THE LAST PHASES OF THE URBAN SITE OF BIR-KOT-GHWANDAI (BARIKOT)

THE BUDDHIST SITES OF GUMBAT AND AMLUK-DARA (BARIKOT)

LUCA M. OLIVIERI

FOREWORD BY ANNA FILIGENZI

WITH CONTRIBUTIONS BY
AMANULLAH AFRIDI, P. BRANCACCIO, M. CUPITÒ,
F. GENCHI, E. LOLIVA, F. MARTORE, M.W. MEISTER,
R. MICHELI, S. NIAZ ALI SHAH, M. VIDALE AND OTHERS

PAKISTAN-ITALIAN DEBT SWAP PROGRAM
ISIAO ITALIAN ARCHAEOLOGICAL MISSION IN PAKISTAN
DEPARTMENT OF ARCHAEOLOGY AND MUSEUMS, GOVERNMENT OF KHYBER-PAKHTUNKHWA
The Barikot hill and surrounding areas seen from Mt. Ilam. River Swat is in the background.

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ACT-FIELD SCHOOL PROJECT REPORTS AND MEMOIRS

VOLUME II

EXCAVATIONS AND CONSERVATION ACTIVITIES
IN SWAT DISTRICT (2011-2013)
KHYBER-PAKTHUNKHWA – PAKISTAN

LUCA M. OLIVIERI

FOREWORD BY
ANNA FILIGENZI

WITH CONTRIBUTIONS BY
AMANULLAH AFRIDI, AMBER BATool, ARSALAN BUTT, BALQEEES BEGUM DURRANI,
Pia Brancaccio, Luca Colliva, Michele Cupitò, Giuseppina Di Giulio,
Giulia Gallotta, Francesco Genchi, Ron H. Hatfield, Muhammad Ibrahim, Edoardo
LOLIVA, Francesco Martore, Michael W. Meister, Roberto MicheI, Misbah-ullah,
Nawaz-ud-Din, Ikram Qayyum, Giovanni Signorini, Ulrich Schräder,
Syed M. Niaz Ali Shah, Marco Togni, Massimo Vidale and Muhammad Zahir

DRAWINGS BY
Francesco Martore
WITH A CONTRIBUTION BY
IVANO MARATI

GIS DATA BY
Francesco Genchi

PHOTOGRAPHS BY
Edoardo Loliva (ISCR) and M. Aurangzaib Khan,
L.M. Olivieri, M. Vidale and M. Cupitò

TRANSLATION BY
Lucia Clark

REVISION BY
Ian McGilvray
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Ivano Marati and Candida Vassallo

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STUPAS, VIHARAS, A DWELLING UNIT

Domenico Faccenna and Piero Spagnesi
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Unità Tecnica Locale (UTL) Pakistan, Cooperazione Italiana allo Sviluppo
(Italian Development Cooperation - Local Technical Unit, Pakistan)
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Ministero dei Beni, delle Attività Culturali e del Turismo (MiBACT), Direzione Generale per il Paesaggio, le belle arti, l’arte e l’architettura contemporanea

Ministero dei Beni, delle Attività Culturali e del Turismo (MiBACT*), Soprintendenza per i Beni Archeologici del Friuli Venezia Giulia

University of Engineering and Technology, Peshawar

Quaid-i Azam University, Taxila Institute of Asian Civilization, Islamabad

Hazara University, Department of Archaeology, School of Cultural Heritage and Creative Technologies

Hazara University, Department of Conservation Studies

Università “Federico II” di Napoli, Facoltà di Architettura, Dipartimento di Tecnica delle Costruzioni

Università di Bologna, “Alma Mater Studiorum” Dipartimento di Beni Culturali

Università del Salento, Centro di datazione e Diagnostica (CeDAD)

Università di Firenze*, Dipartimento di Gestione dei Sistemi Agrari, Alimentari e Forestali

Università di Padova, Dipartimento dei Beni Culturali: Archeologia, Storia dell’Arte, del Cinema e della Musica

Università di Perugia, Dipartimento di scienze Umane e della Formazione

Università di Firenze, Facoltà di Architettura, Dipartimento di Costruzioni e Restauro

University of Pennsylvania, Department of Art History’s Williams Fund

Drexel University, Philadelphia, Art and Art History Department

Embassy of the Islamic Republic of Pakistan in Italy, Rome

General Consulate of the Islamic Republic of Pakistan, New York

Civil Military Logistic center (CMLC), 19th Division, Pakistan Army, Mingora
MANAGEMENT AND TECHNICAL STAFF

Luca M. Olivieri, co-scientific Director, Project Manager (IsIAO and University of Bologna)
Fazal Dad Kakar, co-scientific Director (DOAM, Govt. of Pakistan; until April 2011)
Saleh Mohammad (late), co-scientific Director (DOAM KP; until July 2011)
Nidaullah Serai, co-scientific Director (DOAM KP; until January 2012; April-August 2013)
Shah Nazar Khan, co-scientific Director (DOAM KP; until April 2013)
Mohammad Nasim Khan, co-scientific Director (DOAM KP, current)
Arshad Khan, Honorary Project Advisor
Feryal Ali-Gohar, Project Consultant
Irma Gjinaj, Financial Manager (ISCOS; until September 2011)
Mario Barberini, Financial Manager (ISCOS)
Shehryar Mannan Rana, Administrator
M. Hafeez (Representative DOAM, Govt. of Pakistan)
Ivano Marati, Architect
Candida M. Vassallo, Architect
Zareef Khan, Site Engineer
Roberto Dentici, Technical Advisor (March-June 2012)
Faiz-ur-Rahman, DOAM KP Focal person, Curator Swat Museum
Amanullah Afridi, DOAM KP Representative, Assistant Curator Swat Museum
Munir, DOAM KP, Technical Responsible Swat Museum
Balqees Begum Durrani, DOAM KP Representative
Nawaz-ud-Din, DOAM KP Representative
Syed M. Niaz Ali Shah, DOAM KP Representative
Saeed Akbar, Tourist Consultant
Massimo Vidale, Chief Trainer (University of Padova)
Michele Cupitò, Trainer (University of Padova)
Feryal Ali-Gohar, Project Consultant
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Michele Cupitò, Trainer (University of Padova)
Feryal Ali-Gohar, Project Consultant
Irma Gjinaj, Financial Manager (ISCOS; until September 2011)
Mario Barberini, Financial Manager (ISCOS)
Shehryar Mannan Rana, Administrator
M. Hafeez (Representative DOAM, Govt. of Pakistan)
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Zareef Khan, Site Engineer
Roberto Dentici, Technical Advisor (March-June 2012)
Faiz-ur-Rahman, DOAM KP Focal person, Curator Swat Museum
Amanullah Afridi, DOAM KP Representative, Assistant Curator Swat Museum
Munir, DOAM KP, Technical Responsible Swat Museum
Faiz-ur-Rahman
Ghani-ur-Rahman
Haroon Khan (Quaid-i Azam University)
Idris Khan (Quaid-i Azam University)
Iqfut Shaheen (Quaid-i Azam University)
Iqbal Qayyum (Quaid-i Azam University)
Iqbal Aatif (Hazara University)
Edorado Loliva
Francesco Martore
Luca M. Olivieri
Misbah-ullah (Peshawar University)
Muhammad Amin (Quaid-i Azam University)
Muhammad Ibrahim (Quaid-i Azam University)
Muhammad Rizwan Mughal (Quaid-i Azam University)

LIST OF PARTICIPANTS IN THE FIELDWORK

SEASON 1: MARCH-JUNE 2011
Amanullah Afridi (Assistant Curator Swat Museum)
Ghani-ur-Rahman (Quaid-e Azam University)
Faiz-ur-Rahman
Abdul Samad (DOAM Consultant; Hazara University)
Zain-ul-Wahab (Hazara University)

SEASON 2: SEPTEMBER-DECEMBER 2011
Amanullah Afridi (DOAM Representative)
Arsalan Butt (Quaid-i Azam University)
Ashraf Khan (Quaid-i Azam University)
M. Shouib Alam Khan (Quaid-i Azam University) Roberto Sabelli
Muhammad Shouib Riaz (Quaid-i Azam University) Sangeen Khan (Hazara University)
Munir (Engineer, Swat Museum) Syed M. Niaz Ali Shah
Noor Agha (Hazara University) Massimo Vidale
Qamar-un-Nisar (Quaid-i Azam University) 
Rafiuallah (Quaid-e Azam University)
Rimsha Asghar (Quaid-i Azam University) 
Sadeed Arif (Quaid-i Azam University) Fabio Colombo
Saiba Lai-Venti (Quaid-i Azam University) Faiz-ur-Rahman
Saiaq Akhtar (Quaid-i Azam University) Francesco Genchi
Samina Batool (Quaid-i Azam University) Ehsan Javed
Sajad Ahmad (Quaid-i Azam University) Iqbal Atif
Sangeen Khan (Peshawar University) Iqbal Atif
Syed M. Niaz Ali Shah (DOAM Representative) Francesco Martore
Tayyba Jadoom (Quaid-i Azam University) Roberto Micheli
Tehmina Shaeen (Quaid-i Azam University) Misab-ullah
Uzma Sumro (Quaid-i Azam University) Munir
Massimo Vidale (ISCR) Syed M. Niaz Ali Shah

SEASON 3: MARCH-JUNE 2012

Amanullah Afridi Massimo Vidale (University of Padova)
Arsalan Butt Muhammad Zahir (Hazara University)
Fabio Colombo Sangeen Khan
Michele Cupito
Ehsan Javed (Hazara University) 
Faiz-ur-Rahman
Idris Khan
Ikram Qayyum
Iqbal Atif
Ederado Loliwa
Francesco Martore
Misab-ullah
Giuseppe Morganti
Muhammad Ibrahim
Muhammad Rizwan Mughal
Munir
Luca M. Olivieri

LIST OF CONTRIBUTORS

Amanullah Afridi, Directorate of Archaeology and Museums, Government of Khyber-Pakhtunkhwa
Amber Batool, Quaid-i Azad University
Arsalan Butt, Quaid-i Azad University
Balqees Begum Durrani, Directorate of Archaeology and Museums, Government of Khyber-Pakhtunkhwa
Pia Brancaccio, Drexel University
Luca Colliva, University of Bologna
Michele Cupito, University of Padova
Giuseppina Di Giulio, University of Firenze*
Anna Filigenzi, Österreichische Akademie der Wissenschaften
Giulia Gallotta, ISCR, MiBACT
Francesco Genchi, University of Bologna
Ron H. Hatfield, BETA Analytic Inc.
Muhammad Ibrahim, Quaid-i Azad University
Ederado Loliwa, ISCR, MiBACT
Francesco Martore, ISIAO
Michael W. Meister, Pennsylvania University
Roberto Micheli, MiBACT*
Misab-ullah, Peshawar University
Nawaz-ud-Din, Directorate of Archaeology and Museums, Government of Khyber-Pakhtunkhwa
Luca M. Olivieri, University of Bologna
Ikram Qayyum, Quaid-i Azad University
Gianluca Quarta, CEDAD
Giovanni Signorini, University of Perugia
Syed M. Niaz Ali Shah, Directorate of Archaeology and Museums, Government of Khyber-Pakhtunkhwa
Ulrich Schräder, Director Musée Suisse du Jeu, La Tour-de-Peilz, Vaud, Switzerland
Marco Togni, University of Florence*
Massimo Vidale, University of Padova
Muhammad Zahir, Hazara University
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FOREWORD

ANNA FILIGENZI

The work presented here is the result of some of the activities of the Archaeology Community Tourism (ACT), a three years project, which was born with the aim of integrating into one and the same perspective scientific advancements, knowledge sharing and capacity building.

Financed by the Italian Government through the Pakistani-Italian Debt Swap Agreement (PIDSA), and co-managed with the Economic Affairs Division, Government of Pakistan, this project reflects in its basic features a long history of collaboration between the Italian Archaeological Mission and the Departments of Archaeology and Museums, as well as the traditional friendship between the two countries.

It was conceived as a territory-based project, which does not mean localism but rather innovative pragmatism. When in 1956 Giuseppe Tucci arrived in Swat, he was following a backwards pathway from Tibet. His main aim was the re-discovering of the ancient Uḍḍiyāṇa, the land from which the great siddha Padmasambhava moved towards Tibet to plant there the seeds of Vajrayāna Buddhism. Behind the legendary accounts there was a rich cultural history to be investigated, of which Padmasambhava just represented the tip of the iceberg. The ancient topography of Swat started to be rediscovered through painstaking – and still ongoing – archaeological surveys and excavations which encompass any physical space where human communities might have left significant traces of their presence, social organisation, and ideological universe.

It is significant that the initial boost to such a thorough territorial archaeology came from outside the concerned territories, as the best evidence of how cultural forms move and connect people across boundaries. This circumstance appears as significant as it ever was now that we are developing a new sensiveness towards “global history”. However, global history is a composite fabric made of interlaced local histories, and only a deeper knowledge of the latter can pave the way for a better understanding of the former. In the same way, the history of religions cannot be reconstructed only through religious monuments and texts. It needs to be seen also from the perspective of the lay society and its private and public spheres of life. Thus, it is not an exaggeration to say that the contents of this publication represent a remarkable addition to all these aspects.
The reader will find here the excavation reports of two different kinds of sites: Bir-koṭ-ghwanḍai (Barikot), the most important urban site so far discovered in Swat, and two exceptional (and so far only insufficiently known) Buddhist sites, i.e. the Great Shrine of Gumbat and the Sacred Area of Amluk-dara.

The excavation reports contain a selection of materials, mainly pottery and shell ornaments, which represent the most conspicuous part of the assemblages. Of the materials from Bir-koṭ-ghwanḍai a complete list and synthetic description is given. The sculptures and coins from Bir-koṭ-ghwanḍai and the sculptures from Gumbat and Amluk-dara will be the object of dedicated studies, which will be hopefully published soon.

The data yielded by these excavations deserve the utmost attention. As for Bir-koṭ-ghwanḍai, we have now a clearer picture of the different building periods, which reflect historical and environmental conditions. Besides, for the first time an urban settlement provided direct evidence of ‘Buddhism in context’, where overlapping schemes of religious practises and buildings finally open to us a window into the interaction of Buddhism with folk beliefs. From the side of the ‘official’ Buddhist settlements, the excavation of Gumbat and Amluk-dara provide new insights into building techniques, diachronic changes, and ritual performances. Given the accuracy of the excavation methods, the interpretation of the data can rely on safe stratigraphic contexts, which in turn are connected with a series of precious chronological benchmarks established on the basis of cross-comparison between stratigraphy, numismatic finds and 14C dating.

This will certainly have a bearing not only on the reconstruction of the history of the single sites but also, and moreover, on several critical issues of the cultural history of Swat in general. However, there is another aspect of the project, which can hardly be overemphasised: its direct and immediate impact on the local community. Usually, it takes time before scientific achievements become a shared cultural patrimony. In this case, the needed time has been drastically reduced: the activity on the field has also been an investment on training and capacity building. Thanks to this project, new professionals are now ready to apply elsewhere, sensitive methods of excavation, documentation, restoration and musealisation, others to guard, protect and maintain the sites and to guide visitors, so that they all can actively take part in the promotion of a sustainable tourism.

In the end, let us hope that the participation of the local community may result not only in a temporary economic benefit, but in the permanent acquisition of an enriching cultural awareness.
Note on the xilitomic analysis for the wood identification

The four load bearing timber elements found in the lower inner dome are important components of its carpentry. They are the wooden joist-like element (called element 4), the three crossed beams supporting the SE corner of the inner ceiling (labelled as elements 1, 2, 3) (see above: Detail of lower inner dome carpentry in situ). Samples of all the elements were taken for anatomical analysis.

Wood identification

In order to identify the species of the timber members, observation of macro- and microscopic features of wood has been carried out. The anatomical examination has been developed on four different specimens sampled one from each beam, labelled as for radiocarbon datation, and compared each other. The wood identification was carried out with the typical methodology used in the wood anatomy science, according to the IAWA principles (www.iawa-website.org). Thin slices of wood were cut by means of a cryostat microtome and prepared to be observed to the light microscope.

Through the comparison of the four specimens, no significant differences were found, disregarding the natural individual variability, therefore it can be stated that all the analysed beams belong to the species *Acacia modesta* Wall., a hardwood of Mimosaceae Family.

More than 1300 species of the genus *Acacia* have been described all around the world, and twelve in Pakistan (Sheikh 1993). *A. modesta* and *A. nilotica* are very similar, from the point of view of the anatomical properties. Both are native of Pakistan, but in different habitats (Sheikh 1993). On the basis of geographical distribution, the species *A. modesta* has to be considered the most likely choice.

The main microanatomical features of diagnostic relevance are: wood diffuse-porous; vessels with simple perforation plates and shape of alternate pits polygonal; vestured pits in vessels (a particularly noteworthy character); gums and other deposits abundant in heartwood vessels; axial parenchyma vasicentric, aliform, confluent and in marginal or in seemingly marginal bands; larger rays commonly 4- to 10-seriate; all ray cells procumbent; prismatic crystals in chambered axial parenchyma cells.

The microscopic analysis by polarized light microscope showed a high bi-rifrangence of cellulose in cell walls, associated with an excellent state of preservation.

![Fig. 65 - Cross section. A: element 4, stereomicroscopy. B: element 3, transmitted light microscopy. (Photos by GG).](image-url)
Fig. 66 - Tangential section: element 4, light microscopy. A: normal transmitted light. B: polarized light, that highlights the presence of crystals chains in axial parenchyma. (Photos by GG).

Fig. 67 - Radial section: element 4, light microscopy. A: normal transmitted light. B: polarized light. (Photos by GG).

Fig. 68 - Vestured pits visible on longitudinal section (element 3). Transmitted light microscopy at high magnification. (Photo by GDG and GS).
Density of the specimens

As an additional diagnostic element, the density of some specimens were determined. Due to the irregular shape, the volume of each specimen was measured through the buoyant force (according to the Archimedes’ principle). Both for the measure of the load of the specimens and of the force generated by the distilled water moved by the body in it immersed, an analytic balance was used. Results showed a density very similar to the value coming from literature.

<table>
<thead>
<tr>
<th>Description</th>
<th>Density [kg/m³]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Element n. 1</td>
<td>971</td>
</tr>
<tr>
<td>Element n. 2</td>
<td>995</td>
</tr>
<tr>
<td>Element n. 3</td>
<td>970</td>
</tr>
<tr>
<td>Element n. 4</td>
<td>1003</td>
</tr>
<tr>
<td>Reference density (mean value of the species)</td>
<td></td>
</tr>
<tr>
<td>Sheikh 1993</td>
<td>960</td>
</tr>
<tr>
<td>Pearson &amp; Brown 1932</td>
<td>993</td>
</tr>
</tbody>
</table>

Tab. 11 - Wood density.

Properties of the species

Common names for *A. modesta* are Phulai and Palosa, depending on the geographic area. As Sheikh wrote, this species is native to Pakistan, Afghanistan, and India. Nizami (2012) indicated that *A. modesta* is one of the two dominant species in the subtropical broadleaved evergreen forest of Kherimurat and Sohawa with a medium stem density close to 190 trees on one hectare. In Pakistan it is found below 1200 m in the foothill ranges of the Himalayas, Salt Range, Sulaiman Hills, Balochistan and Kirthar Range and it is also found in the plains close to these mountains. A schematic representation of the growth area is reported in the next *ad hoc* drawing.

![Map of the natural growth area of *Acacia modesta* Wall. Red dot: site of Gumbat. (Drawings by GS and GDG).](image)
A. modesta is a deciduous, thorny moderate-size tree, 3 to 9 m tall. Diameters up to 2 m have been recorded (Sheikh 1993).

The wood was historically described by Pearson and Brown (1932) as ‘light russet with a faint greenish cast, ageing to dark brown, often with darker streaks somewhat lustrous fairly even and straightgrained, medium-textured. It is a strong and extremely hard wood. Certainly the hardest acacia timber examined durable, even in exposed positions, and in contact with water’. In a more recent description, its properties are summarized as follows: close-grained wood with heartwood sharply distinct from the white sapwood, heartwood is dark brown with typical black streaks (Sheikh 1993).

Wood specimens, mechanically extracted from the beams, exhibit greasy and blackened surfaces, caused by the repeated exposition to the carbon black originated by bonfires lit inside the dome during its long life history (see above: Radiocarbon Dating). Despite the age and exposition conditions, wood shows a very good preservation state so that, a few millimeters under the surfaces, the original natural colour can be observed (figure below).

![Image](image_url)

**Fig. 70 -** Particular of the sampling point from beam 4, on the SE corner.

(Photos by EL, processed by GG).

This plant has been recognized a significant ethnobotanical value: extraction of leaves, as well as extract oil and gums are used in popular medicine for different purposes. Foliage is used as fodder, fencing/hedge plant and locally as timber: because of its hardness and resistance, it is used in the manufacture of ploughs and other agricultural tool, but also as
roof beams and in the frame of doors (lintels) (Ul Haq et al. 2010; Sher et al. 2012). Many authors described as relevant the use as fire wood (Ul Haq et al. 2010; Tahir et al. 2010; Groninger 2012; Sher et al. 2012). The wood is very heavy, with an average density close to 1000 kg/m³ (960 kg/m³ Sheikh 1993, and 993 kg/m³ Pearson and Brown 1932). The same authors agreed considering the wood as heavy, hard and very strong, durable even in exposed positions and in contact with water (meaning the heartwood only). The characteristics listed above, combined with the particular colour (described as ‘decorative wood’ by Pearson and Brown 1932) and the potential growth dimensions of the trunk, are all favourable reasons for the use as structural timber in the studied building. As demonstrated by the data collected, the specimens have the mean value typical of the species and they do not indicate any sign of mass lost, notwithstanding the exceptionally long service life.

GDG, GG, GS and MT