shahzad, and Mr. Tariq Jamil, LDA in Lahore and Miss Helen Nagle in London. The study was edited and reviewed in London by Donald Hankey, and John Harrison, and with helpful advice from Sir Bernard Fielden.

EXECUTIVE SUMMARY

Lahore is one of the jewels of Pakistan's heritage. But it is under threat from population growth, technological change, and cultural influences that are not compatible with the planning, form, and ancient structures of the Walled City. Both the local administration and central government have become increasingly aware of the need to include conservation as an integral part of the development planning and urban upgrading procedures.

The *Introduction* looks at the historical background and objectives of the project, examines the structure of the report, and notes areas of further research required.

Chapter I examines the background theory for conservation and the relevant legal and administrative mechanisms. It examines the need for conservation and notes the economic, social, cultural, and scientific benefits. Notable among these conclusions are:

- ◆ The importance of maintenance and repair which are less costly in human, social, and economic terms than decay, social blight, and renewal.
- ◆ The economic, cultural, and social benefits of conservation in retaining the familiar patterns of land ownership, social patterns of behavior, and the historic associations with their cultural roots as expressed through the heritage which are considered to be important for the city.

There remains a great need for an effective listing and registration of the heritage. This work can only be carried out by skilled persons under the direction of the Federal Department of Archaeology (FDA) or other trained professionals. Lists of heritage property must be registered in an inventory held in a national and local archive, covering not only the most important monuments but also urban or rural

areas to be conserved as well as historic buildings and other historical artifacts. Once lost the heritage is gone forever, and this generation bears a heavy responsibility to the next generation for conservation of the cultural heritage.

The principles for conservation policy are outlined in Chapter I noting the importance of keeping the heritage in appropriate use such that adequate maintenance can be assured. There is a serious requirement for careful planning and management of the available financial, material and human resource. The importance of community participation is outlined, and the possible means is examined for involving the community through Association of common interests. The means of community participation and interest in the development planning process is examined. We note that laws and their application are essential, as conservation policy is of a more communal than of private interest. Administrative requirements for organization and management are outlined. Comparisons are made with Fez and Tunis.

Additionally, in Chapter I the conservation processes at various levels from central to local government are described with the related functions and analyses given in some detail regarding the essential components of a project to conserve an urban area or an individual building.

Constructing a brick arch (Delhi Gate)



Conservation in Pakistan as a whole is examined in Chapter II and notes the enormous value and diversity of the heritage dating back some 5,000 years. The roles of the Government, the Federal Department of Archaeology, the State and City Development Authorities, and other organizations are described.

Conservation in Lahore is described in Chapter III as it has evolved over recent years. The importance of the conservation plan is stressed and the need for the plan to be constantly updated. The responsibilities of the Lahore Development Authority (LDA), the Metropolitan Corporation Lahore (MCL), and the FDA require closer cooperation than is achieved as yet, but the problems are complex and theoretical solutions take time to introduce. There is a growing understanding and commitment to conservation as part of the Development Planning work of the LDA.

Chapter IV looks at the detail experience and conclusions resulting from the projects undertaken to date. In particular the contract experience on two buildings, the Delhi Gate and the Shahi Hammam is given and referred back to the principles outlined in Chapter I. Among the conclusions reached, the following are important:

- ◆ Archaeologists and historians should remain involved from the start to the finish of conservation projects.
- ◆ The professions need to improve their experience of alternative working methods if the effective registration and surveying of the great number of historic buildings is to be achieved.
- ◆ An archive of documentation and records of the qualities of the heritage of the heritage and works to the historic buildings must be retained by the local authority, and must be accessible for public observation if essential community participation is to be achieved.
- ◆ The problems of access, decisions on future use, and the historic importance of the fabric of the building to be conserved must be decided early in a project if extra costs and delays in completion are to be avoided and the adequate organization of services and finishes is to be achieved.
- ◆ Planning permission and formal agreement with the FDA should be essential hurdles and disciplines in any conservation project.
- ◆ Systems of satisfactory funding of the conservation of privately owned buildings have to be found to suit the local political, social, economic, and fiscal conditions that prevail. The majority of historic property is privately owned, and while the government can set an example by the works it un-

dertakes to public buildings, the historic character of the city is given by the privately owned properties. Fiscal measures or grant aid tied to contributions from the property owners must be devised as it found elsewhere. Financial mechanisms using non-profit making companies, associations, or trusts should be considered to handle rolling funds or other financial devices for generating development investment.

- ◆ Project management and execution requires trained leadership and improved procedures and disciplines. These are examined in some detail relating information from the experience of the two principal projects.

Chapter V relates to the experience of the cities of these Tunis and Fez. These are used as very important parallels of cities in other countries which are undergoing similar conservation planning. Fez in Morocco, twinned with Lahore, is seen as being of major importance as the mechanisms for funding, public participation, city and project planning and execution are an important precedent for future action in Lahore. We advise that a convention for the exchange of technical information should be arranged.

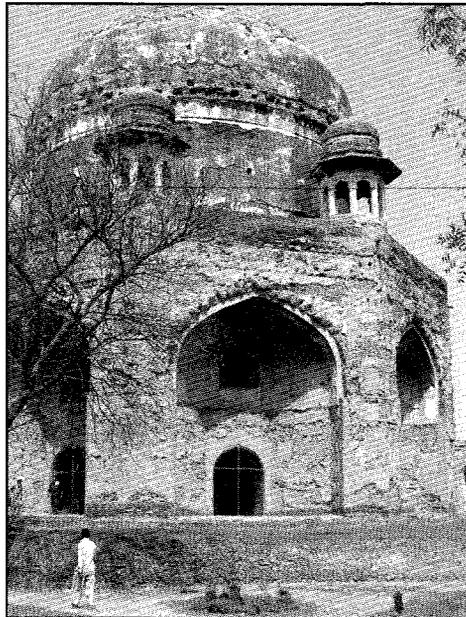
The Technical Case Studies examine two principal projects in some detail so that lessons can be learned and seen in context.

INTRODUCTION

THE HISTORIC CONTEXT

The heritage of Pakistan is particularly rich and varied, covering every century of the last 5,000 years. There are many distinct periods of cultural development: the pre-historic sites of the Indus Valley civilization, the Graeco-Buddhist sites of the Gandhara region, the Hind Shahi, the Sultanate, Moghul and British periods. They have all left important heritage sites representing valuable resources for education, leisure, tourism, cultural appreciation, scientific, and historical research.

The historic cities are full of rich vernacular architecture illustrating traditions of craft skills, design, and urban form. These works contain the best record of past social, cultural, and technical achievements. The decorative styles and detail planning of buildings and urban areas have developed slowly over the centuries. Commerce and craft establishment enriched the life of city dwellers. External influences were absorbed into the artistic and cultural traditions so that today this cultural built heritage represents the principal medium through which past ages may be appreciated.



Moghul mausoleum construction of red brick and kankar lime mortar.

There are common trends to be found in the historic urban centers of most developing countries. These include the introduction of modern technologies, the resettlement of affluent families outside the densely populated city centers, and the immigration of poorer rural people to the city. Powerful economic, demographic, and technological forces can quickly degrade a rich protected heritage into slum areas occupied by dwellers with little ability to care for the social and physical environment.

Many historic towns in Pakistan face risks from forces of change. The heritage is at varying degrees of risk in Gujrat with its surviving walled citadel, Larkhana on the Indus River with its traditional Kashmiri-inspired timber architecture, Peshawar Old City in the Northwest Frontier Province, and many others.

Urban areas are growing through natural population expansion and rural migration at an unprecedented rate. The present urban population of Pakistan is estimated at 35 million and growing at about 4.1% per annum.¹ The speed of material change has increased through the introduction of new goods, new scientific processes, and new transportation systems. The people's aspirations for both the urban environment and the patterns of social behavior are being affected by new experiences gleaned from the greater influence of travel, television, radio, and personal contact with other cultures. This process of physical and social change imposes enormous strains on the public administration in many countries barely coping with provision of essential services let alone the control of growth and development. It is not surprising that in the quest for the new and modern, the reasons for conserving heritage can be misunderstood or forgotten.

The process of change to the urban structure is a complex phenomenon requiring careful planning and research. It requires a sympathetic understanding of cultural, physical, and economic forces, and sensitive and efficient political direction by the authorities.

Action in Lahore

It is in this context that the World Bank and the Pakistan Government initiated the Punjab Urban Development Project (PUDP) of which one component in Lahore is the Conservation of the Walled City, for which GHK and PEPAC are the foreign and

.....
¹ GHK/MRM International. 1993. *Urban Upgrading: Options and Procedures for Pakistan*. WEDC, p. xi.

local consultancy advisers. Under PUDP, conservation work has been carried out on major monuments and historic buildings; city gates, moghul baths, schools, community centers, and streetscapes. This work forms part of a program for major upgrading of the urban infrastructure.

PEPAC Conservation Plan for the Walled City, commissioned by the Lahore Development Authority, identified a total of fifty projects that included the setting up of financial, legal, and administrative systems. During Phase I of the PUDP conservation component (1986/1988), fifteen of the building projects were developed through the contract documentation stage. Projects within the Delhi Gate Catchment Area were treated as pilot projects for the development of appropriate conservation policy and techniques. They included four individual public-owned historic houses in the Delhi Gate Bazaar (2 contracts) and the restoration of the complete North and South facades of all the other properties in the Bazaar (4 contracts).

The commencement of Phase II was in Autumn 1989. Phase II consisted of identification and development of a further 25 projects, as well as an implementation program. The first project on site was the contract for the Delhi Gate, let in January 1990 and completed by December 31, 1990. The next project to start was the Shahi Hammam, the Moghul bathhouse, situated just inside the Delhi Gate. The contract for this project was signed on November 12, 1990 and work was completed in May 1991. None of the Delhi Gate Bazaar projects were implemented, due mostly to complications in the project ownerships.

Objectives of the Report

Various factors have suggested that a review of policy and practice for the conservation of cultural heritage in Pakistan based on experience and progress in Lahore would be appropriate, notably:

- ◆ The World Bank involvement in the conservation of the Walled City of Lahore and the success of their support carries lessons for work in other urban areas and for work in other countries.
- ◆ The 1980 Lahore Urban Development and Transportation Study (LUDTS) recognized the benefit to be derived from integrating the conservation of historic fabric and the upgrading of urban infrastructure, both in the design and implementation stages. The lessons learned in Lahore should be shared.

- ◆ The projects have shown the need for further training in conservation skills, for contract management and craft skills, for improved financial control procedures, and for improved funding mechanisms.

The work carried out to date also shows that, under the present funding allocations and staffing levels, only a very small number of projects can be implemented out of the many for which full documentation has been prepared by the consultant team. If the benefits of the consultancy work are not to be lost, the means of carrying out a larger program of construction work must be found. Also the means must be found to reach those areas not successfully tackled, such as the repair of houses in private ownership and development of cooperation between different authorities.

- ◆ The contemporary situation in Lahore is often typical of other cities of Pakistan, especially with regard to the political, legal and administrative framework. Again the experience of the Lahore work should be shared.

Conservation is but one element in a complex range of social, political, economic, legal and administrative considerations. It is of benefit therefore to review the nature of the present works in the light of the national and local context, and at the detail scale of the projects themselves. This study also reviews the work in relation to experience gained in urban conservation in some other countries.

STRUCTURE OF THE REPORT

The report is structured as follows:

- ◆ **Introduction**—conclusions and recommendations for necessary conservation framework and action and support required for future conservation to be effective.
- ◆ **Chapter 1**—when and why conservation is important. It looks at the present trends for integrating conservation with urban renewal and sets out a model for conservation policy and practice;
- ◆ **Chapter 2**—the importance of the heritage and the national organization for conservation in Pakistan.

- ◆ **Chapter 3**—the nature of the heritage and related conservation planning policies and practices in Lahore.
- ◆ **Chapter 4**—the observations and comments on contracts in progress or completed.
- ◆ **Chapter 5**—comparative data is given on parallel conservation policy and practice in Tunis and Fez.
- ◆ **Technical Case Studies**—two examples give important background to restoration of the Delhi Gate and Shahi Hammam.
- ◆ **Appendices**—abbreviations and acronyms, organizations contacted, terms used, and a glossary of Urdu words. Different cultures use the same words for different meanings for instance “conservation” in Europe and “preservation” in the USA have similar meanings in certain contexts.

Nothing is more inappropriate to a host community’s needs than for an outsider to make proposals that are unaffordable, or technologically inappropriate, or in conflict with local, social, moral, or political beliefs. We hope that we continue to avoid such pitfalls. *Most issues of effectiveness or efficiency raised in this report are relevant to all cultural and political systems and we believe that the conclusions reached are especially relevant to Pakistan.*

It is intended that this report should be of interest to a wide audience, especially national, provincial and local government in Pakistan and countries with similar problems; nongovernment organizations; professional and contracting organizations; and international lending agencies.

FURTHER STUDIES REQUIRED

During the course of the PUDP experience many questions have arisen relating not only to the principles for conservation, but also to particular local issues which should be the subject of separate study as they are beyond the scope of this report. These issues for further study include:

- ◆ Planning policy and the reuse of redundant urban areas,
- ◆ Planning policy and the relocation of incongruous functions such as wholesale markets and heavy industry,
- ◆ Clearing of unauthorized land uses and encroachments,

- ◆ Registration and control of land use and development with statutory support,
- ◆ Links between proposed improvement and the resultant social and economic benefit,
- ◆ Development of political power and the promotion of community participation,
- ◆ Forms of financial mechanisms, fiscal incentives, and the creation of company, trust and other associations for the purposes of promoting appropriate conservation in different sectors of the public and private economy,
- ◆ Relationship between ease of transportation and popularity,
- ◆ Setting up and managing a National Archive for conservation records,
- ◆ Design and manage housing policies with necessary legal back up that will allow for the relocation and resettlement of people, from small family units to large groups.

CHAPTER I.
CONSERVATION
THEORY AND EXPERIENCE

Before looking at conservation policy for Pakistan and Lahore and at the experience gained in the execution of particular projects, it is valuable to restate the conceptual base for assessing and carrying out conservation policy. This section sets out a theoretical and practical model for the subsequent examination of policy and practice. Current advice from the Government of the United Kingdom notes:

Heritage is the product of many centuries of evolution, and it will continue to evolve. Few buildings exist now in the form in which they were originally conceived. Conservation allows for change as well as preservation (retention of the original fabric). There are many cases where it is right to “conserve as found”. But there are circumstances too where architectural heritage has to be able to accommodate not only changes of use but also new building nearby. It is better that old buildings are not set apart but are woven into the fabric of the living and working community. This can be done provided that the new buildings are well-designed and follow fundamental architectural principles of scale and the proper arrangement of materials and spaces and show respect for their neighbors. Conservation means breathing new life into buildings, sometimes by restoration, sometimes by sensitive development, sometimes by adaptation to a new use and always by good management.²

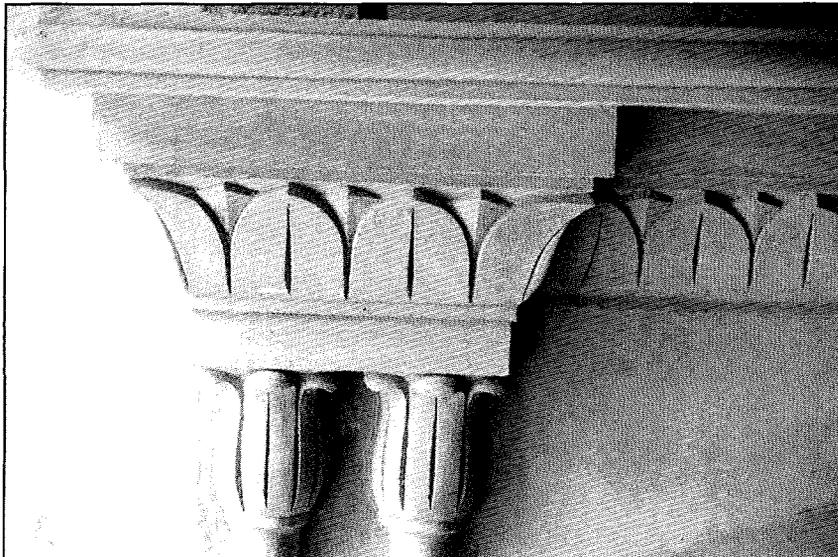
² *Planning Circular 8/87, Department of the Environment, UK*

THREATS TO THE HERITAGE

Mankind now has an unprecedented ability to change the environment. Ignorance, abuse, or misuse damages the heritage. Cultural property is at risk. It is threatened in many countries by private financial and commercial interests; by major infrastructure developments promoted by national, municipal and private agencies; by neglect from owners and responsible authorities; and more often than not, by ignorance as to the value and potential benefits to be gained from appropriate reuse. Many factors threaten this historic environment.

Threatening factors include demographic growth and the movement of population into towns; the increasing dominance of motorized transport and new roads; the failure of planners to control new development at a scale and standard of design sympathetic to the traditional urban fabric; the change in methods of production and manufacture requiring larger buildings often best relocated outside historical areas. Natural causes of decay through sunlight, temperature, ground movement and earthquakes, wind rain and ice, floods and fire can all have catastrophic effects on built heritage. Particularly, in Lahore the location of provincial wholesale markets inside the Walled City, and steel works nearby threaten the environment.

Sculptured kankar lime (Haveli Muborak)



Conservation of cultural heritage is an essential part of the urban planning process which must be managed and balanced with available human, physical, and financial resources. Urban development must consider “continuity” as well as “change”, for social as well as economic reasons. Excessive change is not only socially disruptive but economically unaffordable. Conversely, excessive “preservation” can stifle healthy development and renewal. In order to balance conservation with renewal in urban planning, there must be a mutually accepted understanding of cultural and social value and adaptability of the heritage to be conserved.

To achieve the necessary understanding requires research and analysis of the many factors involved. The built environment reflects the social patterns of behavior and the conservation of the one gives continuity to the other.

CONSERVATION AND HERITAGE VALUES

“Conservation is the action taken to prevent decay (Fielden 1989).” Regular maintenance is the most cost-effective form of conservation, and work aimed at enhancing future use would always be reversible to protect the integrity of the original fabric.

Cultural property is not uniformly valuable, but may be valuable for a variety of different reasons: Values may be *emotional* relating to wonder, identity, continuity, spiritual, and symbolic criteria; *cultural* relating to documentary records, history, archaeology, aesthetics, architecture, urban form, landscape and townscape, science, and technology; or *functional* values which may relate to use, economy, social, and political values.

A high level of awareness and ability is required to assess the cultural value of the built heritage, to propose appropriate new use allowing affordable maintenance, and to integrate new fabric sensitively with the old. Education of the public, professionals and administrators is an essential part of the conservation process.

Not only does the establishment of conservation and planning policy take time, it also requires political and economic commitment. The policy must be supported by the population and given academic and legal definitions if it is to be defensible and a part of a democratic system of government. Such policy must recognize that conservation is not necessarily universally applicable to all fabric of any building to be conserved. The need for conservation varies as does the permitted degree of adaptation or renewal. Sir Bernard Fielden (1989) defined seven scales of intervention between “conservation” and “renewal”. All or some of the following are included in the process of “conservation”.

- ◆ *Prevention* of deterioration (indirect conservation) can be achieved by a program of effective maintenance and controlling environmental pollution.
- ◆ *Preservation* is keeping the object in its existing state of repair to prevent further decay.
- ◆ *Consolidation* includes adding or applying supportive materials with the actual fabric in order to ensure its continued durability and structural integrity.
- ◆ *Restoration* is reviving the original concept, in relation to the original fabric or use.
- ◆ *Rehabilitation* includes adapting the building to a contemporary, sustainable use.
- ◆ *Reproduction* includes copying an existing artifact in order to replace some missing or decaying parts.
- ◆ *Reconstruction* includes rebuilding anew in imitation of the old, as necessitated by disasters such as fire, earthquake, or war.

CONSERVATION BENEFITS

There is clearly a range of benefits accruing from conservation.

ECONOMIC BENEFITS

Population growth concentrates development pressures on the urban environment; more buildings, more infrastructure and municipal systems of transportation and services are required. Administration requires more space, and recreation and leisure must be planned. But there are always economic and physical restraints on financial resource and space available to build new environments. Reusing existing built environments instead of building anew is often cheaper and requires less change to existing infrastructure. Conservation and reuse of the existing is particularly important for the poor urban dwellers who are least able to build new.

It is nearly always cheaper in terms of cumulative capital expenditure, as well as the social costs, to conserve, maintain, restore, and adapt than to allow decay and deprivation to require greater renewal.

The lack of maintenance, the misuse, abuse, or disuse of cultural property lead rapidly to decay and a lack of vested interest in maintenance. This in turn can render the cost of conservation unaffordable. Conservation and maintenance must be regular

and budget costs must be anticipated to avoid unaffordable levels of capital expenditure for reconstruction or rehabilitation.

The heritage properties are important assets for the administration, for the quality residential and commercial establishments, for education and for tourism. They are focal points for commerce and other activities. It has been found in Europe that the successful promotion and presentation of major cultural property will produce large secondary benefits to the surrounding area.

Good quality heritage can sustain effective reuse and will contribute to the general economic well-being of an area. It is often the catalyst for local employment, trade, and commercial benefits.

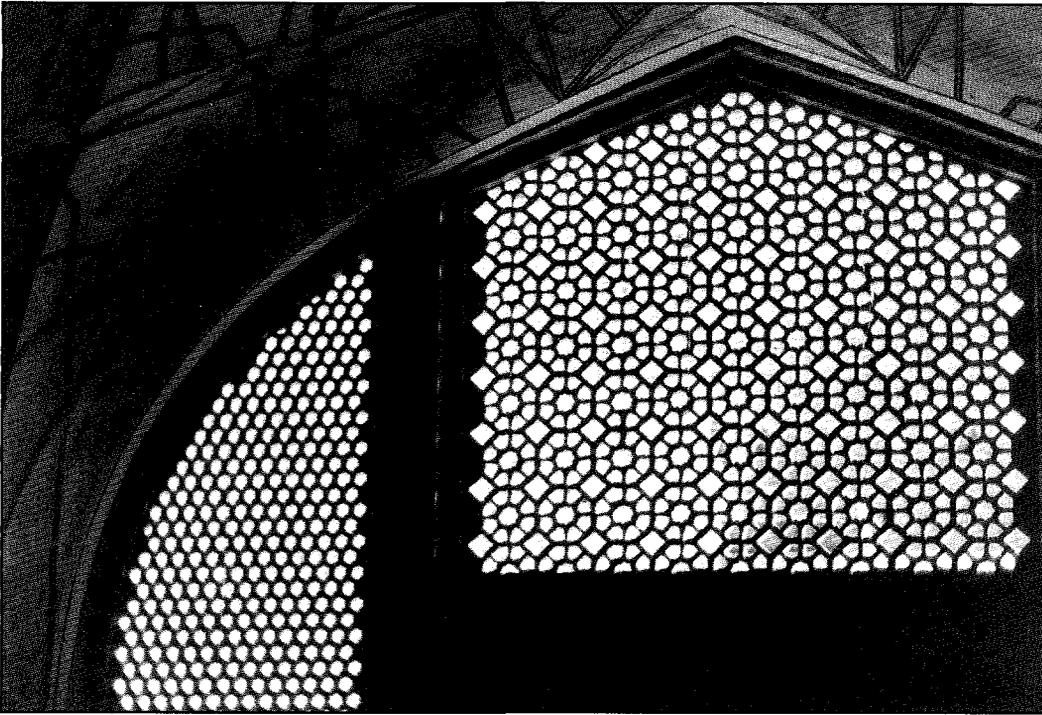
Social, cultural, and scientific benefits

The process of change is disruptive to familiar social patterns of behavior. The delicate fabric of social custom and the healthy communal responsibility for the quality of life are broken when a new environment is created. People often prefer the old because its qualities—refined over time—embody cultural, social, and artistic values that underpin the contemporary norms of expression and behavior.

The cultural heritage differentiates itself from new construction by having recognized qualities that have withstood the test of time. The 19th-century progenitors of conservation in the United Kingdom, such as William Morris, considered that old buildings and cultural property belong not only “to our forefathers” but also “to our descendants” and that “we are only trustees for those that come after us”.

We might define the social, cultural, and scientific benefits as follows:

- ◆ The conservation process provides continuity of craft skills through active maintenance programs. The ability to deploy these craft skills in contemporary, as well as traditional environments, enriches present lifestyles. Craft skills promoted for conservation are also marketable resources for national economic benefit. Morocco is particularly successful at promoting and marketing its craft skills.
- ◆ Cultural property is the most understandable artifact for the interpretation of past ages of human achievement. The resource is non-renewable and once perished cannot be recreated. The heritage often represents the only source of information for several branches of science.



New timber jalli screens (Shahi Hamman)

- ◆ Artifacts of history and culture express the roots of contemporary values, lifestyles, art, design, social, and behavioral patterns. Such a resource helps create public confidence in the institutions and social “mores” of contemporary life.
- ◆ The perception of time and change is only expressed through the perspectives of history. The record of past achievements sets the standards for contemporary products and skills, and forms the syllabus and proof of historical teaching.

CONSERVATION FOR EDUCATION AND TOURISM

Effective conservation policies are of particular importance to both education and tourism.⁵ There should always be a close relationship between national and local

.....
⁵ *Much of the source material of this section has been provided by Sir Bernard Fielden.*

government agencies responsible for these matters. This regrettably is not the case in many countries throughout the world.

Mass tourism is now part of the world culture and the international economy thanks in large part to the international press, television and radio and Internet. At a national level, tourism in Pakistan, especially with its diverse scenery, cultures and climates, plays an important part in cultural education and recreational pursuits. Today an increasing number of people are able to enjoy the pleasures of cultural discovery and tourism. The market in Pakistan is ready to be exploited and would be of undoubted benefit in the promotion of national identity and culture. Tourism statistics throughout the world prove promotion of cultural conservation—enhancing tourism—produces valuable economic benefits to the local community through expenditure on shopping, transport, food, hotels, and services. This boosts employment and allows further money to be spent on this environment and conservation. But to achieve this certain principles must be followed by this administration.

Comprehensive tourist development plans are preconditional for developing any tourist potential. It should be a fundamental principle of any tourist development plan that both conservation—in its widest sense—and tourism benefit from it. This principle should be part of the constitutional purpose of all national trust agencies, and local authority tourism and recreation departments.

National agencies have great responsibility in promoting their tourist plan. One fundamental problem is that the tourist industry is difficult to identify having many disparate parts. Although Pakistan has many fine sites, it lags behind other countries in the development of tourism.

Tourism requires coordinated publicity, the promotion of cultural heritage sites based on sound research, good interpretation of cultural artistic scientific and historic themes, and appropriate presentation for the expected visitor. Good visitor management is essential at historic sites which can suffer excess wear from uncontrolled access. Heritage resource management is a specialist subject requiring a whole range of skills.

Revenues. A significant proportion of *revenues* earned from tourism can and should be applied for the benefit of national and regional conservation. Profits from world tourism go mainly to tour operators and hotels. Unfortunately, only a small proportion filters down to the host community who may provide site staff, guides, shops, food, and local transport.

Entry charges should be made in order that services for visitors can be improved without the reduction of available conservation funds. They can be varied from day to day to encourage a spread of peak loadings. They are the best means for establishing interest and enjoyment at the site. If people are paying, they will demand value for money and soon make known their criticisms. Raising of funds through catering or sales of literature, photos, drawings, guides, and souvenirs can be used to develop the site and visitation.

Local satisfaction. Long-term interests of the people working in any host community should be a primary determination in selecting options for tourist development. The long-term interests of the local communities faced with the impact of world tourism is the critical question for Pakistan. It will be all too easy for the cultural balance in remote and beautiful valleys to be degraded by insensitive tourism.

When the economic gap between the local community and tourists becomes too real, then the community welcome turns into rejection and harassment of visiting guests. This also happens in world centers of tourism such as Rome where the tourist is the prime target for robberies. The answer may be in gradual planned development to avoid an abrupt gap between tourists and the local community. Tourist operators will not understand this point even though they might think that they comply with the Manila Convention.

Education and presentation. Educational programs should assist and invite tourists to respect and understand local life, culture, history, and religion. Tourist policy should take these factors into account. If school children do not enjoy their visit, they may avoid all cultural heritage sites for many years and not introduce their own children to them.

Making visits enjoyable and interesting is achieved by thinking about the visitors' interests and attitudes, not the resource of which one is proud, and this can be difficult for heritage site managers who normally think first of resource. All World Heritage Sites have more than one historical story of importance to tell: stories of construction or sometimes destruction, the people, the daily and traditional activities and happenings, previous uses of the site, and notable treasures.

Presentation must be effective to appeal to all ages and interests of visitors. The media for presentation should not harm the appearance or ambience of the heritage site.

New infrastructure design. The design of new buildings, sites, and transport systems should minimize potentially harmful visual effects. Pollution controls should

*Engraved color
glazed plaster
and imitation
brickwork.
Khat Kashi
(Masjid
Wazir Khan).*



be built into all forms of infrastructure. Where sites of great natural beauty are concerned, the intrusion of built structures should be avoided if possible.

Management. Good management should define the level of acceptable tourism development and provide controls to maintain that level. The management plan for the heritage site should state visitor service objectives. The objectives should be discussed with government, local authorities, and tourist boards to avoid conflicts.

The attitude of staff to visitors is the single most important factor in making their visit enjoyable.

Signs and notices showing the layout of the heritage site should be erected at the car and coach parks and be placed wherever strangers could lose their way. They should be fixed where they will not cause damage to ancient structures or spoil views.

There are many management principles which should be followed relating to languages, guides, tourist and educational information, site maintenance, and the handling of visitors, the control of vandalism and action in the case of fire or danger.

Sustainability. Perhaps the most important principle for any use is that the heritage site must be self-sustaining, and revenue projections must form the basis for affordable maintenance, operation, and presentation as far as possible.

Principles of a Conservation Policy

Having stated the broader objectives in terms of the need for and benefits accruing from conservation, it is helpful to reduce the objectives to more detailed principles which remain valid for most contemporary situations.

NEW USES OR THE ORIGINAL USE FOR OLD BUILDINGS ARE THE KEY TO THEIR PRESERVATION

This is a universal rule, and must be a central policy objective; *without satisfactory use there is no vested interest in adequate maintenance, and the decay of a building's fabric will be rapid.* Appropriate use will vary from one building to another according to its historic importance, quality, adaptability, the cost of conservation or renewal and its ability to satisfy a "market need" for new use.

The cultural value of some heritage can be admired simply for its intrinsic qualities. The interpretation and presentation of its history and qualities might be considered important enough for permanent state financing of its management and upkeep. Preferably, such culturally important properties can generate income to support adequate maintenance through the establishment of realistic entrance fees and other sales. But where they have become nationally important or are run by charities or religious foundations, some dependence upon grant aid may still be required. For the most part, however, historic properties must support a use that can provide funding for operation and maintenance.

Establishing effective use may well require the relaxation of controls over land use, density, site coverage ratios, daylighting, servicing or access requirements. Equally a sensitive application of fire safety measures must be achieved possibly adding electronic detection measures where building construction cannot satisfy the recommended standards. The bias will always be in favor of conservation before any rehabilitation or renewal may be considered.

ADAPTATION TO NEW USE SHOULD PRESERVE THE ORIGINAL FEATURES OF THE BUILDING

The best use for a historic building is obviously its original intent. But it is often necessary to find appropriate alternate uses which must preserve the architectural and historic features of the building. New buildings in an historic urban area should respect the character and context of the neighboring environment. A sympathetic and contextual approach to design permits the introduction of modern systems while respecting the aesthetic qualities of the location. The creation of harmony in the

new design will not detract from the respected qualities of the old. A heightened awareness of the benefits of appropriate construction is required from both property owners and occupiers and from the controlling authorities. Where new construction is required, the impact on the original fabric must be minimized and always be reversible.

THE APPROPRIATE SETTING OF THE BUILDING MUST BE PRESERVED

Unsympathetic development close to a historic building can spoil its setting and make its use unattractive. As we find in Lahore, physical damage to historic property can result from inappropriate construction and use of adjacent properties. “The setting of a historic building is often an essential feature of its character, especially if a garden or open space has been laid out in relation to the building. This principle is most important when considering urban areas worthy of conservation, for they owe their quality not so much to the individual merit but to the harmony produced by the grouping of the buildings. Such areas require the same careful consideration as for individual buildings when proposals for redevelopment are planned.”⁴

CONSERVATION POLICY MUST TAKE ACCOUNT HISTORIC CULTURAL, ARTISTIC, AND SCIENTIFIC IMPORTANCE OF THE HERITAGE

There has to be an adequate system of registering all the historic buildings or areas that require conservation. Registration defines the important features to be conserved and sets standards for planning of conservation, as well as for monitoring of works through the heritage development control process. The importance of heritage may relate to association with people or events as well as to artistic or architectural, engineering, structural, or environmental design and achievement. European systems for registering the built heritage define the information to be contained in an inventory as follows:

- ◆ Location of the site or building, map reference;
- ◆ Date of inventory;
- ◆ Address;
- ◆ The grade or importance of the building;

.....
⁴ *Planning Circular 8/87. Department of the Environment, UK, Section 25.*

- ◆ A building description, including—building type; date of construction; architect, craftsman or patron; materials of all parts of building; plan form and style; facades; interior and secondary features; history of building and its historical associations; setting or townscape value of building(s); sources of information in the inventory.

The listed description, the property, its qualities, and history must be accepted at state or national level as the defensible qualities of the conservation policy. The information listed becomes the basis upon which the conservation policy is established as part of the planning processes at national, regional, or local level. An authoritative statement by the expert listing officer must support conservation policy as to the limits allowable limits of conservation, intervention, adaptation, or reconstruction.

Skilled persons acquainted with cultural, economic, scientific, and social criteria necessary for such work should carry out the evaluation process. The resultant proposals for conservation must be accepted by the authority responsible for ensuring compliance with policy be it at national, state, or local levels of the planning hierarchy.

The inventory is an essential record of the quality and quantity of heritage that must be controlled by the legal powers of government. Normally, a specially constituted national agency is appointed to manage the conservation policy (Ministry of Cultural Affairs with its Heritage Department or Institute of Archaeology, for example). The national agency ultimately responsible for decisions on conservation matters should organize and retain detailed records of all heritage in a National Archive.

**CONSERVATION REQUIREMENT MUST BE MEASURED
AGAINST ALL AVAILABLE AND POSSIBLE RESOURCES**

The requirement for conservation must be assessed and costed. This will enable priority works to be undertaken first, and allow the available time, skills, administrative, and financial resources to be planned, set aside, and used in relation to a programmed budget. Resource relates not only to financial limits, but also to the availability of adequate construction materials, professional and craft skills, and manufacturing capabilities.

Difficult decisions must sometimes be made where appropriate new use requires the adaptation or conservation of fabric. The materials, construction tech-

niques, the cost of training professional and craft skills, and the appropriateness of the historic fabric for the appropriate use needs careful consideration. Often the correct decision for reasons of cost or use may require the conservation of the original with all its faults and defects, but with a surface appropriate for new use added and independent of the original construction.

**CONSERVATION policy MUST FORM AN INTEGRAL PART
of DEVELOPMENT plan AND ITS ADMINISTRATION**

The conservation and presentation of the heritage, whether it be buildings above ground or archaeology below ground, has a strong influence over the zoning and uses that are permissible in urban or rural areas. Due consideration must be given to the character and condition of the heritage in the creation of development plans whether they affect national, state, or local levels of the planning hierarchy. There must be adequate identification of the heritage for adequate protection and integration into the planning process by civil servants or consultants with responsibility for development plans, or for the administration responsible for monitoring of development control.

THE MEANS REQUIRED FOR AN EFFECTIVE CONSERVATION Policy

The above objectives and benefits can only be achieved if they are supported by the appropriate means of realization. The following principles are as important as the objectives in the execution of policy.

PRINCIPLES FOR CONSERVING HERITAGE AS DEFINED IN THE DEVELOPMENT plan MUST BE UNDERSTOOD AND ACCEPTED BY THE OWNERS AND TENANTS OF HISTORIC PROPERTY

The interest and support of the community towards conservation policy is essential if the inhabitants are not to destroy the heritage in the process of using it. There are many methods for generating both interest, understanding, and involvement in conservation, although to do so requires commitment, time, and investment:

- ◆ Publicity will market the objectives and details of proposals through the news media, television, radio, and public meetings.
- ◆ Involvement of communities in the decisionmaking process ensures that grassroot ideas are taken into account. In Lahore this could be done on the

basis of selective involvement of groups of common interest and by delegation of selected responsibility to local groups.

- ◆ Advice on appropriate design or construction methods can be given through the publicity process, through demonstrations, and through education.
- ◆ Education of building, owners, designers and contractors is a long-term but essential strategy in achieving adequate public support.

Owners of property are usually more concerned with the function and usability of their property than with conserving heritage. The scientific, social, and economic values of the historic fabric are seldom known or appreciated by private owners. It is not surprising therefore that the harmonious quality of historic streetscapes and individual buildings is damaged by the use of unsuitable techniques and materials for the repair or replacement of historic construction. A lack of development control by the administration can allow the introduction of incongruous urban design and inappropriate construction details.

LEGAL SYSTEM MUST BE EFFECTIVE AND ENFORCEABLE

The process of conservation requires legal definition. The law of the country plays a vital part in underwriting the authority of Urban Development Planning and supporting the appropriateness of proposals for conservation and reuse. But the law itself must be well conceived, must not have any omissions or faults of definition or confusion and must complement the required system of administration. The courts must uphold the law and must be accessible through the legal system for justice to be done without unreasonable delays. The law must relate to other planning legislation and administrative systems of the country and should at least cover the following matters:

- ◆ *Definition of term, concepts, persons, and organizations involved and their respective roles and responsibilities.* International agencies such as UNESCO have played a major part in defining movable and immovable cultural property and developing an international consensus on appropriate policy. The cultural built heritage can cover a wide range of objects, archaeological sites, ancient monuments, areas of human occupation or past activity, streets, buildings, and single objects. The items selected for conservation must be assessed for “cultural value” in the listing process. This quality is hard to define and varies as the experience of history grows. The definition of the values used

for assessing these qualities must however be clear if support for the policy is to be obtained, and if the legal and administrative machinery is to operate effectively.

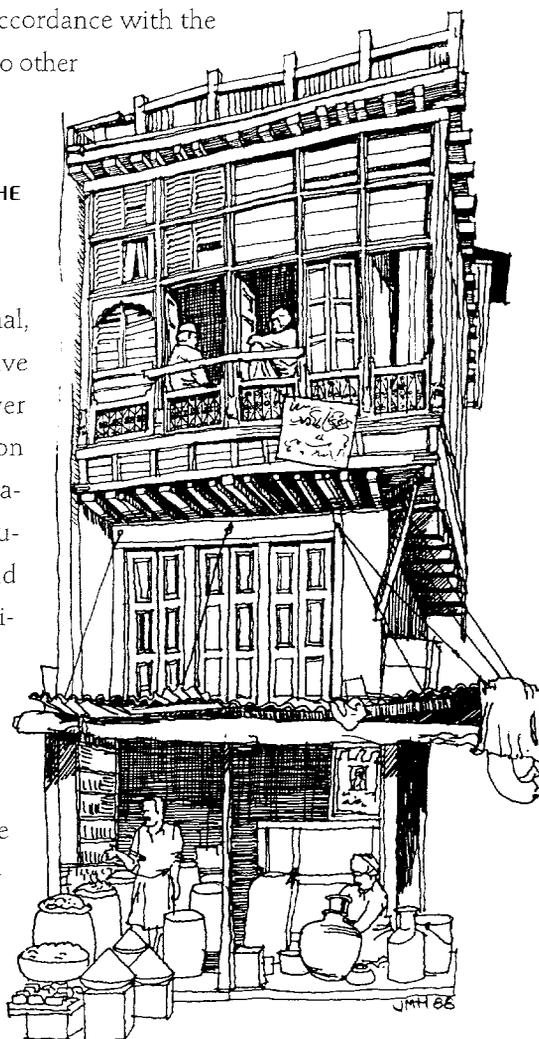
- ◆ *Registration or listing and publication* in an inventory of the heritage sites, the buildings, or antiquities of special architectural or historic interest.
- ◆ *Control of works in or near listed buildings.* This requires an efficient administration able to agree monitor, approve, and keep records of works to listed buildings carried out along with normal development control procedures.
- ◆ *Methods of obtaining permission* for works in or near-listed buildings.
- ◆ *Granting of consent* with or without conditions attached and the rights of owners to appeal against decisions by the authorities.
- ◆ *Rights of public authorities* to take action to prevent deterioration or damage. This may cover such subjects as compulsory acquisition of a building in need of repair, the compensation to be given on the compulsory acquisition, the sanctions against owners in the cases of deliberate neglect.
- ◆ *Urgent action* required for vital works or dangerous structures.
- ◆ *Powers of local authorities* to contribute financially or otherwise to the preservation of the heritage.
- ◆ *Penalties* for acts of willful damage to listed buildings.
- ◆ *Conservation areas.* There should be legislation governing the urban areas to be conserved. The conservation legislation of many countries fails to recognize the group value of quite simple historic areas. Legislation too often deals with the top class monuments and fails to protect the great wealth of quite simple lower quality historic buildings and areas where quality plays a major role in setting the standard of design and ambience in a particular location. "Such areas may be large or small, from whole town centers to squares, terraces and smaller groups of buildings..."⁵ French legislation in addition automatically creates a conservation area within a radius of 200 meters from a historic monument. This has the effect of protecting the setting of a special building but this is often too restrictive for the areas of less important buildings. Prevention of demolition within a conservation area without express permission and other aesthetic controls are the principal effects of conservation area designation. Each country will adjust its laws

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⁵ *Planning Circular 8/87: Department of the Environment, UK.*

around the above principles in accordance with the intention and meanings ascribed to other legislation.

ADEQUATE SYSTEMS OF ADMINISTRATION BY THE AUTHORITIES AND EFFECTIVE GUIDANCE FROM THEIR POLITICAL MASTERS ARE ESSENTIAL

Whatever the political system, the national, regional, or local administration must have the support of government. The power vested in each branch of the administration has to be clearly defined along with the relative rules and relationships of the constituent bodies. Administrative failures and confusion obviously exist where such definitions of relative responsibilities are not made, for instance between federally empowered organizations and the exercise of similar state or local authority organizations. Where legislation does not define roles, or bodies are constituted without reference to their relative responsibilities, inefficiency or neglect can seriously affect the control and enhancement of the country's heritage.



House in Mohalla Namaddgaran

Policies that concern conservation inherently require the support and goodwill of the people as well as government. Without the public's goodwill cooperation and private initiative, conservation policy is unable to effectively manage and control more than properties in public ownership. But the vast quantities of privately owned heritage are the principal elements that determine the character of our historic cities.

But how is such support and goodwill achieved? We have noticed in many cases the importance in the United Kingdom, France, Italy, and Morocco of the devolved responsibility to local groups and sectional interests. One of the Fez suburbs, once a squatter township, complied with city legislation through the devolvement

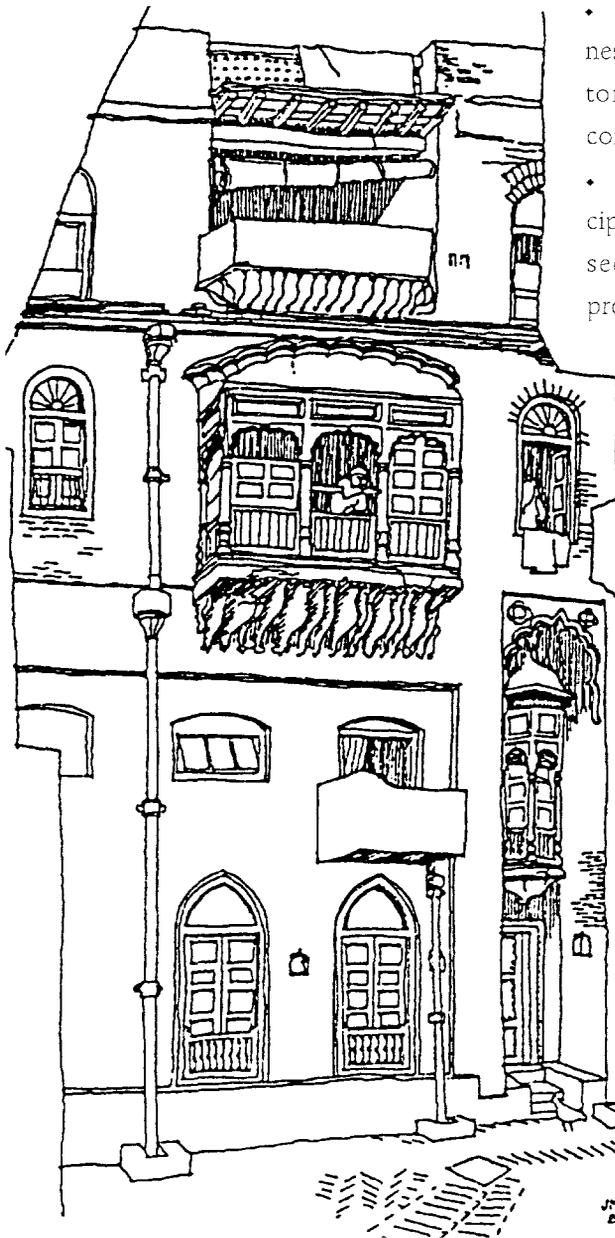
of real political and fiscal powers. In the same city the improvement to the life of sections of traders arose through extensive consultation between the administration and the particular local interests. The founding of well constituted associations of local interests with leaders appointed by the associations themselves permitted a vital focal point for consultation and progress in the framing of acceptable conservation principles and in the development of acceptable planning policies.

In other countries commercial, residential, or specialized conservation or academic groups are regularly consulted as part of the planning assistance given to the local administration. Such societies can act as a focus for healthy popular understanding or the local anxiety about public policies. The experience of Fez (twinned with Lahore) showed the great benefits to the city of adequate consultation in the growing confidence of the population in the city's policies for conservation and the reasoning for the planned redistribution of land uses to the benefit of the whole city.

The possible forms of the administration cannot be discussed here. But in relation to conservation, particular points should be considered:

- ◆ Creation and execution of local conservation policy should be the responsibility of local government.
- ◆ National or federal policy determines the broad criteria within which local authority can operate.
- ◆ The organization of the local administration must:
 - Carry out federal conservation policy;
 - Initiate and maintain a continuous process of development planning that incorporates the conservation of both nationally and locally designated cultural built heritage;
 - Establish, maintain and revise as necessary conservation planning controls and standards;
 - Provide appropriate conservation and related design advice to the people concerned;
 - Take all steps and measures necessary for the implementation and enforcement of the conservation planning provisions as prescribed by the laws in force.
- ◆ In order to execute its conservation responsibilities the local authority must:
 - Have adequate numbers of directors, managers and staff with sufficient experience and skills. This is not easily achieved. Problems encountered

in conservation require not only a detailed appreciation of the requirements for contemporary construction and planning, but also an appreciation of archaeology; art; political, social and cultural history; historical forms of construction and the related problems of decay; techniques of repair and compatibility of modern constructional techniques and materials with their historic locations.



- Be able to judge the appropriateness of proposed schemes which for historic buildings concerns detail construction and decorative treatment.
- Employ and train staff in the principles of its agreed policies. As can be seen from the above, conservation projects require effective teamwork and understanding for appropriate design detail to be achieved, perhaps more so than modern projects. Only staff with a broad-based education can lead projects of conservation with sensitive historic, planning, design, and construction problems.
- Have an archive with constantly updated information on all heritage and related projects in its area, a library for technical and design reference, and a reference collection of components from historic buildings.
- Where most probable in designing and maintaining work on its own historic properties, it must establish clear office proce-

Delhi Gate Bazaar Building

dures to achieve control of design production, quality, good specification, contract and management procedures in administering, organizing, planning, monitoring and controlling its projects.

- Budget annual expenditures, estimate accurate project costs, and develop satisfactory techniques for controlling budgeted expenditure on conservation work. Detailed estimation of costs cannot be precisely known until all the problems are exposed, sometimes only when on-site work starts. The control of costs during works on site requires rapid and efficient cost reporting techniques, if adjustment of work content is required to achieve budget-driven targets.

EDUCATION AND DEVELOPMENT OF DESIGN AND CRAFT SKILLS ARE FOUNDATIONS FOR REALIZING CONSERVATION POLICY

The range of skills to be deployed on conservation works is wide. It is apparent in Europe that the extensive specialized education obtained by professionals and academics employed in the consultancy and managerial roles can lead to bad teamwork through ignorance by one specialist of another’s experience and perspectives. Education and practical experience therefore become essential ingredients in achieving an efficient team. This cooperative spirit is especially important in developing good understanding and harmony with the contractor and his skilled and unskilled labor on site.

For legal powers to be implemented, effective management and advisory skills are required by civil servants. Considerable commitment, effort, and expense is required for specialized architects and historians to compile the inventory and to devise planning policies acceptable to the public which can incorporate the opportunities, advantages, and limitations of the heritage. The necessary skills are seldom available either among the professional planners, architects, engineers, archaeologists and historians or among the administrators, economists and politicians. It is therefore essential that schools and universities are able to provide adequate education in the required professional and administrative skills.

CONSERVATION AT DIFFERENT LEVELS WITHIN THE ADMINISTRATION

Conservation policy is a matter of national concern and must be taken into account at all levels of government.

CENTRAL GOVERNMENT

At central government, conservation comes under the direction of a government ministry (arts, culture, or environment) where the minister or the courts are often the ultimate authority in settling disputes. Conservation policy is given legal definition at national level.

Usually central government enacts the principal legislation that may be repeated or modified by regional or local government according to their special needs. The execution of policy occurs at all levels of the administration and is closely integrated with the planning mechanisms of the country. As with other components of the planning process, the qualities of the heritage in question must be considered as they contribute to education, recreation, commercial, and economic and other activities in the community. The use of the heritage must be assessed and the benefit must be realized if it is not to become a liability. It is sadly the case that, through a lack of creative and economic planning and good administration, many countries still fail to use cultural heritage to their advantage. Major cultural educational and economic benefits are still lost or inadequately exploited.

The central government must give direction to the department endowed with the authority for policy management. This direction is of critical importance in the execution of national policy and requires the department to do the following:

- ◆ Plan and coordinate policy;
- ◆ Manage and direct a central inspectorate responsible for executing policy;
- ◆ Monitor work by regional departments for the integration of conservation into the national regional and local planning process;
- ◆ Set principles for assessing conservation proposals and have powers of approval;
- ◆ Retain a national monument record and inventories of all listed heritage;
- ◆ Evaluate the need and control the granting of financial assistance, incentives through taxation; and
- ◆ Advise governments, central and provincial planners on conservation priorities.

Most countries of the world do not yet fully appreciate the need to retain central heritage records and to ensure disciplined work on heritage sites in a manner that contributes to the sum of public knowledge and understanding. Yet the re-

search carried out on individual projects is the base documentation for the subsequent interpretation and presentation necessary for promoting public appreciation and realizing economic benefits. In these matters the lead must be given by central government.

PROVINCIAL AND LOCAL GOVERNMENT

The devolution of responsibility must be determined according to the nature of the heritage and the political, geographical, and economic characteristics of the country. The principles of administration and policy direction at central government level are repeated in provincial or regional government. It is worth noting, however, that great care must be taken to ensure that regional and local policy is complementary to that of central government.

At each level of the national, regional, or local planning departments a varying degree of concern with detail consideration is required. The application of conservation principles into regional infrastructures and the promotion of regional planning to best exploit the benefits gained from the heritage is most important. The possible conflict between heritage and infrastructure location and land use has to be avoided.

Local government is responsible for development and economic planning, the distribution of functions, and for the control of the context and the quality of the works executed. Debate will always center on the management and distribution of limited financial resource, and on the level of priority given to the identified development opportunities. For options to be understood and for debate to be meaningful, planning must be to a sufficient level of detail. This may require a wide range of professional advisers who are not always available.

The promotion of policy, the development of community understanding, and the promotion of appropriate financial mechanisms to exploit the interests and resource of the community must take place at local government level. Various entities may implement the projects: government or their agencies as owners of the asset, private owners or tenants; developers or financiers; nonprofit bodies such as a religious institutions, associations of common interests; trust; or any combination of them. Long-term confidence in strategic and development plans is essential for the commitment of private financial resource and the promotion of private interests.

The coordination and control of development planning at local level places the prime responsibility for conservation matters on the shoulders of the local administration. The interface between the requirements and development planning and the

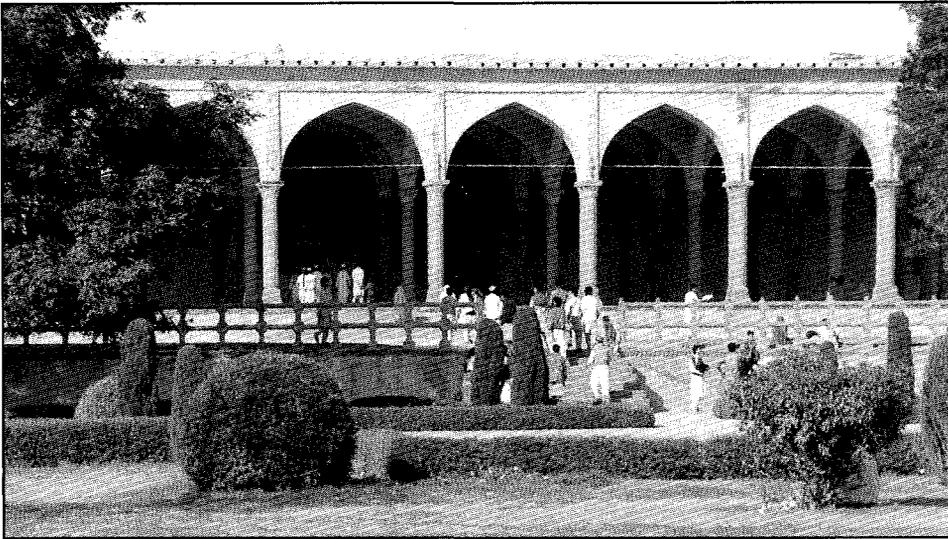
aspirations of the community is most closely perceived by the local administrative officers, who are only able to perform their vital role if given adequate resources of manpower, finance and political support.

The growth and change taking place in modern urban environments can strain any administration. Adding to the responsibilities for conservation of historic city centers, monuments and historic buildings presents a range of unfamiliar problems. It is not generally realized how complex conservation issues can be, involving the historical assessment of the existing fabric; and assessment of appropriate use, materials, construction detailing, and principles of conservation and long-term maintenance. All issues require keen awareness and disciplined procedures by administrators, users and owners, professionals, and contractors. And as often happens when political influence and expediency interfere, the control of planned objectives, the program, and the quality of workmanship can be prejudiced.

At local planning level, the heritage—be it archaeology or buildings—often is found in conflict with private vested interests. The immigrant poor, the tenants, and inappropriate commercial users have little interest in the conservation of heritage and will abuse property which is inevitably secondary to their own survival. Multiple problems arise in poor areas that may seriously affect the heritage. For instance, inheritance laws often lead to multiple occupancy and overloading of floors and *jharokas*. The uncontrolled tapping of services off public mains, leaking fresh water and foul water drainage pipework, all lead to structural damage, movement, or decay of foundations, walls and floors. Unauthorized land use and encroachments abuse the important open spaces and recreation areas. Telephone cables, electrical services and overhead transformers disfigure the street scene. These typical problems result from uncontrolled urban environments, and they point to the great importance of effective public administration that is well organized and disciplined and that has the cooperation and support of the political and social establishment.

It is apparent from the comparison of different countries that effective conservation results from good teamwork and co-operation, between the many people concerned. Considerable success has been achieved in two cities visited by leading officers of the Lahore Development Authority, namely Tunis in Tunisia, and Fez (twinned with Lahore) in Morocco. This success resulted principally from the following:

- ◆ Political support,
- ◆ Development of community participation in the planning process,



Light ashlar masonry structure relying on steel tie rods (Lahore Fort).

- ◆ Financial encouragement in the form of grants to the private sector as an inducement for private funding also to be used in the conservation process,
- ◆ Reduction of density by the relocation of employment and housing outside the city center,
- ◆ Installation of municipal services underground,
- ◆ Careful zoning of uses,
- ◆ Careful surveying and assessment of the areas and buildings to be conserved, and
- ◆ Design of renewal and reuse in relation to compatible historic forms of planning and construction and in relation to the affordability of the intended occupiers.

It is important to note that in most cases of historic city center conservation requiring complex historic assessment and planning processes, a measure of professional and technical support from outside agencies is required until sufficient local professional experience is built up. The development of local experience at handling these issues itself depends upon the commitment by the authorities to promote education and give support to the universities, the professional schools, and other specialized associations.

CONSERVATION OF AN AREA OR OF A BUILDING

There is an essential sequence of action in conservation work. While some of the following items may assume greater importance in any particular project, it will be essential for most of these actions to be seriously considered:

Assess the historical importance of the building and surveys. Archive research should accompany detailed surveys of the built fabric to assess the historic importance of the building; the quality of design; and the appropriateness of recent construction (its artistic, aesthetic, historic, architectural and cultural qualities); and the type and limit of permissible modifications.

Investigation into the historical events and importance of the building is researched using information from public archives, newspaper records, the personal belongings of past occupants if relevant, and books and pamphlets if available. Information on famous buildings is often found in the archives of other states or countries as well as in Pakistan. And of course information on the building's history is gleaned from observation of the building itself and by relating such observations to any written history.

In order to interpret the buildings while being surveyed on site, it is essential to piece together the historical evidence of the building. Trained architectural historians can observe the significance of construction form and architectural style in relation to the events of history. Specialist archaeologists should be good at archaeological analysis and the stratigraphical analysis of built fabric and should perceive the significance of their knowledge in the light of the total project.

An essential requirement of conservation work is the need to carry out sufficient recording of the fabric while it is being opened up for repair work and consolidation. In important buildings, such surveys along with the "as built" drawings and specifications should be returned to a Central Archive or National Monument Record for permanent reference for works in the future, such as maintenance or further alterations.

Physical surveys. The building fabric must be researched and assessments made as may be required:

- ◆ Detailed surveys should reveal the extent and quality of architecture, the design and construction. Detailed schedules of condition and repair are to be made.
- ◆ The strength and potential for upgrading and reuse of all the structures is to be assessed.

- ◆ The ground archaeology and different layers of historic construction might also be assessed for sensitivity to future change and reuse.
- ◆ Understanding the history of the buildings finishes is particularly important. It gives guidance as to the appropriate forms of restoration and conservation. Samples should be taken and labeled.
- ◆ The alignment, condition, and need for renewal of present services and their condition must be revealed. Much damage to structures can be caused by inappropriate services penetrating structures in the wrong places.

Missing structures and finishes can often be traced by fixing points or scars on the remaining fabric, giving clues as to the form of the earlier construction. Discovering the strata of past construction is very important and requires careful observation. The structure and its finishes will determine how easily and in what form adaptation and services might be constructed to allow satisfactory use in the future.

It is essential that the consultant team performs efficient survey techniques. It is often not possible to scaffold a large building, or to survey adequately all the defects that may exist on any one facade. The scaffolding required is expensive and requires owner commitment to carry out the project before important decisions on affordability and reuse can be taken. Adequate alternative recording techniques on the fabrics must be found for monument records, scaled drawings and schedules of repairs. Photogrammetry is prohibitively expensive for the type of problems apparent in Lahore. Only certain buildings would warrant the expense of photogrammetry (an example would be the North Picture Wall to the Fort).

Rectified photography however is often available, particularly for internal elevations to courtyards or rooms within a building. But it is often very difficult with narrow streets, as in the Walled City, to photograph external elevations efficiently. A combination of photographic and manual survey techniques may be appropriate if using good quality architectural lenses. This can provide sufficient accuracy of drawing and a permanent photographic imagery sufficient for historic record, estimation of repair schedules, and budget and pre-contracting documentation. However any inaccuracy of pre-contract survey information is likely to lead to inaccuracy of budgets and insufficient post-contract control of the content of the work. In turn this will effect programming and project costs.

Manual survey techniques require consultant staff to have the ability to draw what is seen on site with sufficient clarity for it to be dimensioned and then neatly

drawn in the office. Practice is required for junior staff to carry out this exercise quickly and efficiently. Where public services and structures are concerned, it is important to develop the ability to record levels, alignments, settlements, deflections with accuracy, and to be able to monitor any live movements in the structure.

Ownership, present use, rights of access and legal constraints. It is necessary to assess appropriateness of the present use and decide upon options for future use in relation to the building form, the limitations on access, servicing, and the zoning of neighboring uses. Ownership and users can limit future use. Most buildings have existing users. Existing tenants must be resettled, at least during the conservation works. If existing tenants are not returning, permanent arrangements for their relocation are required. This problem is critical in cases of overcrowding where, as in Fez and Tunis major programs of resettlement have been found necessary to reduce the density of occupation.

The existing use is often important to the neighborhood in planning terms and may require establishing in the locality. The existing use of the building may be incompatible with the conservation of the historic fabric or it may be inappropriate in some other way. In selecting appropriate use the following should be considered:

- ◆ The proposed new use must suit the neighborhood planning requirements and zoning of uses within the city.
- ◆ Account must be taken of the sensitivity of the building to accept future use, structural floor loading; appropriate services; and creation of the appropriate internal environment, daylighting, servicing, and access; and impact on the surrounding environment,
- ◆ Consideration must be given to the effects of wear. Should the new use destroy the fabric, conservation is pointless. Any new use can destroy the fabric and some measure of control and inspection after completion of the works is required if money spent today on conservation is not to be wasted by careless and unappreciative occupants tomorrow.

Established land use zones given legal authority in a development plan may restrain future use. Legal constraint may also exist in relation to a buildings recognized heritage value. Once classified by the authorities, there may be limitations on permitted change and use.

Financial assessments. Costs should be assessed for all works. The future liabilities for maintenance management and operational costing must be calculated. The costs of financing the project must be balanced with the projected revenues and sales figures to demonstrate financial viability. Most buildings—perhaps institutional buildings less so—require income or sales from new use, which will sustain a fund for the future maintenance of the building. Where no fund exists, future maintenance will always depend on state or institutional finance and assistance for future upkeep.

Enlightened owners, both in the public and the private sector, understand the need to use their property assets for capital return. For this they need to establish a viable use which will provide a business income or pay an economic rent. In such an arrangement, building maintenance becomes a vested interest.

It is desirable to be able to regularly review and to calculate the maintenance costing in the long term and to be able to state the frequency of required maintenance work in relation to the materials and sensitivity of the fabric. The long-term maintenance of historic buildings is by far the most efficient form of conservation. Extreme decay is equally extreme in its cost of repair.

Sketch designs and planning approval. Sketch designs must be carried out to test acceptability and to achieve approval for the desired use, to test the design of new elements and of conservation principles, to satisfy the means of escape in case of fire, public health, environmental and sanitary provisions, and any other development control requirements. Statutory control of property development, whether at government or local level, requires:

- ◆ Registration of the minimum details including plot number and location; plot area; boundary positions (especially in relation to street frontage); number of stories, material and type of construction; condition (good, fair, bad, dangerous); age; historic importance (high, medium, low); special features; present use and ownership of the building;
- ◆ Copies of past plans and correspondence relating to any approvals for use on the building; and
- ◆ Consultation with the authorities as to the limitation on future use and the nature of permissions and the conditions placed upon modifications of this building.

Such information has to be contained within a well-organized public archives with public officers available to visit and understand the properties, understand the archive, and give advice to building owners.

Detail design and contract execution. Detail design and specification will be roughly the same as for new works. But contract documents and the control of works on site requires close teamwork between the administration and the design team and subsequently with the builder on site. It is often impossible with conservation work to uncover all historic details and structural problems until works are begun on site, and an element of contingency must be retained in the budgeted costing.

In conserving or restoring a building all works must be based upon firm evidence and materials. Workmanship must replicate or at least be appropriate to the original fabric. Physical work to the existing fabric must minimal and all new work should ideally be reversible (removable at a later stage without damaging the original fabric). But in the case of utilities installation, this is not always achievable. Repairs and new work should harmonize with the original fabric, but also should be distinguishable by means of dating or surface treatment.

It is important to differentiate between conservation of elements where further decay is to be limited, and restoration which should only be allowed on the basis of adequate evidence and only where completion of an original element in the design is necessary. Replacing historic fabric (rather than consolidating, conserving and repairing) with a reconstructed copy in similar materials is bad practice because it leaves a fabric of little or no historical importance.

The change of function or sometimes the renewal of interior conditions is called "rehabilitation". A new function for the building and therefore a new management of the fabric may be essential for its survival. Complete new elements should be fitted in harmoniously and should be clearly seen to be new.

There is always a temptation where a project is on a limited budget to use cheaper or inappropriate materials or not to supervise the quality of works sufficiently. Defects from inappropriate construction become readily apparent, and the quality of the total investment is damaged.

Equally vital to the eventual cost of a conservation project is the reassessment of qualities and the verification and updating of cost estimates during construction on site. This work is only possible with the efficient recording of instructions between the contractors and the supervising staff with details of instructions given to the cost estimator for calculation. It is only when costs are updated that due consid-

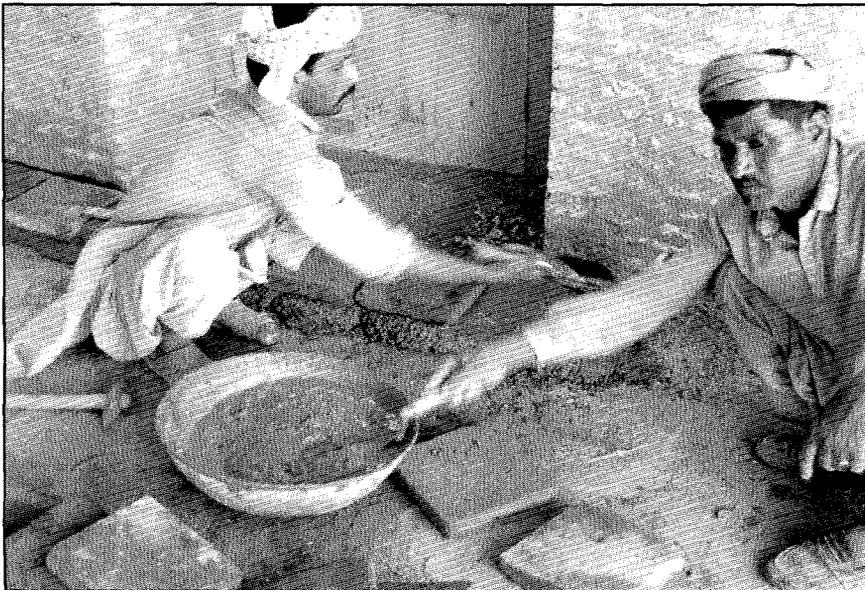
eration can be given to possible cost savings to prevent an overrun of the accepted budget.

There is in fact no better method of conservation than regular maintenance. A system of inspections every 5 years is often adopted to reassess maintenance programs and budgets. Maintenance budgets should be assessed in the light of work requirements within 5 years, 10 years and 30 years.

Funding. As important as conservation and physical works is the essential requirement of raising funds for the study and execution of a project. Sources of funding must be found that are appropriate to the scale of the works. For small owner-occupiers there is often sufficient funding possible by the owner himself if suitably encouraged with a small percentage of assistance from district, regional, or state grant aid. Improvement to the smaller dwellings often increases the resale value of the property to make conservation and repair a profitable venture. With large projects, considerable skill is required to prepare and present details to banks or other lending institutions or sources of endowment capital.

A wide range of mechanisms are possible, and it is worth noting that in the two cities of Fez and Tunis, financial incentives by tax concessions, lowered interest rates or grant aid have been successfully applied. The owners of historic buildings,

Relaying old floor tiles (Delhi Gate).



and in some measure all those who wish to renew their properties, require access to advice on funding mechanisms and financial incentives.

Some financial systems are acceptable to Islamic countries and others are less acceptable, but there are many models for helping the owners to finance the conservation and reuse of their properties:

- ◆ Grant aid as a percentage of the total capital cost encourages the owner to use his own resources. Tax concessions and other financial incentives operate in the same way.
- ◆ Fund-raising by companies or groups of interests, formed into associations or trusts particularly for the conservation of areas, can be encouraged by legislative concessions and grants. Such organizations can also use the market to acquire property at a low price and after conservation to market the property at a higher price to produce finance for further reinvestment. In other countries the charitable status of such organizations carries taxation benefits, and profits can be ploughed back to continue the process elsewhere. Rolling funds can be set up with relatively small capital sums to grow effectively in this way.

Management—Project Manager/Architect/Engineer. The Project Manager (Architect/Engineer) must understand the total organization and theory required for a conservation project. This person must be sensitive to the historical and cultural importance of the building and understand the use of historic materials and the cause of defects in historic structures. Because quantities of work and materials cannot be completely predicted beforehand, the project manager must administer the budget, setting aside contingency sums before the contract is let and carefully monitoring variations which must immediately be valued for budget targets or work content to be adjusted if possible. This role is of particular importance.

The understanding of the project manager during the development of the contract documentation and the pre-contract phase is most important. This is especially so if adequate direction is to be given during the post-contract works on site. While new works can be readily understood, the additional complexity of conservation work needs adequate time and effort in management and programming.

Continuity of pre-contract work by consultants and post-contract work by the contractor can only be achieved with adequate representation of the key consultant

team at site meetings, notably the architect and conservation specialist, the historian/archaeologist and the structural engineer. The mechanical and services engineers would also be required to monitor progress if they formed part of the design team. If such consultants are not present at site meetings, the minutes of those meetings must be efficiently recorded and distributed for the design team to monitor the consequences of site decisions and problems.

Interpretation and presentation. Public funds spent on conservation or rehabilitation works should be justified publicly through adequate interpretation of the fabric and presentation display in the form of exhibits or printed pamphlets describing the background history and importance, the reason why and what works were undertaken. So far the presentation required to promote public awareness has not been efficiently coordinated in most countries of the world. Such presentation work depends to a large extent on the information discovered by the archivist historian, the archaeologist, the architect and conservation specialists.

INTERNATIONAL EXAMPLES

There are significant parallels in the decay of urban areas found in notable cities throughout the world. The demographic movement, the inappropriate zoning of activities and the occupation of historic properties, the overloading of floors and walls, the introduction of substandard services, the noise, pollution and overcrowding are all found in decaying cities. The relief from inevitable decay requires the development of urban planning policies that include the necessary administrative control and financial mechanisms for conservation, renewal, and reuse of properties. Parallel examples with Tunis and Fez will be discussed in a later chapter.

CHAPTER II.

CONSERVATION IN PAKISTAN

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Pakistan has seen several ruling civilizations. Each has left behind records in the form of underground archaeology and standing structures. With each successive downfall of a ruling class the social structures necessary for the care of their buildings have disappeared. Pakistan possesses built remains and archaeological features from 5,000 years ago; early village sites of this age are found in the Punjab, Cholistan and Baluchistan. The internationally recognized "Indus Valley Sites" of Harappa and Moenjodaro are representative of a culture which flourished from 3000 to 1000 BC.

The Graeco-Buddhist Gandharan civilization of 300 BC to 200 AD left stupas and ruined monasteries. The Hindu Shahya temples of the Salt Range dating from 700 to 1100 AD are substantially complete, and vast domed mausolea survive from the Sultanate period (1000-1526). Many of the city sites, including Lahore, were first recorded in the 11th and 12th centuries, although some were well established by then. The history of Multan for example is recorded for 3,000 years.

The Moghul period (1526-1750) left an enormously rich heritage. The Emperors built roads and related infrastructure such as baolis, bridges and serais. They built forts, palaces, gardens, tombs, mosques, pavilions and bathhouses, all impressive imperial structures. This prosperous culture allowed for much rebuilding and improved conditions in the old cities. Akbar built Gujrat Town and the first masonry wall around Lahore City.

The Siks ruled in the Punjab from 1750 to 1849 and left a number of significant buildings, although there was considerable theft of marble from Moghul buildings. Then from 1849 onwards, the British built an extensive stock of imposing government offices, public buildings, warehouses, and housing. They extended Lahore considerably and imposed their standard colonial planning disciplines on the city.

Since the birth of Pakistan in 1947 there has been much building in the cities and in the expanding housing areas around, often revealing in the early years an indigenous development of western modernism and exuberant Art Deco styling.

The monuments and outstanding historic buildings however are only part of Pakistan's rich heritage. Far more numerous and often unrecognized are the traditional vernacular structures, from simple village houses to decorated bazaar shops and grand havelis, which form the vast majority of buildings in any settlement. The walled cities of Lahore, Multan and Peshawar contain a rich complex of dense building and organic growth, ancient street patterns and traditional craftsmanship which date from Moghul times to the early 200 century.

THE STRUCTURE OF GOVERNMENT AND OTHER ORGANIZATIONS

Present national policies for the conservation of historic buildings in Pakistan have evolved from the nineteenth-century study of sites and monuments by the Archaeological Survey of India. In 1902 the Department of Archaeology was formed from the Survey and in 1947 became part of the Pakistan Civil Service. Legislation for the preservation of historic buildings is embodied in the Antiquities Act 1975, superseding the Ancient Monuments Act of 1904. The Department of Archaeology administers the act. The following sections consider the various institutions which in one way or another are involved with historic buildings.

THE FEDERAL DEPARTMENT OF ARCHAEOLOGY

The Federal Department of Archaeology (FDA) is constituted to act as the national custodian of monuments and historic buildings. But it has historically been more concerned with museums and archaeological sites, so it is not surprising that conservation is seen in terms of single outstanding monuments rather than historic urban fabric or buildings in use. Historic buildings conservation has not yet been adequately integrated into the urban planning process and so it is too easily ignored in the development or upgrading of cities.

While the constitution of the FDA requires it to oversee all work to historic monuments, FDA can exercise little control because relatively few buildings have been designated "monuments" or "listed buildings". Furthermore it neither has the staff nor receives consultation by other departments to influence adequately present damage to historic fabric. Yet legally, it is Pakistan's most important organization

responsible for administering the current legislation. It needs more staff to fulfill its functions.

Based in Karachi, the FDA has a number of regional and sub-regional offices throughout the country including the Northern Circle in the Lahore Fort. The department undertakes the following functions:

- ◆ *Identification.* The identification of national monuments for inclusion on the Register of Antiquities, or for acquisition. To date there are 355 monuments on the national register, considered a seriously underlisting of sites. Considerable effort and expense is required to register the built heritage adequately.
- ◆ *Recording.* The recording of monuments. Some major monuments have been recorded with international technical and financial support but much remains to be done. Lahore Fort for example, is one of the most important forts on the sub-continent, but has not yet been completely surveyed.
- ◆ *Monitoring action required to maintain monuments.* FDA has prepared several consolidation reports. These are essentially feasibility studies with fairly precise descriptions of the required works. There is an established capability for recording, analyzing, and producing proposals for conservation and the approach is certainly scientific and up to international standards. However FDA is under-financed in view of its legal and cultural responsibilities.
- ◆ *Conservation of monuments.* FDA is responsible for the preservation and conservation of monuments and historic sites and employs engineers, archaeologists, and art historians, but no conservation architects to fulfill its obligations. Qualified conservation architects are not available locally. The ability of FDA to carry out complete conservation works depends very much on the scale of the project. Their approach is to carry out repairs on a small scale. FDA is accustomed to managing repair contracts. It would appear to be a problem for the FDA to budget for the maintenance of major monuments. Present resource allocations permit only a few monuments to be maintained. A lack of presentation, reuse, and revenue discourages the necessary political support and funding.
- ◆ *Training and research in conservation.* The Pakistan Institute of Archaeological Training and Research (PIATR) was set up in 1989 by FDA to train professionals in monument management and conservation. It has organized the first Conservation Training Course (designed and run by Sir Bernard Fielden),

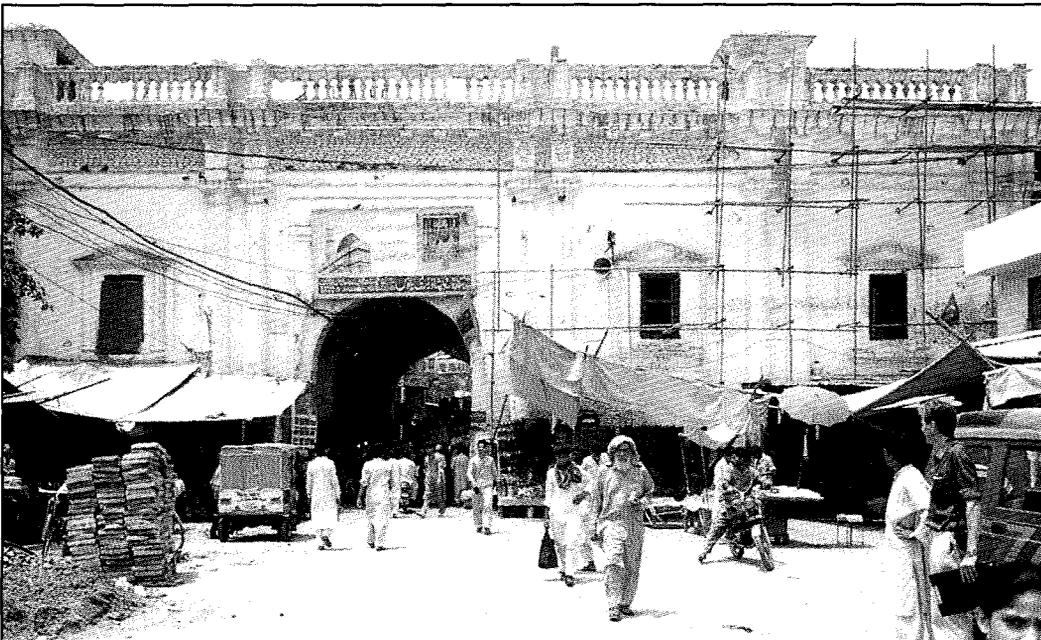
and a course in museology. It is in the process of establishing a laboratory but this project cannot be completed until further funds are obtained.

A budget is allocated by the Federal Ministry of Culture and Sport for a national conservation program but in each of its above functions the effectiveness of FDA is severely restricted by lack of resources and manpower. The FDA receives approximately Rs.80,000 annually from visitors to the three major monuments in Lahore and the budget for the entire Punjab is Rs.350,000. An estimate prepared in 1981 indicated a total sum of Rs.30 million would be required to consolidate the Lahore Fort. In carrying out the functions above the department is consequently only able to record, monitor and conserve a few of the monuments now on the register.

THE DEPARTMENT OF ARCHAEOLOGY, GOVERNMENT OF PUNJAB

The Punjab Archaeology Department was created in 1987 from the Conservation Cell of the Auqaf Department, and now comes within the Punjab Department of Information and Culture. It is based in Lahore, with a sub-divisional office in Multan.

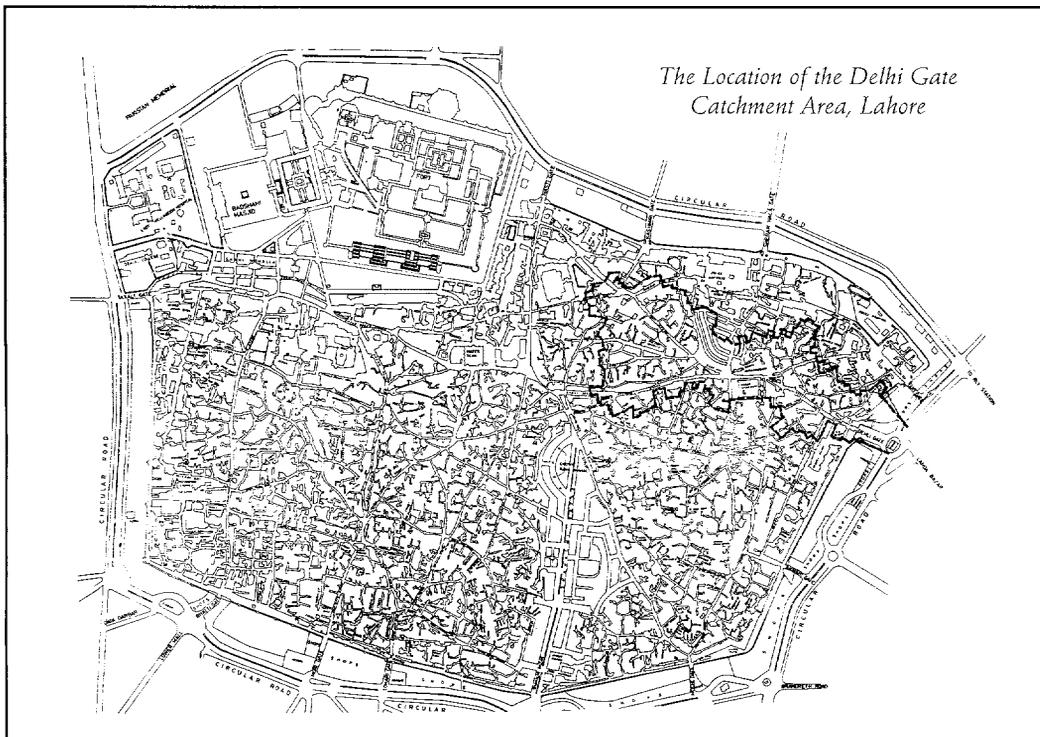
Delhi Gate in Lahore before Restoration



The department's functions and staffing are similar, but on a smaller scale, to those of the FDA and require the following:

- ◆ Identify provincial monuments,
- ◆ Record monuments,
- ◆ Organize and monitor the maintenance work required,
- ◆ Conserve monuments,
- ◆ Administer the Punjab Special Premises (Preservation) Ordinance, 1985. This legislation is very similar to the Federal Antiquities Act and provides powers to prevent external alterations, demolitions, and new development within 200 feet of a monument, to enforce its presentation or compulsorily acquire it, reinforced by penalties of fines and imprisonment. There are only 62 listed "Premises" in Lahore, but none of these are the Walled City.

The department has established a separate register of 200 monuments throughout the Punjab.



AUQAF DEPARTMENT

The Auqaf was founded in 1962 as a provincial government public service. It took over the responsibility for mosques and shrines, which until then had often been maintained by the descendants of the founder or saint associated with the building.

The Auqaf Department manages shrines, mosques and other holy places, and the associated surrounding lands. The main objective is the continued use of safe and reliable prayer halls, but the department also owns smaller commercial premises and space around holy places. It frequently develops its lands to provide revenue for new mosques, but 75-80% of its property is not endowed with an income. The Department is responsible for 700-1,000 historic or religious buildings in the Punjab.

In 1991 the Punjab Auqaf Department was spending many millions of rupees on new construction, but it had no specific funds to personnel devoted to the repair of historic buildings.

THE FEDERAL EVACUEE TRUST AND PUNJAB EVACUEE TRUST BOARD

These trusts are in their organization and function similar to the Auqaf Department. They manage Buddhist, Hindu and Sikh secular and religious buildings, including houses, tombs, shrines and temples. The Trust does have experience in identifying and managing project work. However it does not employ archaeologists or conservation architects in its service, and is unaware of the methods, principles and management required for conservation works.

CITY DEVELOPMENT AUTHORITIES

City Development Authorities have been established in recent years for most major cities of Pakistan. In 1975 the Punjab Government adopted "The Lahore Development Act 1975". The purpose of this act was mainly to create a planning authority which would set planning objectives for the City. The first objective was the provisions of a Master Plan for the development and extension of Lahore, and secondly the upgrading of mains water supply, sewerage and drainage systems to the properties within the LDA zone.

The Act gives the LDA wide powers and states that the authority may prepare, implement, and enforce schemes for environmental improvements, including the preservation of objects of historical interest. The LDA is able to acquire responsibil-

ity over publicly owned buildings in order to improve the condition of the fabric. However the authority still requires staff trained in the methods, principles and management of conservation works.

As part of its duties, the LDA has set up a conservation and upgrading unit. But with a shortage of both funds and available trained staff, only 60% of the required complement have been appointed. This proved to be a considerable restraint on the progress of the Punjab Urban Development Program (PUDP) upgrading project that included the conservation of the Walled City.



Secco painting (Masjid Wazir Khan).

METROPOLITAN CORPORATION LAHORE

Metropolitan Corporation Lahore (MCL) organizes public, non-religious, education, and health services in Lahore. It manages 65 schools, medical dispensaries and 4 major hospitals. A considerable number of these are based in the larger significant buildings, and 22 of the schools are situated either within the Walled City or in the surrounding gardens. The MCL is the statutory body for the exercise of planning and building controls over development within its boundary, but this authority is not effectively applied within the Walled City. The MCL also maintains streets, drains and streetlights and is responsible for the collection of solid waste.

THE LAHORE CONSERVATION SOCIETY

The Society was formed in 1938 by a group of professionals who were convinced that elements of the existing built environment were important to the quality of daily life. By 1991 the Society has some 60 to 70 members and held monthly meetings to promote its interests.

PRIVATE ORGANIZATIONS

Anjuman-e-Mimaran, a private society, was founded for academic research whose principal objective is to survey and record missing links in Pakistan's cultural his-

tory; set up a school of building arts; and preserve traditional techniques, methods and materials used in historic construction. It also trains professionals involved in the conservation process.

In 1991 Anjuman-e-Mimaran commenced its first live conservation project, the consolidation of the Haveli Barbarelli. The Society also functions as an architect/contractor, offering a complete conservation service from recording the buildings to the execution of the works.

The Heritage Foundation in Karachi is a similar organization based on architectural practice, which has been recording the urban fabric and traditional vernacular architecture for some ten years in Pakistan.

FUNDING AGENCIES

The World Bank and other international funding agencies provide the Punjab Government with loans for the upgrading of the Walled City. The LDA is the executing agency. A percentage of the loan is spent on the integrated conservation of historic buildings in the Walled City, and the transfer of technical assistance to the LDA. International agencies such as the Overseas Development Agency of the UK, the United Nations Development Programme (UNDP) and others have provided funding for many different services and projects.

THE PRESERVATION OF HISTORIC BUILDINGS

Public buildings in use

In accordance with the best principles for conservation, the city corporation and development authorities try and ensure appropriate use of their major historic buildings. Considerable effort has been made to cope with structures often over 100-years old and built of sensitive materials. The major monuments are frequently visited and enjoyed by the public. These buildings often provide the principal places of leisure for the family and for education (Shalimar Garden, Jehangir's Tomb, and the Old Fort in Lahore).

Due to budget limitations, many of those assets cannot be fully exploited and properly maintained. But FDA and LDA have drafted some excellent programs for maintenance and prevention. Both the Prime Minister and the Governor of the Punjab have shown much needed support and financial contribution.

Throughout Pakistan as in all countries, there is a need to ensure the cooperation of the Water and Power Development Authority (WAPDA) and Water Sup-

ply Authority (WASA) installing services in a sensitive manner in the historic environment. Great work has been done to improve the quality of services, but financial limitations have prevented the adequate concealment of these services. Overhead transformers and power lines disfigure streets. Water and drainage services above ground are easily damaged and are a health risk. It takes a time for such infrastructure improvements to be planned, budgeted, afforded, and executed. The cities of Tunis and Fez demonstrate however the benefits of these works once complete.

The conservation and upkeep of major monuments is a constant drain on the resources of labor materials and money. Consideration should be given to a more realistic pricing structure for access and use of the more popular sites to improve revenues and maintenance. This is especially important when wear and tear from use is damaging irreplaceable heritage and a share of revenues are needed to assist upkeep.

It is difficult to incorporate modern services into old buildings without the adequate budgets and architectural skills. But methods need improving to integrate modern functions and services with old fabric, if damage to the historic asset is to be avoided. Equally, the training of appropriate professional and contracting skills is an urgent requirement to ensure work is executed in a sensitive manner to the historic fabric and maximizes the benefit from limited budgets.

Most monuments are in need of urgent repair. In Lahore, Wazir Khan Mosque needed skilled craftsmen to repair structures, mosaics, and frescoes. The contemporary use of iron pins for the fixing of stonework to the Badshahi Mosque will lead to later problems. There has been perhaps a lack of technical skills and inappropriate cost cutting. But there are also excellent instances of sensitive works, for example, restoration of Shah Rukn-e-Alam in Multan, was carried out well by the Auqaf Conservation Cell (later to become the Punjab Department of Archaeology) and won an Aga Khan award for its revival of traditional building crafts. This was a success story.

The scale of problems is such that repair works and maintenance are largely reactive to serious defects which become apparent, but there are obvious needs:

- ◆ Well-coordinated assessment of works and priorities,
- ◆ Proposals for new ones,
- ◆ Financial planning, and
- ◆ Period of fundraising to undertake adequate maintenance and adaptation for new ones.

UNUSED HISTORIC BUILDINGS

The ancient monuments and unused historic buildings in general are in a poor state of preservation and administrative control. Most of the monuments are neglected through a lack of funds and available maintenance staff. Those monuments located in distant areas and out of the way places suffer most from the lack of inspection. Much work remains to be done in particular for the monuments of the Hindu Shahiya period scattered throughout the Salt Range which are as yet hardly recorded and are poorly protected. A system of careful structural consolidation and annual or quinquennial inspection is required.

It is common in most countries to find that heritage is often inadequately protected from abuse and more important has not yet benefited from interpretation and presentation to the public. Without presentation public awareness of the importance and interest of the heritage is lacking, and without presentation the public cannot give financial and moral support for exploiting the benefits that accrue from the heritage. Much work remains to be done to achieve effective presentation and where possible beneficial use of the many unused buildings of the heritage in Pakistan.

There is great opportunity for promoting public awareness through display panels at the sites, published guides, and television and radio.

PRIVATELY OWNED BUILDINGS

The vast majority of historic buildings are privately owned townhouses. It is naturally a politically sensitive matter to impose restrictions on the action by private citizens on their own properties. With frequent elections, politicians are cautious of introducing restrictive policies. But damage to privately owned heritage continues to degenerate the major part of the national heritage. The problem has to be faced soon and needs firm direction from the highest level if action is to be undertaken. Action is required, including:

- ◆ Cover this heritage by the current legislation,
- ◆ Ensure proper listing of properties and advise owners of such history,
- ◆ Develop appropriate financial mechanisms or fiscal concessions to encourage the private funding of conservation repair and upgrading,
- ◆ Employ and train local administrative officers to supervise and direct planning controls and to monitor and supervise with the FDA the granting of

permission for works to listed buildings and the provisions of any funding and support to private owners of heritage.

Much work is required to carry out the above standard tasks that are essential to avoid the misuse or demolition of buildings. It is only on the basis of adequate administrative staff that development planning can realistically take account of the heritage. In each city, some compensation—with federal or state assistance—may be essential if the power to redevelop is restricted. Equally some present use such as commercial, storage, or multiple occupancy of historic buildings may be unsuitable. Careful negotiation with building owners to modify the use or to negotiate expropriation in order to relocate occupants and then to protect or redevelop historic property requires skilled administrators and the support of the law.

The process of developing public awareness is always slow and major political changes only delay the ability of the local administration to act consistently. Awareness grows gradually. As at Lahore where the Delhi Gate, the Shahi Hammam and other conservation projects have been completed, public awareness is now shown to grow best by these excellent examples.

CHAPTER III.
**CONSERVATION
IN LAHORE**

THE HISTORICAL AND PHYSICAL CONTEXT OF LAHORE

Over the last 150 years great changes have been wrought upon the city structure; the walls were destroyed and the gates rebuilt, the moats filled in and the Circular Gardens created. Colonial residential properties and defensive military installations were placed outside the Walled City and new trading focal points and centers of government were created. After Independence and Partition, the ravages of population upheaval destroyed great sectors of the city and changed street patterns and employment. Damaged areas of the city were rebuilt as wholesale markets and population migration moved the rich people out and the poor people into the historic center. The trend has continued with property in the Walled City now often occupied by tenants of absentee landlords.

By 1985 the serious poverty trap and health hazard of the Walled City was seen in stark contrast to the magnificence of its many historic buildings and the homogenous urban quality that still remained. Recognition of these facts by international funding agencies, notably the World Bank, led to the Punjab Urban Development Programme for the upgrading of urban environment and the development of conservation planning for the Walled City.

Conservation plans for the Walled City by the Pakistan Environmental Planning and Architectural Consultants (PEPAC) correctly assessed the characteristics and qualities of the urban environment, among which some 1,406 buildings were proposed for registration under the Punjab Special Premises (Preservation) Ordinance 1985. However chaotic services, encroachments, and inappropriate construction and use of buildings have among other reasons caused accelerated rates of decay to the

historic fabric since Independence. Traffic and access to wholesale markets within the Walled City has led to serious congestion and inaccessibility and has become a deterrent to effective movement and trading.

In spite of these obstacles the Walled City still has powerful social and cultural associations, commands the highest land values in Lahore, and remains a desirable location for small business. The responsibility for coordination and development of policy is shared between the Metropolitan Corporation of Lahore (MCL) and the Lahore Development Authority (LDA). The formal relationship and division of authority between the two organizations is laid down and understood by their offices. But good liaison, which is particularly required for planning and development control matters is still hard to achieve.

The Federal Department of Archaeology's regional office is located in the Old Fort and is headed by a director and his staff. They are responsible for the administration of the Antiquities Act 1975. The Punjab's Special Premises (Preservation) ordinance 1985 is a much shorter and weaker piece of state legislation. Article 4 of the ordinance overrides any other conservation legislation, and yet fails to provide the necessary degree of definition, procedural requirements or sanctions in the pursuance of conservation.

For political and social reasons, both the national and state acts above are inadequately applied. Neither the MCL nor the LDA or private individuals adequately consult the conservation authorities. The reason seems to be that sufficient funding is not made available to the conservation authorities for exercising their statutory requirements of control. There is in addition a serious shortage of adequately trained personnel to exercise the authority vested in the law.

The utility services administered by WASA and WAPDA are required to be well coordinated with the formal planning and development of the city. The insufficiency of technical and administrative staff and the problems of incorporating conservation issues into proposed works encourages poor installation of services. This results in lack of consideration for street scenes, historic buildings, and the consequential disfigurement of buildings, at times a public danger.

It is a major long-term task for the administration to develop the organization, discipline, and experienced staff to carry out the policies and functions required for planning and upgrading. Conservation is but one element of the city planning process. The majority of the population remains only partially aware of the importance, commitment, and participation that is required if conservation of their heritage is to

be achieved. Experience of the Delhi Gate and Shahi Hammam projects would suggest that there is a wide base of support by the entire population for the improvements required.

In a great developing country such as Pakistan, the strains of pressure and growth and change are so enormous that it is not surprising if the less tangible and yet vital benefits or conservation are forgotten. With the particular political and economic organization of Pakistan, firm direction from the top is essential and as has recently been observed on conservation projects within the Walled City, can be effected in achieving results.

It is true to say however, that in the highly complex constitution of the city, the Lahore Development Authority has over the years been able to concentrate on essential areas of improvement and upgrading. It has achieved effective planning and improvement of infrastructure, and initiated exemplary projects of conservation of major monuments within the city, involving conservation, repair, refurbishment and reuse of the city gates, the city walls, institutional buildings, schools community centers, havelis and streetscapes.

THE URBAN FABRIC OF THE CITY

The densely packed Walled City with some 20,000 individual buildings divides itself into historic quarters through a network of principal streets (guzars), neighborhood streets (mohallas) and cul-de-sacs (galis). The different levels of communication, access, and privacy have influenced the development of residential, commercial areas, social and religious buildings, and the few remaining squares and gardens. Much alteration to traditional building form has taken place as a result of modern material influences. The pressure for space has led to intensive encroachment, sub-division of havelis, extension of buildings into the street, and the loss of open space through uncontrolled stall holders and commercial establishments. Particularly serious is the loss of the few available open spaces such as the Chowk (square) in front of Wazir Khan Mosque, and the spaces in front of the city gates and the Circular Gardens. This later feature, which resulted from the filling in of the moat around the Walled City, is a vital open area for leisure and recreation, separating the Walled City from adjacent zones. But it is being eroded through serious encroachments, misuse, and abuse.

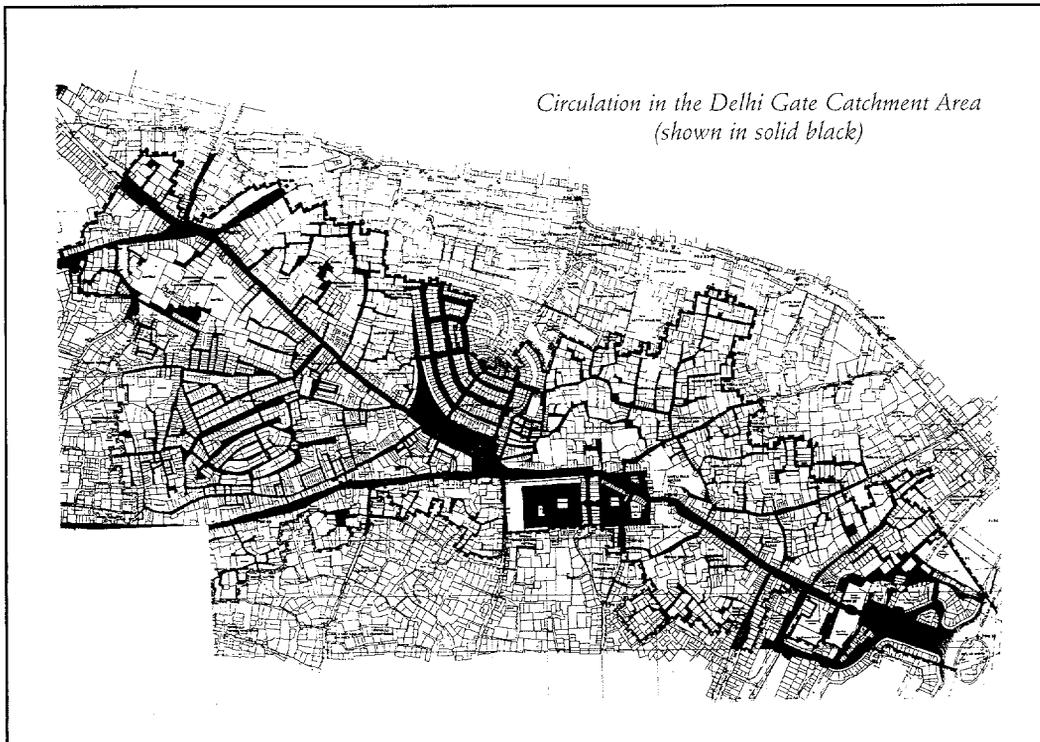
There is a rapid rate of reconstruction of old buildings and changes in the use of their lower and upper floors, as commerce spreads into new areas. Often commercial interests fail to protect and use appropriately the upper floors of their properties and the rate of decay in unused property is alarming fast.

The principal commercial establishments are situated along the bazaars on the ground and first floors, with housing on the floors above. In prime locations, on squares or along the major streets, there are schools, mosques, hospitals, and offices. Major old buildings are satisfactorily used for these purposes. Sometimes the reuse is not so appropriate. The converted accommodation is often substandard and improperly serviced, leading to risks of decay and collapse. Some modern buildings with basements have been constructed within the Walled City. Such basements create their own problems of damage to neighboring property through settlement and the inappropriate effects on ground conditions.

New buildings replaced property destroyed during Partition in 1947. The cloth market is a typical example of a major wholesale function that replaced destroyed property within the Walled City and that brought with it difficult access causing serious congestion and concrete structures unsympathetic to the domestic scale and design of the historic environment. The development is unsuitable for the location. While such businesses and markets are expanding through residential districts and creating commercial ghettos, the process has driven property owners and the wealthier residents to leave the Walled City because of the overcrowding and lowering of environment standards.

The cities of Fez and Tunis have both achieved the sensible relocation of incompatible uses on sites outside the Walled City. They have demonstrated that such relocation of functions can be both possible and beneficial. The immigrant poor who become tenants in many of the residential properties above commercial establishments, have no interest or idea of maintenance, and their tenancy agreements seldom require maintenance of their properties. The inevitable decay, as has been cited for other cities, destroys the heritage and renders more expensive and difficult the conservation of the historic character.

Solutions adopted elsewhere include the reduction of multiple occupancy tenancies by large-scale resettlement and the construction of public housing on new sites outside the city. Such programs involving acquisition by the LDA could be financed through rolling funds operated by non-profit making organizations set up



for this purpose, or through state sponsored housing companies acting as agencies for grant aid and management.

The enormous growth of commercial and industry within the Walled City since independence presents perhaps the major challenge to the urban planners. The commercial activity occupying the residential properties or in new and inappropriate construction within the Walled City generates in its turn diverse markets and manufacturing industries of every description. Few of these are compatible with the conservation of the fabric and in their own way add to the general congestion and confusion. The present situation leads to endemic failures to both structures and organization of the city. Past policies have concentrated on industrial and commercial development at the expense of the quality of life and the environment of the city center.

The objectives of the PUDP project and of the LDA are to correct these destructive functions, relocate the inappropriate uses, train the professionals and administration to achieve control and organization, and to enhance and rediscover the qualities

that this city still so obviously possesses. There are good examples of effective action in other cities that could be beneficially studied by politicians and civil servants alike.

There is a growing body of organizations that are aware of the need for conservation and that actively promote public awareness of the subject outside the administrative hierarchy of government: e.g. the Institute of Architects and Anjuman-e-Mimaran, the University of Lahore. But membership is relatively limited and the impact only relates to the educated section of the population. There is at present little promotion of public awareness through the radio or television and this is particularly important in a country where 75% of the population is illiterate.

The Conservation Plan for the Walled City of Lahore

The Conservation Plan by PEPAC is the most important conservation policy document for the City of Lahore to emerge in recent years. While all its conclusions may not be valid the main analysis and proposals of this work remain essentially correct. It is an important document that, like the Antiquities Act, includes recommendations that have not been acted upon. It is worth recapitulating the principle observations and recommendations of this plan:

- ◆ Conserve life and buildings in the Walled City,
- ◆ Retain and enhance social and economic functions,
- ◆ Identify, preserve and restore environmental assets of the city,
- ◆ Identify significant historic buildings and associations with historic events and people, and
- ◆ Identify and prioritize areas of conservation action.

The plan identifies the importance of community development, local, political representation, and the need for existing residential communities to serve as the foundation for future community-based conservation bodies. It recommends that associations of mutual interests such as associations of shopkeepers and traders who should combine to support action in specific commercial areas. The plan further recommends the promotion of education and the dissemination of information through government resources as well as private means. Future land use within the Walled City should be controlled and coordinated so that appropriate employment,

income generation, and skills are able to cope with the conservation process within the city.

The conservation plan further recommends the necessity for satisfactory analysis and documentation of the physical fabric, control of demolition, provision of financial incentives, availability of technical assistance for owners and contractors, clear guidance set for permissible change to areas and buildings, and control of the structural safety of buildings.

The plan sets out appropriate guidelines for housing, commerce, and production, traffic and transportation, social facilities, infrastructure and utilities. The final proposals of the conservation plan comprise nine good recommendations:

- ◆ Strategic policies and actions identifying specific priority action.
- ◆ Wider planning studies to produce a structure plan for central Lahore.
- ◆ Institutional development requiring increased commitment to conservation, the involvement of the population within the Walled City, the promotion of education and training, and the adequate use of the existing legislative powers. It proposes a joint commission for coordinating the conservation of the Walled City.
- ◆ Urban management and controls including a local plan for the Walled City; a manual for conservation and building renewal to coordinate standards of construction and action; and coordination of land use and building control.
- ◆ Traffic improvement and management program.
- ◆ Upgrading of buildings and urban services.
- ◆ Redevelopment within a strict framework of guidance and control.
- ◆ Upgrading and rehabilitation of special conservation precincts.
- ◆ Conservation of individual historic buildings.

PROGRESS IN THE CONSERVATION OF THE WALLED CITY

The draft plan was presented in 1988. The Lahore Development Authority finally approved the plan in 1990. The plan has not been published and there is little progress so far on the development of the institutional mechanisms or the systems for personnel training.

Progress in the implementation of a conservation policy has been greatly assisted by the transfer of technical knowledge and assistance given under the PUDP

Program. Some 35 projects have been designed and some 5 have been or are being executed on site. The problems of financing, especially of the private properties forming part of streetscapes have not been resolved.

Development control and consultation procedures have yet to be perfected. Difficulty is being experienced in clearing unauthorized land use. Some utility organizations have little understanding or care about conservation. There are many political and financial obstacles. All this is to be expected at this stage. The LDA have initiated effective work and, to carry out recommendations, requires agreement and support from political leaders and funding agencies from both within and from outside Pakistan.

There is a real need to establish the appropriate administrative structures and to incorporate and harness adequately the many organizations involved in the conservation and planning process. The continued lack of detail conservation planning outside the PUDP can only serve to promote the continuing confusion, poverty, public health dangers, and damage to the historic fabric of the city. Perhaps more serious is the present failure to use the Walled City as an asset for the well being of the inhabitants of Lahore as a whole. The lessons of history, the understanding of cultural roots and the consequential pride and identity of the Walled City's inhabitants with their fine history and heritage has yet to be achieved. The Walled City as a center for national tourism and education at present contains a unique potential for commercial success, recreation and enjoyment which may one day be as important to the local population as it is to the many visitor's to the city.

CHAPTER IV.
**THE CONSERVATION
EXPERIENCE AT PROJECT LEVEL**

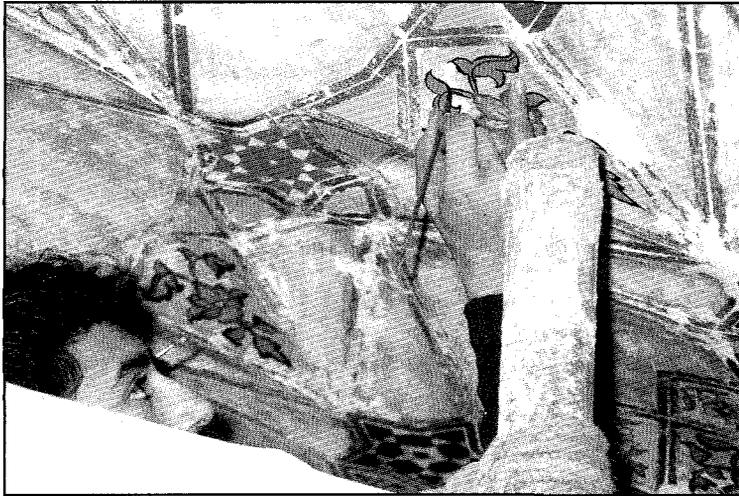
THE INITIATION AND ORGANIZATION OF THE CONSERVATION PROJECTS

The first studies of the 1980s by the LDA indicated the value of the heritage in the Walled City and the close relationship between physical upgrading and conservation works. Six projects were identified for immediate action. The projects were:

- ◆ Identification and demarcation of the city's fortification walls,
- ◆ Conservation of the Shahi Hammam,
- ◆ Conservation of the Chowk Wazir Khan,
- ◆ Conservation of the Delhi Gate and Kashmiri Bazaar,
- ◆ Restoration of Dhyan Singh Haveli, and
- ◆ Conservation of the open space of Gurdwara Baoli Sahib.

A second study planned and proposed a range of long-term actions for the conservation of the Walled City and identified four action areas: the Lohari, the Delhi, the Yakki, and the Masti Gates. As a result of the studies, LDA, the implementing agency for the PUDP project, received loans from the World Bank for a project that integrated conservation with the upgrading process. Already involved in the upgrading of the infrastructure, LDA received technical support from local consultants PEPAC and from foreign consultants GHK Ltd.

The terms of reference for the latest PUDP project required the preparation of contract documentation and the supervision of conservation, restoration, and reuse of institutional buildings, the city gates, schools, community centers and streetscapes, facades, townscape areas and parks. A program was required to institute commu-



Repainting missing parts of fresco (Shahi Hamman).

nity participation, support for cost recovery mechanisms, job training for LDA and professional staff, and to arrange a study tour outside Pakistan. In addition specific advice was required on construction management and supervi-

sion of construction projects to ensure quality and efficiency.

The Delhi Gate project was surveyed and designed in 1988. However, it had to wait until January 1990 before work could be financed and until December 1990 before work was completed. Also in 1990, the Shahi Hammam project was started and a further 24 new projects were identified throughout the city. This chapter relates particularly to experience gained on these two major projects. The delays in starting related to the difficulties in obtaining project funding, a lack of political support and direction, and the need for projects to be linked to World Bank support for technical assistance under the PUDP Program.

COMMENTS ON THE PROJECTS UNDERTAKEN

The criteria for selecting these first projects in Lahore were unusually diverse, and related to the normal criteria as well as to the planned impact on public opinion of the conservation projects themselves. The promotion of public awareness was seen as very important.

The buildings selected by the LDA for implementation were in public or institutional use. Indeed, there is no satisfactory means at present of publicly funding conservation of heritage in private ownership. The selected projects, particularly the Delhi Gate and Shahi Hammam, are located along the principal circulation route for the east, and had been identified in the conservation planning studies. The conservation of these major buildings would have maximum impact on the Delhi Gate

Bazaar running from the Delhi Gate itself up to Wazir Khan’s Masjid. As detailed conservation drawings have been made for upgrading the private properties of the Delhi Gate Bazaar, so the impact of the two conservation projects was intended to encourage the conservation project along the whole bazaar. This may only be possible if financial incentives of some kind are made available to private owners of the Bazaar, and policy must be coordination and agreed with the owners for a project to be successful.

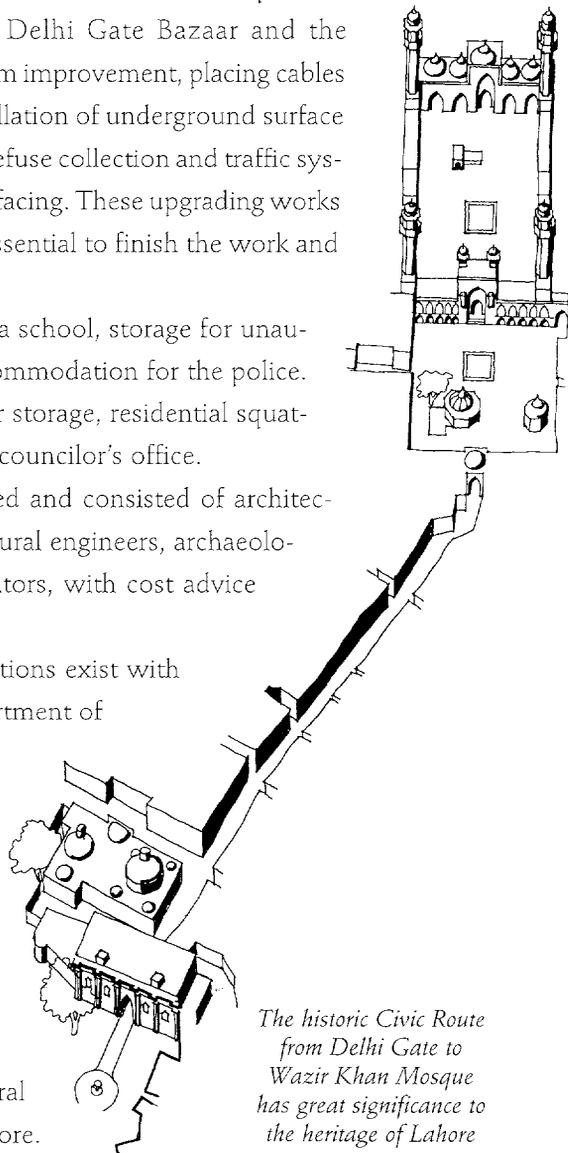
All the aspects of urban upgrading must be achieved for the planned environmental improvements to the Delhi Gate Bazaar and the townscape. These include electrical system improvement, placing cables underground or away from streets, installation of underground surface and soil drainage, rationalization of the refuse collection and traffic systems, and improvements to the street surfacing. These upgrading works are in progress but their completion is essential to finish the work and the setting for the two major projects.

The Delhi Gate was being used for a school, storage for unauthorized commerce, and residential accommodation for the police. The Shahi Hammam was being used for storage, residential squatter accommodation, schools, clinic and councilor’s office.

The consultant team was established and consisted of architectural and conservation specialists, structural engineers, archaeologists, historians, and specialist conservators, with cost advice being given by the LDA.

Although excellent information relations exist with the Regional Office of the Federal Department of Archaeology (FDA), there was insufficient formal liaison between the local authorities and the FDA. But while the latter are legally responsible for ensuring appropriate conservation, their influence on the projects was lacking due to no formal mechanisms for project approvals being established or used.

There is a need to establish a central archive as part of the FDA office in Lahore.



The historic Civic Route from Delhi Gate to Wazir Khan Mosque has great significance to the heritage of Lahore

Equally an archive specifically related to conservation and planning matters within the LDA should be properly used and accessible.

There is room for improving and developing the conservation and planning processes of the city, particularly the following:

- ◆ Community understanding and participation in the conservation proposals and plans will permit the promotion of policy and the involvement of the public. Without public involvement the reduction in population density, the improvements to industry locations and the enhancement and conservation of streetscapes and private properties will not be so simple.
- ◆ Mechanisms for involving private funding in the conservation process must be established perhaps by limited grant aid or fiscal inducements.
- ◆ The improvement to the quality of life requires the relocation of population to reduce density and can only be achieved in the context of a broad development planning policy for the city.
- ◆ The current upgrading of city infrastructure services increases people's awareness of the benefits to be obtained from improved living conditions. Conservation can only be effective in the context of general planning improvements.
- ◆ The present intense industrial and commercial occupation causes problems of access efficiency and congestion. Some reduction in density through the relocation of industries will be necessary.
- ◆ The conservation plan started by PEPAC in the 1980s is of great importance to the Walled City and must continually be updated, expanded and integrated into the city planning system. This will only be possible if adequate funding and staff are found.
- ◆ Acceptable reuse of historic property now requires a wide appreciation of the sensitivity to change of the historic fabric and the careful budgeting of available financial, material and human resource through efficient management.

In reviewing the work and projects the following factors (also discussed in chapter 1) became apparent:

Historic buildings. The importance of the surveying of historic buildings, the retaining of survey records and the involvement of historians and archaeologists or specialist architects in the projects of conservation are only just being fully appreci-

ated by the administration. The organization and management is being developed but must not lose momentum. The present leadership has gained an important experience that is vital to the future of this great city.

Physical surveys. There is much scope for wider education in architectural and technical schools of the disciplines and methods of surveying. Much effort was required to convey to local staff the logic and methods of surveying available. The professional and technical institutes should assist in promoting good practice on these and other matters.

Ownership, present & future use, rights of access and legal constraints. Many buildings have existing users, and in Lahore there are many illegal encroachments. Eviction requires superior authority, and the removal of encroachments, was not easily negotiated. In various parts of the city a variety of measures have been adopted for the removal of encroachments, from negotiation and relocation, to the bulldozer. Encroachments surrounded both the Delhi Gate and Shahi Hammam and all the above factors of eviction, removal of encroachments, relocation of tenants and services and assessment of the appropriateness of existing and continuing uses, required the most careful consideration. Delays in taking appropriate action on these matters caused corresponding delays in design and contract work on site.

There is scope for greater care and awareness of the available options in planning the integration of services into the historic fabric. It is only too easy to damage this heritage by the use of inappropriate services, ugly fluorescent lights supplied by surface mounted trunking, and badly located switch socket outlets. Services have to be renewable without further damage to the historic fabric. This requires a real appreciation of the sensitivity of the building fabric and of the available servicing options. Excellent efforts were made to achieve appropriate servicing of these projects.

Approvals and planning permission. It is universally accepted that the heritage, whether in public or private ownership, is of national importance and carries an influence beyond the responsibilities of the property owner. In most countries ownership of properties requires the owner to abide by specific restrictions on work on the properties that can be undertaken with or without authority. Pakistani law does support this philosophy, but it is not applied either by adequate inspection by the Department of Archaeology or at the level of control over construction works by the City Authorities, (the MCL or the LDA). Such Authorities, as has been explained earlier, cannot carry out their duties effectively without adequate manpower, financial resource, and commitment from the government.

The legal mechanism is available however, along with the conservation plan for the Walled City, to identify, register and classify which buildings are important. The conservation plan has successfully surveyed and identified a greater number of important properties, making available base information to the city authorities for their administration to us.

Experience on the conservation projects undertaken on the Walled City to date is that consultation between the local office of the Federal Department of Archaeology and various City Authorities is inadequate on conservation matters for the terms of the national and local conservation legislation to be fulfilled.

It is inevitable that decisions on reuse, planning control, conservation of the heritage, and the expansion of private interests will be uncontrolled. There is extensive decayed fabric, law which is not obeyed, and a lack of trained civil servants who can apply the law and give advice and guidance. But there is a growing administration at Lahore and the decisions by the senior officers on questions arising on the PUDP project have been taken with commendable reason and clarity. We believe it is essential that such administrative clarity should spread to the care of all buildings in the Walled City.

Detail design and contract execution. The lack of adequate access and hence surveying on the Delhi Gate and the compressed construction program on the Shahi Hammam as a result of pressure from politicians, led to many decisions having to be made site. While this is not unusual in conservation work it put special pressure on the contract for the control of costs and completing the agreed content of the work.

The procedures for handling paper work needed to be more disciplined and the consequences for modifications to the cost budget needed to be given to the Project Manager and also the archaeologist, or historian, and the design architects as quickly as possible. Such disciplined paperwork and monitoring was advised by the consultants but rejected by the site staff. In consequence both time and cost budgets were exceeded on the Delhi Gate project. Improved control was achieved however on the Shahi Hammam.

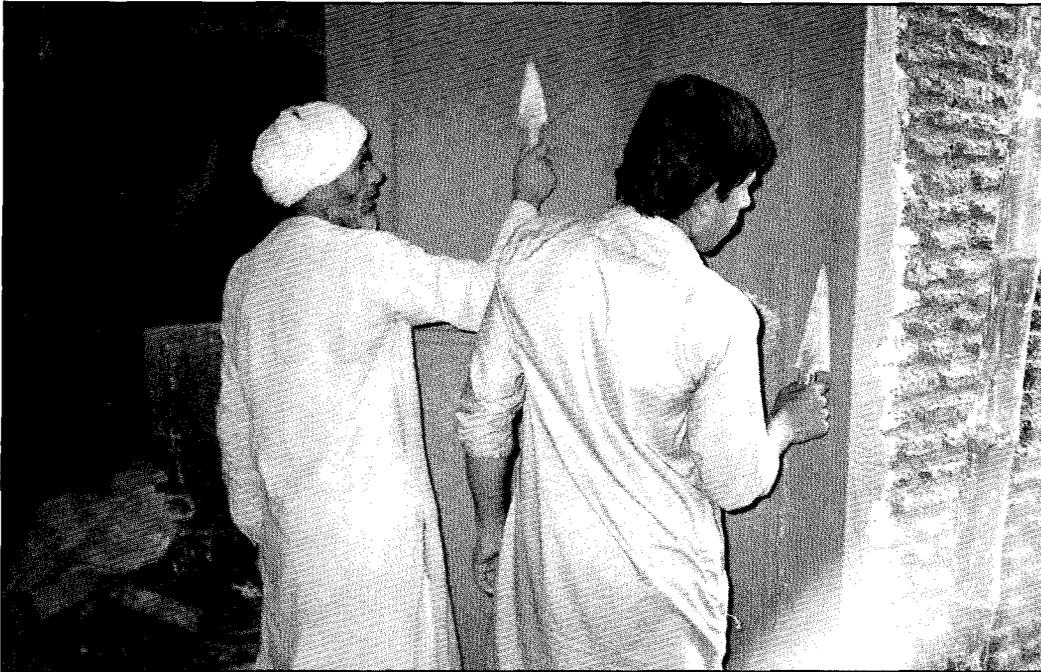
During the post-contract phase, the contractors had difficulty programming their works. The sequence of operations that was appropriate to conservation work and the necessary protection to the fabric below while conservation work proceeds above was not readily appreciated by the contractor. The complexity of the conservation works needed recognition of the additional time and effort required in the management and programming.

Quality control. The consultants were able to offer advice to the client throughout the works. But their site attendance was inadequately requested. Quality was therefore at risk because the significance of pre-contract decisions and the sensitivity of the fabric were not always taken into account. In conservation projects, considerable awareness of the design options must be available if appropriate solutions are to be found in the direction of works and variations required on site. The programming of consultant effort could neither afford, nor allowed sufficient site visits.

Financial control. As noted above the Delhi Gate contract overran budget costs because the squatters' encroachments and tenants could not be removed quickly enough, and pre-contract documentation was carried out with insufficient survey. During the works, evidence for missing elements were discovered on site. The appropriate conservation and restoration required the construction of structural work. These factors contribute largely to the quite serious cost overrun (45% over the contract sum for the Delhi Gate). While it is not unusual for costs to vary considerably on historic building contracts, it illustrates clearly the importance of skilled investigation and such prior to finalizing contract documentation:

Structural repairs. Assessment of the strength of the building by the structural engineer was of great importance when deciding the appropriateness of new use. Buildings can suffer settlements in foundations, thermal movements in the superstructure, decay of materials and damage through natural forces. Deformation of arches that are not properly restrained had occurred particularly in the Delhi Gate where the circular drain to the wall gardens passes next to the building. Wherever possible structural cracks that may not have been serious, resulting from earthquakes and minor ground movements, and were not continuing to move, were grouted or stitched according to the severity of the crack. The appropriateness of such repairs could only be assessed by applying tell-tale signs and other indicators to show whether movement was continuing. Assessment of structural movements is job for an experienced conservation architect and structural engineer, and must proceed for at least one year to establish a safe envelope of movement.

Water ingress through the roof of the Delhi Gate had caused failure of roof beams and these had to be replaced or repaired. Damage to timber by water ingress and by insect attack occurred mainly at the hidden bearing points within the walls. Insect attack was often apparent in visible timbers but could be more easily treated. Assessment of this decay required drilling to expose frass or other such insect indicators, and to assess the reduction in structural strength of timber members. Treat-



Beating Kankar lime (Shahi Hamman).

ment against insect attack with modern materials was thought to be effective on these projects.

Finish—Applying new plaster layers of kankar lime. The new kankar-lime on roof-vaults at the Shahi Hammam dried too quickly and showed severe cracks on the surface. The kankar was not burnt properly and slaking was carried out too quickly. The reasons for this lay in the contractor's lack of experience and inability to follow specifications laid down in the contract documents, and lack of supervision by project management or its representative.

Adjustment was required to the mixture of lime, kankar, and sand in order to achieve a compatible mix with the backing materials. These adjustments had to be made by the consultants.

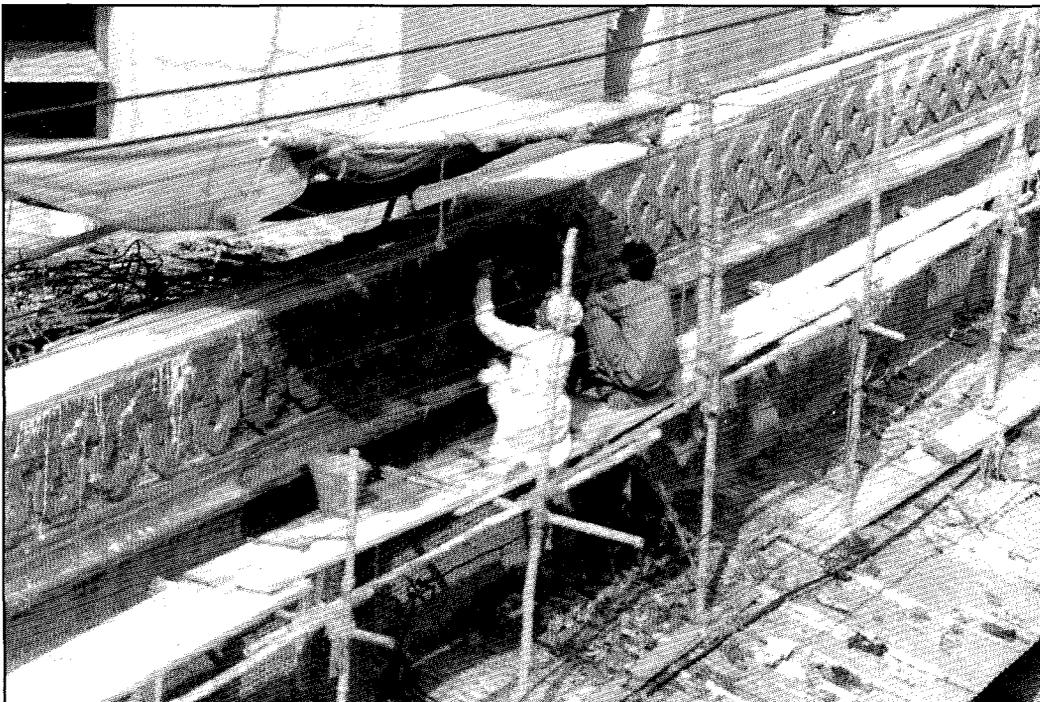
As traditional materials were being used, it was considered essential that traditional methods of workmanship were also employed. In this case the kankar-lime was also applied to the wall using traditional techniques

Finish—Repointing brickwork and vaults. Difficulty was experienced in achieving the appropriate quality of workmanship on brick walls and vaults, especially with

repointing. Incorrect tools were used to remove limewash or rake joints and brick edges were often damaged, thereby destroying a proper key for the plaster. This is an example of the need for further craft training for building workers. Craft training is however unlikely to happen without tough and experienced control from site supervisory staff and good specification from professionals. Craft training also requires a measure of institutional recognition and an establishment that can give qualifications and achievement standards which in turn may be reflected in the pay scales for the work operatives.

Finish—Painting new frescos and stuccoes. It was found at the Shahi Hammam that it was extremely difficult to convey the proper requirement of fresco conservation to the painters employed. Generally their experience related to the restoration of missing frescoes with new work or to overpainting of deteriorated frescoes. For this purpose they were highly skilled in their craft. However the importance of history demanded that the original surfaces should be most carefully preserved, even if their surface treatment and brilliance of color was not as new work might have been.

Restoration of Zagiva patterned brickwork (Shahi Hammam).



Operatives did not generally realize on site that new work has no historic value by comparison with the old.

There were problems also with mixing colors. New paint work was very plain in comparison with the artistry of the original work. The consultants considered that the wrong mixture of colors or the use of the wrong techniques, such as painting on dry plaster instead of the specified moist plaster, were the discovered cause of the problems. The completion of the frescoes in the Shahi Hammam was the subject of much discussion. The most important factor was that the new work had to be reversible and should not damage the original remaining plaster. To a large extent this objective was achieved.

Materials supply. The only problem encountered with the supply of materials occurred at the Delhi Gate where it was initially difficult and eventually impossible to obtain adequate 12"x12" brick tiles for flooring. There were difficulties with other materials such as timber beams of a length only obtained with special government permission and transport. The project benefited from the necessary government support.

Management—The project manager/architect/engineer. These complex projects required much experience from the local consultants, the LDA, the LDA contract staff, the general contractor and his labor force. The position of project manager proved to be of great importance. Because of the lack of conservation training it was extremely difficult for the LDA to find staff of sufficient experience particularly for the management of conservation works on site.

This problem was symptomatic of the LDA difficulty throughout the PUDP project. There was not adequate number of sufficiently qualified staff provided as intended in the terms of reference. In accordance with government contracting procedures, the LDA was obliged to appoint an engineer as project manager rather than an architect trained in design and conservation. Thus the project manager was likely to be experienced only in engineering infrastructure. Consequently, there was a problem of conveying the appropriate conservation and design message to the contractor and his staff.

There was some difficulty in selecting the projects that would have political approval. This caused some delay in turn to the consultants program. The principles of project management generally worked well but could have benefited from more frequent formal reviews. Weekly reviews would have produced minutes of meet-

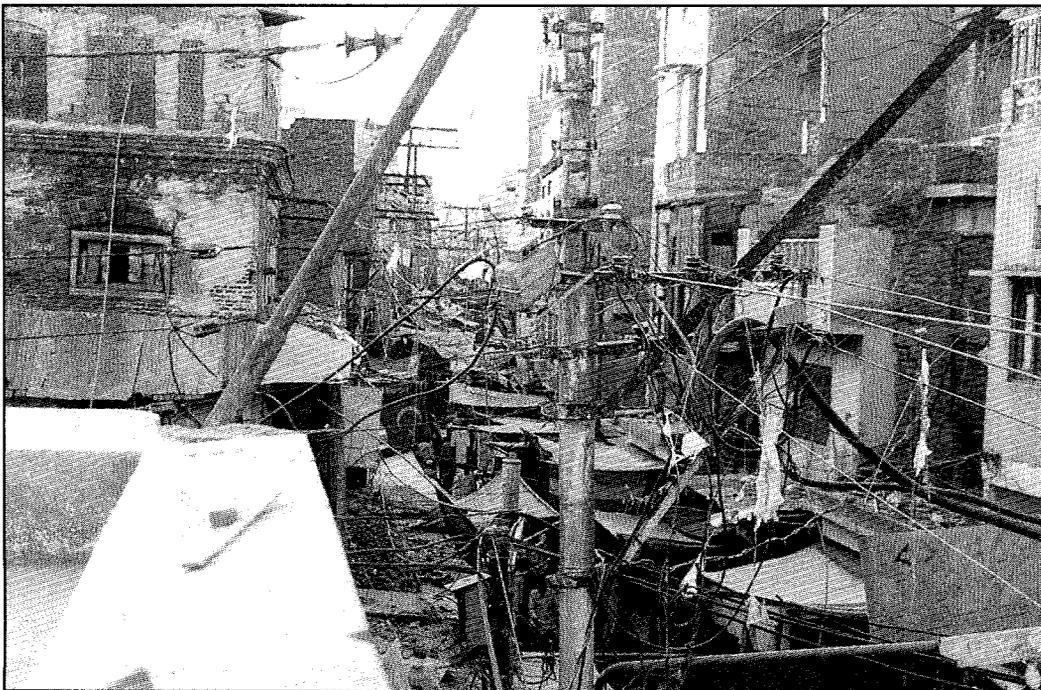
ings and notes outlining required actions by the consultant and client team. It proved to be important for the LDA to be closely involved and, as required, contribute both manpower and resources. But skilled manpower and financial resources was not always adequately available.

The lack of appropriate education and training in conservation and management in the schools and universities was nowhere more apparent than in the direction and staffing of projects.

The Impact of the Projects

The execution of these projects has resulted in some all-round progress in the consolidation of publicly owned historic buildings. There is a fresh knowledge and awareness among the participants. Enthusiasm was apparent for the introduction of innovatory methods of surveying and the scheduling of required works, notably on the Victoria High School for Girls.

*The conflict of services and heritage: View of the Delhi Gate Bazaar
from the roof of the Shahi Hamman*



Some improvement in site procedures and supervision was achieved during the works but these achievements will not be maintained for future work unless the required disciplines are carefully recorded in a procedural instruction manual that can be used by consultants and site staff on a future project.

The importance of management and procedural disciplines is insufficiently recognized and requires greater development to achieve quality control in both management and construction. The scale of the problem faced by the administration in the execution and control of conservation works was quite challenging for all concerned. The novel procedures and necessary adaptation of working methods can only occur over a long period of time and with the benefit of the examples of past successes and failures.

Undoubtedly, the immediate neighbors to these buildings have demonstrated that public awareness and appreciation of these conservation works has been positive. The attention of the press was considerable and there were articles on the projects by various journals. Visits by the British High Commissioner, the American Ambassador, and other VIPs helped to raise the perceived importance of the project and the conservation work being undertaken in Lahore. The occupants of the new buildings are most appreciative of the improved environment. It is hoped that their support and compliments will encourage others.

TRAINING

There is no established specialist training in architectural conservation available within Pakistan except at the recently opened Archaeological Training Institute. But archaeology is not like conservation, construction, and management training. The Institute does not teach subjects that are wholly relevant to the needs of effective conservation within the Walled City.

The few available, specialized staff in Pakistan received training abroad. These individuals have no broad experience with conservation. There is still great difficulty in achieving adequate leadership from local Pakistani professionals who could give technical and managerial guidance and the necessary balanced judgment on the wide-ranging issues in conservation work.

To some degree experienced foreign consultants are still required, particularly in the overall management of current projects. The work by experienced staff in training colleagues and directing projects and management procedures is critical to the

satisfactory development of efficient administration and execution of effective conservation works.

The training component in the PUDP work has not been successful in relation to the LDA management procedures. Engineering and other staff could not be appointed in accordance with the terms of reference. There has, in effect, been a lack of people to train. This situation must be corrected before commencing the later phases of work.

CHAPTER V.
**PARALLEL EXAMPLES OF CITY
CONSERVATION AND POLICY
DEVELOPMENT**

The Medina of Tunis

As part of the training program, leading LDA members visited counterpart organizations responsible for the Medinas of Tunis, Fez, and Rabat. Parallel problems exist to that of the Walled City of Lahore. How the administration came to terms with those problems has useful parallels for the Walled City.

The Medina of Tunis lies at the heart of the modern city. During the years of colonization the European suburbs separated the rich and colonial masters from the indigenous families occupying the Medina. With independence after World War II, the principal landowners moved out from the city center to the suburbs. The poor moved into rented property in the Medina and could no longer afford to administer and maintain the properties in the same manner.

After Independence the Association for the Preservation of the Medina (ASM) was founded in 1986; construction forms were adopted in the reconstruction projects. The sequence of work carried out on the Medina was as follows:

- ◆ Detailed surveys were made at 1:250 scale lasting for two to three years.
- ◆ Detailed analyses of building condition, population, density, trades, industry, and other activities and services were made. These analyses lasted for a further two years.
- ◆ To promote public involvement, discoveries and structure of the Medina went on exhibition that also involved all major local persons who needed

to be consulted before proposals were made. This exhibition lasted for one month.

- ◆ A further three years were required to develop suitable proposals for the revised land use, infrastructure, and services required for the Medina.
- ◆ The municipal government and the national government then took a further six years to analyze and adopt the new plan. The delay was mainly political and expressed the anxieties and conflicts that needed to be overcome. Eventually the President himself required action to be taken and this gave the essential impetus to the start of rehabilitation and conservation works.

To date two zones have been completed covering 30 hectares. The Medina covers 270 hectares in all with a population density of 500 persons per hectare. Each zone is planned in great detail covering the principles of repair and modification to the existing buildings, the proposed renewal of severely dilapidated buildings, and the mechanisms for funding. Detailed studies have been completed for 100 hectares or less than 50% of the total Medina.

Various funding mechanisms have been set up for the rehabilitation process which are promoted by a variety of government organizations set up for the purpose such as the Association for Urban Rehabilitation.

As in Lahore particular problems existed with the rehabilitation of buildings in multiple tenancy occupation. The absence of rich owners lowered the ability to fund and oversee repairs. The density of occupation for the properties in multiple ownership had to be reduced, and the quality of apartments had to accommodate satisfactory minimum standards to ensure that the income groups of occupants could afford contributions towards maintenance.

The financial and planning analysis carefully investigated alternate solutions in relation to new uses, capital costs, and funding. Proposals were worked out and then ratified by a council headed by the Mayor of Tunis. The political support was seen as being essential to the program. Although the work has been considered for some 23 years, some advance has been made in both the managerial and administrative mechanisms of control. Teams of professionals are now well organized under the guidance of renowned and experienced leadership.

The Rehabilitation of the Medina of Fez

The city of Fez has been fortunate in separating the modern city from the ancient Medina. This clarity of geographical form has permitted the enhancement of the Walled City with its surrounding land clear of development, its 12 kilometers of city walls have been renewed, and some 43 separate projects of restoration, conservation, and rehabilitation are in progress.

The old city contained 60% of the entire Fez population and is comprised of 8,000 historic buildings and 4,000 fountains. As with Tunis and Lahore, change in economic and trading circumstances affected demographic movement. In the case of Fez, the change in phosphate trading and climate increased immigration from rural areas. This gave rise to extensive illegal construction in the suburbs outside the Walled City. The city administration however achieves a high degree of public consultation and participation politically in the decisionmaking of the city development authority. Solutions to social, economic and infrastructure problem were negotiated with the local population to achieve adequate standards of construction and town planning. As result of immigration the extremely high residential densities of the old city had to be reduced. The current policy is to relocate industry and residential accommodation outside the Walled City avoiding daily commuting to work. Problems of traffic might thereby be avoided.

Associated with the control of legal development is the National Agency for Countering Substandard Residential Property (Agence Nationale de Lutte Contre L'Habitat Insalubres). This agency objective is creating development programs. And being state funded with little help from the national budget, it achieves funding through local taxation. There is now no illegal construction taking place in the Fez area and the city can concentrate on making old buildings habitable. The city encourages local construction and gives adequate guidance to satisfy construction planning and regulations. Where money is scarce, the city tries not to arrest construction but to modify it to the principles of its development plan and system of control.

The administration of the city deals with the principal problems of fire, noise and pollution, conservation, the promotion of tourism, and the economic well being of the population as a total strategy. Architecture and conservation are one of the components of this balanced strategy.

Education policy was seen as being most important with schools being placed in old houses. Schools also formed the nucleus for good community structure.

Fez is designated a preservation area and a UNESCO World Heritage Site. The administration of the city may provide loans for the rehabilitation of housing within the preservation area. The current policy is to reduce the density of population within the city. The administration sets standards for the conversion of housing to flats through the design standards for house types administered by the planning control department of the administration.

Where historic property is being converted, the introduction of new structure is required to be reversible. It is naturally estimated that fashions will change, but the historic fabric should at all times retain its integrity beyond the time limits of short-term socio-economic and aesthetic pressures of fashion.

Effort was being directed in Fez to arrest accelerated decay and privatize the conservation process, thus allowing families to decide the priorities and options open to them and working with assistance of loans available for rehabilitation. While this was the theory, the implementation was proving to be much harder.

As in Tunis and Lahore, decay had been caused by absentee landowners and accelerated through lack of maintenance by tenants. Examination of the history of growth in Fez shows that between 1975 and 1987 much bad restoration work had been undertaken with inappropriate reuse of properties. The administration had managed to control this situation by improving legislation, and by allowing the population to help itself within the context of the law.

Emergency action was undertaken to reduce risk of fire, eradicate ruined sites, and improve social health and co-ordination between the administration and the communities. These proved to be important moves. By undertaking action towards care for the community, the community reciprocated with considerable support for the policies of the administration. The criticism by the community allowed for adjustment of policy. The care taken with public policy and the cooperation with the local population brought rewards for support and loyalty for the locals.

Housing policy outside the Medina helped to stop migration into the old city. Diversification of employment and type of resident permitted alternative choices for successive generations of people within the Medina itself. The city had discovered that in order to change level conditions and economic circumstances, the people's belief in themselves and support for the administration had to grow. In consideration new legal measures, the administration wished to balance the power at the center with the community power at local level.

Educational policies gained importance with effort directed at technical, social, financial, and crafts education, and also training of engineers and architects. Contemporary construction systems are now achieving harmony with traditional construction systems that are essential for the conservation, modernization, and reuse of the traditional fabric within the city. The promotion of good communication and education in craft skills were seen as an essential foundation for healthy trade and the marketing of the skills available in Fez, both nationally and internationally. Good training and education also encouraged financial support from the banking system. Undoubtedly these policies which are supported by central government have permitted Morocco to export its considerable abilities in craft manufacturing and construction skills.

The administration noted the complexity of the problems being dealt with and therefore the great need for long-term programs and goals. This in turn would give continuity of employment and trade to provide stability during this period of change and growth. The city was particularly aware that historic sites produced financial benefits both to the occupants of the buildings and trades people in the vicinity. Though much of the funding goes out of the city, two components were extremely important:

- ◆ People pay taxes at the same rate but do not necessarily get back the same improvements as a result of those taxes. Therefore the investment in the Medina requires supplementing by the district and the country.
- ◆ The investment into social facilities, hospitals, and public services is paid for by funds from outside the old city. It is essential in reducing population density of the old city and for the improvement of the quality of life that the city can be made attractive and a contributory factor to economic prosperity.

It was noted that the souks have been improved with finance originating from the owners of the shops themselves. Crafts tended to concentrate in specific sectors of the old city as at Lahore, and craft organizations had grouped together and selected representatives for their local interests. The city of Fez arranged improvements with the local representative of the organizations and owners of properties. Where a single proprietor or tenant gave resistance, the mutual benefit and persuasion of the groups of traders ensured conformity and progress in the relations be-

tween the local interests and the city management. Such arrangements were not legally binding but were wholly effective in producing community participation.

Taxation by the municipality is effective and is a major factor in contributing to the financial well being of the city. The management of the city by the municipality was also effective and benefited largely from good community relations. The Auqaf department was also very important in Fez. The Auqaf is strong in social programs and the city planners took these programs and Auqaf's interests into account. It was seen as most important that the sectional interests of the Auqaf, like any other sectional interest within the city should be taken into account in developing plans for improvement. As in Lahore the Auqaf owns much land and had developed considerable confidence in the city administration's ability to promote the interests of the Auqaf as much as the interests of the city.

Considerable financial assistance had been given to the city by a variety of organizations:

- ◆ UNDP supporting feasibility study and funding 60 to 70% of the projects.
- ◆ Food and Agriculture Organization (FAO) helping particularly towards improving insalubrious or dangerous structures where health and social conditions require improvements.
- ◆ United Nations Fund for Popular Action (FNUAP) also providing funding for Fez.
- ◆ The World Bank.
- ◆ The Islamic Bank.
- ◆ The African Development Bank.

A system of grant aid from the state was in operation. Grant aid covered 60% of the cost of construction and private funding was required to cover the remaining 40%. A maximum of approximately \$3,000 to \$5,000 was available in grant aid per property.

Local organizations such as the Fez/Sais Association had been founder for cultural, economic and social development. A varied membership of this association existed and was treated like a public service organization; it provided funds and was supervised by the state and recognized under tax law. It was quite apparent however problems with development work existed in Fez: Neither does the public understand financial mechanisms nor does it easily recognize the dangers and failures

of inaction and decay in an old city before it is too late. And while the public understands administration, they do not understand the process of raising funds.

The administration largely delegated detailed theoretical analysis and professional supervision and design of city projects to the society for the rehabilitation of the Medina of Fez.

MAPPING AND THE INTEGRATION OF ARCHAEOLOGICAL AND HISTORICAL SITES IN THE NATIONAL PLANNING OF TUNISIA

In the early 1980s Tunisia recognized the importance of its national heritage in the context of internal and international tourism, the balance of payments and international trade, the education of its population and the promotion of understanding of the roots of Tunisian culture. Tunisia like Pakistan has a heritage covering some 3,500 years, and consequently is aware of the great asset for tourism and national identity represented by its rich heritage.

Many archaeological sites and historic buildings are sadly under-exploited, suffering from decay and pilfering by the interested public. They lack any satisfactory interrelation and context. Yet the sites of this country relate to Phoenician, Greek, Roman, Islamic, Spanish, and modern heritage of great importance and artistry. The National Museum is full of remarkable treasures. The problem today is how to conserve and exploit this heritage for the benefit of Tunisia. A United Nations Development Programme project was undertaken to support the national planning department in the organizations of the heritage. The program is relevant to the one in Pakistan and consisted of the following elements:

- ◆ Mapping and listing of all archaeological and built heritage in the country. The survey has lasted five years and is still not quite complete.
- ◆ Listing and computer registration of all details of registered heritage property and the dissemination of registered information to national, regional, and local administrations and property owners.
- ◆ Analysis of appropriate administrative systems for the integration and control of the country's heritage at various levels of the national planning hierarchy.
- ◆ At national level the controlling institutions such as the National Institute of Archaeology and Art were required by law to retain ultimate authority un-

der the Ministry of Culture for all questions concerning the appropriate conservation, restoration, and reuse of heritage.

- ◆ Relationship between the National Institute of Art and Archaeology and the regional governments and district authorities needed examination. Equally at each level at the planning hierarchy, a range of questions needed examination relating to integration of heritage to local development for its protection and acceptable use.
- ◆ Methodology to be used in the analysis and design of a conservation project needed detailed description.
- ◆ Pilot project to be selected would have to involve the principles of planning an appropriate conservation project.
- ◆ Legal provisions for the protection of the heritage needed detailed examination to ensure the adequacy of such provisions and the avoidance of confusion or misinterpretation. While European experience was brought to bear, lawyers from Tunis University carried out the detailed analysis of the legal provisions.

Some management problems were encountered in achieving adequate description and registration of the property during the years of survey. Considerable administrative efficiency was required and checking of documentation proved to be inadequate by the National Planning Department. Subsequent corrections to administrative procedures for the program were required to achieve the necessary level of efficiency. Skilled computer use was of fundamental importance to the registration of information being gathered. Computer users require training. The computer input required close liaison between the inspecting officers and the management responsible for the quality control. This was difficult to achieve partly as a result of inexperience, shortsighted understanding of the specialist archaeologists and historians of the purpose of registration, and as a result of weak management.

Examination of the legal system showed that the law suffered many faults in its formation. It was not properly applied to fulfill its prime function of controlling planning and defending the heritage. It was discovered also that the administration also ignored the law when it came to giving favors to selected individuals. For instance the Mayor of Carthage permitted development in the Punic ports, a World Heritage Site. And major new underground pipelines were allowed to pass through the center of the most sensitive archaeological site at Carthage.

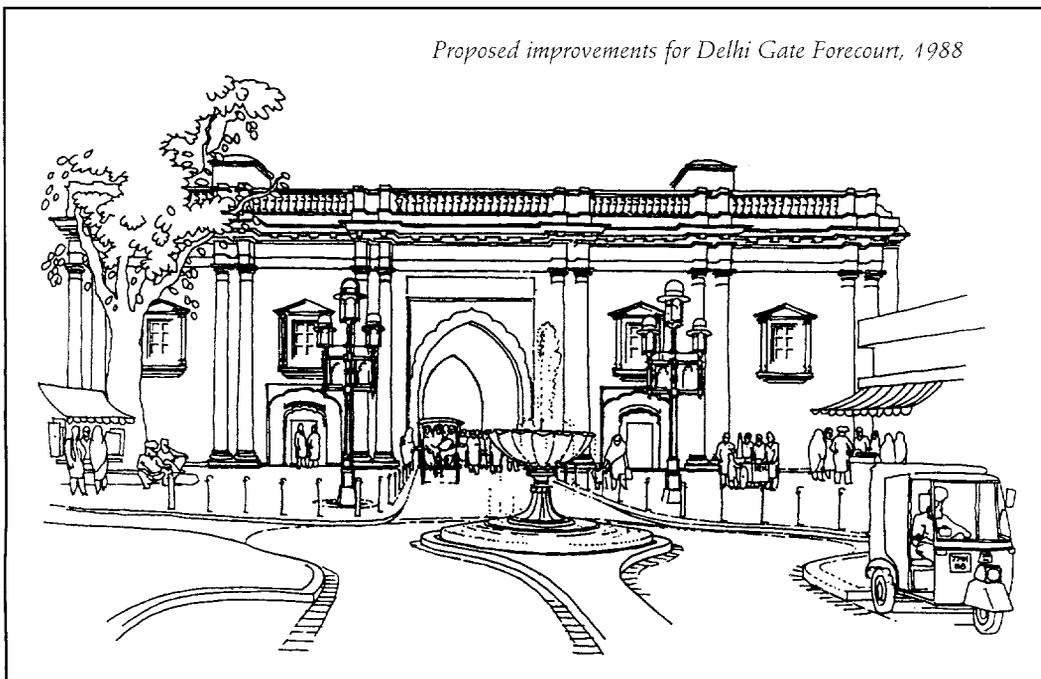
The agency responsible for the reuse and presentation of historic sites was only recently founded. There was no control over visitor ticketing at historic sites and almost complete absence of satisfactory presentation media for the benefit of visitors. The country's asset was in effect almost totally unexploited.

There is a greatly increased sum of knowledge from various countries of the world on the methods and problems of investigating and presenting heritage to the public. This information still has to be developed and understood in the Tunisian context. The study showed however that enormous potential existed for economic benefits, increased employment and secondary benefits to the communities, and improved commerce and trade through the improved interpretation and presentation of the country's heritage.

TECHNICAL CASE STUDY 1.

THE RESTORATION AND REUSE OF THE DELHI GATE, LAHORE

The Delhi Gate and the Delhi Gate Bazaar were accepted as pilot projects because of the historic and geographic importance of the route from the Gate to the Wazir Khan Mosque and on to the Golden Mosque. The Gate is included in the Department of the Archaeology's List of Buildings of National Importance. The original LDA cost estimate for the works, prepared in July 1988 was Rs2.8 million.



History

The Delhi Gate was built in the early British Period, probably in the 1860s. It is built on the site of the Sikh period gateway. The building was designed to accommodate a police station, a magistrates court, and the gates which could be closed. It is not established for how long these functions survived. There is evidence of past alterations to the building on at least two different occasions. It seems likely that the south courtyard served at some stage as a gun platform, and this is supported by the evidence of the ramped access leading up to it. There is no evidence to show any link with city walls at the south end. The use as a police station continued until 1988 when the police formally evacuated the building in December 1990. From January 1991 the building was in use as a private girls school.

Description of the building

The Delhi Gate is located near the north east corner of the old city a short distance from the Grand Trunk Road, and facing due east is linked to the Circular Road by a large forecourt. The plan form is a rectangular shape, 36 meters by 20 meters, arranged symmetrically and divided into north and south sections by the central carriageway, which leads into the Delhi Gate Bazaar. The carriageway widens in the center of the building to form an oval-shaped space, from which doors lead into chambers on both sides. All the principal accommodation is arranged at the first floor level. On the north side there is lobby and three linked rooms of which the center one overlooks the carriageway through three windows. A return range along the front of the building houses another room, lobby, and staircase that leads up to the roof. This room has an alcove with a raised floor and a window on the east side overlooking the forecourt. A small courtyard completes the planning on the northside. The rooms on the northside were used for the police station.

On the south side there is a symmetrical arrangement, of a lobby and a range of three rooms, where the central one has three windows that overlook the central carriageway. A staircase leads from the Bazaar at ground level up to the lobby, and a smaller winding stair leads from the adjacent room up to a mezzanine corridor that provides the only internal link between the north and southside of the building. Adjacent to the range there is a long hall running across the building, which has a matching alcove, doors and window.

The hall is approximately 21.3 meters by 6.1 meters wide, with 7 timber beams spanning across to support the roof at 6.1 meters height. On the southside of the hall there is a verandah from which an iron door leads into a “lockup” at the west end, and from the east end the second staircase rises to the roof.

There is some inconclusive evidence in the brickwork to indicate that there was originally the same planning on the south side as is found on the north side, that is the hall and verandah were later additions. The apparent symmetry of the building would support this theory.

The verandah faces a large courtyard, the ‘gun platform’, which is bounded on the east side by an arcaded wall and a projecting bastion, and on the west side by a range of buildings built in the 20th century containing three single-story rooms and an entrance lobby. This provides the access point into the courtyard from the top of the sloping ramp. The arches were filled with jallis (a screen of ventilating brickwork) and the whole was built upon the original low plaster-topped wall, which formed the Shah Nasheen, or ‘King Seat’. The work was taken down to courtyard level during restoration.

Structurally the building was generally sound. However some settlement on the southern side of the archway had produced serious cracks, and there were other areas where movement had occurred. Major works were required to repair the cracks, cure the water ingress through roofs, repair defective timber work, and install a new drainage system.

FUNCTION

The proposals for reuse of the Delhi Gate included rehousing the functions previously located in the Wazir Khan Hammam: The Boys’ Primary School, the Girls’ Vocational Training School and the MCL Councilors office. The community medical center was to be located in the building to the north of the gatehouse, outside the Delhi Gate contract work. There was a priority to remove existing tenants, so that the medical center could be transferred from the Hammam and allow that contract to commence.

Eventually all the first floor of the Delhi Gate, on both North and South sides, was let to the Girls’ High School. To the rear of the gatehouse on the southern side the remains of the access ramp up to the rampart have been restored to provide access to the school playground located in the south courtyard.

The proposed uses were to be accommodated within the gatehouse without any major modification to the original structure. The only new building proposed was the toilet facility at the southern end of the gateway to serve the boys' school at the first floor level and the users of the Hammam on the ground floor.

OBJECTIVES AND BENEFITS

The World Bank and the Punjab Government funded The Delhi Gate contract. It was the first conservation project to be implemented. And as such it was important for the establishment of good working methods and management procedures, for the fostering of good relations with other interested parties (the Department of Archaeology, MCL and WAPDA) and for the promotion of conservation and the benefits of urban upgrading in the Walled City.

For many members of the project team this was the first experience of such work. It gave them the opportunity to learn from on-site experience, and for both the team and the Contractor to appreciate the differences between conservation and new built work.

It also gave the opportunity to start the process of conservation in an area of high public profile where the work could demonstrate the benefits to the city environment and begin to encourage others by example. The Contract highlighted problems of management, as well as necessary improvements to working practices required by the professional team. The following issues referred to in the main body of the report were shown to be of particular importance:

- ◆ The need to agree the new use of the buildings at an early stage in the design process, thus avoiding the need for later changes to the brief and contract drawings and the incurring of extra costs and delays.
- ◆ The need to rehouse temporarily or permanently any occupants or people living in encroachments so that building works might continue uninterrupted.
- ◆ The need to have sufficient access to carry out detailed survey and archaeological investigations prior to drawing up contract documents.
- ◆ The need to improve contract management, especially control and site supervision procedures.

SURVEY

The original survey was limited to a visual and measured survey only, as no funds were available for an investigative survey. Also because of the extensive encroachments in and around the building adequate access was not possible. As a result some aspects of the building's history and construction were not discovered until the contract started.

Removal of the roof surface and defective plaster allowed detailed inspection of areas previously concealed, and several major additions to the contract were consequently made. The main items included:

- ◆ The restoration of missing parapets, cornice and chimneys to the roof following the discovery of archaeological evidence for the originals.
- ◆ Demolition of a structurally unsound lobby at the head of the south ramp.
- ◆ The renewal of the roofs and west wall of the north courtyard loggia. Here it was possible to restore the roof to its original design and position using archaeological evidence discovered on site.

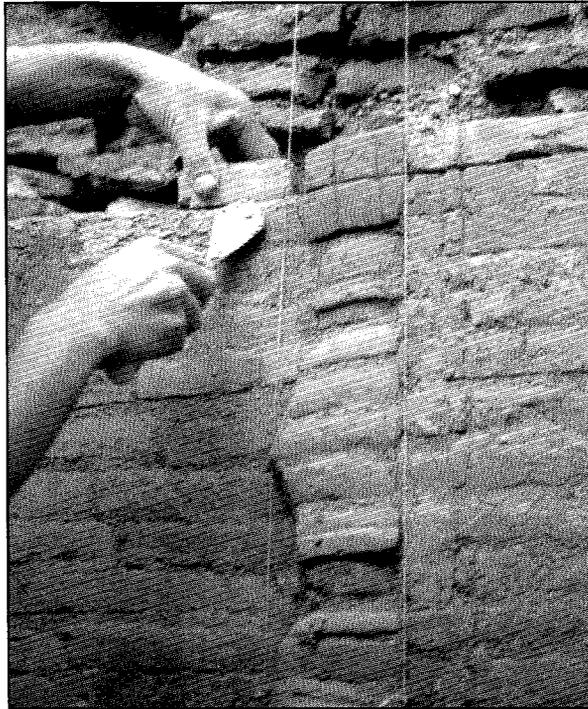
Elsewhere, internal plastering was found to be more extensively perished than was originally thought, and several leaning courtyard walls were rebuilt for safety reasons. This included the north and west walls of the north courtyard and the east wall of south courtyard. Mostly these walls were of more recent date than the building, and built of modern sized bricks. The policy was to repeat this approach where the wall was to be rendered, and to use small traditional bricks in places where it was not. A white painted and rendered wall finish was used to denote new structures, in particular the toilet block in the north courtyard and the new double height toilet block to the south of the south courtyard.

PROJECT DESIGN

FUNCTIONS

The contract to install new uses was designed to retain the gatehouse as a public building. The two schools previously housed in poor conditions in the adjacent Shahi Hammam (see Technical Case Study 2) were to move into the Delhi Gate.

*Renewal of carved
brickwork detail in walling
(Victoria High School).*



The Girls' School, which would by nature require privacy, high boundary walls and independent toilets, was to be housed in the north side of the building.

The Boys' School, intended to occupy premises on the south side of the building, was to retain the use of a large hall 18 feet by 55 feet (formerly the Magistrates Hall) as well as the large southern courtyard. Both of these were to be used for public functions, meetings or weddings when the school was not in occupation. Access was always to be via the original ramp leading to the rampart.

In fact the whole of the first floor was occupied by a single school, a new Muslim Girls' High School. This came about as a result of keen interest shown in the project by the new Member of the National Assembly for the Walled City, Mr. Shahbaz Sharif.

The ground level rooms leading off the carriageway were to be given over to public utility functions such as post office, telephone room, Health Inspector's room, and Ward Councilor's office. Only some of this was achieved as planned, and there was difficulty in removing the shopkeeper tenants. One item not dealt with in the Contract was the conversion of existing buildings to the south of the Delhi Gate into a dispensary and medical center. These functions were at the time housed within a concrete structure attached to the Shahi Hammam, which was due to be demolished. The dispensary and medical center were rehoused in the remaining chambers on the ground floor of the Delhi Gate.

DESIGN FOR REPAIRS

Due to the inaccessibility of the premises at the time of survey, the design suffered from an inadequate analysis of the structure and building plan form. Due to its continuous occupation, a full archaeological survey and an adequate structural engineer's survey during the project design stage was lacking. The implications of structural cracking were not fully analyzed until later in the contract. These two processes were important for the design of the conservation work to accurately interpret the existing fabric and to account for structural anomalies. In the Delhi Gate the additional works instructed after the start of the contract reflected these shortcomings.

DESIGN PRACTICE

The consultants studied possible improvements in the organization and contents of contract drawings and documents. Several significant conclusions were reached:

- ◆ It was agreed that survey and proposal information should be on separate drawings. The survey drawings of historic buildings form the only record of what was found before works were proposed and carried out. Subsequent research and interpretation and the base information for future maintenance depends upon the record of the building being retained in an accessible archive. Considering the value of the investment, every building should have its historical record of works undertaken available to inform subsequent generations of owners and users.
- ◆ In turn, the proposal drawings should carry identification of future uses, adequate instruction to the contractor, and references to detail drawings and to the specifications.
- ◆ It was considered essential to create standard drawing formats to benefit from the economical use of paper, and to add further details in the working drawings.
- ◆ While for new buildings it was LDA practice for Bills of Quantities to be the principal working and contractual document on site, it was decided that clearer documentation for conservation and repair works was required. Schedules of work items were related to specifications and cross referenced by numbers to drawings, noting the architect's or structural engineer's or mechanical and electrical engineer's estimation of quantity. This gave improved clarity of instructions for the contract labor and management on site. This

system was only partially developed over the several contracts being designed and supervised. It also had the great advantage of avoiding the extensive descriptions of works covering the drawings.

CONTRACT

PROGRAM

The contract was let in December 1989 at a value of 2.2 million rupees with a term of six months, and a start on site set on January 16, 1990. The program was only presented by the Contractor in March and it was still not in a form that could be approved by the client. Good project programming is essential for organizing the works, ordering materials in time and monitoring progress.

The Contractor's initial program showed that he had not the experience to plan the stages of the work in any detail. Four sections of the building were to be worked on simultaneously by different teams, and plastering/decorating works for the four sections were programmed to finish on the last day of the contract. After discussion a revised program was produced which showed sequential operating, having improved continuity of the work by trades, and gave the last dates for phased access to sections of the building, especially those parts still occupied by tenants. The dates for access however were passed without any progress by the client to remove the tenants. The contractor had little choice but to work around the obstructions. Further refinements in the contract would have allowed the client to penalize for late completion. Equally, the contractor should have been able to claim compensation for late instructions. The contract might also have stated a maintenance period for making good defects which would have protected the client against the discovery of defects after completion of the works.

The client's contract regulations did not allow for contingencies. While this is reasonable for new works, it is unreasonable to have no contingency sums in a contract for works of alteration and repair, and especially so far to historic buildings where knowledge of the fabric cannot be complete until the necessary opening up and survey has taken place.

The works were finally completed by January 1991. However, for various administrative and technical reasons such as the costing of the extra works, the final account was only settled by the client in August 1991 and the contractor was concerned by the delay.

The extra works outlined previously had a considerable effect upon the contract sum. Estimates prepared by the Assistant Engineer in May 1990 suggested a 45% increase in forecast costs over the contract value. From this the consultants deduced that the conservation program might be overoptimistic against the pre-contract budgets, and that only a small number of contracts might be financed compared with the number prepared. The final account for the Delhi Gate was settled at 3.7 million rupees.

Quality

The contractor employed a foreman whose family for generations had contracted with the Archaeology Department. He had worked as a craftsman under Mr. Waliullah Khan (head of the Punjab Department of Archaeology from 1989 to 1991) on the restoration of the Wazir Khan Mosque. His experience enabled the contractor to proceed fairly happily with the specified traditional mortar mixes using kankar lime and surkhi (brick dust). The quality of new work was favorable whilst repairs were sometimes more difficult to control.

There is always a temptation for a contractor to replace old with new rather than to repair. This was certainly the case at Delhi Gate, for reasons of expediency and perhaps a lack of appreciation of the importance of the fabric. It is here that the historical and cultural interpretation of the building could have helped to put the objectives of the contract into perspective for personnel on site. There was also the need to give the contractor more detailed drawings of the repairs to back up the schedule description.



In some cases quality was hindered by the availability of correct sized materials, especially in the case of the supply of the larger traditional bricks. Some shortcomings in

Laying new roof new sub-base over Magistrates Hall: Brick hoggin on clay on polythene damp proof membrane (Delhi Gate).

*The Delhi Gate
after restoration*



the quality of work were found as a result of design rather than execution. Design decisions were often taken on site by junior supervising staff who were insufficiently skilled or trained and who did not refer to the design team adequately. Some new works were carried out without full consideration of their design implications, especially those works not foreseen at project design stage. As management skills grew, these teething problems began to disappear.

PROJECT MANAGEMENT

From the start there were areas where it was felt that the introduction of improved methodologies for the running of the contract could be of benefit, and the consultants prepared model agendas for pre-start and site meetings. But old adapted practices from NE Lahore engineering contracts were used instead. These meeting agendas were weak on design analysis, on works programming control and on financial management, requiring no monthly financial statement, and no assessment of revised contract values following instructions. Site meetings were not called on a regular basis except when some problem arose.

A lack of regular site meetings is of particular danger in conservation work.

The tendering and letting procedures were handled by the LDA and it was later agreed that the consultants should be advised of any meetings so they may attend if they wished. The contract documentation called for the appointment of a Project Manager, who could be an architect or an engineer to run the contract and issue instructions. Owing to the LDA system of financial authority lying with particular graded posts for engineers, only the resident engineer for the Walled City was appointed to this post. This was unfortunate in that there was an Architect of Deputy Director status available who was more appropriately trained in conservation. After



Wall repairs in south courtyard, Delhi Gate.

discussion it was agreed that, in future contracts, persons other than an resident engineer may be named project manager even though their instructions would need countersigning by a suitably authorized person such as an engineer. It was clear however that, whoever supervises works must have a good knowledge of the philosophies and objectives of conservation work and the project.

There is still the need for management training no matter who is the Project Manager. He needs the support of the assistant engineer and a good clerk of the works, as well as drafting staff to prepare detail drawings of revisions to the designs etc. One area which needed improvement was the issuing of instructions. Site works orders were rarely used and even major deviations from the contract were commenced without written instructions from the client. The contractor was often under pressure to "get on with the job".

This absence of adequate records of verbal instructions allowed for serious misunderstandings in the execution of the works and subsequent problems in settling the final account.

Good practice requires the contractor to be properly instructed, and in theory he should refuse to carry out extra works until duly authorized. The formal issuing

of instructions would also help the communication of design instructions to all the project team. New instructions should be reviewed at regular site or office meetings.

All instructions to the contractor including those of any consultants should pass through the Project Manager and his staff. In reality, the contractor should be encouraged to see the consultant's role as advisory and not executive. The consultant's role during project implementation was not adequately clear, although his involvement was extensive.

CONSTRUCTION AND REPAIR

The Delhi Gate was built of burnt clay bricks of traditional sizes, mortared with kankar lime and roofed in either vaulted brick-work or timber and clay. The central vaulted carriageway with 2 stories of rooms on north and south side was one monolithic structure of brickwork. The courtyards at first floor level to north and south were built on brick and tile rubble fill, and the adjacent rooms are of brick walling with timber and clay roofs.

In accordance with the practice and philosophy of conservation, traditional methods and materials were used wherever appropriate to ensure compatibility of old and new fabric.

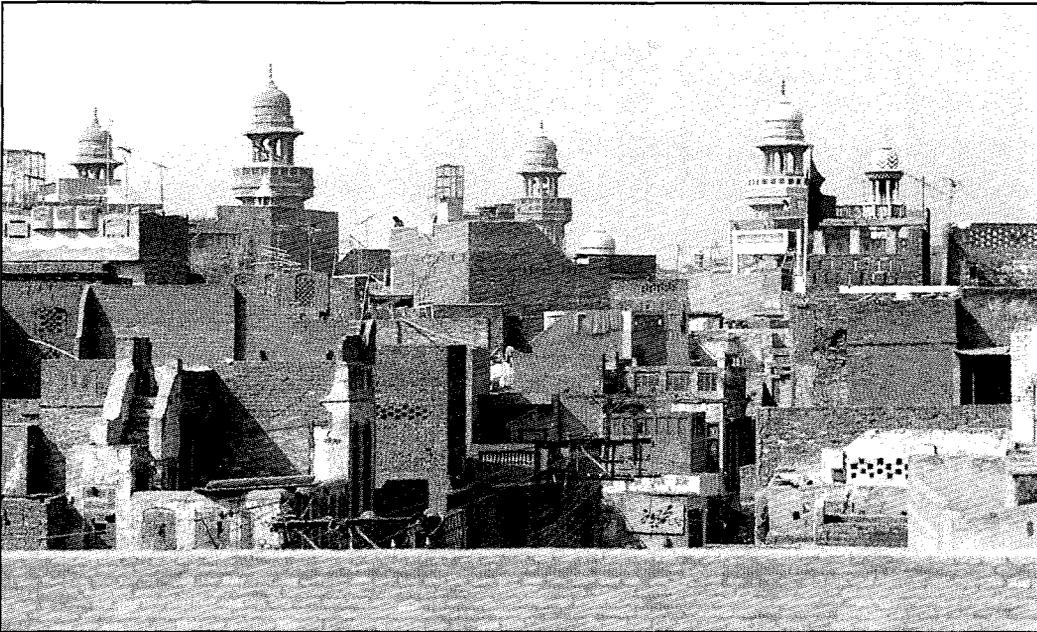
Bricks

The bricks used in the construction were of traditional sizes namely:

- ◆ 300x150x50 millimeters (mm) (12"x 6"x 2") used in flooring internally and used as binders in the projecting cornices
- ◆ 300x150x50 mm (12"x 6"x 2") used as string courses and bonding courses in walling
- ◆ 230x112x37 mm (9"x 4.5"x 1.5") standard walling size
- ◆ 200x100x25 mm (8"x 4"x 1") used on-edge for flooring of ramp.

In later additions and repairs modern-size bricks of 230x112x75 mm (9"x 4.5"x 3") had been used, especially in the single-story structures around the south courtyard, and for paving.

New constructions were to have a rendered finish and these were built of modern size bricks, being cheaper in prime cost and labor to lay. Reconstruction was



View from rooftop looking toward the Wazir Khan Mosque

carried out in new fair faced brickwork of the appropriate traditional size. The new paving of the roof was done in 300x150mm (12"x 6") size bricks, and 300x300 mm (12"x12") size was to be used to repair the original internal flooring.

The new 200x200 mm (8"x 8") bricks cost the contractor 2 rupees each.

Walls AND ROOFS

The walls were generally sound except where modern repairs had collapsed. Two areas of structural concern became apparent during the course of the works; one was settlement of the south arcade of the central carriageway, and the other was differential movement between constructional phases of the building, especially on west face externally where the Magistrate's Hall abuts the central monolithic structure. Replastering and historic repairs had disguised the true extent of masonry fractures and distortions resulting from structural settlement.

The contract did not provide for any particular structural remedies. The cracks were stitched and grouted but of course this may not prevent their re-appearance should there be further changes in the ground settlement pattern, which is affected by the variations in the depth of the water table beneath the building. The occur-



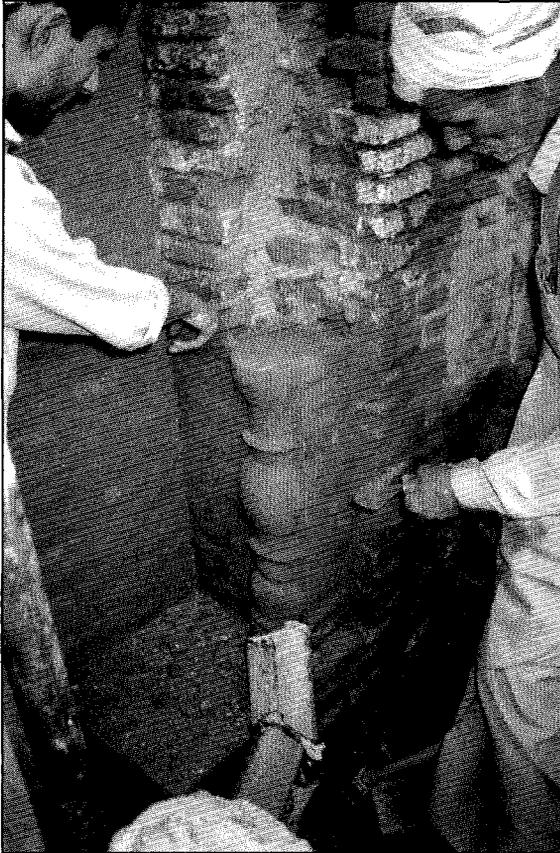
Relaying the stepped entrance ramp, Delhi Gate

rence of earthquakes caused some filled cracks to open up again. This cycle of differential movement will continue in the future and continuous attention to repair is inevitable without unaffordable and major work to the foundations.

Another discovery during the removal of plaster was evidence for the missing string course and the cornice moulding on the walls of the Magistrates Hall. These were replaced according to the sections discovered on the north side.

The roof of the Magistrates Hall was traditionally constructed of massive beams of Deodar, carrying close-spaced square-section joists which supported a brick tile decking with a puddled clay finish of between 100 mm (4") and 150 mm (6") thickness. The contract called for replacement of two beams which had obviously failed. One was cracked through and supported on wooden posts; the other was seriously bowed, and had been previously patched at one end with a board which covered up major historic decay. It is likely that this patching had been carried out to second hand beams when the Magistrates Hall was built late in the 19th century. The beams were replaced under the contract. It was not possible to obtain in Lahore seasoned timber beams of sufficient length. Through contacts of the project sponsors, the new beams were located and brought from Kashmir.

At the same time, the other beams were inspected. This operation should have been carried out at an earlier stage but scaffolding was not then available. A third



Remaking brick detail

beam was found also to have been patched, concealing a defective end bearing. There was not time to obtain another new beam so the existing one was repaired using a good length cut from one of the replaced beams and a traditional bolted scarf joint.

A similar though lighter construction was used for the new roof placed above the room adjacent to the north courtyard. The existing roof was found to be a later replacement at a lower level, and was structurally unsound due to the inadequate size of the rafters.

KANKAR

Kankar lime was used traditionally throughout the Punjab for all forms of mortar and plaster. Only in the 20th century

has kankar been superseded by the use of cement. Kankar occurs naturally as nodules of limestone with a high clay content, and when burnt produces a naturally hydraulic lime. The supply for the DEIW Gate was from Awandhia Village, 10 miles north of Lahore, where it was collected from the surface of the fields and burnt in a traditional kiln fired for a week with fuel of dried buffalo dung.

The burnt kankar was brought to the Delhi Gate where it was ground to a fine powder and stored in the dry ready for slaking and use in mortars. Kankar from the same source was used, in its raw unburned state, as an aggregate for lime concrete in the sub-base of the brick paved roof finish.

SURKHI

The same machine used for grinding kankar was used to grind broken bricks into a fine powder known as Surkhi which was then used as a filler and setting agent for traditional lime mortar.

Mixes

Plaster. The kankar powder was mixed with a fat of white lime prepared on site and left to hydrate for at least 2 days before use. As a walling plaster, the mixture was applied in a single coat up to 1-inch thick and beaten with timber battens in two stages. The smooth surface was finally scratched for the skim coat of lime cream to follow.

For thicker work and to build up the surface for architectural stucco work several layers were used. Eventually 10% fine sand was added to reduce shrinkage cracks. The Contractor's proposal to use cement additive was prohibited.

Mortar: The 2-parts fat lime were mixed with 12-parts surkhi and gauged with 1-part cement.

Lime concrete: One part each fat lime and Surkhi were mixed with 6-parts raw kankar. This was found to have too few fines so 1:1:4 was adopted.

Summary

- ◆ Walling plaster: 2 kankar, 1 lime, 10% fine sand
- ◆ Concrete: 6 raw kankar, 1 lime, 1 surkhi
- ◆ Mortar: 1 cement, 2 fat lime, 12 surkhi
- ◆ Pointing mix: 2 kankar, 1 fat lime

Policy Preparation and Development

The Delhi Gate is legally protected as a registered monument. The reuse of the buildings was essential to guarantee the maintenance and preservation of the monument.

Accepting new uses inevitably led to the need for some changes and the requirement for a degree of restoration. The Delhi Gate was in use and a compromise had to be reached between the functions and the monument. The new functions were two schools and these needed toilets. The new structures were designed not to conflict with the historic fabric, and the new walls were rendered to differentiate their finish from the original brickwork of the building.

Repairs of defective structure provided the opportunity for restoration where the original form was known or would be deduced. This was the case with portions of the battered lower walls where modern sized bricks were replaced with traditional brickwork. Elsewhere, archaeological evidence provided the informa-



*Restoring
moulded
plasterwork*

tion necessary for restoration, such as the corniced parapet and chimneys to the roof.

The provision of services to a historical structure requires great care and sensitivity. The lighting for the schools had to provide good illumination but also had to avoid the naked fluorescent tubes, so common in many public institutions. Thus function and presentation of the historic interiors demanded an imaginative and bold approach to lighting design. Some interiors which were originally only lime washed have been plastered to conceal electrical ducting.

Above all the ducting for modern services must not require removal when renewal of the service is needed. Alterations to the use of fabric requires flexibility in the location of services, and any damage to the historical fabric must as far as possible be reduced when works are undertaken.

Conclusion

In a fairly wide ranging but short report it is possible to draw only general conclusions. The results were encouraging and the interest generated in and by the project has exceeded all expectations. The Delhi Gate control provided examples of all the implementation problems. Much has been learned by the parties involved. It is essential to improve management and to strengthen the conservation support team.

TECHNICAL CASE STUDY 2.
**CONSERVATION AND REUSE
OF THE SHAHI HAMMAM**

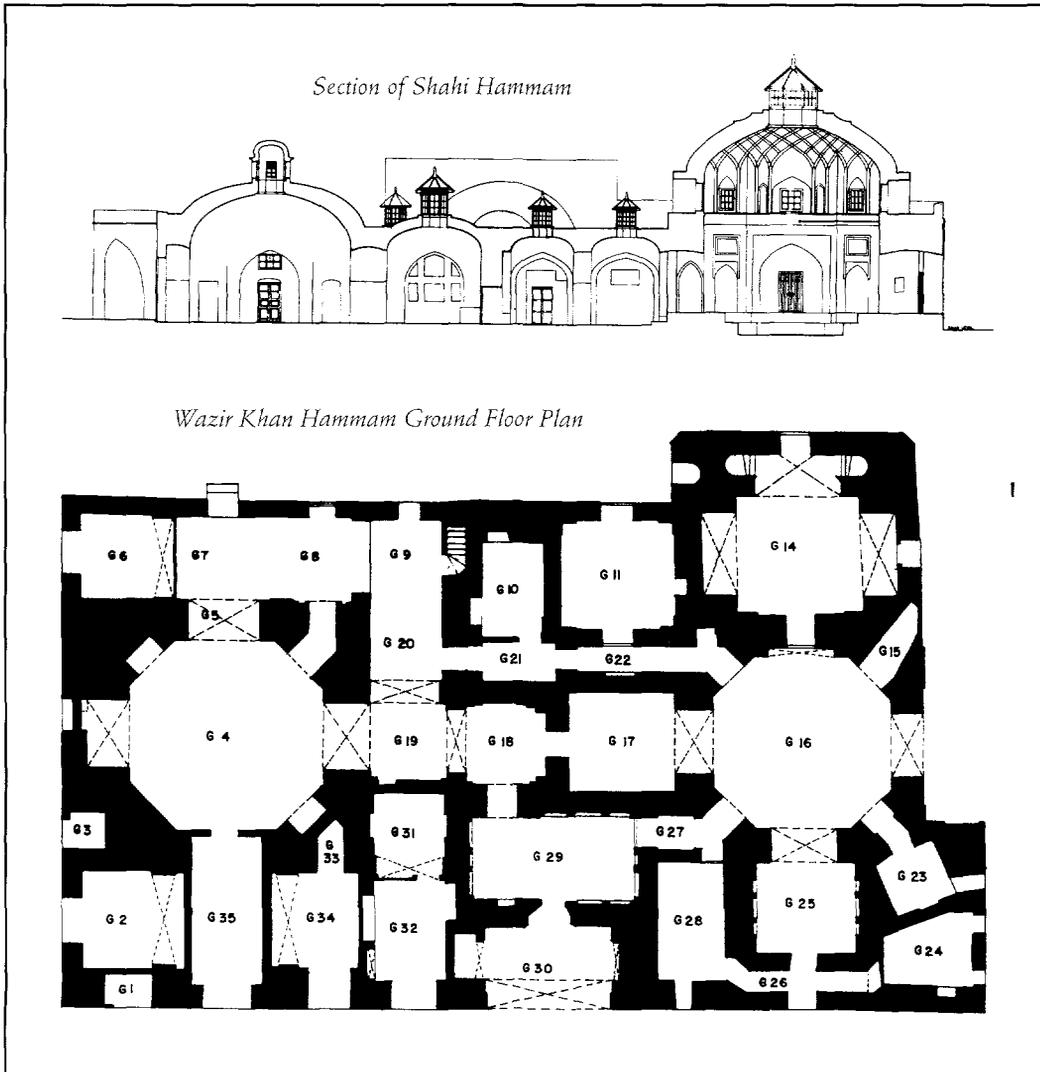
The Shahi Hammam, or literally King's Bath, is located next to the Delhi Gate on the principal entrance to the old city of Lahore and is most significant for its urban design and townscape value. It is a major building at the start of the Delhi Gate Bazaar which still retains a number of architecturally significant buildings on either side. This bazaar is one of the more attractive areas of the Walled City as well as one of the more popular and prosperous, leading as it does to Wazir Khan's Mosque and then the wholesale cloth markets. The Hammam has not been used as a bathhouse for many years, and had become partially obscured through encroachments and general decay. The Hammam had been identified as a pilot project under PUDP (Phase 1) during 1988. It was partially surveyed at that time along with other buildings in the Bazaar, and some scraping of the whitewash in the principal hall (room G4, see Ground Floor Plan for location of rooms on next page) had revealed a decorative scheme of fresco on plaster. The LDA provided funds for a special survey which provided more information on the extent of the painting as well as the discovery of the main bath itself under the floor in room G4.

While specialists had always known the Hammam to be important, there was little appreciation of its historical value or potential use at local level. Even as late as December 1990 there were suggestions from those in political positions to pull it

down for redevelopment. The building has for many years been on the register of those buildings protected by the Department of Archaeology.

HISTORICAL BACKGROUND

The Shahi Hammam conservation project in Lahore was the second conservation project to be implemented under the World Bank financed Punjab Urban Develop-



ment Programme (PUDP). It is considered one of the five most important buildings in the Walled City, being architecturally and historically as important as Wazir Khan's Mosque. It was constructed by Wazir Khan, chief minister to Shah Jahan, together with the bazaar and serai, immediately or soon after the construction of the Grand mosque in 1634. Together these elements formed a grand plan designed to provide the ancillary functions and economic support for the upkeep of the mosque. The serai was demolished in the 1960s but the Hammam is still preserved relatively complete.

ARCHITECTURAL DESCRIPTION

The Shahi Hammam is situated at the junction of Akbari Mandi Bazaar and the Delhi Gate Bazaar. It covers an area of 1,480 square meters (15,930 square feet). The principal entrance of the building lies on the west side on Akbari Mandi bazaar although this has not been in use for many years and had become obscured by market stalls. There was a secondary entrance on the northern facade facing Delhi Gate Bazaar, also long out of use, and an open arcade on the south side. As found there were also 2 doors into rooms on the east side.

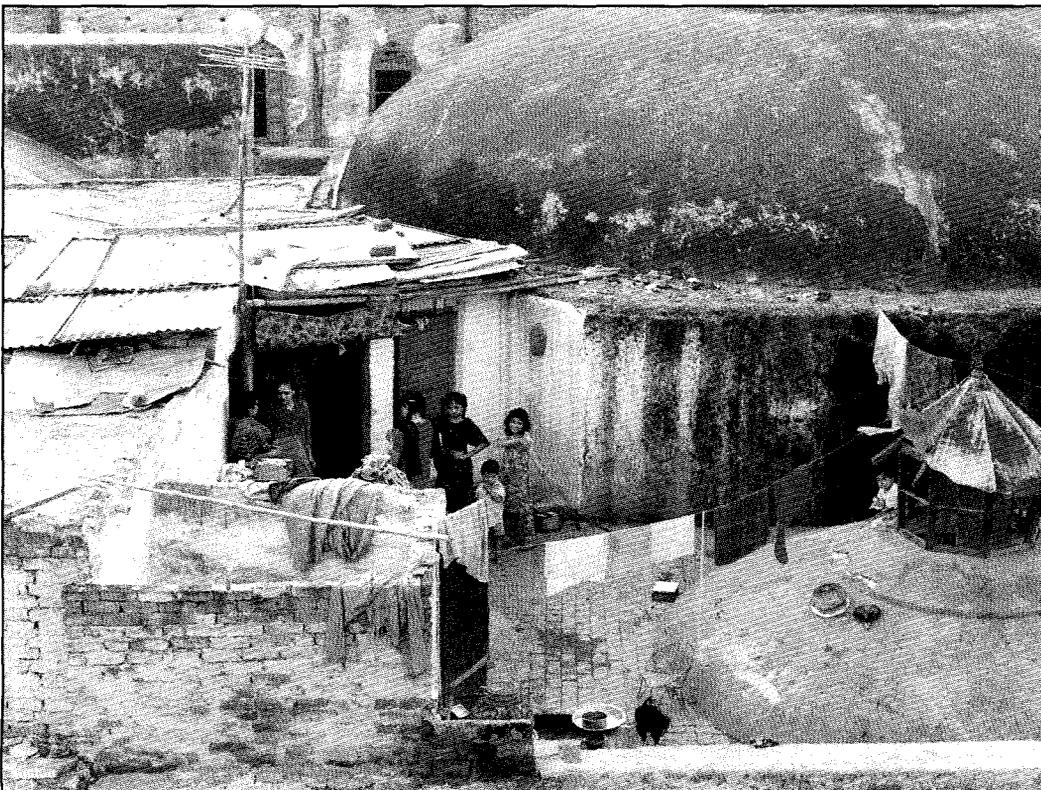
The building is divided unequally into northern and southern blocks by a principal corridor on the east-west axis with a 3-foot difference in floor levels. The north block was originally entered from the Delhi Gate bazaar through an arched opening. The main feature of this block is the 10-meter high domed octagonal hall (space G4) of 9-meters (29.5 foot) diameter with clerestory windows and a lantern above the center. The longer faces have arched openings on the north, east, south and west elevations and the smaller corner elevations have recessed niches. Two of the principal faces and three of the niches are blocked up and the spaces beyond are in commercial use associated with the bazaar. The corridor which separates the north and south blocks is divided into five compartments of various sizes and was probably accessed from the entrance loggia (G30) at its west end. One theory suggests that the corridor separated cold and warm zones from each other.

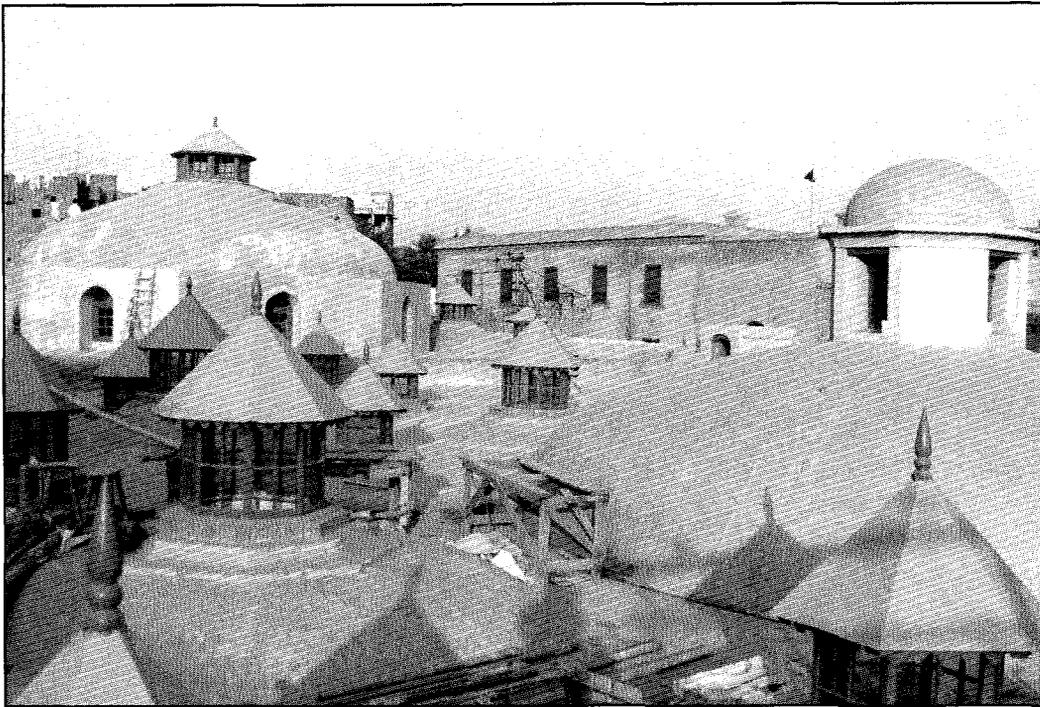
The southern block covers nearly twice the area as the northern block. The principal features are the grand main entrance on the west elevation and a second octagonal domed hall (G16). The arched portal of the entrance opens into a rectangular loggia roofed with a semi-spherical dome. The domed hall is slightly smaller than space G4 at 8.2 meters (27 feet) diameter, and much lower at 5.7 meters height to

the oculus beneath the lantern. This hall has four arched openings on the four principal sides, and three of the angular comers open on to corridors while the fourth on the southwestern side leads to a small mosque (G33), with a mehrab on the western wall. The north-east opening connects via a passage (G22, G21) with the principal corridor separating the two blocks. Square rooms with low vaulted ceilings flank the domed hall on the north and west sides, a larger vaulted room on the east side, And on the fourth side it opens to the exterior without any evidence of doors. Here the soffit of the arch is decorated with floral decorations in fresco work, the only original work remaining in this hall which had been replastered in cement render.

To the northeast and the southeast of space G14 there are two recessed niches containing cisterns which were probably used for the storage of water, while the fire for heating water appears to have been located in a recess externally on the north

Original condition of roof with family in residence, Shahi Hammam





View across roofscapes near work completion, Shahi Hammam

east corner. The hall (G16) including the rooms on the east and west, may have been the dolidarium, sudatorium and the tepidarium.

Each room of the Hammam has a circular or polygonal opening in the apex of its vaulted or domed ceiling which is covered above by a wooden lantern. These lanterns appear to date from the British Period. However, the single masonry lantern above G16 would appear to be an original form. Externally the brickwork walls of the Hammam are raised above the roof in solid parapets with a decorative frieze. The roof is flat at two levels corresponding to the change in levels internally and punctuated by the raised domes of the larger rooms beneath, creating a characteristic and distinctive feature of the building.

EVALUATION

The monument is significant for the following reasons:

- ◆ It is the largest surviving historic bath-house public not only in Pakistan but in the entire subcontinent.
- ◆ It has a unique hydraulic system. Ducts run through the wall for the supply of steaming water for washing and cold water for bathing, and these also once provided water to the cascade in G29 and cistern in G4. High level wall channels are visible along west and north walls of G28, with drops to feed 2 basins at hand height in the north wall. The south wall of G11 contains a concealed duct (perhaps for hot hair?) which passes over a hand-height cistern and opens into passage G22 at waist height. There is much further work to be done on the design and functioning of the hydraulic system and its relationship to the manner in which the baths were used.
- ◆ The building is particularly interesting because of its fresco paintings. No other secular public building in Lahore has such extensive frescos with fairies, birds of paradise, trees of life and an endless variety of floral decorations. At least 14 spaces in the interior and the recessed panels on the eastern facade had fresco decorations. At the time of the project it was believed that these were original and contemporary with the construction of the building. Was later confirmed by an expert on mogul wall painting that this was the case.

RESEARCH AND INVESTIGATION

HISTORICAL RESEARCH

The work on this important monument was started in November 1988. Under an extension to the PUDP project (Phase 1), PEPAC was commissioned by the LDA to prepare contract documents for the Hammam's repair and conservation and for its reuse as LDA Conservation and Upgrading Unit for the Walled City of Lahore. In addition, the LDA provided funds for the identification of fresco paintings and other archaeological investigations. The documentation and repair proposal as prepared by PEPAC was submitted to the LDA in January 1989. Within the limited time available for survey work as much detail as possible was recorded. The collection of survey information continued during the execution of the project as hidden parts of the building were opened up.

Research was carried out in the following areas:

- ◆ Library research; to find all written and, descriptive records of the building.

- ◆ Efforts were made to collect all available photographic records of the building.
- ◆ Interviews were conducted concerning the past use, condition and furnishing of the building.
- ◆ Archaeological investigations were also carried out to trace the depth and nature of historic flooring. In this process a major bath was identified in Room G4 which had not previously been mentioned in any record.

PRESENT USE

At the time of survey, the building housed a girl's vocational school, a boy's primary school, and a medical dispensary run by the Metropolitan Corporation Lahore (MCL). The building was completely encroached upon by shops and stalls on its northern and western sides. At least 10 different Spaces or rooms were occupied by these shops. Both northern and western facades were completely obscured by makeshift

Roofworks at Shahi Hammam

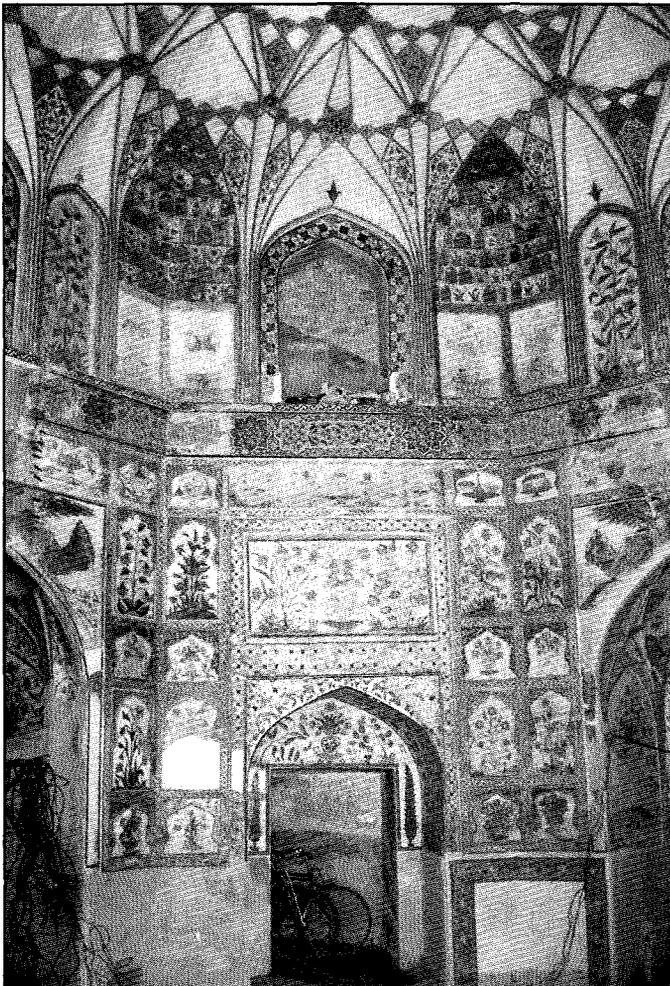


stalls. The caretaker had also constructed Ws house on the roof of the Hammam. During the course of documentation MCL constructed a Local Councilor's Office in the open space between the eastern facade and the ramp of the Delhi Gate.

Condition

The building on the whole was structurally sound at the time of the survey. Two structural cracks existed in the two main domes, and many of the doorways had cracks through their arches. However, the cracks were historical, resulting from settlement over a long period of time. Roof lanterns were in all cases defective or damaged, and some cases missing

Detail of wall in Shahi Hammam



(G29), allowing leakage over a long period of time. All rooms suffered from rising damp, hence much of the plaster was damaged. The plaster on walls and soffit of domes in rooms facing the southern facades (G14, G16, G24 and G25) were damaged due to dampness, dirt and grease associated with many years of use as a marriage hall and cook house. Over the years many spaces had been plastered with cement/sand mortar, in some cases (G7 and G8) on top of the original plaster. In seven rooms or spaces the original plaster has survived in relatively good condition, except where exposed to leaks or rising damp. All these rooms were originally decorated with fresco paintings, long since hidden beneath, and no doubt

protected by, layers of white wash.

Room G4 was elaborately decorated with frescos. The plaster on the north wall was perished up to 3.0 meters in height due to dampness caused by a faulty drain. The original lime terracing floors existed beneath 150 millimeters (6 inches) of modern cement concrete and brick. Also beneath the floor, in the center of room, the octagonal cistern/bath still remained, although its exact function is not yet established. It appears that the floor level of the north wing had been raised throughout by 150 millimeters and the south wing, 350 millimeters (14 inches) to avoid flooding during the monsoon season.

The original canopies over the roof openings had been replaced by temporary wooden boxes, and these were decayed.

Over the years, many arches and doorways had been blocked, especially to isolate the encroaching shops from G4 and to close off wide arcaded openings in the east wall of G7, G8, and the south wall of G16.

PROJECT DESIGN AND PREPARATION

On the basis of the research and investigations, comprehensive documentation was drawn up by the local consultant, PEPAC. The documents were later reviewed in 1989 by PEPAC and international consultants GHK Ltd.

In view of the special nature of the project, PEPAC were commissioned by the client to carry out additional investigations. As a result, a number of significant features of flooring, hydraulics and wall finishes were identified and recorded, and most of these were able to be preserved during conservation.

Even so, the project design suffered certain deficiencies because of the inaccessibility of some parts of the building and the lack of thorough archaeological investigation. In particular the shops were not accessible for recording as the walls were covered with show cases or else covered with plaster and brick filling. Ducts and evidence for most of the historic hydraulic system was covered up and could not be identified at the time of the survey. It was intended that all these details would be recorded when the work was executed.

The future use of the Hammam was originally identified as the LDA Conservation and Upgrading Unit for the old city and the project design was related to this function. There Was, however, insufficient support for this proposal and it was later decided to reuse the building as a Community Center. However, during the course

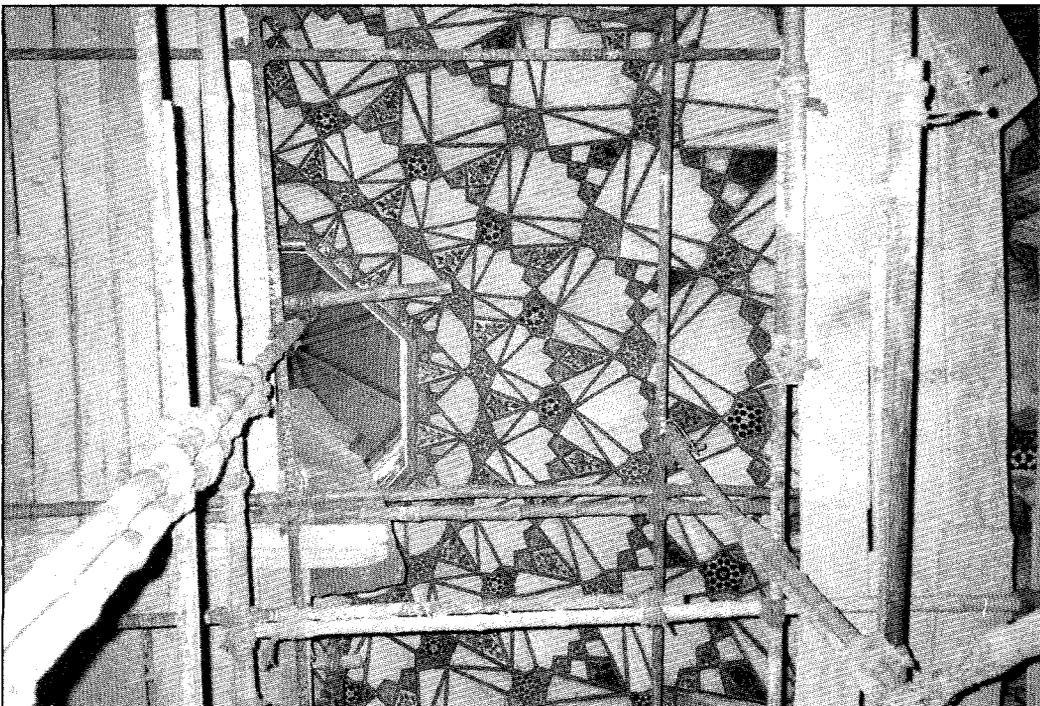
of the restoration work it was realized that such a use, including wedding functions, was not compatible with the delicate nature of the historic interiors.

Extensive lobbying, especially by the Lahore Conservation Society, persuaded the politicians to look for other uses. The result was the southern portion being used for a ladies vocational training school, and the north portion by the Punjab Tourism Development corporation for use as an office, craft exhibition space and a tourist information center for the old city.

Proposals for reuse must be drawn in consultation with the local community and then be widely publicized.

Naturally such diverse functions have different requirements, especially regarding services, and the changes in end-user led to some difficulty with the electrical design. In accordance with good conservation practice, the electrical supply was designed to have the following features:

Detail of ceiling in Shahi Hammam



- ◆ All services should be distributed within conduits or ducts so that in the future new cables can be added without any disruption to the fabric.
- ◆ The conduits should run either under the floor or under the roof so that the structure need not be unduly disturbed.
- ◆ All conduits on walls would run under the plaster finish.
- ◆ All electrical socket outlets would be placed 450 millimeters (1'8") above the finished floor level.

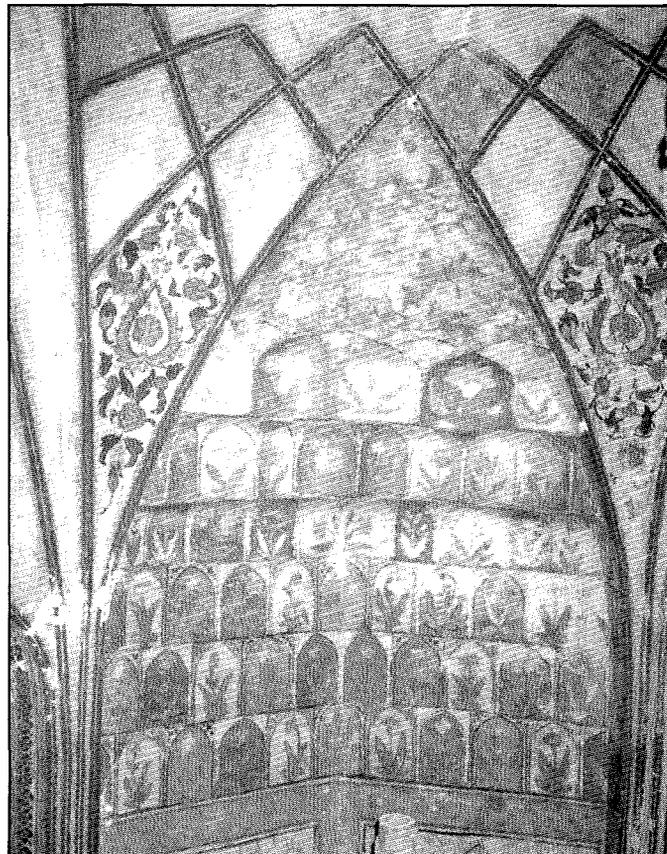
Most of these objectives were achieved successfully. However in detail there were changes made from the original design:

- ◆ A number of switchboards were placed around the walls which were not provided for in the original scheme.
- ◆ The wall light fixtures were not provided according to the suggested design and are rather too modem for the setting.

One criticism made of the electrical installation design is that, being a modem installation in a historic building, it could have been installed more 'out of sight'. However, this would make it less easily accessible for use, and be more damaging to install.

The changes of proposed function also affected detail design of finishes. In particular, during the 'Community Center' phase, it was agreed to substi-

Detail of wall in Shahi Hammam



tute marble paving for the brick on edge floor design as the latter would be too difficult to clean and not stand up to the expected wear. At this stage it was also, unfortunately, decided not to open up and display the tank in G4.

Some design decisions were taken at the last moment on site without allowing adequate consultation with the design team. Political pressures required the works to be rushed.

CONTRACT MANAGEMENT

World Bank guidelines require that contracts are tendered for competitively. In the case of conservation work this has the following implications if such work is to be successful.

- ◆ To establish a tender list of 5 or 6 firms, all prospective firms will need to be pre-qualified through a process of interview and inspection of past works. It must be established that each firm on the list has the necessary experience and qualified craftsmen to undertake historic building work.
- ◆ The consultants have a great responsibility to ensure that the contract documents are fully detailed in the nature and quality of materials, and in the quality of workmanship. This is only possible where there has been time to fully survey, investigate, and analyze all the fabric.
- ◆ The system relies on a supply of well trained craftsmen available to do the work which is not always the case. In fact, the main contractor appointed to carry out the work would probably rely on specialized sub-contractors to handle specific tasks. He needs to demonstrate that he has established who these people are at the pre-qualification stage.

The careful selection of the contractor is very important when contracting out specialized work. An alternative approach would be for the client to employ direct labor, as is the success established custom in Lahore, adopted successfully by both the conservation department of the Governments of the Punjab, and the Department of Archaeology. These departments have gathered a reservoir of building craftsmen and they move them from site to site according to the nature of the work. The system allows for strict supervision over the quality of material and workmanship, both essential for a conservation project.

In the case of the Hammam, it was extremely difficult to find sufficient firms who could demonstrate the necessary experience. The contractor appointed, Ahbab Contractors, could only claim six months experience on one conservation project involving a different range of construction and finishes. However, the directors demonstrated a wide range of skills. It was unfortunate that half way through the contract, the experienced foreman (master craftsman) was removed by the contractor for reasons not established. It was immediately apparent that the quality of the workmanship suffered, as seen in:

- ◆ The quality of color matching in paintings
- ◆ The quality of kankar lime plaster
- ◆ The brick-on-edge flooring and
- ◆ The techniques of repairs to damaged brickwork.

The position of site foreman is crucial in establishing quality of workmanship and good management.

Two important issues were raised in the pre-start meeting: the required submission of a work program by the contractor and the testing of kankar lime before the start of work. The work program was never submitted and the lime mortar had not been tested after two and a half months. The entire work was executed without making any satisfactory work program. Supervision by the Engineers failed to enforce contract discipline.

The project was originally designed for one year, which was quite reasonable. For political reasons, the program was reduced to 5 months. The quality suffered, and the desired results could not be wholly achieved.

The program and orderly conduct of the works was undoubtedly affected by the pressure from the authority for an early completion. The inevitable short cuts and compromises seriously affected the quality and completeness of the works and the contractor's ability to program the works was not enhanced. On the job training for the contractor's labor and project management suffered.

At present the LDA procedure for costing various items is linked to a standard schedule of rates, to which a premium is added to bring the rate up to date. In this situation the contractor is tempted to increase the amount of his work. The contract should be preferably let on the basis of rates for items of workmanship and materials, and should not be let on a percentage basis added to the values in the prevailing

schedule of rates. Also, these standard schedules do not have rates for specialized items of conservation works such as ghalib khari, fresco paintings, kankar lime plaster or brick imitation. Thus all such items of traditional crafts or repairs to fabric were given special rates calculated from first principles for each contract.

To bring up to date the standard schedule of rates and to include a section on standard rates for conservation items should be seen as a top priority.

Role of Consultants

Both local and international consultants within the LDA contributed significantly to bring this project to a standard where it can be recognized at national or international level. The consultants made frequent visits to site, in order to:

- ◆ Carry out archaeological investigations in areas inaccessible during project preparation, especially relating to the design of the hydraulic system.

Detail of wall in Shahi Hammam



- ◆ Carry out further research on the nature and quality of materials and finishes, especially the preparation of kankar lime.
- ◆ Record new findings, notably the survey of the fresco paintings.
- ◆ Keep a photographic record of interesting features.
- ◆ Maintain quality of workmanship,
- ◆ Offer advice and support to the site foreman and his assistant in difficult situations.

A detailed work and materials specification was prepared for the conservation of the fresco paintings and new drawings were prepared to facilitate reference between the panels and photographs. Some requests were acted upon while others were not. This was primarily due to the limited advisory nature of the consultants' role in the management of works on site.

Detail of wall in Shahi Hammam



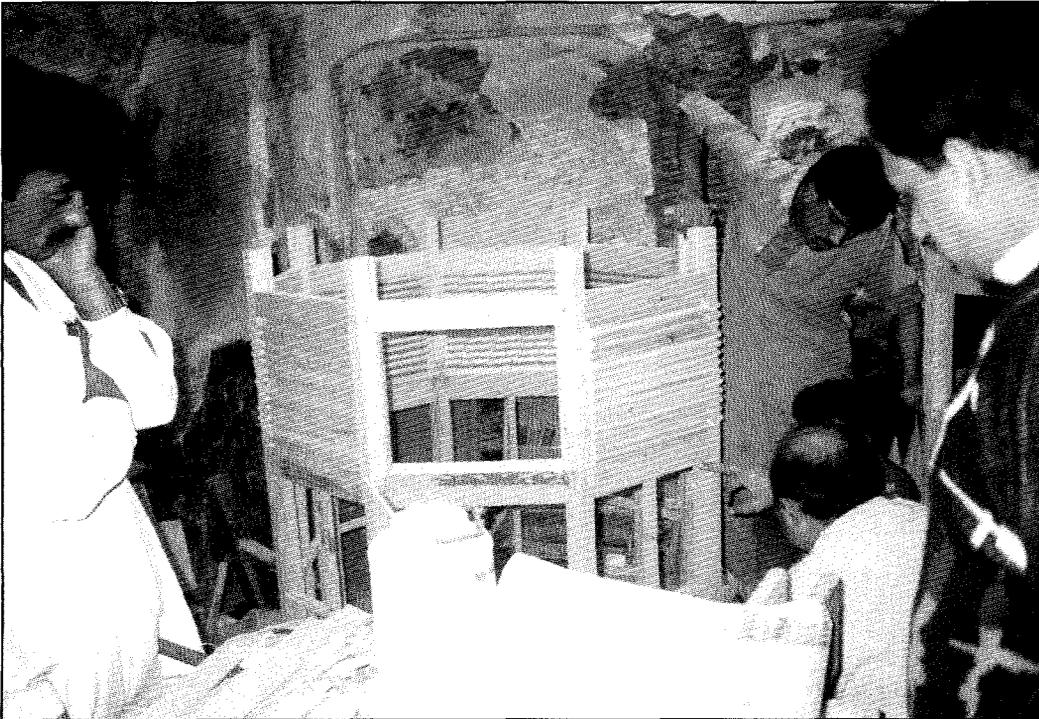
There is the need to find means of achieving better continuity between the consultants' pre-contract documentary preparations and the client's post contract implementations.

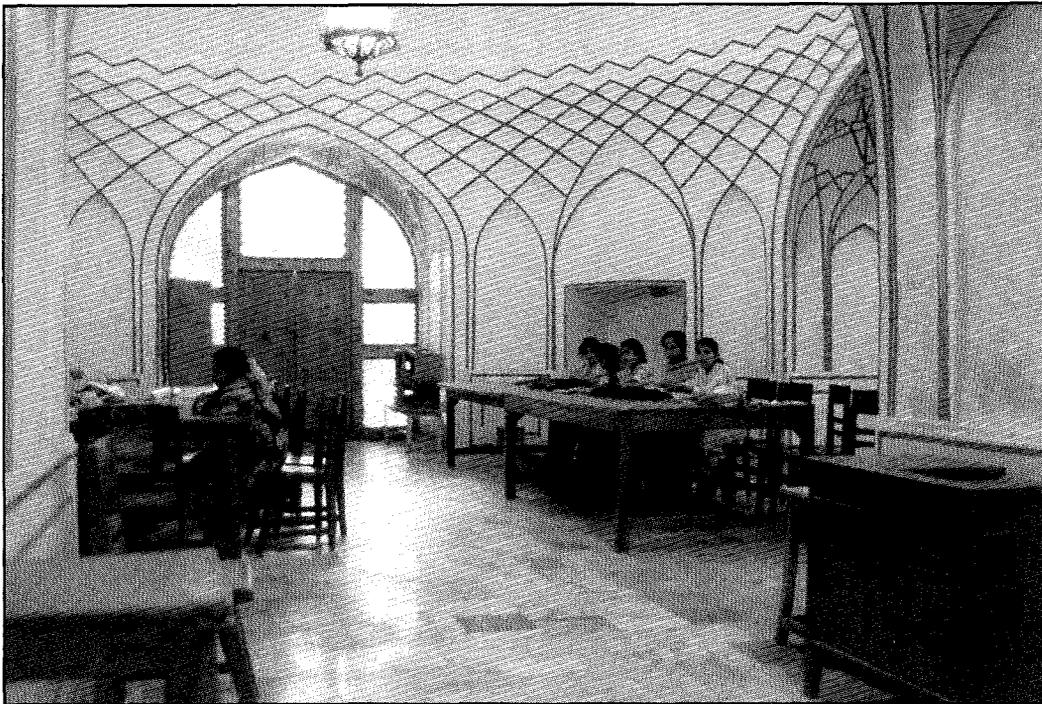
When the full extent, quality and significance of the fresco paintings was appreciated following the removal of the whitewash, the consultants requested specialist conservation help in this area. However, no fresco conservation specialist was available.

MATERIALS AND WORKMANSHIP

In Pakistan, the use of traditional materials and wall finishes was discontinued in the last quarter of the nineteenth century, when cement and modern bricks replaced lime and traditional tiles, respectively. For example, the knowledge of the preparation of lime mortar and its application has slowly and gradually, been forgotten.

Examining new roof lantern for Shahi Hammam





New users of Shahi Hammam, girls in dressmaking class

Traditional skills only survived among a few craftsmen engaged in the conservation of monuments by the Department of Archaeology. The production of appropriate materials and the training of craftsmen in Pakistan to use and understand old materials was almost negligible. This project has helped to pinpoint areas where particular skills have been lost or misunderstood, notably fresco painting, and where further training would be useful. The project has helped in the understanding of traditional mortar mixes and the application of plasters. It has reestablished methods to set out and build up the geometry of ghalib khari to the underside of domes. The project has established the importance of testing each fresh batch of kankar lime to check for excess clay content.

The Shahi Hammam was entirely built of burnt clay bricks of traditional size, mortared with kankar lime. The interior volumes are plastered with kankar lime and finished with pucca kali plaster. The exterior walls were mostly plastered but the north facade and half of the west facade were finished with brick imitation work. The floors were finished with polished lime mortars. Exterior paving was carried out

using traditional bricks. All these finishes were identified before or during the execution of the work.

Damaged plaster was replaced and missing areas were repaired using 1:2-3 (lime cream: kankar lime). In addition jute was added at the rate of 5-10% by volume. The mortar as suggested was 1:2 and 10% jute. The mortar required proper ramming with wooden tools (thapis) for three days until it became strong and hard. After the application of mortars, some cracks and bulges appeared, especially in the exterior surfaces. This was due to:

- ◆ Insufficient use of lime cream and jute.
- ◆ Insufficient ramming of wet plaster after application.

Due to the shortage of time and uncertainty over future use, the proposed lime flooring was replaced with marble tile flooring. The tile used in the floor is 305x305 millimeter (1"x 1"). In some areas tile-on-edge floor has been laid using new 200x100x25 mm (8"x 4"x 1") brick tiles. The cracks in the dome were filled by pressure grouting using a white cement and lime cream slurry.

The consultants advised that fresco repairs should be determined by the following conditions found on the building:

- ◆ *Good quality original work, probably faded, on sound plaster*—Clean down using water and glycerin soap and a light sponge or else a soft artist's brush. Paint on two coats coconut oil, 24 hours apart, the first coat thinned by 50% with the second coat polished after drying.
- ◆ *Good or poor quality original work, on perished plaster*—Pinprick through tracing paper to make copy of pattern, and take color samples of paint. Remove fresco and old plaster and renew plaster. Mark out pattern with soot onto damp lime plaster finish coat and repaint the exact picture as recorded using natural pigments in a medium prepared by traditional recipe. Finish with coconut oil.
- ◆ *Poor quality original work, faded, water damaged on sound plaster*—Clean down using water and glycerin soap and a light sponge or else a soft artist's brush. Touch up paintwork only where small pieces are missing or flaking has occurred, using traditional pigment paint. Finish with 2 coats coconut oil.
- ◆ *Lack of definition*—Clean with a light dusting down. where the picture is complete and visible but extremely faded it was agreed acceptable to improve

definition by retracing only the outlines in the original color.

- ◆ *Where pictures or painted decoration are missing but on sound plaster*—Clean down using water and glycerin soap and a light sponge or else a soft artist's brush. Do not repaint background. Consolidate surface with 2 coats coconut oil.
- ◆ *Areas of cement plaster infill, plaster damage, holes, plugs, etc*—Carefully take out plug or cement plaster; tamp in new kankar lime and finish with polished pucca kali, natural color. Touch up with paint to match the surrounding field if the repair is a single color or part of a repetitive geometric pattern.

The contract specified that the fresco paintings should be restored using only artists skilled in the fresco technique. Detailed observation revealed that the decorative scheme was really a mixture of true fresco, that is the absorption into damp plaster of pigment suspended in a medium, and secco, that is the effect achieved by painting after the plaster has dried or by later overpainting. It was theoretically only possible to achieve new fresco work where the plaster had been renewed, and likewise impossible to touch up existing dry work except by the secco process. Hence it was inevitable that repairs could not achieve the translucent quality of true fresco.

This led to much discussion between the client, the contractors, the consultants and other interested local experts.

At the time of the work being carried out, the foreign and local consultants advised the client to follow the western practice of *minimum intervention* and *reversible processes* for the conservation. The fresco scheme as yet uncovered was not yet sufficiently recorded or analyzed by experts to allow full restoration which would inevitably obscure original work. The client held the view that the frescos should be fully restored in accordance with local tradition, it being normal practice to overpaint weak areas and recreate missing parts of the decorative scheme.

It has been noted above that this procedure was appropriate in renewing areas of perished plaster where the original design could be salvaged by tracing off.

After the painting works started on site, when it was found that:

- ◆ The contractor was overpainting existing paint with powdered pigments suspended in a resin based varnish. The argument was made that the resin was necessary to provide adhesion of the new paint to the old surface, especially where there were still traces of the polished oiled finish. The consultant requested that the contractor should not use resin on the grounds

that it provided a permanent non-removable layer of paint on top of the original fresco.

- ◆ The quality of newly painted decorative work fell far short of the original, whether on new fresh plaster or on existing plaster where the pattern had been lost by flaking and water erosion, etc. In comparison, the new paintwork was lifeless and dull, heavy and matte-finished with none of the translucency of the original.

This observation is important as the reasons for it touch upon both technical and cultural considerations. The successful reproduction of fresco paint lies equally with the quality and composition of the plaster as with the correct mixture of the paints. The skill and knowledge to produce such plaster, with ground alabaster and egg shell, has been lost from general practice and could only be obtained by more research and specification and cost. This could not be achieved within the time available.

Another factor was artistry. The painters, many of whom had worked for the Department of Archaeology, were not so much artists as copiers, having been trained to reproduce the pattern and shape of mogul decoration for the purpose of overpainting without a real sense of the form or artistry involved.

The final scheme represented a compromise and the following approach was agreed:

- ◆ The line work of the dome, which delineates the geometric forms of the Ghalib Khari would be repainted using resin.
- ◆ The 'touching up' of small missing parts could also be based on a resin mix.
- ◆ None of the existing backgrounds should be repainted.
- ◆ The new work should be done in the traditional manner, without use of resin.
- ◆ All line work and repetitive geometric borders could be restored where missing or after renewal of plaster. Other missing panels to be left blank.

The priority was always to preserve as much of the original painting as possible. In spite of the care and advice of the consultants, there were times when the contractor, in misplaced enthusiasm, took the new overpainting work much further than necessary. More new panels were painted, based on historic interpretation rather than original design, after the formal inauguration of the project.

The problems in achieving the required quality of the works also showed up the great importance of having good management, experienced foremen on site and the need to have enough time for supervision. The lack of LDA staff required the project management to split their efforts with other contracts in Lahore.

For a building in use it is probably more important that the restored wall/ceiling paintings are presented with an overall uniform aesthetic to enable the iconography to be read and the architecture to be complemented as originally intended. However, as a part of this restoration, it is essential to build into the program sufficient time and resources to allow the original work, as opened up and cleaned, to be inspected and analyzed by the appropriate specialists (art historians, etc) and to be professionally recorded to their satisfaction.

The conservation of paintings is a specialist task requiring many skills, sufficient time and good site management to be carried out properly. It cannot be carried out in a hurry.

Elevation drawings of all walls/ceilings containing paintings must be prepared at survey stage so as to be able to quickly identify small areas and individual panels for detailed instruction.

Material used to prepare pigments for fresco paintings			
<u>Pakistani Name</u>	<u>English Name</u>	<u>Form</u>	<u>Color</u>
Kajal		Lamp Black	Powder Black
Pucca Kali	Lime cream	Paste	White
Lajward		Stone	Blue
Neel		Blue	Powder Blue
Phul Bila		(Flower)	Yellow
Pili Miti	Yellow Clay	(Powder)	Yellow
Zafram	Saffron	(Fibers)	Orange
Shingraf		(Stone)	Orange
Sung-e-Surkh	Red Stone	(Stone)	Red
Hurmichi		(Powder)	Dark red
Geru		(Powder)	Red
Sabaz Selu	Algae	Fibbers	Green

CONSTRUCTION COSTS

The contract sum of Rs9,194,117 was accepted in December 1990 and the completion period was designated as one year. This time period was reduced to 5 months shortly after the project started. Some areas in the possession of shopkeepers were left without being repaired or conserved. The total expenditure up to May 31, 1991 was Rs4,944,609. Completion was in August 1990, and the final account remained unsettled at the time of writing.

The pre-tender cost estimates prepared by the consultants were based on the cost of works currently being executed at different sites by the Department of Archaeology.

The following figures shows the estimated cost per square meter and the actual rates quoted for three major items.

	<u>Cost Estimate</u>	<u>Contracted Cost</u>
Fresco Painting (new work)	Rs2,980	Rs4,000
Kankar lime mortar	Rs232	Rs420
Fresco Painting (repairs)	Rs867	Rs1,062

The contracted costs were considered to be too high but were accepted for political and program reasons.

Public Participation

This project generated much interest from the general public. A number of people from all walks of life including students, architects, historians, archaeologists, journalists and government officials visited the site. Consultation meetings were held with members of Anjuman-i-Mimaran as well as the Lahore Conservation Society.

The shopkeepers on the north and west sides of the Hammam were approached in order to repair these parts of the building and to reclaim parts of the Hammam interior now occupied by shop storage. However, negotiations broke down as the shopkeepers were not prepared to vacate their properties, and so the opportunity to restore the full symmetry of the large domed room G4 has been delayed.

FUTURE USE

The Hammam had been used as an MC boys' primary school and girls' vocational school for several years. In addition the office of the local councilor and a dispensary was also housed in the Hammam. The Consultants, during the first phase of PUDP, proposed its reuse as an LDA Conservation and Upgrading Unit so that all development activities in the Walled City could have been controlled from a single office. In addition drawings, photographs and old sketches about the history of Lahore were to have been exhibited to increase the awareness of the local public and foreign tourists.

At the start of the Conservation project, the proposed reuse was changed to a wedding hall (Shadi Ghar). Finally, as a result of political inspiration, it was decided that it should be a multi-functional center. It will now house a tourism office, a library, a vocational institute for girls and a center for teaching computer classes.

Since the official opening of the building in June by the local W, preparations have been underway to accommodate the new users. The northern half of the building is to be used as the office and public information point by the Tourism Development Corporation of Punjab, with facilities for craft display, exhibitions, library and refreshments. This will be the first such facility in the old city.

The southern half of the building has been taken over by the Punjab Department of Education (Technical Directorate) for a Ladies Vocational Training Institute. This originated as a small school for needlework and has been upgraded to offer 2-year diploma courses in computing, cooking and needlecrafts. Up to 60 local girls will be accommodated.

It is difficult to maintain and repair monuments which are being shared by several departments. The consultants advised the LDA to consider keeping one room as a caretakers/administrative office to facilitate maintenance. Particularly difficult is the satisfactory organization of services for future use.

It is preferable for the reuse of any project to be decided at the time of the sketch design, giving the following advantages:

- ◆ Detailed design can be prepared in the light of accepted reuse,
- ◆ The structure and finishes will be less disturbed during reuse,
- ◆ Services, finishes, access and ventilation can be better organized in relation to the required use.

OPERATIONAL MAINTENANCE

The Hammam is the property of the Auqaf department, and the repair and maintenance is the responsibility of the Department of Archaeology. There are now a number of organizations involved in the project. In future this figure will increase when it is used for a variety of functions. Maintenance will be a continuous problem, and will require satisfactory management co-ordination and agreement between these bodies. At present, the Department of Archaeology cannot maintain these buildings because of the lack of funds and staff.

Since the LDA is now repairing and conserving many buildings, their future maintenance will be a continuous requirement. It is therefore suggested that a new estate office should be established within the LDA, which must have its own full-time staff to maintain these buildings. This practice is being successfully followed in other Government departments.

The maintenance department that is given responsibility must be equipped with details of the building and the works carried out and especially the location of services and other construction details.

Conclusion

After completion of four conservation projects, the results are encouraging and the interest generated in and by the project has exceeded all expectations. Much has been learned by all the parties concerned. Improvements can be made to the management and to strengthening the technical, professional and contracting conservation support. On the basis of past experience the following measures would improve the situation:

- ◆ A committee of local experts should be constituted for every project and its meetings held fortnightly. This was practiced in the Shahi Hammam contract for a limited period of time and the results were very encouraging.
- ◆ The consultant's input for site supervision should be increased so that part of it could be used for training supervisory staff.
- ◆ Continuous research on materials should be carried out throughout the implementation of the project.

- ◆ The specialist services of the archaeologist and the historian should be provided during project preparation and they should visit the site and be kept informed of the project during progress of the works.
- ◆ Full-time supervisory staff should be designated on all projects of this size.
- ◆ Public participation should take place from the beginning to obtain occupation of the premises and support and promotion for the project.
- ◆ Conservation projects could possibly be implemented by employing direct labor on daily wages instead of letting out contracts to a general contractor. This sort of practice has produced fruitful results in the case of the Tomb of Shah Rukn-e-Alam at Multan and the Bhong Mosque near Rahim yar Kahn, for the FDA. But this method is not necessarily appropriate for major projects. The employment of direct labor suits minor works but requires excellent management to be successful.

Appendix 1.

Abbreviations and Acronyms

ADB	Asian Development Bank
DOE	Department of the Environment (UK)
ETPB	Evacuee Trust Property Board
FDA	Federal Department of Archaeology, Government of Pakistan
GHK	Gilmore Hankey Kirke Ltd. Architects, Planners, Engineers, Economists, London
HBFC	House Building Finance Corporation
LDA	Lahore Development Authority
LUDTS	Lahore Urban Development and Traffic Study 1980
MCL	Metropolitan Corporation Lahore
MDA	Multan Development Authority
NCA	National College of Arts, Lahore
ODA	Overseas Development Administration (UK)
PEPAC	Pakistan Environmental Planning and Architectural Consultants
PIATR	Pakistan Institute for Archaeological Training and Research
PUDP	Punjab Urban Development Project
UNCHS	United Nations Centre for Human Settlements
UNDP	United Nations Development Programme
UNEP	United Nations Environmental Programme
UNESCO	United Nations Educational Scientific and Cultural Organization
WAPDA	Water and Power Development Authority
WASA	Water Supply Authority

APPENDIX 2.

DEFINITION OF TERMS

Conservation: Preservation within an economically viable and sustainable context.

Consolidation: The physical application of adhesive or supportive materials to ensure the durability and structural integrity of original fabric.

Cultural property: (UNESCO 1970) Property that on religious or secular grounds is specifically designated by each side as being of importance for archaeology, prehistory, history, literature, art, or science. Can be movable, unmovable, intangible.

Maintenance: The regular care and attention to the proper functioning of the elements of a building through attention to defects.

Planned Maintenance: The carrying out of maintenance on a regular basis against programmed inspections and against a budgetary allowance.

Preservation: (UK) Maintaining cultural property in its original form. Repairs are carried out to prevent further decay. All form of decay and further damage are reduced to a minimum.

Refurbishment: The fitting out of a building.

Rehabilitation: Bringing a building or an area back into use by repair with or without adaptive alteration.

Renovation: Making new again, restoring and repairing to good condition.

Repair: The mending of defective parts or replacement of defective elements of a building.

Restoration: (UK) Returning historic building to condition at particular date, if necessary by rebuilding parts, in accordance with original materials, design techniques of construction and authentic documents.

Upgrading: Improvement of standards of main utilities services to urban areas. Services to building. Systematic infrastructure improvement to a settlement.

APPENDIX 3.

GLOSSARY OF URDU TERMS

Urdu is an official language of Pakistan

Aqiq	Cornelian, semi-precious stone used in Pietra Dura
Astar	Glaze in enameled tile work
Babul Kikar	Timber used for construction
Baoli	Well accessed via stepped ramp to water level
Baradari	Country pavilion, or 'summer house'
Bukharchi	Decorated covered wooden balcony, usually at first floor level
Chaki	Stone mill for grinding glass etc.
Chaqmaq	Chort, stone used in Pietra Dura work
Chuna	White, (lime cream), Neel blue powder, pigment used in fresco painting
Crore	10,000,000
Deodar	Ceder timber used for construction
Gali	Narrow alleyway between buildings
Geru	Red powder, pigment used in fresco painting
Ghalib Kari	Decorative stucco work molded in panels in dome interior
Hammam	Bathroom
Haveli	Large town house
Hurmchi	Dark red powder, pigment used in fresco painting
Jalli	Fretwork screen
Jharoka	Oriel window
Kajil	Lamp black powder, pigment used in fresco painting
Kanal	1/8 acre, 20 marlas

Kanch	Glass crystals produced for tile glaze
Kankar	Limestone with highly clay content used to produce hydraulic lime
Kashi Kari	Enameled tile mosaic work
Kashmir	Paste of silica sand, clay and ground glass for production of glazed tiles in enameled tile mosaic
Khat Kashi	Lines drawn on edges of Ghalib Kari panels, imitation brick-work on plaster
Khurand	Corundum stone used for tile glaze, a whitish quartz
Lajward	Indigo blue stone, pigment used in fresco painting, lazurite or lapis lazuli, used in Pietra Dura
Lakh	100,000
Luab	Glaze for tiles
Madrassa	School
Maidah	Fine muslin cloth to sieve dry glaze powder
Marla	225 square feet, 20.77m ² (in Lahore)
Masjid	Mosque
Mehrab	Niche in mosque facing towards Mecca
Mister	Straight edge
Mohalla	Neighborhood
Neel	Blue powder, pigment used in fresco painting
Partal	Timber used for construction
Petunea	Chlorite, semi precious stone used in Pietra Dura
Phul Peela/Bila	Yellow flower pigment used in fresco painting
Pili Mitti	Yellow clay (earth) powder, pigment used in fresco painting
Pucca Kali	Polished and hardened lime plaster used as a finishing coat
Sabaz Selu	Green fibers, algae, pigment used in fresco painting
Sajji	Carbonate of soda used in production of glaze for tiles
Sal	Plumb bob
Sang-e-ishab	Jadite, used in Pietra Dura
Sang-e-Khhattu	Yellow marble, used in Pietra Dura
Sang-e-Musa	Black marble, used in Pietra Dura
Serai	Traveler's hostel
Shingraf	Orange stone, pigment used in fresco painting
Shisham	Timber used for construction

Stupa	Buddhist domed shrine
Sung-e-Surkh	Red (stone), pigment used in fresco painting
Surkhi	Brick dust, finely ground
Thappa	Wood implement to beat mortar/plaster surface
Tonga	Horse-drawn carriage
Vatak	Jaspar or agate used in Pietra Dura
Zahar Mohra	Horublende, used in Pietra Dura
Zafran	Safron fibers, pigment used in fresco painting

Appendix 4.
ORGANIZATIONS CONTACTED

Federal Department of Archaeology
Pakistan Institute for Archaeological Training and Research (PIATR)
Department of Archaeology, Government of Punjab
Auqaf Department
National College of Arts, Lahore
Lahore Development Authority
The Metropolitan Corporation of Lahore
The Evacuee Trust Board, Punjab
Anjuman-e-Mimaran, Lahore
Heritage Foundation, Karachi
Lahore Conservation Society
UNICON Architect, Lahore

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