

EASAA 2005

Handbook of Papers and Panels

List of Panels

Mind the Gap: Continuity and Change in South Asian Archaeology (Monday July 4 2.00 – 5.00)

Convenors: Prof. Robin Coningham (University of Bradford) & Dr. Ruth Young, (University of Leicester)

Ethnoarchaeology in the Himalayas (Monday July 4 2.00 – 5.00)

Convenors: Lindsay Zamponi (Ph.D Candidate, SOAS, London) and Dr. Tadeuz Skorupski (SOAS, London)

Indo-Iranian Borderlands (Monday July 4 1.30 – 5.00)

Convenors: Morteaza Hessari (National Museum of Iran) & Prof. Vasant Shinde (Deccan College, Pune)

Technology, Regional Interaction and the Indus Civilisation (Tuesday July 5 9.30 – 5.00)

Convenors: Prof. Mark Kenoyer (University of Wisconsin-Madison) & Dr. Rita Wright (Department of Anthropology, New York University)

The Temple in South Asia (Tuesday July 5 9.30 – 5.00)

Convenors: Dr. Adam Hardy (University of Cardiff) & Dr. Crispin Branfoot (De Montfort University)

Issues in Gangetic Archaeology (Tuesday July 5 9.30 – 12.30)

Convenor: Robert Harding (UCL Institute of Archaeology)

Numismatic, Literary and Epigraphic Evidence on Chronology in Gandhara (Tuesday July 6 9.30 – 5.00)

Convenor: Dr. Osmund Bopearachchi (C.N.R.S.)

Issues in Northwestern Art and Iconography (Tuesday July 5 2.00 – 5.00)

Convenors: Dr. Martha L. Carter, Dr. Carolyn Schmidt

Tibetan Epigraphy and Petroglyphs (Tuesday 5 July 2.00 – 5.00)

Convenor: Dr. Philip Denwood (SOAS, London)

Economies in South Asia (Wednesday July 6 9.30 – 4.30)

Convenors: Dorian Q. Fuller: Institute of Archaeology, University College London & Dr. Richard Meadow: Director, Harappa Archaeological Project, Peabody Museum, Harvard University)

The Hephthalites (Wednesday July 6 9.30 – 4.30)

Convenors: Dr. Madhuvanti Ghose (Dept. of Art & Archaeology, SOAS, London) and Dr. Etienne de la Vaissière (EPHE, Paris)

EASAA 2005

Handbook of Papers and Panels

PANEL: Mind the Gap: Continuity and Change in South Asian Archaeology (Monday July 4 2.00 – 5.00)

*Convenors: Prof. Robin Coningham (University of Bradford) & Dr. Ruth Young,(
University of Leicester)*

The Importance of Comparative Studies

Dr Ruth Young: University of Leicester

The Late Harappan at Harappa: Re-analysis of Strata I & II of Cemetery 'H' and Fresh Interpretation

Prof. Rafique Mughal: Prof. of Archaeology & Heritage, Boston University

Archaeological evidence revealed at Harappa by M. S. Vats during 1930's at the cemetery is traditionally grouped under the (Mature) Harappan (R - 37) and the so-called "Post-" or Late Harappan (Cemetery - H) periods. Since the funerary pottery shapes and their painted designs and modes of burials belonging to the last occupation levels in Trench 'H' marked a radical change from underlying burials and associated materials of the (Mature) Harappan period, the cemetery 'H' was regarded to represent influx of Aryan-speaking people coinciding with an end of the Indus or Harappan Civilization.

Further excavations at Harappa by Mortimer Wheeler, the present author and George Dales and his team, confirmed the stratigraphic position of the two cemeteries.

A re-examination of the Cemetery -H materials so far found at three areas of the site has shown that the materials from the two Strata I & II of Cemetery -'H', represent two distinctly separate modes of burials with distinctive funerary objects. There is no justification for mixing the evidence of Stratum I and II from Cemetery -H and putting all of it in the "Late Harappan" time-bracket. There is clearly a cultural link between the Mature Harappan cemetery R - 37 and the lowest levels of Cemetery -H but not at all with the upper level represented by the pot burials. Lack of clear distinction between the evidence from the two levels has created a great deal of confusion in understanding the sequence of events during the late second millennium BCE in South and Central Asia.

The Forgotten: a proposal of how to approach Toy classified Material of the Indus Civilization

Elke Rogersdotter: University of Umea

Traditional archaeology tends to exclude toys from deeper analysis. One explanation may be the view of them as uninteresting because of their belonging to children 's sphere. Another would be the opinion of the 'toy' as a construction of contemporary western culture, the material thus concluded too problematic to approach because of its impossibility to be distinguished from, say, ritual items. Based on an analysis of toy materials of the Indus settlement at Bagasra, this paper proposes an alternative perspective, suggesting a viable way of approaching the materials when considering them within a theoretical framework illustrating their social aspects. Resisting temptations to 'transform' them into other identifications, their very toy-role is pointed at as crucial, enabling them to express various social uses in addition to their eventual function as children 's playthings. By suggesting the material to imply diverse social

EASAA 2005

Handbook of Papers and Panels

strategies and serial action, the notion of the limiting connection of toys to children becomes unravelled. The focus further eliminating the need for established entities or category borders has inspired the paper to widening the perspective, approaching toy materials from another time period as well. Selected materials from the Early Historic sites of Charsadda and Taxila have therefore been added to the analysis. Since this comparative attempt is in its early stage, further research may be proposed. However, having so far yielded interesting traces to follow, it may be emphasized as a promising research area. With traditional divisions being questioned as to their validity, the problems with cultural loading and elusive distinguishing are proposed as constructions possible to avoid while the toy concept is suggested to particularly highlight the complex simultaneity of change and continuity within the social structure.

Ceramic Analysis as a key tool in understanding technological changes and continuity between major cultural phases in South Asia

Dr K. Krishnan: Dept of Archaeology and Ancient History, Faculty of Arts, The Maharaja Sayajirao University of Baroda, Vadodara; I.C. Freestone: School of History and Archaeology, Cardiff University; and A.P. Middleton: Department of Conservation, Documentation and Science, The British Museum

This paper will by comparing the 'scientific' approaches to the analysis of ceramics within India, identifying differences between archaeological practitioners of the Indus Valley and Early Historic traditions. It will then consider a single case study of the "glazed" Reserved Slip Ware, before considering ways in which this approach could also enhance our understanding of Early Historic ceramic manufacture and technology. "Glazed" Reserved Slip Ware is a high quality ceramic belonging to the mature Harappan phase of the Indus Valley Period. It has restricted forms and the vessels are small in comparison to the full range of clay-based Harappan ceramics. Although only limited numbers of sherds were found on classic Indus Valley sites such as Mohenjodaro, it is more common on sites in Gujarat, such as Shikarpur, Dholavira, Bagasara and Nageswar. This ceramic has a pale body with a hard, glossy bichrome coat, with narrow pale grey and black bands. Earlier, this colouration was attributed to manganese oxide or smelting slag. However, studies using Scanning electron microscopy with energy dispersive X-ray analysis indicate that the surface coat on Reserved Slip Ware is composed of a pale grey vitrified clay slip that overlies a black slip with significantly higher iron oxide. Further analysis of the slip by X-ray diffraction indicates that both the pale and black slips contain hercynite, mullite and quartz. From the scanning electron microscopic study it was also noticed that the black slips contain higher amounts of coarser-grained hercynite. The elemental data suggest that different clays were used to make the bodies and the slips. However, apart from iron oxide, key oxide ratios are very close in associated black and pale slips, suggesting that the clay used for both slips is the same. The grey slip appears to have been produced by elutriation of the fine, iron oxide-rich clay that was used to prepare the black slip. The pale grey slip was laid over the black and removed by combing to produce the bichrome effect. This ceramic was a specialist product requiring a relatively high input of skill and resources and is likely to represent the output of a limited number of workshops.

EASAA 2005

Handbook of Papers and Panels

The Idea of the Harappan City: From historical agents to historical structure
Dr Piotr Eltsov: Harvard University

This paper investigates the nature of the Harappan city using a theoretical model extracted from a large variety of ancient Indian texts, including the Buddhist Canon, the Kautilya Arthashastra, the Epics, the Milindapanha, and the Sanskrit Puranas. The method of using these texts in the interpretation of archaeological data is based on several interdependent presumptions: first, that the sociopolitical mentality of historical agents is inseparable from the phenomena, structures and processes of the past; second, that the Sanskrit and Pali literature is valuable as a source of ideas rather than facts; third, that neither as an idea nor as a phenomenon can the city have a single and universally comprehensive definition; and fourth that the phenomenon of the city is inseparable from the idea of the city in the minds of historical agents.

Following these presumptions, it is argued that a large number of Sanskrit and Pali texts provide us with a theoretical model, according to which the city is defined by the presence of fortification and authority. Previously tested by this author against the archaeological record of the Ganges Civilization (South Asian Archaeology 2003), this model is now tested against the archaeological record of the Harappan Civilization, i.e., a sample of twelve well-known archaeological sites. It is proposed that indeed the earliest cities of the Harappan Civilization were epitomized by the concurrent and interrelated processes of the construction of fortifications and the formation of authority, and that fortifications performed mostly ideational functions, i.e., symbolized authority, delineated space, and marked territorially bound identities. In conclusion, the parallels are drawn between the Harappan and Gangetic cities and a new method for the holistic study of the ancient South Asian civilization through the analysis of archaeological and textual data is reasserted.

EASAA 2005

Handbook of Papers and Panels

Shedding light on the changing face of urbanism: what really happens at the end of the Harappan? A case study of new excavations from the Gomal Plain

Prof. Ihsan Ali: Head of Museums for North West Frontier Province

The Directorate of Archaeology and Museums, Government of NWFP, under the supervision of Prof. (Dr.) Ihsan Ali, Director of the Directorate and Mr. Zakirullah Jan, Ph.D researcher as Field Director, M/s Mir Muhammad, Sohail Khan Asim Amin and Niaz Ali Shah, graduate students of the University of Peshawar conducted four months excavations at the Harappan City of Gandi Umar Khan in the Gomal Valley, D.I. Khan.

Gandi Umar Khan, 55 km west of D.I Khan City, covering an area of 220 x 200 m and maximum height of 8.5 m, discovered in 1997 by the University of Peshawar is the most important archaeological site of the Indus Valley Civilization in the Frontier Province. Earlier, this region was considered as out of the extent of the Harappan Empire. But recent discoveries by the Directorate of Archaeology & Museum, Govt. of NWFP has changed the earlier hypothesis and added new dimensions to the study of the Harappan Civilization. Keeping the importance of this region in view, the Directorate conducted extensive survey of the Gomal Plain in March 2003, through the authors.

As a result, 127 sites were recorded and documented ranging in date from 7000 year B.P. to the late 19th Century.

After the completion of the first phase of the survey, the Directorate then decided to conduct archaeological excavations at the significant site of Gandi Umar Khan in the region. Although, eleven Harappan Period sites were recovered including the earlier discovered six, Gandi Umar Khan is the largest settlement of all these sites in the Frontier Province. Another attraction for researchers is the Kot Dijian culture, which is also found on the site. No other site in this region, except the short Harappan occupation at Gumla, has so far yielded Harappan and Kot Dijian material collectively.

The afore-mentioned significance led the Frontier Archaeology Directorate to excavate the site, where excavations were conducted from September 2003 till January 2004. During the course of excavations, a trial trench for obtaining preliminary information was laid down on the southern mound of the site, the goals were to (a). know the cultural profile of the site, (b). know the main periods of occupation (c). know the relation between them (d). establish chronology of the Bronze Age cultures of this region.

Two main periods, identified, were the Harappan and Kot Dijian Periods. The Harappan Period was lying on the top, where as the Kot Dijian one was earlier. The exciting element of the excavation was the relationship between the two periods. Till our excavations at the site, the scholars were of the view that the Harappan Civilization is derived from Kot Dijians and preferred to call the later as "Early Harappan" culture. Some researchers have identified a transitional phase between them at certain sites. But no such transitional phase is noticed here at Gandi Umar Khan. Rather, a complete break between the two periods is observed. A fifty-five centimetre thick ashy layer, devoid of any cultural material, separates the Kot Dijians and Harappans.

EASAA 2005

Handbook of Papers and Panels

The Harappans as well as the Kot Dijians at our site of Gandi Umar Khan in the Gomal Plain were living in the mud brick structures unlike that at Harappa and Mohenjodaro, where the people were living in kiln baked brick structures. The orientation of the rooms remained unchanged like the Harappans. The Kot Dijians here at Gomal also practiced the same architectural style with slight difference from the Harappans. Needless to mention here, that the Kot Dijian Sites in the Gomal Plain are much richer and earlier than those at Sindh and Punjab.

The Harappans of Gandi Umar Khan also worshiped the mother-goddess as the cult objects in the shape of T/C female figurines are collected from the site. These figurines reflect some regional variation, as they are slightly different from those found at Harappa and Mohenjodaro. The other antiquities from the site include stone blades and tools, T/C, Stone and paste beads, metal objects like antimony rods and nails, baked clay ceramics and T/C cakes etc. Pottery and T/C cakes are found in large number from the site. Harappan perforated vessels are also unearthed in sufficient number. The Harappan pottery is mainly plain, however, painted ceramics were also collected, which were painted in black colour on red surface like the typical Harappan wares, in floral and geometric patterns. The geometric designs include intersecting circles, hatched pattern, vertical and horizontal lines and bands with thick fabric. On the other hand, the Kot Dijian ceramics are thin and include short-necked grooved ware, flanged rimmed painted and plain ware, Quetta Wet Ware and rimless bowls. The Kot Dijian pottery also has paintings on some of the sherds, which include linear pattern, hatched pattern and incised lines etc.

The antiquity found at Gandi Umar Khan is of great interest for further research, which will add new chapters to the missing chapter of the Indus Valley Civilization and needs detailed excavations and explorations in the Gomal Plain, which the authors intend to continue.

EASAA 2005

Handbook of Papers and Panels

Trade, Polity and Urbanization: Continuities in the First and Second Maritime Traditions on the western coastlands of South Asia (2500 BC – 300 AD)

Dr Sunil Gupta: Allahabad University

The First and the Second Urbanizations are important watersheds in the archaeological history of South Asia. The Harappan Civilization (2500 - 1800 BC), with its planned cities, technological standardization and widespread trade, represents the First Urbanization. The Second Urbanization, marked by the rise of Iron Age kingdoms (mahajanapadas) in the Gangetic Valley, commenced around the early 1st millennium BC. Harbours reappeared on the western littoral of the subcontinent around mid-1st millennium BC, nearly a thousand years after Harappan ports of trade like Lothal and Kuntasi had slipped into obscurity. The maritime revival was driven by the mahajanapadas and successor polities (Mauryans) seeking outlets to the sea, replicating the earlier Harappan expansion to the western coastlands. We can therefore speak of the First and Second Maritime traditions on the western coastlands of South Asia, widely separated in time and triggered by cycles of urbanization in the Indus and Gangetic basins. Major episodes of long distance sea trade epitomize the two maritime traditions: the Harappan sea trade with Persian Gulf civilizations in the 3rd-2nd millennium BC and Indo-Roman commerce in the BC-AD transition.

The paper attempts to trace the complex processes of long distance trade, political formation and urbanization on the western coastlands of South Asia from the First to the Second Maritime traditions. The so-called 'dark age' between the decline of Harappan ports and the emergence of Early Historic harbours is critically examined. The crucial issue is whether this interregnum (1800 - 800 BC) represents a hiatus or a continuum. A number of questions are posited:-

- .. Is it possible that all external contact with the western coastlands ceased in the period following the Harappan decline?
- .. Is it possible that seafaring skills and watercraft technologies built up in the high noon of Harappan-Mesopotamian trade vanished into a time warp?
- .. Why was the deposition of Late Harappan wares rising in the Oman precisely at the time when Harappan de-urbanization was well underway?
- .. Was the expansion of pastoralism in Gujarat in the post-Harappan phase actually instrumental in sustaining 'food exports' to the arid Oman?
- .. Can we speak of 'Chalcolithic ports' or 'Chalcolithic trade' between the Harappan and the Early Historic periods?

The paper is based the premise that exchange networks, once formed, do not easily fade away. There are valid theoretical pointers and ground indicators to suggest that the so-called 'dark age' between the Harappan and Early Historic periods is a misnomer. I shall seek to show that the First and Second maritime traditions were not exclusive of each other but two resurgent events in a historical continuum.

EASAA 2005

Handbook of Papers and Panels

Practice and Evidence: of the Indus Civilisation and Early Historical India

Dr Sudeshna Guha: Museum of Archaeology & Anthropology, Cambridge

Since the finds of the 'late Harappan', 'black and red ware' and 'chalcolithic' sites within India, historians and archaeologists of South Asia have conjectured on the possible representations of the artifact assemblages from these sites. The debates regarding whether many of these present 'phases' in the decline of the Indus civilisation, or whether they culturally connect it with the early historic period, have led to opposing theories and contradictory notions; of which, the most controversial is the presentation, as a 'fact', of the primordial aryaans of India. Intellectually stimulating, and productive in terms of establishing historical knowledge, are those insights, into the nature of the 'Indus' and the 'early historic', that have emanated through comparative research on overlapping themes, related to processes of state formation, economics of urbanism, patterns of subsistence and settlement, and on modalities of exchange and consumption. These works create an awareness that the many existing classificatory aids, for investigating the archaeological record of the second and the first millennium B.C. within the Greater Indus Valley, Rajasthan, Gujarat and the Deccan, need serious revisions; one being the periodisation of sites according to 'chrono-cultural sequences'. An introspection of the manner in which knowledge on the Indus has been created through archaeological methods, show very clearly that inferences for excavated objects are usually negotiated. It also reveals the extent to which historical conditions offer excavated artifacts the legitimacy of proof. Using examples from Inamgaon, Lothal, Hastinapura and Mohenjodaro, my aim through this paper will be to highlight the ways in which specific objects and concepts are endowed with differing truth-values, to make meanings on historical phenomenon. By relating evidence to its historiography, my objectives will be to offer an understanding of the use of material objects as sources. This understanding is perhaps the most crucial for seeking patterns, be they of breaks, transformations or continuities, through the archaeological method.

Summary and conclusion: Continuity or change: archaeology, archaeologists and urban forms in south Asia

Prof. Robin Coningham: University of Bradford

EASAA 2005

Handbook of Papers and Panels

PANEL: Ethnoarchaeology in the Himalayas (Monday July 4 2.00 – 5.00)

Convenors: Lindsay Zamponi (Ph.D Candidate, SOAS, London) and Dr. Tadeuz Skorupski (SOAS, London)

The Tibetan Amulet Box, or Ga'u

Dr. John Clarke (Curator, Department of South and Southeast Asia, Victoria and Albert Museum, London)

This paper will discuss evidence for the history, gender divisions and regional styles of the ga'u or amulet box.

The possible origins of the ga'u in China and India are examined and further art historical and literary references from Tibetan history drawn into the discussion. Surviving possibly early ga'us are discussed.

A division of ga'u types is proposed based on gender and class. The regional styles of men's round and shrine shaped box ga'us are outlined and the question of style explored. The most prominent types of women's ga'us and issues of regionality are similarly focussed on. Differences in finish and degrees of decoration are related to class and wealth and the ga'us indicating actual government status looked at. Finally the question of stone supply and carving are discussed.

Issues and Conclusions Arising from an Examination and Analysis of Ritual Implements of the dGe-lugs-pa Order of Tibetan Buddhism

Lindsay Zamponi (PhD candidate, Department of Art and Archaeology, School of Oriental and African Studies)

This paper will present issues and recent findings arising from my doctoral research project, entitled *An Examination and Analysis of Ritual Implements of the dGe-lugs-pa Order of Tibetan Buddhism*. The main object of the project is to determine if there are sect-specific characteristics of the forms, structures (including materials, symbolic motifs and iconographic elements) and types of decoration (such as the style of metalwork and the use of precious and semi-precious gems) of the various ritual implements employed in the Tantric practices of Tibetan Vajrayana Buddhism. The ritual objects under consideration in this study are those that are used as tools in ritual performance and also depicted iconographically in painting and sculpture as attributes of deities, Arahats, yogins and yoginis, mahasiddhas and lineage-holders. Among them are: the vajra, or rdo-rje; the hand-bell; the double-sided hand-drum and double-sided skull-hand-drum; the skull-bowl; the hook-knife; the phur-pa; the khatvbqga; the trident; the vajra goad hook; the vajra hammer; homa fire-offering implements; and various staffs, sceptres, wands, whisks, ritual mirrors, ladles, swords, water-offering vases, seed dispensers, arrows and lassos.

The paper will describe the methodology employed in the project, issues that have arisen thus far, and key considerations regarding sectarian preference in the manufacture and usage of ritual implements. Among the topics discussed will be the practical difficulties of conducting a survey of ritual implements held in international museums, private collections and monasteries; the ethnographic mode of collecting Tibetan

EASAA 2005

Handbook of Papers and Panels

material artefacts, and resultant issues pertaining to archival information held by museums; and the construction of a database of ritual implements, to be employed in the creation of a typological classification system for each type of object, and as a tool in identifying and classifying objects owned and/or used by members of the dGe-lugs-pa order. The paper will conclude with a brief assessment of the potential practical applications of this research in the fields of art history and archaeology.

Western Himalayas wooden sculptures: stylistic definition and connection with the art of Kashmir

Dr. A.K. Singh (Reader, Department of History of Art, Faculty of Arts, BHU, Varanasi)

Upper basin of the river Sutlej in Himachal Pradesh, forming the border district Kinnaur, has been explored by scholars like Alexander Gerard, A. H. Francke, G Tucci and Rahul Sankrityayan but village to village survey was never attempted to investigate the archaeological potential. The present author has been working in the region since 1977 to prepare an inventory of archaeological material through conducting village to village and door to door survey in Kinnaur. The fieldwork has yielded a huge amount of cult images in bronze with other artefacts of great historical importance. Especially sites like Rangrik, Ropa, Kothi, and Ribba preserve a good deal of rare wooden images of high aesthetic merit which deserve attention. The paper attempts to study the stylistic definition and provenance of some select Buddhist wooden sculptures discovered by the author.

The area had been a buffer state between the Indian states of Western Himalayas and Tibet. It is known that during the time of the second diffusion of Buddhism in Tibetan provinces, in particular western Tibet (gNari-Khorsum), Kashmir played a key role in the process by extending full support and supplying scholars, monks and artists. Still in many old Buddhist temples of Western Tibet art works of Kashmiri artists are preserved.

Aesthetically superb, the sculptures under investigation present a very interesting case of diffusion of an art style that is Kashmiri, about which still not much is known. In the medieval period, from the 8th to the 10th century, when Kashmir consolidated its power in Northern India, Western Himalayas, and Central Asia and established her hegemony in the region, the state of artistic tradition too achieved a high watermark. The artistic expression of Kashmir became eclectic rather more international due to intense cross cultural contacts in the North-western peninsula which from very beginning was open to various influences from the west. During the heyday of political hegemony Kashmiri art too permeated far afield. In the making of Kashmiri art expression elements of Gandharan, Gupta Indian, Persian, Central Asian, Chinese, Tibetan, Byzantine, Greco-Roman and folk of native valleys of Western Himalayas can be discerned

The wooden sculptures under discussion display a maturity of the style and its further transition. This paper will present a study about the regional development of Kashmiri style, its extension, and various stylistic sources. Indeed, the contribution of Chamba School needs to be examined carefully for scientific evaluation of Kashmiri expression,

EASAA 2005

Handbook of Papers and Panels

the paramount style in the western Himalayan region. Chronologically, the material can be ascribed to a definite frame of time that is from ninth to twelfth century AD.

Two popular dharani-s and Tibetan instructions on their use

Dr. Michael Willis (Curator, Department of Asia, British Museum, London)

This paper has emerged from a study of Tibetan wood-blocks and wood-block prints in the collection of the Department of Asia at the British Museum. The prints and blocks studied are those which were used to make prayer-flags. The texts on the prayer-flags are not generally read by Tibetans and have not been subject to detailed academic study. For the present study, the relevant texts were located in canonical sources and translated. Two dharani-s were found to be particularly popular for use on flags. Translated from Sanskrit in about the ninth century, they contain various instructions on how the texts should be used, and so show a number of continuities and discontinuities in current practice.

Recent Research in the Tawang District of Arunachal Pradesh.

Dr. Richard Blurton (Curator, Department of Asia, British Museum, London)

Studies of the tribal societies of northeast India have invariably concentrated on the unchanging 'traditional' quality of these societies. A recently constituted research project, 'Tribal Transitions. Cultural Change in Arunachal Pradesh', which is based in SOAS, headed by Dr Stuart Blackburn, and funded by the Economic and Social Research Council, challenges these assumptions. These different arguments do not deny that the Northeast is passing through a period of intense cultural change today, but remind us that change has always taken place in the fabric of material culture and sometimes dramatically and speedily as well. Finally, the rapid nature of today's change makes it imperative for this change to be documented.

This paper will examine aspects of religious change amongst the Monpa, a group settled in the northwest of the state, close to Bhutan and Tibet. Change here has come about through economic, political and religious factors some of which will be highlighted in this paper. Further, some intimation will be made of the use of such fieldwork in the better understanding of museum collections which, all too often, come down to us lacking in vital contextual information

EASAA 2005

Handbook of Papers and Panels

PANEL: Indo-Iranian Borderlands (Monday July 4 1.30 – 5.00)

Convenors: Morteaza Hessari (National Museum of Iran) & Prof. Vasant Shinde (Deccan College, Pune)

Part I: French Archaeological Mission in Makran (Balochistan, Pakistan)

Plundering in the Indo-Iranian Borderlands (Afghanistan, Pakistan and Iran). A case study: The Dasht Plain (Kech-Makran).

Roland Besenval and Aurore Didier

Since few years, the plundering of archaeological sites has increased in the Indo-Iranian Borderlands, especially in Afghanistan and Pakistan. The first part of this paper will present an overview of the situation. The second part will be focused on the example of the Dasht Plain in Kech-Makran (Western Pakistan), where these illegal activities concern particularly the large proto-historical cemeteries and also some habitats of the same period in the coastal area.

Shahi-Tump (Balochistan, Pakistan: results of the last two field-campaigns and first stratigraphical study.

Vincent Marcon

We will present in this paper the most important elements discovered during the 2004 and 2005 field-campaigns in Shahi-Tump. The main task of the work done on this site is still focused on the makrani chronology study. After 9 years of excavations, it concerns particularly the definition of the Period II - and its division in different phases - and also the transition between Period I and Period II. We will also present a first stratigraphical account of the mound.

First presentation of Period II inhumations in Shahi-Tump

Cécile Buquet

During the last two field seasons, our different excavation aims were focused on period II. It includes many new burials from this period, and most of them have been found inside a funeral area localized in the northern slope of the mound. The utilization and evolution of this cemetery is clearer with the opening of two new trenches in this part of the site. In comparison, the other period II burials, which have been revealed few years ago in another part of the mound, seem to be isolated. We have also found some domestic inhumations of small children, all localized in Trench II. It may indicate a special funeral treatment for the youngest individuals, and also that living area and funeral area are not always separated.

Short Account of the pottery of Kech-Makran Period II : First Preliminary Results

Benjamin Mutin

The main topic of this paper is focused on the pottery of Period II which has been brought to the light at Shahi Tump in Kech valley of Southern Pakistani Makran. Some features of this pottery have yet been briefly presented by Roland Besenval. But the recent studies on the field, especially the discovery of new architectural levels of Period

EASAA 2005

Handbook of Papers and Panels

II, have allowed us to identify some new shapes and types of decorations. This has been followed by a complete study of the corpus and a first classification. Then, forming techniques have also been observed.

Part II: Iranian Research

Polychrome ware: A variable figuration system in a cultural continuity

Loredana Mugavero: University of Genoa

Shahr-i Sokhta, the main protohistoric settlement of the Helmand Civilization (Sistan - Iran), has a peculiar ceramic class, the Polychrome Ware. It is distinguished by bright coloured decoration applied after firing on the vessel's body. Polychrome Ware is mostly represented by restricted shapes. More rare are truncated-cone shaped bowls, probably used as lids for others polychrome containers.

The vessels were formed by combining coil-building and wheel throwing techniques. The jars were formed in 2 or 3 superimposed sections joined and finished in plastic state on the wheel.

During the whole chronological sequence of the city Polychrome Ware continuously evolved both in terms of shapes and figuration system. At the end of Period III (around 2200 BC), following a general rationalization trend of ceramic production in protostoric Sistan, Polychrome vessels became bichrome (red and black). Potters invented a painted technique where black and red were probably obtained in a single firing, by varying the atmosphere in the kiln. Such a persistence might well be explained if these vessels had important functions in the domestic sphere, and were linked to a developed system of symbolic associations. The informations coming from the graveyard suggest that the Polychrome containers throw back a particular status depending upon the sex, age, kinship or ethnic affiliation of the deceased.

Survey of Zaboli Region, South-East Iran

Assad Bashokat

In this paper I would like to give a first survey of the pottery, found during in my survey in Zaboli, south-eastern Iran. The main purpose is to present the 4-3 millennium B.C.

I started to examine the pottery of the Sarawan-region. The assemblage consists of all the sherds of my survey. In general the pottery is in a poor state of presentation and surface is often eroded.

There were mostly isolated, scattered sherds. Probably some of these sites were settled in the third and second Mil. as well. I have found the medium to coarse wares, the coarse wares and the Iron Age wares.

The dating of this pottery is still difficult but: a) The assemblage of fine wares includes also some third Mil. pottery. b) The fine wares were the major reason for an early second mil. date

EASAA 2005

Handbook of Papers and Panels

A marble human head from Jiroft, South- East Iran

Morteaza Hessari: National Museum of Iran & Nima Bagheri Tadi: Ph.D candidate, University of Hamburg

Jiroft is located in Kerman Province, south-east Iran. The site of Jiroft is one of the most important sites for the knowledge of the south-east Iranian culture or Jazmurian culture Province.

The marble Columns paired have been found at Shahdad, Tepe Yahya and Bactria, Archaeologists have only occasionally found fragments of human marble sculpture. The present paper presents a short outline of head types from southeast Iran and west Afghanistan and Indus culture region. In this respect, similar parallels have been traced with south Bactria. (North Afghanistan) The tradition of their manufacturis is traced back to the third Mil. B.C .The marble Head comes from assemblages of Jirofts Archives. The marble head is not published yet. We will see the direct interaction between the cultures of the Jazmurian region and Central asia.

Shahr-e Babak petroglyphs, Kerman province, South-East Iran

Morteaza Hessari: National Museum of Iran & Abolghasem Hatamy: Ph.D candidate, University of Iran

The Shahr-e Babak rock carvings were found on our survey in 2004. South-Eastern Iran is bound by high mountains. The mountains give very little passage at the Baluchi frontier. The pictograms were drawn on the grey and black rock. They are of schematic form and are drawn by the techniques of digging and engraving. We discovered many new engravings- single or in the shape of multiengraved compositions Animal motifs are dominant among those represented in the earliest prehistoric petroglyphs. A group of engraving displays a probably Eurasian animal style. Another group of engraving reveals its origins in the general area of Iran through ornamental motifs.

The economic role of complex societies of southeastern Iran during the third millennium B.C.

Mehdi Mortezaavi: Associate Professor, University of Zahedan

Soft-stone weights from Jiroft, south-eastern Iran

Morteaza Hessari: National Museum of Iran & Abolghasem Hatamy: Ph.D candidate, University of Iran

Jiroft is located in the southern province of Kerman and came into the spotlight some years ago when extensive illegal excavations and plundering of the invaluable historical items of the area by local people surfaced. The Jiroft culture prospered along the 400-km-long Halil Road.

We shall investigate the assemblage from Jiroft with respect to material from other sites in Iran, Mesopotamia and central Asia and we will see which mathematical system was used. Weights and measures were among the earliest tools invented by humans. Primitive societies needed rudimentary measures for many tasks. The definition,

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Handbook of Papers and Panels

agreement and practical use of units of weights and measures have played a crucial role in human endeavour from early ages up to this day.

Our present knowledge of early weights of Jiroft comes from published and unpublished material from Jiroft. We have a considerable number of weights that have survived from the third Mill.B.C to the early second Mill. B.C.

The settlement pattern of Bard Sir Plain from prehistoric to Islamic period

Alireza Khosrowzadeh: Research Centre in Iranian Cultural Heritage, Zahedan

The first season of archaeological survey of the Bard sir region was fulfilled during Oct-Des 2003. Totally, 97 sites were recognized, recorded, and surface collected, of which the earliest one dates to the Middle Palaeolithic.

The prehistoric settlement of the surveyed area usually located along or near to the Chari and Lalezar Rivers. The Iblis 0 and I periods, of regional cultural sequence established by works of J.Caldwell in 1960, show the minimum numbers of the settlements and the Iblis III period Maximum numbers. With beginning of the Proto-historic period in the Bard sir region (periods IV and V), we see sudden increase in the number of the sites, hence the population. It seems that in this period the interregional contacts increased. In later periods, Iblis VI and VII, the number of settlements drop dramatically. Preliminary analyses of the settlement patterns show that the Achaemenid and Parthian sites had not high dependence on the perennial and seasonal streams. This observation suggests that during those periods they could conduct water from distance, presumably by digging qanats. During Sassanid time, the number of settlement increases once again, and in the early and middle Islamic period they reach to maximum number from the earliest times. In the Islamic period most of the population concentrated in a few urban centres

Recent archaeological surveys and excavations in Bazman Region, Iranian Baluchistan

Morteaza Hessari: National Museum of Iran; Mohammed Heidari & Hassan Akabri: Research Centre in Iranian Cultural Heritage, Zahedan

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PANEL: Technology, Regional Interaction and the Indus Civilisation (Tuesday July 5 9.30 – 5.00)

Convenors: Prof. Mark Kenoyer (University of Wisconsin-Madison) & Dr. Rita Wright (Department of Anthropology, New York University)

This session will focus on the results of recent studies on Indus technology and regional interaction. In the absence of written documents, detailed analyses of technological processes, distribution of crafts at a site and changes of technology over time provide the most accurate information of socio-economic and socio-political organization of Indus settlements. A list of participants and what they will potentially discuss is provided below. This combination of papers will cover the major sites of Harappa and Mohenjo-Daro as well as some of the smaller sites that have been the focus of recent excavations and analysis.

Precursors to urbanism in Beas regional settlements

Rita Wright: Department of Anthropology, New York University, USA

The discovery of regional settlements near the major city of Harappa provides a new perspective on urbanism for this region. Recent analyses of the ceramic corpus from survey sites along the now defunct Beas River indicate a longer period of rural occupation than previously assumed based on earlier surveys. Sites featured in this analysis were sampled for five to ten percent of their remaining surface area, and diagnostic ceramics were recorded in detail. The information collected has been used, in this study, to define the relationship between Urban/Harappan occupations and a continuous sequence of occupation from the Early Harappan/Kot Dijian to the Urban/Harappan. There also are indications that some of the Beas settlements were settled even earlier during the Hakra/Ravi phase. This paper presents the evidence for Early Harappan/Kot Dijian and Hakra/Ravi ceramics documented to ascertain the relationship between similar levels of occupation at Harappa. Its principal goal is to better understand the relationship between rural settlement patterns and precursors to urban expansion of Harappa during the Urban/Harappan.

Specialized craft production and trade between periphery and core area sites from Hakra to Harappan period: a view from the Thar Desert

Qassid Mallah: Department of Archaeology, Khairpur University, Sindh, Pakistan

It is fairly recent that archaeological discoveries from Thar Desert have been made; until now more than 65 sites have been recorded and research is still continued. The sites initially analyzed chronologically are associated with Upper Paleolithic period to onwards. The discussion for present paper is based on the data set that comes from surface analysis of sites. This data set is collectively consisting of the pottery, stone tools, metal objects and various kinds, of beads, bangles and other cultural material. Were all these specialized craft items produced in Thar Desert and distributed locally? Or, was there an emergence of any kind of economic interaction system? This paper examines the economic interaction network system occurring between the peripheral settlements of Thar and the core area region(s) of Indus Basin. More clearly, the interpretations will be made asking pivotal question, which exotic commodities were received in the Thar from craft communities in the core areas of the Indus during the

EASAA 2005

Handbook of Papers and Panels

Hakra through the Harappan Period. Conversely, whether or not the Thar communities provided raw materials or finished items that were traded to the urban centers. The larger question that I am investigating is the role of the peripheral communities in the growth and development of first urbanism in Indus valley. The archaeological data has been documented and is curated in the Department of archaeology Shah Abdul Latif University Khairpur Sindh. The archaeological interpretations will be based on interpretive models developed through my ongoing ethnoarchaeological documentation from Thar region.

Kot Diji Phase reconsidered: a preliminary report

Hideo Kondo, Yoshitaka Rojo, Akinori Uesugi, Atsushi Noguchi.

Hiroshi Noguchi and Manabu Koiso, Tokai University

To this day, process of how exactly the Indus Civilization came into existence remains a question. The key factor lies in a group of pottery known as Kot Dijian that spread in Sind, Punjab and some parts of NWFP adjacent to the Indus plain that represents the Kot Dijian phase (sometimes called the early Harappan phase) or the formative phase of the Indus Civilization.

The major aim of the present study is to understand more about the formation process of the Indus Civilization, by focusing on complex regional interaction that is reflected in manufacturing techniques of not only pottery but also of stone tools, To start with, the excavated material of Gumla and Rehman Dheri kept in the University Museum or Peshawar University is studied.

In case of pottery, not only morphology but also various techniques such as scraping, smoothening and shaping of rim, body and base as well as painted decorations and motifs can be analyzed more in detail. At the same time, relation between various techniques and respective types of pottery can be pursued chronologically (comparison with that of Harappan pottery) as well as regionally with other various sites of the same period. Any continuity or discontinuity of various factors may indicate certain changes in social system, in which potter constitute a member.

On the other hand, reassessment of production process of blade industry (blades, micro-blades, their cores, products made from blades such as lunate; in particular) is the main issue for the study of stone tools. Technical attributes, such as condition of platform, percussion point and bulb, angle between core and debitage etc. can be compared. Furthermore, comparison of technical characters of each industry will offer valuable data [or discussion regarding the organisation of blade production system of the Kot Dijian phase.

Contributions of Baluchistan in the Formation of the Indus Civilisation

Dr. Fazal Dad Kakar, Director-General of Archaeology & Museums, Government of Pakistan

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Handbook of Papers and Panels

Some important aspects of craft production and organization in Harappan tradition of Gujarat

Dr. Kuldeep Bhan: Department of Archaeology and Ancient History, MS University, Baroda

The purpose of this paper is to discuss some of the aspects of craft production and organization during Mature Harappan Phase in Gujarat which corresponds with Integration Era (2600 to 1900 BC) as defined by Kenoyer (1991) & Shaffer (1991). The data for presentation will be mainly derived from three recently excavated sites – Bagasra, Nagwada and Nageshwar. Nevertheless the data obtained from other excavated sites of Gujarat will be also viewed in conjecture, in order to have a holistic view of the organization and production of stone bead making, shell working and faience production. The interpretations are based on the rigorous recording and analysis of the archaeological data and the application of specialized ethnoarchaeological and experimental studies that has led to the development of more appropriate interpretive models

A possible organizational pattern emerges from the available evidence, since we have detail information now available on the stone bead and shell working from the above mentioned sites of Gujarat. . Both Bagasra and Nagwada have revealed intensive and efficient manufacturing evidence and show very specialized techniques were used in the transformation of semiprecious stones into beads. A comparison with our ethnoarchaeological studies from Khambhat has indicated that the Harappan stone bead industry of Gujarat was more flexible, independent form of production as compared to centralized production, controlled by the political élites represented by manufacturing center of Chanhu-daro (Kenoyer et. al. 1994; Vidale 2000: 58). While, the analysis of shell industries has revealed three levels of production with sites like Nageshwar and Bagasra at the top of hierarchy.

Indus technology and interaction networks: textiles, transport and long distance trade

Prof. J. Mark Kenoyer: Department of Anthropology, University of Wisconsin, Madison, USA

This paper will present an overview of recent research at Harappa that is providing new information on the development of a range of Indus technologies, and their role in the emergence of urbanism. The study of textile production and its implications for the emergence of high value commodities for local and regional exchange will be explored. A quantitative and typological analysis of toy terracotta carts and wheels, and models of boats will be used to discuss the evolution of transport mechanisms that would have been necessary for regional and long distance trade. And finally, a discussion of marine shell technology and trade will be used to explore the nature of long distance trade. Together, these data reflect the dynamic relationship between technologies practiced at inland centers such as Harappa, and the emergence of local, regional and long distance trade.

EASAA 2005

Handbook of Papers and Panels

Evidence for early silk use in the Indus Valley'

Irene Good,

Peabody Museum, Harvard University, USA

New evidence is emerging for the early use of silk in the Indus Civilization. Several textile and thread samples from recent excavations at Harappa reveal the practice of sophisticated fiber processing techniques, including sericulture, during the mid-third millennium BC. Current study of thread fragments discovered inside microbeads from Chanhu Daro indicate that they also contain silk. Although it was in China that the silkworm *Bombyx mori* was domesticated, and the process of de-gumming is known to have developed there at some point during the second half of the third millennium BC, this silk moth is derived from a species native to northern India, Assam and Bengal, known as *Bombyx mandarina* Moore. Moreover, there are several other economically viable silk moth species of the SATURNIIDAE family, namely *Antheraea pernyi*, *A. mylitta*, and *A. Assamensis*, among others, some of which are also native to South Asia. Until now, very little reliable evidence has been put forward for early silk use in regions outside of China. Study of ancient silk fragments based on morphological observations is hampered by poor preservation. However, silk is a highly crystallized polymer protein, which at the molecular level resembles cellulose, because of the highly repetitive sequence of molecules, which make up the chains, making it conducive to study in a degraded state. Silks from different species are biochemically distinct from each other, primarily due to the different composition and ratio of amino acids. The employment of biochemical analyses, discussed in this paper, has offered definitive confirmation of silk in archaeological samples, as well as the identification of the silk moth species from which they derived, enabling a more accurate view of the nature and extent of early sericulture in Asia, and of the production and exchange of this important commodity.

Indus rock and mineral trade networks: the view from Harappa.

Randall Law: Department of Anthropology, University of Wisconsin, Madison, USA

This paper will present the results of a recent series of geochemical studies in which several varieties of archaeological stone from the site of Harappa (ca. 3300 to 1700 BC) were compared to raw material sources in South Asia and elsewhere. Alabaster artifacts were examined using combination of strontium and sulfur isotope analysis. It was determined that sources in northern Baluchistan as well as the Salt Range, Punjab Province were exploited for that material. Using trace element analysis yellow banded limestone artifacts were compared to sources in the Jaisalmer region of Rajasthan and Kutch, Gujarat. It now appears very likely that many of the banded limestone artifacts at Harappa derived from geologic formations in the vicinity of Dholavira in the Great Rann of Kutch. Isotopic analysis of lead artifacts indicates that sources north of Harappa in Jammu and Kashmir were exploited along with lead deposits in southern Baluchistan and, perhaps, Oman. Instrumental neutron activation analysis (INAA) was used to compare carnelian artifacts with sources in Iran and various locations in Gujarat. While it was possible to verify that Gujarat was the primary source of Harappan carnelian, it appears that famous deposits in the Rajpipla region may not have been the ones actually exploited during that period. Several varieties of chert, as well as vesuvianite-grossular garnet, were also analyzed using INAA. The results of those

EASAA 2005

Handbook of Papers and Panels

studies, along the others, have provided significant new insights regarding the pathways through which Harappans interacted with different resource areas around the greater Indus Valley region and beyond. While many of the assumptions made by previous scholars about rock and mineral source utilization and trade networks during the Harappan period have been confirmed, others may now need to be significantly revised.

Development of metallurgy and other technologies in the Kopet-Dagh Piedmont Strip (c. 4000-2000 BC)

Massimo Vidale
IsMEO, Rome

Surface surveys carried out by the IsIAO teams on the surface of the sites of Ilgynly-Depe (Namazga II, about 3800-3200 BC) and Altyn-Depe (Namazga III-V, 3200-2000 BC) allowed the gathering of new substantial evidence on the evolution of early craft technologies in southern Turkmenia. The distributional patterns observed on surface were coupled with an ongoing stage of archaeometric research. We are now able to outline a picture somehow different from that originally proposed by Soviet archaeologists, where the peak of technical complexity is reached during the 4th millennium BC, and not in the second half of the 3rd millennium BC. Other results include a reconstruction of a generalized transition, in the sequence considered, from copper-lead based to copper-arsenic alloys; at Ilgynly, an early copper beads making process, together with indicators of gold and silver ornaments production. The picture of copper-based metallurgy gathered at Altyn-Depe and already outlined in a previous SAA conference is completed by the archaeometric study of a cluster of 10 copper melting crucible fragments, actually a rare find in the palaeotechnological picture so far available for early South Asia.

From the 7th to the 2nd millennium BC in Balochistan (Pakistan): the development of copper metallurgy before and during the Indus Civilisation

Benoît Mille & David Bourgarit: Centre de Recherche et de Restauration des Musées de France, UMR 171 du CNRS; Jérôme-F. Haquet & R. Besenval: Musée Guimet, UMR 9993 du CNRS

The study of metallic artefacts coming from excavated sites of Mehrgarh and Nausharo led us to set about characterization analyses. Therefore, a large-scale research program on copper metallurgy of the Indus Civilisation was initiated with the C2RMF. To date, more than 120 metallic artefacts uncovered by the French archaeological Mission (headed by J.-F. Jarrige) have been studied. The whole chronological sequence has been sampled, from the first metallic objects in Neolithic and Chalcolithic levels (7th to 4th mill. BC) to the Indus periods (3rd mill. BC, beginning of the 2nd). The combined use of elemental analysis (ICP-AES) and metallographic examination on closely related metallic artefacts allows us to reconstruct the evolution of copper-based alloys before and during the rise of the Indus Civilisation for the first time in that region.

The first metallic objects came from a burial excavated at the Neolithic site of Mehrgarh, dating from the first part of the 7th millennium BC. Hammering of unalloyed copper was the exclusive technique used to manufacture these small ornaments. Their

EASAA 2005

Handbook of Papers and Panels

discovery suggests that the first metallic objects found in this area are more than a millennium older than previously thought.

But Chalcolithic metallurgy is even more surprising: our investigations reveal the contemporaneous emergence of casting (lost-wax type process) and alloying (copper-lead alloys) as early as the 5th millennium BC. These techniques permit complicated shapes to be formed, yet the objects discovered are predominantly ornamental and small-sized. Generalised use of metal for tools and weapons is not encountered until the second half of the 4th millennium BC: for example, blades, points, chisels and axes which are generally made of arsenical copper. Several examples of casting with moulding techniques and intentional alloying provide evidence that Balochistan had by this time developed some of the most innovative Chalcolithic metallurgy ever known. Moreover, its dynamism should be emphasised, as revealed by the archaeometric approach and typological observations, which have provided many examples of intensive contact with Mesopotamia and Central Asia.

With regard to the Indus periods, the range of objects available from Nausharo in the Kachi plain is - compared to the previous period - much greater. However, all these metallic finds (mostly utilitarian tools and weapons) were unearthed from dwelling areas. At this site no burials were discovered, thus eliminating the possibility of finding other kinds of metallic artefacts such as those left as grave goods. The apparently monotonous picture of Indus metallurgical production, mainly using arsenical copper, should be put into correct archaeological context. As is the case in other areas of the Middle East throughout the third millennium BC (e.g. Mesopotamia, Oman), bronze is only used very sporadically.

The procurement of copper during the Harappan Period: New evidence from Pb isotope analysis

*Brett C. Hoffman, Randall Law, Kishore Raghubans, and James H. Burton
Department of Anthropology, University of Wisconsin, Madison, USA*

The procurement copper by peoples of the greater Indus Valley region during the Harappan Period (ca. 2800-1700 BC) has been the focus of much scholarly attention. In this paper we will describe a new attempt at copper artifact-to-ore source correlation for this region and time period.

Lead (Pb) isotope analysis is a highly effective technique with which to characterize metal artifacts and ore sources. For this study, published Pb isotope data for copper bearing sulphide deposits in Oman and Iran was first compiled. Using an inductively-coupled plasma mass spectrometer (ICP-MS), new Pb isotope analyses were then conducted on samples from previously uncharacterized copper deposits in Baluchistan, North Waziristan, and the Himalayas. Isotope analysis was performed as well on slags from old workings in the copper-rich zones of northern Rajasthan near Khetri and the proto-historic site of Ganeshwar. A set of archaeological samples from the site of Harappa was also analyzed and compared to isotopic properties of the geologic samples and slags. The archaeological set consisted of raw ore (chalcocite and malachite) fragments, which perhaps is the best form of copper to study when attempting artifact-to-source correlation as problems stemming from the mixing of material from multiple

EASAA 2005

Handbook of Papers and Panels

sources are obviated. The results of these new analyses are beginning to shed new light on late prehistoric copper sources and trade networks in the Indus region.

Harappan debitage analysis: discriminating primary craft production activity from secondary deposition

Gurudev Das Allin

Department of Anthropology, University of Wisconsin, Madison, USA

The determination of primary activity areas is extremely important for understanding the nature of craft organization in urban centers such as Harappa. One of the best indicators for determining the location of primary lithic processing in bead making or stone tool manufacture is the presence of microdebitage along with other sizes of lithic debris. This paper will present the results of lithic analysis and microdebitage analysis in several different potential craft areas of Harappa dating from the earliest Ravi Phase (3900-2800 BC) as well as the Harappan Phase (2600-1900 BC). An evaluation of various analysis techniques applied to large assemblages of lithic debitage and microdebitage will be discussed. Due to the diversity of materials and the different types of craft production processes, it was necessary to use several different approaches to reliably discriminate between primary craft production areas and secondary deposits of debris. The results of this research have shown that some areas with considerable quantities of lithic debris are in fact secondary deposits while in other areas, specific strata can be associated with primary flake and blade manufacture, stone drill production, bead drilling and different stages of stone bead manufacture. This research demonstrates the importance of using multiple levels of debitage analysis, and the combination of both quantitative and qualitative approaches to better understand the nature and organization of lithic craft production.

The Lothal Sealings: evidence for administrative technology and procedures from an Indus Civilization site in Gujarat

Dennys Frenez

Department of Archaeology, University of Bologna, Italy

The productive systems of the Indus civilization were probably the most complex known for the 3rd millennium BC, adapted to and serving a geographical area larger than that of any other Bronze Age civilization. Socio-economic structure seems further complicated by the apparent polycentric organization of production (particularly of craft), distribution and exchange: currently available evidence, in fact, does not suggest managing by single central agencies such as temples, palaces or major storage facilities. Given the complexity of these systems, the anomalous low number of clay sealings so far found in Indus sites represents a problem, since it is difficult to imagine how production was administered without continuous recourse to records of trading transactions, contracts and deeds, which in contemporary civilizations often closely depended upon the use of sealings and other specialized administrative media. The most famous exception is the approximately one hundred terracotta sealings discovered at Lothal decades ago by S.R. Rao, still poorly studied despite the fact that they still represent the most relevant example of administrative technology for the Indus Civilization. This paper provides the first detailed typology and functional study of this important class of artifacts, based on a physical re-examination of the sealings and on

EASAA 2005

Handbook of Papers and Panels

new high-resolution photographs, with greater attention paid to the rear impressions. I outline similarities and differences with contemporary Near-Eastern sealing systems and discuss the role apparently played by Lothal traders in the wide-range commercial networks of the Gulf Region.

The Role of Standardized Measurement Units in Indus Period Technologies, Architecture, Town Planning, Trade and Commerce

Ghulam Mustafa Shar: Department of Archaeology, Khairpur University, Sindh, Pakistan

This paper will focus on a discussion of standardized measurement units used in the Indus region and their role in various types of crafts. There is little question that the Indus craftsmen had developed a high level of precise measurement and the discovery of a ruler at Mohenjo-Daro led E. J. H. Mackay to write "it shows the people of Mohenjo-Daro to have reached an advanced stage of mental development, with capabilities of precision and mathematical accuracy in thought and work."

The discovery of a "ruler" from Lothal and more recently from Laken jo Daro, Sindh, demonstrate the indigenous origin of this measurement system and also the presence of slight regional variation. The Lakhen jo Daro ruler is particularly important because of its association with other crafts such as semi-precious bead making and copper working. A hoard of copper inscribed tablets, beads, sheets, human figurine as well as lapis lazuli and faience macro and micro beads were also discovered at the site in large numbers. Obviously the artisans working at this important workshop had precise measuring tool to determine and control the dimensions of manufactured products as desired in markets.

The accurate measurements specify the true value of the object. The standardization of measurement allows workshops and individual craftsmen to produce goods that will be of value both locally and in long distance trade. The measurement technology and proportions derived from these measurements also appears to have been used in the construction of the houses and the layout of cities. In my study of the Indus measurement tradition. I also take into account traditional measurement systems of Sindh and historical South Asia in order to develop more appropriate reconstructions of the Indus period length measurements and their application.

Manufacturing ideology: The construction of the anthropomorphic terracotta figurines from Harappa

Sharri Clark: Harvard University, Cambridge, MA, USA

Many interpretations of the anthropomorphic terracotta figurines from the Indus Civilization have a long history, some formulated in the reports from the earliest excavations. For example, it has been suggested that the construction of the anthropomorphic terracotta figurines from Harappa indicates that the Indus figurines were a local manifestation of a broader ancient Near Eastern tradition. It has also been suggested that some of the female figurines with panniers attached to the headdresses, which have been interpreted as receptacles for burning oil or incense, functioned as anthropomorphic votive lamps. I re-examine the anthropomorphic figurines in light of

EASAA 2005

Handbook of Papers and Panels

recent research at Harappa and re-evaluate some of the technological and ideological implications of their construction, based upon visual examination of the figurines, as well as radiographic and spectrographic analyses of selected figurines. I also evaluate through compositional analyses whether the black deposits inside the panniers attached to some of the female figurines' headdresses are evidence of burning as suggested by Ernest Mackay, an idea which has never been empirically tested. I show that the construction of the Indus figurines – from the unusual construction from two coils to the choice of pigments to the representation of sex/gender -- is distinctly different from that of other ancient Near Eastern figurines in certain respects that may reflect ideological, rather than (or as well as) technological choices.

Reconsideration of 'Late or Post Harappan Phase' in northern part of the Indian Subcontinent

Akinori Uesugi: Kansai University, Osaka, Japan

In this paper, I will discuss the Late or Post Harappan Phase from the beginning of the second millennium BC down to the appearance of the Painted Grey Ware in North India. The previous studies on this subject have tended to stress either a cultural continuity or a gap between the Harappan Culture and the Early Historic Period. However, most discussions were based only on the site-distribution in various regions in the northern part of South Asia. I will pick up pottery evidence which is one of the most available indicators of 'Late or Post Harappan Cultures', as the subject of analysis, and will offer a picture of a cultural dynamism in the period after the collapse of the Harappan Urbanism.

As a conclusion, I will point out the necessity of an interpretative framework which can explain more dynamic cultural transformation after the decline of the Harappan Urbanism. In my hypothetical view, although the decline of a strong cultural integration system of the Harappan Urbanism brought a diversification and localisation of regional societies and cultures, inter-regional cultural contacts and relationships were maintained over the northern part of the Indian subcontinent. In this process, social and cultural system was reorganised in the region, and in the later half of the second millennium, The Gangetic plains became a focus of cultural interaction with the appearances of the Painted Grey Ware which was possibly generated under the cultural interaction over the western half of the northern half of the subcontinent, including the western half of North India (the Bala Culture, the Ochre Coloured Ware Culture), Gujarat and Balochistan, and the Black-and-Red Ware of a chalcolithic tradition in the eastern half of North India. This reorganised cultural interaction system in the Gangetic plains led to the development of the second urbanisation in the region during the early half of the first millennium BC. In this sense, the previous view that stressed either a continuity or a gap is not appropriate, and hence a perspective of more dynamic cultural transformation should be emphasized and refined. In this framework, the problem of the advent of the Indo-Aryan speakers can be hopefully explained.

EASAA 2005

Handbook of Papers and Panels

PANEL: The Temple in South Asia (Tuesday July 5 9.30 – 5.00)

Convenors: Dr. Adam Hardy (University of Cardiff) & Dr. Crispin Branfoot (De Montfort University)

Early Architecture and its Transformations: Kanganhalli

Michael W. Meister: University of Pennsylvania

The recently excavated Buddhist stupa at Kanganhalli, Karnataka, provides, among many important narrative panels from the first centuries BCE and CE, unique visual evidence for forms of early built architecture in South Asia. Within the visual idiom of Kanganhalli, what you see is what was built, unmediated by the iconic transformation of later stone representations and replicas that move away in significant ways from the early impermanent architecture of India. A preliminary report on the site and sculptures of Kanganhalli was given by the Director General of the Archaeological Survey of India at the 15th conference of South Asian Archaeology in Leiden in 1999. It is important now to illustrate the depth of new evidence for architecture this new material provides.

New evidence on early architecture of Bengal

Prof. Dr. Enamul Haque: The International Centre for Study of Bengal Art, Dhaka

The story of architecture in Bengal covers a long period of more than two thousand years. Largely a product of the soil, it however maintained a close interactive contact with development of architecture in other regions of the subcontinent. Although Bengal is found to have made important contributions, the fact is hardly recognised in the standard works on Indian architecture. Not unnaturally, even if some mention has been made, such references remain embedded in publications of comprehensive character that are concerned with various aspects of life and culture of Bengal or India. Admittedly, there is an extreme dearth of ancient monuments in Bengal, especially of the Early Historic phase. Our scanty knowledge of early human settlements in Bengal does not permit us to visualise precisely the building activities at the dawn of its history. The archaeological excavations in Bengal so far have revealed structures generally dated from the Gupta period. But recent discoveries of terracotta plaques from Chandraketurah, Mahasthangarh and other places have produced substantial evidence to have an idea about the lost and forgotten architecture of ancient Bengal. On the basis of such finds it has been possible to identify free standing columns, pavillions, pavillions with vault, toranas, vedikas and curved roofs with finials on the top, all dated between the Sunga and the Gupta period.

Shaivite temple at Kashmir Smast: study and analysis

Dr. M. Nasim Khan: Department of Archaeology, University of Peshawar

Recent advance in archaeological research in the region of ancient Gandhara has been the focus of scholars interested in the political and religious history of the area. One of the latest discoveries is the identification of Kashmir Smast as the earliest Shaivite monastic establishment in the region. The archaeological investigation at the site and the chronology established on the basis of its antiquities show that in different periods Kashmir Smast has been a convergence point of different dynasties regarding their religious belief. Besides the un-precedental discovery of antiquities, the internal

EASAA 2005

Handbook of Papers and Panels

landscape of the site is one of the best examples of well-organized system of town planning in the area. Different establishments at the site and their strong association vis a vis others is an important feature of the site. Although damage to some of these religious structures by clandestine activities is a great setback for the art historian there still remain some monuments to be scientifically studied and properly preserved. One of these monuments is the main Shaiva temple, the only of its kind in Gandhara that can be dated back to 4th/5th century AD. Here we are making an effort to reconstruct the monument and its history and to understand its role in the internal landscape of the monastic area.

Newly Discovered Temple Remains at Ramgarh

Anne Casile: Universite de Paris III

On the hill of Ramgarh, near Badoh-Pathari (Madhya Pradesh) was conceived a religious settlement of the Brahmanical faith, dating to the early 6th century. During my recent fieldwork I discovered a group of temples on the top of the hill. These are unfortunately in a very ruinous condition, mostly reduced to mounds. Three big sculpted niches showing interesting images count among the vestiges, along with a few scattered architectural fragments. The association of these temples with the caves and images carved into the hillside, reminds us of Udayagiri. Remains of a hydraulic structure (dam) can be observed from the landscape configuration downhill, and are to be considered in relation to the religious complex. This paper will report briefly on the remains on the hillside, including the recent discoveries, and will address various questions regarding the landscape setting of these structures, comparing the settlement with other complexes in the region (notably Udayagiri).

New researches on Paharpur Buddhist monastery (North Bengal)

Jean-Yves Breuil: INRAP (National Institute for Research and Preventive Archaeology), France, UNESCO Consultant in Bangladesh

Dr. Sandrine Gill (University Sorbonne Nouvelle, Paris III, France), UNESCO Consultant in Bangladesh

Paharpur, the ancient Somapura vihara founded in North Bengal at the end of the 8th century by Dharmapala, was extensively excavated and partly conserved in the 20s-30s mainly under the supervision of K.N. Dikshit. Its inscription on the World Heritage List in 1985 is based on the originality of the cruciform central shrine, considered as a prototype, and its exceptional collection of 2800 terracotta plaques.

Since the birth of Bangladesh in 1971, a few excavations in the monastery area led to the discovery of a monumental bronze Buddha image and occupation levels earlier than the main temple. Moreover, exploration in the surroundings and discovery of contemporary sites including Halud Vihara and Jagdal Vihara provide a new perception of Paharpur in its regional context. These new evidences, combined to the recent rediscovery and safeguarding of more than 1700 glass photographs taken by the Archaeological Survey of India - Eastern Circle in the 30s and largely unexploited (less than 16% published) prepare the ground for a better and new understanding of the site under different angles: pre-monastic history, style and iconography of the terracotta plaques, spatial organisation of the site (relations between the main shrine, the

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Handbook of Papers and Panels

monastery, and subsidiary structures), transformation of the site throughout the centuries, adaptation of the builders to environmental constraints and relations between Paharpur, its environment, and contemporary sites.

A study of the development of the Vihara Archetype in medieval Bengal, on the basis of the archaeological findings.

M. Mizanur Rashid and Prof. Heng Chye Kiang: Centre for Advanced Studies in Architecture, National University of Singapore.

The archaeological surveys of the last century in the region of Bengal have revealed traces of numerous Buddhist religious structures from 5th to 11th century A.D. The present physical conditions of most of the structure are so poor that it is almost impossible to perceive their architectural characteristics. However there are a significant number of structures, which are recognizable at their foundation level after archaeological excavation and their layouts, architectural plans and two-dimensional spatial organizations have been documented.

This paper focuses mainly on the Buddhist Viharas that had been constructed during the period Pala dynasty when Buddhist architecture has experienced its peak in Bengal through the manifestation of and mega structures like Sompur Mahavihara at Paharpur and Salban Vihara in the Lalmai-Mainamati region. This study will use the archaeological resources, mainly drawings and artifacts, to understand the architectural characteristics of the Buddhist monastic architecture that has been developed in Bengal in this period. Major objective of this paper is to respond the existing knowledge gap regarding the morphological development of the Vihara archetype in Bengal through the ages. It will further attempt to explore the general architectural features of the planning of a Bengali Vihara type that have been developed during this period due to the internal socio religious and political condition.

The cruciform temple type of the Buddhists in comparison with that of the Hindus

Dr. Falk Reitz: Freie Universitaet Berlin

The Buddhist temple complex within the Somapura Mahavihara (Sanskrit: great monastery of the moon locality) in Paharpur (Bengali: hill locality) is the consequent result of an architectural evolution which took place parallel to that of similar Hindu structures. In the vastushastras of the Hindus the cruciform type of temple with four doors/niches in the cardinal directions and a central garbhagriha is known as sarvatobhadra temple.

The paper will describe the theoretical concepts of the sarvatobhadra temple within the Hindu and Buddhist canons of architecture and will compare both concepts. Furthermore, the Buddhist monuments in Paharpur, Mahasthan and Mainamati will be compared with cruciform Buddhist structures in Uttar Pradesh and Bihar as well as in Sri Lanka and Myanmar to find out regional variations of the same architectural concept. In the discussion we shall also focus on the problem of chronology, especially which of the two communities developed the concept first.

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The Ritual Function of the Decorative Portals of the 8th - 10th Century in Chamba State and the Himalayan Area. The Archaeological Evidence.

Verena Widorn: University of Vienna

The early Hindu temples of Sakti Devi in Chatrarhi (Chamba) and Mirkula Devi in Udaipur (Lahaul) as well as the Lo tsa ba lHa khang in Ribba (Kinnaur) depict an uncommon feature in the appearance of their architectural structure. All these temples are distinguished by extensive wooden carvings on the facade of their inner sanctum. This beautiful, predominately figurative, decoration of the garbhagṛha stands in stark contrast to the rather unadorned outside entrance doors. This feature is never found in the extensive Buddhist or Hindu architecture of the region in subsequent centuries.

Numerous studies have already demonstrated that prior to the late 10th centuries no differences in the plan of Buddhist and Hindu shrines can be identified. Therefore it is even more surprising that this phenomenon contrasts with the only slightly later facades of diverse Buddhist shrines in the neighbouring regions of the Western Himalaya, such as the richly carved wooden portals of Tholing and Kojarnath (West Tibet) or Alchi (Ladakh).

The question arises if there is a sectarian reason for this development or if the answer can be sought in the architectural development of these monuments. The presentation will provide information about the archaeological history of these temples and show possible explanatory models that include considerations of a ritual function for this unusual architectural form.

The Vault of Heaven*: Some Observations on the Function and Symbolism of Ceiling decorations in Indian Hill Architecture

Christiane Papa-Kalantari: University of Vienna

The symbolism of constructed buildings in India, in the vertical direction derives from the concept of the axis mundi and the tree in Hindu mythology as the axis mundi. Stella Kramrisch has pointed out that wood is the substance of this ancient concept. Although the symbolism of the Hindu Temple in India has been extensively studied the iconography associated with the decoration of the temple ceilings has been, until now, not sufficiently examined.

During the time of the newly established kingdoms in the Indian Himalayas (10th to 13th centuries) the Indo-Tibetan Buddhists constructed their simple and austere sacred monuments with the indigenous materials of mud bricks, rubble stones and timber adapted to the harsh climate. These Buddhist temples continued in the rich tradition of wooden temple architecture, namely the Hindu mandapa temples where pillars support the wooden ceilings. However a completely new concept has been incorporated into the symbolism of sacred architecture of the Indian Himalaya that is the rich and varied textile culture: The use of textiles has a special rank in the evolution of the indigenous hill architecture that is deeply linked with international textile trade.

The question of the function and symbolism of painted ceilings as a part of the iconography and the ritual whole of the Indian Hill Temples has not yet been posed. A preliminary analysis will be presented in this talk based on ongoing conservation

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analysis and praxis in Nako, as well as fieldwork and Tabo (both In Himachal Pradesh) and Alchi (Jammu & Kashmir) during the last 4 years.

*the term and concept of this metaphor has been discussed by D.Klimburg-Salter in her article "Dung dkar/ Phyi dbang, West Tibet, and the Influence of Tangut Buddhist Art" In: *East and West*, Rome 2001.

Defining the sacred space: Painted Ceilings in Dungadkar and Tsaparang in Western Tibet

Helmut F. Neumann

Painted ceilings are found in most Central Asian cave temples, from Bamiyan in the West to Dunhuang and Yulin in the East. They are in many instances an essential feature for defining the sacred space.

It is therefore not surprising that painted ceilings also play an important role in the three caves of Dung-dkar (end of 11th/12th century) in Western Tibet. The paintings on the ceilings of the three caves are different from each other. The ceiling of one of the caves, which consists of a three-dimensional mandala of the Dharmadatu Vagasvara, was discussed at the SAA conference in Rome (Neumann, H.F. *The 11th Century Wall-Paintings of the Rediscovered Caves of Dungadkar in Western Tibet in South Asian Archaeology* 1997, pp. 1383-1402, Rome 2000).

This paper will focus on the motifs and style of the ceiling of the other large Dungadkar cave, the cave with the lantern ceiling. This ceiling is particularly splendidly painted, with great variation comprising geometric and floral patterns as well as figurative motifs, especially human forms and real or mythological animals.

When in the time of the political and religious revival of Western Tibet in the 15th/16th century, major temples were built, the artists resorted to the great precursors of the 10th to 12th century for elements of both style and motifs. The panels between the ceiling beams, e.g. in the White Temple in Tsaparang contain motifs from the ceiling of the cave with the lantern ceiling in Dungadkar. The vocabulary of the painted ceilings in Tsaparang was, however, enriched by additional elements, particularly the Eight Auspicious Symbols and the inclusion of deities in circular arrangements resembling mandalas.

Part and Whole: the Story of the Horseshoe Arch

Dr. Adam Hardy (Cardiff University)

The paper attempts to throw some light on Indian temple architecture as a whole through the window of one small part, the 'chaitya arch' motif, in particular the *gavaksha* of northern or Nagara traditions, c. 6th-13th centuries. This is examined both as a hallmark of style and as an architectural element.

As an image of a gable, the horseshoe arch form is inherent in certain shrine forms and in the aedicules or shrine-images derived from these, which form primary components in the composition of more complex temple forms. A dynamic process of growth, often

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expressed through the relationships between such components, is at times (especially in 7th- to 8th-century Latina and Valabhi shrines) conveyed through patterns of relationship between *gavakshas* alone. Unfolding, proliferating *gavaksha* patterns suggest symbolic interpretations, as much as the representational and associational resonances of the form, as window and eye.

The way that the *gavaksha* form and *gavaksha* patterns evolve within a number of Nagara traditions is very characteristic of Indian temple architecture. Originally representational, the image is increasingly abstracted. Reflecting the kind of growth process that they themselves convey, the patterns unfold in a quasi-organic way, emerging, proliferating, fragmenting, re-merging. The individual motif is almost lost in a carved network (*jala*). The paper examines the grid structure that both generates *jala* designs and assists in their pertification.

Use of the Valabhi mode of the Nagara language of Indian temple architecture in Bengal during Pala Period (800-1200CE)

Dr. Ajay Khare, BIT MESRA, Ranchi, India.

Indian Temple Architecture is expressed mainly in two languages, which are 'Nagara' and 'Dravida'. While Dravidian language of temple architecture is seen only in the Indian peninsula, Nagara tradition is present in the Northern, Western and Eastern parts of India. There are three modes of the Nagara language of Temple Architecture; Latina, Valabhi, and Phamsana. The Latina and Phamsana modes are known in Eastern India in Orissan terms as Rekha and Pidha whereas the rare Valabhi mode is known as Khakhara. The early temple architecture (800-1200 CE) of eastern India finds expression mainly in Latina mode and we do not have many surviving examples of the other two modes of temple building from the early period. But from the architectural fragments of the Pala period, it is amply clear that Valabhi and Phamsana as mode of temple building were well known to the builders of Bengal and their use was also widespread.

The present paper highlights the use of valabhi mode of temple building in the temple architecture tradition of eastern India. In the beginning of the paper the latina and phamsana deuls are briefly explained while the valabhi deul is explained in detail indicating its oblong plan and distinguished mastaka with barrel vaulted elongated roof. It gives examples of valabhi deul used all over the eastern country mainly for Shakti shrines. The paper goes on to explain the use of aedicules in temple building and the use of the valabhi aedicule as khakhara mundi in Orissan temples. The paper makes use of the votive stupas and architectural fragments such as lintels where valabhi aedicules are used along with latina aedicules on the faces. The paper also identifies and lists the extant temples in Bengal where valabhi aedicules are used on the walls of temple i.e. mandovara. The paper analyses the underlying concepts behind that use and identifies the use of valabhi aedicule as essential characteristics of the temple architecture of Bengal. The spread of the use of the valabhi aedicule suggests its presence in Magadha and Orissa region but except for the Vaital deul and a few other shrines, the valabhi mode remains rare in use even in Orissan tradition. The paper will also analyse the absence of the valabhi mode in the later temples of eastern India when the latina and the phamsana modes continue to be built.

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Handbook of Papers and Panels

Architectural features of the surviving mediaeval temples in Maharashtra.
Dr. Gerard Foekema (Amsterdam)

In this talk I will present results of recent fieldwork in Maharashtra. Over a period of 25 years, fieldwork on old temples was carried out in many parts of India, but especially in Karnataka. This resulted in two large monographs, one called Hoysala Architecture, published in 1994, and another called Calukya Architecture, published in 2003. These books, in fact, are catalogues of the surviving mediaeval temples in the southern and northern halves of Karnataka respectively. A third monograph, now in preparation, will deal with the surviving temples in Maharashtra. Probably it will be called Hemadpant Architecture.

In the winters 2002/03 and 2003/04 fieldwork was focused on Maharashtra. About 100 mediaeval temples found here have been published before, but most of them superficially or only in passing. The writing of a catalogue with good illustrations was started in 2004 and will take several years. Many of the architectural features met with are shared with the temples of other regions and illuminate Indian temple architecture in general. Other features are specific for Maharashtra. A good example of a temple showing both common and regional features is the Siddhesvara-temple in Akola. Akola is a village in Ahmadnagar District and its temple was published earlier by Cousens (1931, page 53). Our paper will focus on this temple and notably on the following features:

1. The decoration of the elevation with architecture;
2. The occurrence of both stepped and square plans;
3. The occurrence of a second entrance into the cella.

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Cholas, Pandyas, and "Imperial Temple Culture" in Medieval Tamilnadu

Leslie C. Orr: Department of Religion, Concordia University, Montreal

The religious architecture and sculpture, the forms of temple worship, and the patterns of royal patronage and court culture of the ninth to thirteenth century in the Tamil country are almost invariably identified as "Chola" in both popular and scholarly circles. From the very moment of the demise of this dynasty, in the late thirteenth century, there has been a glorification of the Cholas -- by a series of claimants to their political and cultural legacy (from the kings of Vijayanagara to modern Tamil nationalists); in the Hindu sectarian traditions which celebrate the links between the Cholas and the great teachers, ritual practices, and sacred sites of the Tamil country; and by those in both India and the West whose acclaim of "Chola style" artistic productions has influenced iconography and temple-building, aesthetic judgements and art markets, and representations of Hinduism. The application of this blanket dynastic term not only obscures the importance of distinctive local and regional developments with respect to religion and culture, but masks the political complexity of this period -- during which any number of kings and chiefs successfully challenged Chola hegemony, and when the Cholas' neighbours to the south, the Pandyas, arguably had a greater claim to a truly "imperial" style. In this presentation I shall draw on literary, epigraphical and art historical materials to examine the "Chola-ness" of religious art and architecture, of courtly culture, and of temple life in medieval Tamilnadu.

Two Kalamukha Temples in Karnataka

Pierre-Sylvain and Vasundara Filliozat

The two temples in Karnataka, the Somanathesvara, Haralahalli (A.D. 1182) and Kadambesvara, Rattihalli (1230 A.D.) are now known as Jakkanacari gudi because the villagers think that they were built by the divine architect Jakkanacari. Inscriptions show that they were the works of two Kalamukha saints of Pasupata Saivism. Pasupata Saivism became important in the south under the Calukyas of Vatapi (Badami), and reached its summit under the Calukyas of Kalyana, especially under Calukya Vikramaditya VI who acceded to the throne in 1075 A.D. Modern historians credit Vikramaditya VI with creating, for the sake of better administration, many chieftancies in his kingdom and entrusting their governorship to many vassals. Kalamukha, A branch of Pasupata Saivism called Kalamukha received particular attention from the local chieftains and vassals. The Kadamba chiefs of Rattihalli Nurumbada and the Gutta rulers of Guttavolal are two vassalages which are the focus of our study here. Both the ruling families were adepts of Kalamukha saints belonging to Kittagavi scions, Saktiparise (congress) of Parvatavali school. Under the advice of their guru, both the dynasties converted temples of Siva of single sanctum into temples with triple cellas and added many architectural elements. The principles behind such transformations are the main subject of this paper.

Regional pasts, imperial present: Vijayanagara temple architecture in Karnataka

Dr. Crispin Branfoot (De Montfort University)

The Vijayanagara Empire dominated most of southern India for two centuries from the later 14th century. During the 15th century a new style of temple architecture, based upon

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the Tamil tradition, was created at the capital city that subsequently spread across the whole of southern India. Two decades of research at the capital city of Vijayanagara in northern Karnataka has documented and discussed the characteristics of the 'imperial' Vijayanagara style of temple architecture. In this paper the temple architecture built in the 15th and 16th centuries in Karnataka but outside the capital will be examined in order to: (i) assess the degree to which temple construction was concentrated at the capital city; (ii) examine when and where temples were built across Karnataka; (iii) analyse the degree to which the Vijayanagara imperial style was a source of visual unity across the vast area of the empire; (iv) determine how the temple builders of Vijayanagara related their work to that of earlier dynastic temple building traditions, such as the Hoysalas, both in terms of where they founded temples or added to existing sites, and how earlier building traditions affected Vijayanagara-period design.

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Domes, Tombs and Minarets: Islamic Influences in Jaina Architecture

Dr. Julia A. B. Hegewald (Heidelberg)

Despite at times violent persecution of the Jains by incoming Islamic forces, the stylistic influence Islamic art has had on Jaina religious buildings is startling. Jaina Temples, especially those of the fifteenth, sixteenth and seventeenth centuries, frequently have Islamic decorations and arches, tiles, bulbous domes, minar-like towers and niches resembling mihrabs. Islamic stylistic features did, however, not only remain on the surface but also influence the underlying planning layout of Jaina architecture. Jaina temples were constructed following the principles of courtyard mosques as well as Islamic tombs.

This paper will for the first time draw attention to this so far neglected phenomenon and consider a series of possible explanations. Was it the concept of mimicry, of pretending to be Islamic in order to shield off attacks, which drove Jaina builders to construct temples in the style of what frequently were their worst enemies? It is questionable, however, if such buildings could ever have been mistaken as true Islamic structures. Was the aim perhaps more simply to please or at least not to offend once new rulers by avoiding figural representations and building in a style understood and liked by Muslims in order to prevent raids and destruction? The period of the fifteenth and later centuries is, however, not usually marked by such violent persecution any longer and this might indicate that Islamic design features had become widely accepted and part of the new artistic repertoire. Such and other reasons will be debated in the proposed paper and it is likely that not just one but a series of reasons might have led to the creation of this fascinating hybrid style of Jaina temple architecture.

Vaishnava Havelis in Rajasthan - Origin and Continuity of a Temple Typology

Shikha Jain

In the 17th century, a new temple form emerged in the region of Rajasthan under the patronage of the Vaishnavite sect. Often referred to as the Haveli temple, this form adapted the courtyard architectural style of the medieval mansions called Havelis and discontinued the use of the typical shikhara.

This type was initially defined by the 'Pushti Marg havelis' of the Vaishnava sect. It is believed that as a protection of the temples from the Mughals, the Vaishnava sect started building temples in the haveli pattern. Though later, it became an established temple typology and a number of temples from eighteenth to twentieth century were built on the Haveli pattern in Rajasthan.

This paper traces the origin and continuity of this Vaishnava Haveli temple in Rajasthan. It presents the Haveli temple type by a detailed analysis of two most dominant Vaishnava haveli temples in the region i.e. the 17th century Haveli temple of Srinathji at Nathdwara and the 18th century temple of Govind Devji at Jaipur, each serving as a nucleus in its historic setting. Along with a study of their broader urban context, the paper provides an insight into the spatio- ritual planning of these two haveli temples to establish the generic layout of the Vaishnava Haveli temples in Rajasthan. The paper further provides an overview the spatial planning and architectural

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vocabulary of Haveli temples in Rajasthan. It identifies sub regional variations within Rajasthan by citing specific examples from the nine different regions of Rajasthan and it also evaluates the newly constructed haveli temples in the region.

EASAA 2005

Handbook of Papers and Panels

PANEL: Issues in Gangetic Archaeology (Tuesday July 5 9.30 – 12.30)

Convenor: Robert Harding (UCL Institute of Archaeology)

Changing perspectives in archaeology of the Ganga Plain

Rakesh Tewari : U.P. State Archaeology Department

The archaeological excavations carried out in the Ganga Plain and adjoining areas during the last two decades or so, have provided hitherto new information. A good number of new radiocarbon dates have been determined of the samples collected from stratified occupation deposits of such sites. The studies on the carbonised archaeological remains recovered from these deposits have generated a lot of primary data. More palynological studies on the lacustrine deposits and multifaceted geomorphological information are available. This paper is aimed to discuss their main implications on the prevailing perceptions in archaeology of the Ganga Plain, which suggest that - 'the Ganga Plain is not plane', 'the theory of dense forests in the Ganga Plain is a myth', 'the Ganga Plain settlers interacted with distant regions since circa 3rd millennium BCE', 'agriculture advanced in the Ganga Plain without the use of metal artefacts', 'the dynasties mentioned in Puranas and other ancient Indian texts should not be written off', 'iron appeared in the Ganga Plain in first half of the 2nd millennium BCE', and so on.

Excavations at Mahasthangarh: new results

D. Allios, Maitre de conferences, Univ Rennes II & Md. S. Alam, Regional director, Dhaka division

This paper will focus only on the earliest levels excavated by the Franco-Bangladesh expedition. Reinterpretation of the chronology for the ancient levels at the Eastern Rampart excavations (1993-1999) using C14 datation and paleomagnetism of bricks we suggest a Pre-Mauryan occupation of the city. The study of the rampart allows us to specify the different phases of its construction and to link them with the growth of the urban center

In the new area excavated by the Franco-Bangladeshi team (2000-2005) monumental buildings, road and massive defensive wall have been found. Some items point to a religious activity

Bairagi Bhita: an intra muros temple from Mahasthangarh

Dr. Barbara Faticoni

Placed within the town-walls of Mahasthangarh in northern Bangladesh, the Bairagi Bhita temple represents one of the most interesting archaeological remains from this site. Although excavations over the last few years have interested only the eastern rampart area, and more recently the south-eastern side of the city, archaeological surveys conducted in the past had brought to light several monuments inside and outside the town-walls.

Among these monuments, the temple of Bairagi Bhita (trans. Ascetic's Home, from vairagi = a man without passions, a hermit, and bhita = home or original place, as well

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as generally a building's podium, or the building itself) holds a prominent position. Its first description was made by K. N. Dikshit, who directed site excavations between 1928 and 1929, and related the temple to the Pala-Sena school.

During the excavation campaign in the Mahasthangarh citadel this year, the temple of the Bairagi Bhita has been reopened by the French team working in Mahasthangarh (preparatory work had been concluded in 2004). The objectives set for this second year of mission were: to continue the clearing of structures between the platform and the second temple, and to understand the relationship between the podium of the first temple and the podium of the second temple.

The first objective aims at drawing an extensive and complete plan of the temple in the coming years as a first step towards a new and complete reading of the temple. In order to understand the relationship between the first and the second temple we opened a small trench (2.50 x 7.50 m, direction East-West), from the edge of the "platform for the ablution" right to the end of the platform of the first temple. This allowed us to identify three building phases in the main temple, and also to conduct preliminary tests on the materials drawn from the various layers, which clearly indicate a religious context. Over the next few years we plan to complete the study of the entire sacred area. This will entail a full clearing of structures, drawing a comprehensive map, and also planning systematic excavations with the aim of reopening the area and preparing a restoration project.

In the almost total lack of reliable studies on Pala-Sena architecture, archaeological work in Bairagi Bhita may substantially improve our knowledge of Indian architecture and its evolution.

Terracotta discs of PGW period: A concept of primitive coins

Dr. O.P. Srivastav: Centre of Advanced Study, Department of History, Aligarh Muslim University

Trade and currency are inseparable, may it be barter or banking economy. In primitive society barter was the principal method of exchange and in India this system existed even after the introduction of real coins. In this paper the author has tried to convince the terracotta discs as the primitive coin or token money. Usually coins were made of silver, copper, gold, lead, nickel and bronze etc. But from the commentary on Vinayapitaka by Buddhaghosa we learn that sara wood, lac, skins of animals, the outside of bamboo or the Palmyra leaf, fruits and seeds were also in circulation as a type of non-metallic currency. Clay lumps bearing coin devices may also have been used as currency. In fact the use of clay as a medium of exchange was not uncommon in India. Thaplyal, therefore, thinks that if any non-metallic substance bearing rupa-marks has any claim of being taken as coins, clay lumps bearing coin devices are also equally entitled to be classed in the same category. The concept of currency is associated with particular value to the object /coin, which may not be the actual value of the object. But non-metallic currency, although it was in vogue, was not certainly organized currency in circulation over a wide area. It could, however, at best have been only a local arrangement. Punch-marked coins did not appear suddenly into existence. Before taking its shapes as punch-marked coins, there must have been its primitive stage.

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Terracotta discs have commonly been found at PGW sites. At most of the sites they occur in very large numbers and has a long tradition during the successive period also. Why should not we take terracotta discs as primitive source or stage of punch- marked coin? Perhaps, the symbols found on terracotta discs were the source of symbols for punch-marked coins. The characteristics features of the punch-marked coins are its various symbols. Surprisingly, most of the signs are similar. The symbols commonly found are as follows: - The Human figure, the Sun, the Moon (Crescent), the Mountain (Chaitya), the Swastika, the Charka (four, six, eight, or multi-armed), the Star, the Tree? Arrow, Fish, Eye or leaf design, Circle / Checker/cross/ square/ rectangle/triangle/dotted line/parallel line and other geometrical lines etc. In this research paper, I have prepared a chart to compare the symbols and motifs found on terracotta disc with the symbols and motifs found on punch-marked coins.

The archaeology of Middle Ganga plain: a note on copper objects from Imlidih Khurd, Gorakhpur, India

Ravindra N.Singh: Banaras Hindu University, Varanasi

The study of archaeological metalwork is as significant in archaeology as the study of ceramics, bones, or lithics. The scientific examination of metal artefacts is not an end unto itself, but a method by which more information can be gleaned from the archaeological record. The metallurgical techniques commonly used today (e.g. metallography, elemental analyses, electron microscopy) have consistently produced valid results that have helped to clarify important archaeological issues such as the reasons for the development of craft specialisation, the impact of the introduction of new technologies on societies, the degree of interaction between cultures, and the forces necessary to alter societal infrastructure.

The objectives of the research work being undertaken by the author since last few years are to demonstrate the manner in which metallurgical analyses can be used to address important archaeological problems. Several samples of metal objects (particularly copper & iron) have been subjected to the scientific examination from the archaeological sites of the middle Ganga plain in order to estimate the questions like, How were production and exchange organised? To what extent do metal reflect the cultural milieu in which they were found? Do different types of metals, because of appearance, geological rarity, or difficulty of working, have different cultural trajectories? etc. In present communication, as a case study, the data obtained by the examinations of a few copper objects from Imlidih Khurd, an important site from the Sarayupar region of the middle Ganga plain have evaluated.

Imlidih Khurd is located on the left bank of river Kuwana in Gorakhpur district. It extends in an area of 6-8 hectares. The Banaras Hindu University conducted the excavation at the site. The main achievement of the Imlidih excavations is the discovery of an antecedent phase of culture, stratigraphically occurring just below the Narhan Culture deposit hence termed as 'Pre-Narhan' with a suggested date of pre- 1300 BC. The diagnostic trait of this culture comprised the characteristic pottery (corded ware) hitherto unrecorded from Narhan, Khairadih and Manjhi but present at Sohgaura and Lahuradeva.

The inhabitants of Pre-Narhan culture lived in wattle and daub houses represented by reed marks in large numbers. Several floors made of mud, oven and *chulah* marked the

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other structural activities. The small find comprise several micro beads of steatite (similar to Harappans), beads of terracotta, agate and faience, bone points and pottery discs. In addition, a few pieces of copper objects such as beads, an arrowhead and a celt (comparable to the copper hoard variety) were also recovered. A scientific examination of the copper objects revealed that the alloying is noted from the very beginning but by the time of NBP period (i.e. c700 BC) the use of tin metal was in vogue in the middle Ganga plain. The analytical details, ore-sources, ore-artefact relation and the archaeological significance shall be discussed.

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Early ceramic assemblages of Sarayupar in the light of the excavations at Gotihawa, Nepalese Tarai

Liliana Camarda & Daniela De Simone

At Gotihawa, a site in the Nepalese Tarai excavated by the Italian Archaeological Mission, has shown the existence of ceramic assemblages typical of the Chalcolithic and post-Chalcolithic horizons of the Upper Middle Ganga valley (Sarayupar). C-14 dating also supports the stratigraphic sequence. A few fragments of OCP have been also found, pointing to an even earlier context. The Nepalese Tarai, therefore, appears as being fully part of the settlement history of the central Ganges plain. A careful observation of the materials and the archaeometrical analyses show that the relation between the Black-Slipped Ware and the NBPW and the very nature of these ceramic classes are far more difficult to define than usually believed. The technological development which eventually led to the production of the NBPW is discussed at length.

An archaeological study of ritual and pilgrimage at Bodhgaya

Abhishek Singh: Ph.D candidate School of Oriental and African Studies, London

Bodhgaya, the place of Buddha's enlightenment, has been one of the most sacred Buddhist pilgrimage sites visited by people from around the world, and venerated by the devotees for centuries. This paper intends to study the discovery of Bodhgaya as one of the major Buddhist sites and its importance for the study of Buddhism in the nineteenth century. In addition, an attempt would be made to study the tradition of pilgrimage and rituals at the site. The paper begins with a historical background including the works of the surveyors and archaeologists in the nineteenth century which led to the identification of Bodhgaya as a Buddhist site. The second section would analyse the inscriptional sources and archaeological remains and structures in and around Bodhgaya. In this section an attempt would be made to locate the growth of the site archaeologically in order to study laity's contribution and the interaction between the monastic and lay community at the site. The relationship between laity and monastic community gets reflected in pilgrim's patronage, necessary for the survival of monastic community, and

EASAA 2005

Handbook of Papers and Panels

laity's desire to accrue religious merit which resulted in the construction of religious structures at the site. This interaction between the monastic and lay community contradicts the notion of Buddhism being a monastic religion. In the final section, the paper contends that the continuation of the site from early historic period to fourteenth century A.D. reveals the social base of the religion as reflected in the continuation of patronage and pilgrimage at Bodhgaya. Thus, the paper would demonstrate the symbolic meanings of the archaeological structures by viewing them in their wider ritual context, i.e. the way they were made, used, and experienced by the followers.

Bharhut: A reassessment

Jason Hawkes: Ph.D candidate, Department of Archaeology, University of Cambridge

Since its discovery the remains of the Buddhist stupa of Bharhut have been the subject of much study. For the most part, however, past scholarship has focused almost exclusively on the sculptural remains of the railing that once surrounded the stupa. More specifically, and due in part to a preoccupation with the textual sources in the study of ancient Buddhism, it has tended to concentrate on the identification and analysis of those scenes deemed to represent certain narrative episodes from the Pali Canon.

This focus on the narrative scenes has restricted the questions that can be asked of the sculptural scenes, and in doing so limited their value as archaeological evidence. While the exclusive focus on the carved remains in general has limited the examination and understanding of the wider archaeological context of the site itself, a complete account of which has yet to be made.

New examination of the archaeological evidence from Bharhut as part of wider doctoral research has greatly added to the knowledge about the site and its remains. Reassessment of the remains of the stupa railing has expanded the total number of both the known constituent parts of the railing as well as the sculptural scenes that adorn them. Preliminary schematic analysis of those sculptural scenes has also yielded interesting results that appear to challenge the traditional importance attached to the narrative scenes. While basic examination of the surface remains at Bharhut has greatly improved the picture of the site itself.

Together the findings of these results have not only improved the basic understanding of the site, but more fundamentally highlight the growing need for new direction in the study of religious monuments in South Asia, one more grounded in the archaeological realities of the sites themselves.

New results on Early Historic fortification

Prof. Paul Yule, Heidelberg University

The archaeological component of the DFG SPP1066 project shed light on early historic fortifications of Orissa, concluding as it did field operations in January 2005. Since the last SAA conference in 2003 it was possible to use a laser scanner in Sisupalgarh to document the column complex "Area D". A tachymetric survey of Area D supplemented the area recorded for computer simulations. Ground radar also

EASAA 2005

Handbook of Papers and Panels

illuminated the south moat, Area D and the crest of the glacis of the western city defenses. Most notably, the southern moat was located and proven to exist. Finally, in face of increasing pressure to settle on all of the available land within the walls, preservation was documented by means of GPS-assisted mapping.

EASAA 2005

Handbook of Papers and Panels

**Panel: Numismatic, Literary and Epigraphic Evidence on Chronology in Gandhara
(Tuesday July 6 9.30 – 5.00)**

Convenor: Dr. Osmund Bopearachchi (C.N.R.S.)

***Introduction: numismatic, literary and epigraphic evidence on chronology in
Gandhara***

Osmund Bopearachchi

The aim of this panel is to discuss the problems concerning chronology of Gandhara and neighbouring regions from the conquest of Alexander the Great until the end of Kushano-Sassanians, in the light of new archaeological, epigraphic and numismatic data. Scholars unanimously admit that the reconstruction of the history of the Indo-Greeks and their successors in Central Asia and North-West India, depends mainly on numismatic evidence. It is because, the literary sources, though important, secondary compared to the vast and rich information conveyed to us by coins. However their history cannot be written taking only one aspect of their culture into consideration. The other forms revealing their economic activities, modes of production, and their artistic tastes, such as architecture, ceramics, inscriptions, artefacts, etc. are equally important in this exercise.

The composition of hoards, overstrikes, monogram pattern along with the distribution of coin finds and all the aspects of numismatics give us indications about the chronology of each and every dynasty who ruled over the regions of Gandhâra. We have at our disposal more than 50 unpublished Sassanian and pre-Sassanian coin hoards discovered during the last fifteen years. The discovery of unprecedented number of inscriptions in Greek, Bactrian and very particularly in Gandhari enable us to solve if not at least to understand the fundamental questions regarding the history of Kushans and their predecessors. The new inscription referring to an Indo-Greek era published by Richard Salomon will be given a particular attention. Should we or should we not assume that the Azes era is equivalent to Vikrama era and then the Indo-Greek era to 186/5 B.C.? We also hope to discuss the questions raised regarding the genealogy of Kushan kings up to Kanishka I, as revealed by the Rabatak inscription. The coming of the Sassanians into Bactria and Gandhâra, and the end of Kushan power in India and the dating of the issues of Kushano-Sassanian rulers will also be given a special attention. All these contributions are closely linked with the controversy over the date of Kanishka. We may perhaps never know the absolute truth about the history and the chronology of these enigmatic rulers, yet what is important, is to come as close as possible to the truth.

A Note on the Vikrama Era

A.D.H. Bivar: Prof. Emeritus, SOAS, London

The Vikrama Era's start date of 23rd February, 57 B.C. is based on the Hindu tables of the Surya Siddhanta, compiled during the 5th century A.D. and before that date difference systems of intercalation were in use. Two different starting dates are found with the Vikrama Era, a similar situation to that found with the Hellenistic Seleucid Era, established in 312-311 B.C. Both Hellenistic calendars are attested in historical inscriptions of South Asia and Afghanistan. Thus both could have been transmitted to the astronomers of medieval

EASAA 2005

Handbook of Papers and Panels

India through the scientific teachings of Indian centres, especially at Ujjain where Graeco-Babylonian traditions of astronomy were long respected. The survival of this system might explain the double calendar of the Vikrama datings. Thus it appears that owing to our insufficient knowledge of the early mechanics of these calendars, it is unsafe to attempt exact conversion to the day of early datings in this era. For present purposes, and to avoid the errors of one year easily made in converting such dates, it is best to use the rule of thumb given by James Prinsep for these conversions:

To convert Samvat into Christian dates, subtract 57; unless they are less than 58, in which case deduct the amount from 58, and the result is the date B.C.

Evidence is presented to show that the era begins with the inauguration of the Saka king Azes I

Links Between Coinage and the Greek Eras Used in Gandhara *Dr. David W. MacDowall*

Recent discoveries have proffered new but conflicting evidence for the reference date of the Greek era used by the Kushans and their predecessors. The geographical distribution of the inscriptions and some coinages indicate the extent to which some rulers of the period emphasised continuity with their predecessors.

The double dating that Falk has recognised in the Yavana Jataka of Sphujiddhvaja quoting "a date Kusana elapsed plus 149 produces San elapsed" seems to establish an absolute date of AD 227 for the second century of the Kushan era and a date of AD 127 for the era of Kanishka. The Trilingual inscription from Dasht-i-Nawar dated in year 279, thought to give the name of Vima Kadphises, was interpreted by Bivar as the last year of Vima Kadphises and the first year of Kanishka. But the name on the unfinished inscription from Kanishka's Nikator sanctuary at Surkh Kotal has now been read as Vima Tak... ie Vima Takto. He is known from the Rabatak inscription to be the father of Vima Kadphises and grandfather of Kanishka. The last two digits of the date on the unfinished inscription are sketched roughly on the stone and the interpretation has been disputed. We can no longer accept Bivar's reading of 279. The alternatives, 299 proposed by Harmatta and 285 by Maricq would give reference dates of 171 BC or 157 BC for the Bactrian era.

However the triple dating of the inscription of Vijayamitra king of Apraca in his 27th regnal year in year 73 of Azes and year 201 Yona to be published by Salomon gives a different date of 187-186 BC for the Yona or Greek era.

Recent research into some of the Graeco-Bactrian and Indo-Greek coinages and their distribution suggests that the contexts of 187-186 BC for an era of Demetrius I and of 171 BC for an era of Eucratides I are actually the reference dates for two eras – one Indo-Greek and the other Graeco-Bactrian.

Epigraphic and Numismatic Evidence on the Chronology of Gandhara *Bob Senior*

EASAA 2005

Handbook of Papers and Panels

The chronology of Gandhara during the Indo-Greek and Indo-Scythian periods has been a matter of contention for well over a century but the publication of recently discovered inscriptions and of vastly greater numbers of coins has perhaps allowed a clearer picture to emerge than that afforded to our predecessors. This paper will discuss this new evidence, as well as issues relating to the construction of chronologies.

Another inscribed reliquary vase from Wardak, Afghanistan

Prof. Harry Falk: Institut für Indische Philologie und Kunstgeschichte Freie Universität Berlin

In 1833 Charles Masson found an inscribed metal reliquary at Wardak, east of Kabul, now on display in the British Museum. Its inscription speaks of Vaga Marega, founding a stupa in the time of Huviska. A very similar vase was seen recently. Its inscription shows that it was donated on the very same occasion by the little daughter of Vaga Marega. Fortunately, this time all the contents of the vase have been preserved. Apart from some relics, they include the donations of the girl and her little friends, they also show that the reliquary was inspected - but not destroyed - about 300 years later, when the Huns were ruling in Kabul. This second vase proves that a ruling family prepared for the installation of a sacred Buddhist area by planning from the outset to erect several stupas at once. The differences in the two dedicatory texts can easily be explained along these lines. The contents of the vase can be used to illustrate the ceremony of filling and sanctifying the reliquaries before they were given to the stupa.

From the Rabatak Inscription to the Sasanian rock relief of Rag-i Bibi: problems of chronology in the history of greater Gandhara

Michael Alram: Kunsthistorisches Museum, Vienna

For the symposium, Coins, Art and Chronology, held in Vienna in 1996, scholars were invited to discuss critically problems of chronology in the pre-Islamic history of the Indo-Iranian borderlands. In these discussions, the long standing problem of the date of Kanishka was a major topic stimulated by the then recent landmark discovery of the Rabatak inscription. Since that time, new discoveries and hypotheses have been made: we have learned more about the contents of the Bactrian documents from Nicholas Sims-Williams; Harry Falk has brought an important passage in the Yavanajataka (an astronomical text, written in 269 A.D.) to our attention which links the Kushana era with the Shaka era. The identification of Vima Takto with Soter Megas has been questioned by Osmund Bopearachchi, and Nikolaus Schindel has published the third volume of the *Sylloge Nummorum Sasanidarum* (Shapur II – Kawad I) which provides an important new basis for understanding the development and organizational structures of Sasanian coinage. Finally, the extraordinary newly discovered Sasanian rock relief at Rag-i Bibi in Afghanistan presented by Jonathan Lee and Frantz Grenet at the conference “After Alexander: Central Asia before Islam”, in London last year, may also provoke new ideas for Kushan chronology.

It should be stated that the aim of my paper is not to prove or disprove chronological dates and hypotheses developed by different scholars on the basis of the aforementioned evidence, but simply to present a critical summary of what has happened during the last ten years in our research.

EASAA 2005

Handbook of Papers and Panels

The chronology of the Sasanian Kushanshahs

Nikolaus Schindel: Numismatic Commission, Austrian Academy of Sciences, Vienna

The importance of the Kushano-Sasanian coin series for establishing the date of Year One of the Kushan King Kanishka I has been recognised for quite some time now. Despite earlier attempts of comparing Sasanian and Kushano-Sasanian issues, however, the dating of the Kushan-Sasanian rulers themselves still is subject to considerable debate.

This paper tries to establish a reliable chronological frame for these coins by comparing various pictorial elements of their obverses and reverses with Sasanian imperial issues. The basic assumption is that if the same variants can be found on Imperial Sasanian and on Kushano-Sasanian coins, they should have been produced more or less contemporarily. Of great importance in this respect is on one hand the comparison with earlier and later depictions in the Sasanian coinage for establishing general patterns, on the other hand the cumulative evidence of the typological analysis, that is to say, whether an accumulation of congruence can be found. Being a numismatic contribution, the paper fully concentrates on the numismatic material.

The result of this comparison is that the entire Kushano-Sasanian coin series cannot be earlier than the last years of the Sasanian king Wahram II (276-293), and that most issues cannot be later than the early period of the reign of Shapur II (309-379), an approximate end date being c.325 AD. Thus, the numismatic comparison between Sasanian and Kushano-Sasanian coins places the latter in the reigns of Narseh (293-303), Ohrmazd II (303-309) and Shapur II, with the actual start being maybe as late as the ascension to the throne of Ohrmazd II.

Under this assumption, and when taking into account the various overstrikes of Late Kushan copper coins on Kushan-Sasanian issues and vice versa which have been published by Cribb, the most likely date range for Year One of Kanishka I appears to be the 2nd century AD.

EASAA 2005

Handbook of Papers and Panels

Panel: Issues in Northwestern Art and Iconography (Tuesday July 5 2.00 – 5.00)

Convenors: Dr. Martha L. Carter, Dr. Carolyn Schmidt

A study of some deities in Indo-Scythian and Indo-Parthian Coinages

Dr. Christine Frohlich:

In ancient North-Western India, the Indo-Scythian and the Indo-Parthian coinages (Ist c. B.C.- Ist c. A.D.) are often considered only as a historical source. They are indeed the more abundant one, the more complete and the only one through which it is possible to reconstruct a chronology and a king's succession. But Indo-Scythian and Indo-Parthian coins have more to say than historical dates. Their iconography informs us about their conception of kingship, when depicting the king on horseback holding a spear or a whip, but also about their religious preferences. Both aspects, either on their coin obverses or reverses, are essential to understand their relationships with contemporary or nearby civilisations such as Scythian, Parthian or Indian civilisations.

There is no place here to deal with both aspects, even to pretend to study all deities appearing on Indo-Scythian and Indo-Parthian issues. A good part of them are taken from the Indo-Greek coinage, their predecessors, as for Athena and Zeus. However some gods are a good example of how foreign deities were modified, emptied out of their signification or even introduced; some of them indicate how a syncretism between several religions begins during the Indo-Scythian and the Indo-Parthian periods, a syncretism which is developed and amplified later on under the Kushan power (IInd-IVth c. A.D.).

The majority of the deities represented on Indo-Scythian and Indo-Parthian coins are of Greek origin. Some of them find parallels in Gandhara art. Even if they keep their Greek aspect, they sometimes are "indianised". Some other Greek deities combine Greek and Indian features. Indian deities were also introduced by the Indo-Scythians, sometimes with Greek features. Eventually there are unidentified gods which associate Greek, Iranian and Indian characteristics.

Thus this study raises two questions: firstly, it seems that the syncretism observed during the Kushan period indeed began earlier, during the Indo-Scythian and the Indo-Parthian periods. Secondly, the large range of deities found on these two nomadic dynasties issues have often no parallels before or after this period. It is possible that beyond syncretism, Indian, Iranian and Greek elements were added to their own cultural substratum that we do not know in other respects.

Not the Buddha but Zeus on the gold token from Tillya-tepe

Prof. Katsumi Tanabe: Faculty of Policy Studies, Chuo University

On the obverse of the gold token excavated by V.Sarianidi from the tomb No. 4 of the Tillya-tepe burials in northern Afghanistan is struck a unprecedented image of a Zeus-like naked and bearded man turning a wheel (Sarianidi 1985, pp.188-89, 250, pl.131). V.Sarianidi and G.Koshelenko did not identify this naked man but simply described him as the figure or silhouette of naked man (Sarianidi/Koshelenko 1982, p.315). However, this naked and bearded man was identified for the first time, by G.Fussman as the

EASAA 2005

Handbook of Papers and Panels

Buddha Shakyamuni (Fussman 1982, pp.167-168; 1987, pp. 71-72). This identification followed by D.W. Mac Dowall (Mac Dowall 1987, p.173). Furthermore, R. Brown tried to search for its proto-type or model admitting the identification of the Buddha (Brown 2000). According to M. Taddei, “the human figure, not displaying those marks that will later identify the body of the Enlightened One, surely testifies to one of the earliest attempts at an anthropomorphic representation (of the Buddha)” or “the nude man pushing a wheel certainly reflects a Buddha type which eventually failed, though it can still be recognized in some mature Gandharan reliefs” (Taddei 2003, vol.2, pp.499, 594).

It seems to me that the identification of the man concerned as the earliest anthropomorphic representation of the Buddha Shakyamuni is prevailing among the many scholars of the South Asian archaeology and arts. However, I cannot agree with this kind of identification. In my opinion, the Zeus-like figure is not the Buddha but simply Zeus. Therefore, this naked man is not the earliest image of the Buddha. In the following I will try to refute the so-called prevalent identification.

1) Reinterpretation of the Kharoshthi legend of the obverse of the gold token:

The relevant Kharoshthi inscription on the obverse is deciphered as “dharmacakrapravatako” by G. Fussman and “dharmacakrapravatana” by V.V. V. ertogradova respectively (Fussman 1987, p.71; Sarianidi/Koshelenko 1982, p.315). However, the last “ko” and “na” are not correct but these two characters are actually “ti” according to A. Sadakata’s new reading (dharmacakram pravatati) (Sadakata 1998, p.229). In fact G. Fussman doubted the reading “ko” in his first decipherment (Fussman 1982, p.166, [ko?]). Following A. Sadakata’s new reading, the relevant inscription should be transliterated in Sanskrit as “dharmacakra(m)pravartati”. It means therefore that (he) turns (or is turning) the Wheel of Law. The subject of this sentence is “he”, which must be the Buddha Shakyamuni. G. Fussman and others regarded the bearded and naked man as the Buddha, but this Zeus-like man is not the subject of this sentence. This man is added only to show that the wheel is to be turned or pushed, because the simple depiction of wheel does not convey the idea of being turned. If this man were the Buddha, the name of the Buddha such as Shakamano must have been inscribed as the subject of this legend. Furthermore, without the name of the Buddha nobody would not have been able to understand that this Zeus-like man was the Buddha. The image of the naked Zeus had been introduced to Central Asia by Diodotos in the late 3rd century A.D. and the dressed image of Zeus was handed over to Gandhara through Indo-Greek and Indo-Scythian coins. Therefore, many Buddhists of Gandhara and adjacent regions must have identified the relevant bearded man as the image of Zeus.

Based upon the new reading of the relevant legend, I will conclude that the naked man concerned is not the earliest anthropomorphic image of the Buddha but Zeus himself.

2) Gesture of the turning and pushing the wheel:

R. Brown compared the naked man pushing a wheel with the standing Buddha image depicted in several Gandharan reliefs depicting the First Sermon (Brown 2000, figs.11, 12). In these reliefs the Buddha touches the wheel of the Law by the right hand. Therefore, R. Brown interpreted that the gesture of the right hand goes back to that of the Zeus-like naked man of the Tillya-tepe token. This interpretation was followed by

EASAA 2005

Handbook of Papers and Panels

M.Taddei (Taddei 2003, pp.594-595). However, in my opinion, the gesture of touching something by the right hand signifies the manufacturer or owner in Gandharan Buddhist art. This is already demonstrated by the Gandharan image of Vishvakarman (Tanabe 1995/96). Vishvakarman is depicted with the right hand on the roof of the palanquin which he manufactured for carrying the infant Shâkyamuni to the palace of Kapilavastu. Therefore, the right hand of the Buddha touching the Wheel of the Law does not allude directly to turning, but shows that the Wheel is created by the Buddha or that it belongs to the Buddha. In a relief depicting the First Sermon now in the possession of the Hirayama Ikuo Silk Road Museum in Kamakura, Japan is represented the Buddha touching slightly by the right hand the shaft of the tri-ratna column supporting the Three Wheels. It means the relevant column symbolizing the First Sermon belongs not to others but to the Buddha. Taking into consideration these reliefs, I conclude that there is no direct relationship between both pushing hands of the Zeus-like man and the right hand of the Buddha.

In conclusion, no anthropomorphic image of the Buddha Shakyamuni did exist before the Kushan period.

Greek and Graeco-Roman jewellery from Bactria and Gandhara

Chantal Fabregues

The cities of Taxila-the Bir mound and Taxila-Sirkap in Gandhara and the Tillya tepe tombs in Bactria yielded a most impressive, and hence always referred to, amount of pieces of jewellery. Among them are ornaments of Greek or Graeco-Roman origin or descent. Further examples of such ornaments occur at various other sites in Gandhara, in various necropolis on the right bank of the Oxus and, as I could discover from the study of it I have been offered to undertake, among the material Charles Masson collected at Begram. Some more classical ornaments of unspecified provenance in Bactria and Gandhara are held in museums throughout the world while others are part of private collections. Gandharan sculptures exhibit some specimens.

My paper is concerned with putting them together in order to show, firstly, their importance in number and their variety in types, which makes of them another elements pointing towards the importance of Western classical influence in the areas under consideration, secondly, that some of them originate from a specific place in the Greek or Roman world and bespeak therefore particular trade currents, and thirdly that their representation on Gandhara sculptures is scarce what suggests that Western Classical culture influenced a small part only of the Gandharan population.

Vajrapani in the narrative reliefs

Dr. Monika Zin: Institut für Indologie, Munich

A comprehensive documentation of the representations of Vajrapani in narrative art has been compiled as a "by-product" of a project currently running at the Institute of Indology in Munich (working title: "Buddhist stories of conversions in Indian art and literature"). The comparison of the reliefs (many of them yet unpublished) with the textual tradition allows to argue conclusively that the meaning of Vajrapani in Buddhist belief has so far been understood inadequately. Not only was the role he played much

EASAA 2005

Handbook of Papers and Panels

more important than has been assumed, but it also differs significantly from the common interpretations: Vajrapani was not the "guardian angel" of the Buddha but a violent fighter for conversions. Often it was through Vajrapani's merciless actions which are frequently depicted that the Buddha could demonstrate his mercy.

Hieratic, hierarchical reliefs and stelae from Sahrī-Bahlol: a typological study

Carolyn Woodford Schmidt, Ph.D.

While almost one hundred and fifty years have passed since the major Buddhist center of Sahrī-Bahlol was initially surveyed, the site remains one of the least well understood complexes of the Greater Gandharan Buddhist tradition. That Sahrī-Bahlol is of importance to the history of Buddhism in the region is attested by the recovery of many of the tradition's most significant sculpted pieces, providing evidence of major developments that is largely absent from other sites in the northwest. With scholars disagreeing on numerous points of interest, little progress has been made over the years, and, in the absence of new excavation, as the site is currently occupied, it is through detailed analyses of the sculptural tradition that the answers to many of the outstanding issues may be addressed.

The purpose of this study is to evaluate a discrete corpus of hieratic, hierarchical reliefs and stelae in terms of iconographic content, stylistic characteristics, and relative chronological period. These sculptures may be classed as theophanies and visions of paradisiacal realms associated with Mahayana traditions, which were seemingly introduced at Sahrī-Bahlol sometime during second century and continued as a major focus through the fourth or fifth centuries. The primary subject of these sculptures is a large image of a Buddha shown in a tripartite relationship with two Bodhisattvas. The Buddha is seated in *padmāsana* (lotus sitting attitude) and displaying *dharmacakra mudrā* (gesture of setting on motion the wheel of the Law). These works vary in the settings depicted, complexity, and the total number of figures which are included in the overall iconographic program. In addition to these characteristics, four types of lotus daises, distinguished by both iconographic and stylistic features have been identified.

As no systematic analysis of the known corpus of these reliefs and stelae has hitherto been advanced, this effort provides new opportunities to understand and more precisely define one of the most influential components of the enduring visual language developed in Greater Gandhara during an exceedingly vibrant period in its history.

Indo-Scythian Buddhists in Han Dynasty China: The visual evidence and its significance

Dr. Martha L. Carter

Conclusions: During the Augustan Era the Roman Empire saw the beginning of a demand for silk from the Far East that reached unprecedented levels by mid first century. At the same time in China a series of natural disasters and civil unrest culminating in a temporary loss of imperial power caused its network of military outposts protecting land trade routes across Xinjiang to collapse. Due to these conditions, demand surpassed supply and the price for Chinese silk climbed steeply, causing merchant middlemen of the Indian subcontinent to use other routes to China by

EASAA 2005

Handbook of Papers and Panels

sea and land. It seems very likely that the earliest known Buddhist art in China was created as the result such contacts in the northern coastal area of Jiangsu and in the south in Sichuan.

The first reliable reference to Buddhists in China comes from the Later Han Annals' report of a prince Ying who ruled a small portion of northern Jiangsu in the mid-first century AD and held feasts for Buddhist laymen and monks. In the same vicinity of Jiangsu near the modern port of Lianyungang a rocky hill has been found covered with a variety of Buddhist imagery carved in crude low relief. Some carvings show figures of foreigners who appear to be Indo-Scythians. It is reasonable to postulate that there was a settlement nearby of Indo-Scythian Buddhists who first arrived by sea during the early first century. Other remnants of the earliest Buddhist art in China occur in central Sichuan. one near Leshan in an Eastern Han era rock cut tomb with a relief of a seated Buddha above the entrance, and in small Buddha images on funerary 'money trees'. Again, stylistic details suggest influences from an Indo-Scythian environment. During the first century an increased number of sea traders from India plied the Bay of Bengal to Burma where they bartered with caravaners who had trekked the difficult passes through Yunnan to Sichuan for silk. Indo-Scythian Buddhists appear to have been among them.

The Gates to the Darel Valley from the Singal Valley, the Batakhun & the Yajur Passes: field research in northern Pakistan in tracing Fa Hsien's route from Pamir to Darel, 2003 & 2004.

Prof. Haruko Tsuchiya: University of California, Berkeley

This paper focuses on our field work on the Batakhun and the Yajur Passes, the two gates to the Darel Valley from the Singal Valley, conducted as part of Tsuchiya/Ajmad field research. The field research of the Singal Valley (2001) covered almost the entire valley except for its head beyond the Patharo Chowki. The field work in the Darel Valley (1998-2000) started from the mouth of the valley on the Indus, towards Pouguch and Rajikot, but was halted at Junishal. The area between Patharo Chowki and Junishal has remained a no man's land for non-Darelis. In our present field work (2003, 2004), we could finally cover the two gates to the Darel Valley, the Batakhun and the Yajur Passes, as the first scientific field work ever to have been made of this area.

'Grid-Planning' at Taxila

Rachel Mairs, Ph.D candidate, University of Cambridge

Sir John Marshall's excavations at Taxila between 1912 and 1934 revealed a distinctive, regular street-plan, which he attributed to the influence of Greek theories of town-planning, brought to the region by the Indo-Greeks. Marshall's conclusions are, however, compromised not only by the uncertain chronology of the regularly-planned portion of the site, but also by the contemporary archaeological milieu within which he worked, which was often overenthusiastic in its attribution of Graeco-Roman characteristics to South Asian sites.

This paper seeks to place Taxila within its wider context – South Asian, Hellenistic and Central Asian – and consider the urban layout of Taxila alongside that of comparable

EASAA 2005

Handbook of Papers and Panels

sites. Comparison of Greek and Indian architectural theory, as presented in textual sources, with the archaeological data, makes it clear that a regular 'grid-plan' was in fact the ideal in both South Asian and Greek systems, but seldom comprehensively applied in practice. Instead, we should look at the possible pragmatic reasons for Taxila's 'grid-plan', with reference both to the history of occupation of the site itself, and to the circumstances of the foundation of regularly-planned cities elsewhere.

The 2003 field research found the area linking the Singal and the Darel valleys, surrounded by mountains, to be a high plateau, rich with pasture, streams and lakes and the glacier covered Kini Chish Mt.(4949m). Many families from Darel spend summer grazing cattle and growing maize. The Yajur Pass was found to be a regular route to reach Darel, more popular than the well-known Batakhun Passes. Because of the gradual ascent along the Kolibari stream and the relatively easy descent to the Darel Valley, the Yajur Pass was preferred by general traffic with cattle and with loaded animals.

The 2004 field research covered the entire Batraith Valley, the high plateau and the Batakhun Pass. The Darel side descent of the Batakhun Pass is extremely steep, rugged and dangerous, only used for emergency. The Batakhun area and Darband at the head of the Darel Valley was found to have formed a defensive system, protecting the entire Darel Valley, including Pouguch, a possible Buddhist establishment, where Fa Hsien could have made the pilgrimage.

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PANEL: Tibetan Epigraphy and Petroglyphs (Tuesday 5 July 2.00 – 5.00)

Convenor: Dr. Philip Denwood (SOAS, London)

Recent discoveries of rock-carvings and rock- artefacts from Swat valley (Pakistan)

Luca Maria Olivieri: IsIAO, Rome

During the 2004 spring campaign, new protohistoric carvings and rock-artefacts have been found in Swat. The findings are mainly from Kandak Valley, not far from the Barikot village (Laurenza & Vidale in SAA 2001). Four classes of findings will be presented: cup-mark boulders, rock-carvings, rock-paintings and tanks. We present and discuss some new cup-mark sites, among which is Lekha-gata.. Further examples of bi-triangular style, together with a carving representing a chariot, were observed in another shelter. A revision of the work previously done in the shelters of Sargah-sar and Dwolasmane-patai (Olivieri in SAA 2003) allowed us to complete the documentation with new important details. One of the most interesting findings is the s.c. 'wine-presses': large rectangular tanks excavated in the solid rock whose features fit very well both with some ethnographic data and with other examples from Hunza. The new findings will be compared with the previous data, in order to provide sounder interpretations and establish a more detailed cultural sequence.

Petrographic study of pre-Buddhist religion: Bonpos of the Western Himalaya

Prof. Laxman S. Thakur (Department of History, Himachal Pradesh University, Simla)

The main focus of present study is to understand the cultural evolution of western-Himalayan tribal society prior to the spread of Buddhism in the area. Extensive archaeological fieldwork carried out by the present researcher in the border districts of Lahaul-Spiti and Kinnaur has revealed a large number of petroglyphs. Some of the carvings accomplished on these rocks are comparable with the symbols and devices used by the Bonpo community that has once exercised very dominating role in the ancient kingdom of Zhang Zhung. This paper has used for the first time archaeological evidence explored in situ to unearth the ceremonial organisation, rituals, and belief system of western-Himalayan people living in most inhospitable and arid landscape of the Himalaya. The archaeological data have been compared with the people living in the area of the study, and the migrant Bonpo community from Tibet, now settled at Dolanji near Solan, Himachal Pradesh. The information gathered from the present Bonpo community has been used in interpreting and explaining several symbols engraved on the petroglyphs. The paper has used ethnographic information for interpreting archaeological data, and archaeological evidence for explaining the socio-cultural pattern of pre-Buddhist nomadic and semi-agricultural communities once inhabiting the ancient kingdom of Zhang Zhung. Zhang Zhung remained the centre of Bonpo faith until the seventh century when it was gradually absorbed by the expanding empire of central Tibet. The archaeological data earlier collected by J. V. Bellezza (1997-2000) and Suolang Wangdui (1994) from Byang Thang (Northern Plains of Tibet); A. H. Francke (1902-3, 1905-7) and H. P. Francfort, et al. (1992) from Ladakh are compared with those explored from Lahaul-Spiti in Himachal Pradesh. The data collected from a few sites have been interpreted for wider generalisation and understanding of Himalayan pre-Buddhist socio-cultural patterns existing in the area prior to the seventh century AD.

EASAA 2005

Handbook of Papers and Panels

The Tibetan Empire in the Karakoram and Western Himalayas, and its contribution to Buddhist art.

Philip Denwood: SOAS, London

A number of rock reliefs, typically depicting bodhisattvas or buddhas, some accompanied by inscriptions, are known from the districts of Gilgit and Baltistan (Pakistan), Ladakh and Spiti (India), and Purang (Tibet). Their study has been held back because many of them have been poorly recorded or not published, because they have not been considered as a group, and because of many uncertainties in the history of the areas.

Although the full evidence cannot be given in this paper, I believe the chronology of the westward advance of the Tibetan empire into these regions (7th-9th centuries AD), with the subsequent ethnic Tibetanisation of parts of them, can now be outlined with a much higher degree of confidence. Against this background the paper will consider the range, iconography, stylistics and epigraphy of these rock reliefs using published and unpublished material. It will also briefly review the sculptural and other art of the Patola Shahi dynasty of Gilgit in relation to historical developments.

The paper will conclude that while the new Tibetan rulers brought the art of the Patola Shahis to an end, they encouraged and sponsored the production of most or all of the rock carvings under consideration.

New evidence on the "Renovation Inscription" at Tabo Monastery

Kurt Tropper

The so-called "renovation inscription" at Tabo monastery (Spiti, Himachal Pradesh) ranks among the most well-known epigraphic documents in the Western Himalayas. It has been edited and translated three times, namely by Tucci (1935), Steinkellner/Luczanits (1999) and Thakur (2001). While the latter two publications are primarily based on in situ transcriptions of the authors themselves, Tucci had to rely on a copy that was prepared for him in 1933 by a local assistant. As has been pointed out already by Steinkellner/Luczanits and Thakur, the edition of Tucci features a number of misreadings and gaps, but it has text in some places where the inscription was not legible any more when the transcriptions for the two recent editions were prepared. Thus Tucci's study is of ambivalent value, but it is based on what had to be considered the earliest documentation of the inscription available so far.

EASAA 2005

Handbook of Papers and Panels

Panel: Economies in South Asia (Wednesday July 6 9.30 – 4.30)

Convenors: Dorian Q. Fuller: Institute of Archaeology, University College London & Dr. Richard Meadow: Director, Harappa Archaeological Project, Peabody Museum, Harvard University)

All human societies have economies that involve the extraction, modification, exchange and consumption, or use, of materials. Studies of production and consumption and how these are organized through kinship or non-kin social institutions are fundamental to anthropological and historical approaches to society. In this session we hope to encourage a comparative consideration of economies across south Asia in periods studied archaeologically. Such studies provide a crucial means for considering social change and comparing societies, from those that are organized at a small scale, such as the "domestic mode of production" featured in Sahlin's Stone Age Economics or larger corporate and institutional forms of organization, like those explored in Timothy Earle's Bronze Age Economics. What societies at different scales have in common are the flows of materials through societies and the organization of labour that procures, creates or transforms those materials, thereby creating value until such materials are consumed or discarded. Key issues include procurement, as in localized raw material extraction or the collection of rare spice plants; food production, through cultivation and animal herding; preparation/ creation/ transformation, when raw materials such as clay are turned into ceramics, fish are dried for transport, or harvested crops are processed into storable or tradable commodities; storage and redistribution, which invariably relates to issues of value and social organization; and finally consumption and use, and the extent to which these are more or less restricted. Methodologically there are important issues about how archaeological evidence can be related back to these economic processes, through an understanding of archaeological formation processes, but we hope to encourage contributors to this session to use such analyses of the archaeological evidence as a starting point for considering the organization of the labour involved in production, the means of distribution and/or patterns of consumption.

The Stability of Hunting and Gathering in the Prehistory of South India

Preston Miracle: Department of Archaeology, University of Cambridge

Historically known hunter-gatherers in Southern Asia articulated in various, complex ways with neighbouring agriculturalists. Here, as elsewhere, the validity of the term "hunter-gatherer" is debated. Murty (1985) and others have projected ethnographically based models of hunter-gatherers exploiting agriculturally marginal areas and exchanging wild resources for pottery and other goods from agricultural villages. In this paper we examine models of hunter-gatherer – farmer/herder interaction using new zooarchaeological evidence from seven cave and rock shelter sites recently excavated in the Kurnool District, Andhra Pradesh Province. Patterns of resource use and histories of site occupation provide evidence for questioning the long-term stability and perhaps viability of hunting and gathering in the region. We use these data to construct a new model. The specialised use of wild resources was a flexible strategy that was activated in response to particular opportunities and contexts, such as intensified production and trade during the late Neolithic, and the rise of regional polities during the Megalithic period. Our analysis thus provides some of the first concrete evidence about the nature and history of forager-farmer relations. More significantly, this Southern Indian case

EASAA 2005

Handbook of Papers and Panels

study provides a compelling critique of general models that project ethnographic and ethnohistoric models into the past.

From domestic economy to political economy: A framework for thinking about changes in artefacts and agriculture in prehistoric South India

Dorian Q Fuller: Institute of Archaeology, University College London

Nicole Boivin: Maison de l'Archeologie et de l'Ethnologie, Université de Paris

The Neolithic is usually studied in terms of the beginnings of agriculture and sedentism, but it is also important as the beginnings of important changes in social organization and productive activities that culminated in the development of complex polities with internal social hierarchy engaged in regular long-distance trade. The early historic states of South India had craft specialists and engaged in long-distance trade in commodities such as cotton textiles, but the roots of these crafts and the specialist divisions of labour that produced them is rarely considered. Drawing on archaeological evidence from the Southern Deccan, we will argue that major social transformations are evidence during the course of the late Neolithic and the transformation to the Megalithic period (Second Millennium BC). This includes agricultural changes, as fields must have become fixed, requiring continued investment, and the cultivation of non-subsistence and long-term perennials such as cotton and tree crops became established. This is paralleled by artefact evidence for craft production, including spinning, the beginnings of metallurgy, pyrotechnic bead production, and changes in the production of lithics and ceramics. Fabric analysis of Neolithic ceramics suggests many local producers but much exchange between communities, implying domestic production and exchange through social networks, whereas the emergence of wheel-made pottery of the Megalithic tradition, represents more standardized specialist products traded as commodities. Ground stone axe production, can also be shown to have become more specialised and to have occurred probably at fewer centres on a larger industrial scale by the time of the transition to the Megalithic period, 1400-1300 BC. The roots of the political economy can therefore be traced to this late Neolithic transformation into the Megalithic.

Socio-Cultural transformation in Early Bronze Age: A case study of Sindh region

Dr S. Rama Krisana Pisipaty: Sri Chandra Sekharendra Saraswathi Viswa Mahavidyalaya (Deemed University), Kanchipuram

The phrase 'transitional period' is generally used to refer to episodes when stability and tradition are succeeded by instability and collapse, such as the end of the Harappan civilization. Similar social and cultural transformation has occurred many times in world history, and provides opportunities for comparison. The first civilizations are now generally placed as emerging in the fourth millennium BC with the advent of metal. By the end of the second millennium BC, many elements of the first Indus civilization had declined and disappeared, while other traditions persisted and new social and cultural elements can be noted. No doubt many factors contributed to these cultural changes, but for the present study I will consider the role of environmental constraints and changes, including pathological/epidemiological issues. Environmental changes can provide both problems and opportunities for living things in general and human communities in particular. Further, as communities became more integrated and dense they became more vulnerable to environmental fluctuations. Using examples drawn from recent

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palaeo-environmental, geomorphological, archaeo-botanical, pathological, archaeological and anthropological investigations, the speaker will examine some of the significant factors behind the formation of social-cultural systems in the region. Despite changes, however, I will discuss several instances of cultural elements that prevailed thousands of years ago, and some of which can be found amongst modern practices in Sindh and beyond. These I will relate to Early Sindh Vedic literature i.e. the Rig Vedic text. For example, many economic plants, which are described in the early literature are considered, including some experimental observations on their burning, and ethnographically-documented uses.

Analysis of glass beads from Bangladesh and North-East of India: application to the study of glass trade

Dr. Bernard Gratuze and Prof. Marie-Françoise Boussac

We present here new analytical results obtained on glass objects recovered on five different archaeological sites located in the north-east of India: Harinarayanpur, Mangalkot, Deulpota and Chandraketurgarh and in Bangladesh: Mahastan. These results are compared to those obtained by Laure Dussubieux on ancient Indian glasses.

The recent study carried out on Indian Ocean glass objects by Laure Dussubieux has brought new insight into this important research field (Dussubieux 2001). This work whose main objectives were to study the provenance and the diffusion area of Indian and Southeast Asian glass products, focuses mainly on south Indian archaeological sites. The north-east of the country is only represented by the site of Kalahandi (Orissa). In order to extend this research to the north-east of the Indian peninsula, one hundred new glass beads coming from four different archaeological sites from Bengal (Harinarayanpur, Mangalkot, Deulpota and Chandraketurgarh) and one site from Bangladesh (Mahasthan) have been analysed using LA-ICP-MS (Laser Ablation Inductively Coupled Mass Spectrometry). The obtained results will be presented in terms of maritime and inland glass trade and exchange paths.

Economics and technology of bead production at the Early Iron Age and Early Historic site of Mahurjhari, Central India

Dr. R.K. Mohanty: Department of Archaeology, Deccan College, Pune

The Early Iron Age and Early Historic site of Mahurjhari is an exceptionally rich semiprecious stone bead manufacturing centre in central India. The recent excavations reveal that the entire Early historic settlement, spread over an area of five hectares, was engaged in large scale production of beads, continuously for several centuries. The manufacturing processes have left enormous amount of beads in various stages of production and corresponding refuses from the raw material procurement to the final stage of production. The evidence suggests segregation in production systems in terms of proficiency, specialisation, raw material and was probably controlled by a central authority. The inscriptional evidence supports economic patronization by the state. Large number of finished and un-finished beads, associated artefacts and working platforms found at different levels allows to identify their changing production personality according to the time of production, material preferred, necessary quality control, specialization available and market demand. The resultant economy from craft

EASAA 2005

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production is probably reflected in the qualitative and quantitative grave goods found and the energy spent in the elaborate Megalithic burials at the site.

Significance of copper residue on microliths from the Mesolithic site of Bagor, Rajasthan, India

Arunima Kashyap: Michigan State University and Prof. Vasant Shinde: Deccan College, Pune

SEM and EDS examination of microliths from the Mesolithic site of Bagor, Rajasthan, India has produced evidence of copper residue on the retouched edges of the microliths. Copper residue present on the edges of the tools indicates that a copper point or punch was used as a pressure tool by Mesolithic people to retouch the edges of the microliths. The paper examines the significance of the use of copper tools in the Mesolithic period in India.

A comparative macro-view of Harappan animal economies

Ajita K. Patel and Richard H. Meadow: Peabody Museum, Harvard University

Harappan period settlements at Dholavira, Nagwada, Balakot, Nausharo, and Harappa are located in different environments across the vast interaction zone of the Indus Civilization. Each had as the basis of its animal economy the keeping of domestic animals and the exploitation of natural resources through grazing, fishing, and hunting. This paper explores variability in animal use between these different sites within the context of settlement type, location, and function in the Harappan world. Not only is the nature of resource availability considered, but the cultural choices that were made in animal exploitation and consumption are evaluated based upon the history of faunal use in the different regions.

A first look at the bones from Bagasra

Bradley A. Chase: University of Wisconsin

This paper is primarily a presentation of a preliminary analysis of a large sample of faunal remains from the site of Bagasra, a small Harappan site in Gujarat excavated since 1996 by the faculty and students of MS University at Baroda. Bagasra is a provocative site: it is extremely small, yet was surrounded by a large enclosure of monumental scale and construction and for a time was integrated into the Indus Valley Civilization's urban economy not only through its residents' use of a range of "typical" Harappan material culture, but also their involvement in production and trade of economically and ideologically important prestige goods, most notably shell bangles. The goal of analyzing the faunal remains from this site is to reconstruct the animal economy of the site in order to more completely understand the manner in which the site was integrated into both its immediate hinterlands as well as the larger economic and ideological networks of the Indus Valley Civilization.

Animal husbandry, hunting and fishing in ancient Mahagama (Tissamaharama, Sri Lanka)

Prof. Dr. Norbert Benecke: Deutsches Archäologisches Institut, Referat Naturwissenschaften, Berlin

EASAA 2005

Handbook of Papers and Panels

Excavations (1992–2003) in the citadel of Mahagama, the capital of the antique Kingdom of Ruhuna, revealed well-stratified samples of animal remains dating to the period 4th cent. BC – 9th cent. AD. Altogether approximately 6,000 animal remains have been studied from three sites within the citadel (Tissa 1 – Workmen’s quarter, Tissa 2 – Court’s Garden, Tissa 3 – Sarvodaya) so far. The following domestic species could be identified (species arranged according to frequencies): cattle, pig, water buffalo, chicken, sheep/goat, dog, cat, horse and donkey. Interestingly, more than half of the mammal and bird bones belong to wild species. The most frequent wild species are spotted deer (*Cervus axis*) and wild pig (*Sus scrofa*). Marine and freshwater fish, birds and mollusks were exploited as resources for food and raw materials as well. An exceptional find is a rib of spotted deer with a broken arrow head made of quartzite. This could be an indication that the native Veda-people supplied the inhabitants of the citadel with hunted animals.

Exploitation and use of plants in the Halil Valley during the Bronze Age. First results from the archaeobotanical analysis at Kunar Sandal A and B, South-East Iran
Margareta Tengberg: Maison de l’Archeologie et de l’Ethnologie, Université de Paris

The recent archaeological surveys and excavations undertaken in the Halil valley, south of the modern city of Jiroft in the Kerman province, have brought to light a rich Bronze Age civilisation with far-reaching contacts in the Middle East. This paper presents an important, and so far little known, aspect of the 3rd millennium BC societies in South-eastern Iran: the exploitation and use of plant resources, both wild and cultivated. The results of the analysis of charcoal fragments, sampled during the excavations of Kunar Sandal A and B and most probably constituting the residues from fuel wood, inform us on the vegetation cover of the valley during the occupation of the sites. Seeds and fruits from wild species, collected in the surroundings, further add to our knowledge of the past environment. A major part of the paper is devoted to a discussion of the subsistence economy and agricultural practices in the Halil valley, revealed by the study of charred seeds and fruits as well as plant impressions on mud brick. In this context, particular attention will be paid to the role of the date palm (*Phoenix dactylifera*), frequently and naturalistically represented on the famous Jiroft chlorite vessels.

Exploring new frontiers: archaeobotanical investigation of prehistoric sites in Orissa
Emma Harvey: Institute of Archaeology, University College London

The state of Orissa in Eastern India is still a relatively unexplored area archaeologically particularly concerning archaeobotanical investigations. Little is known about the early agricultural communities in this area although there are many known prehistoric sites. A field season took place in winter 2003 when a number of prehistoric sites in the highlands and lowlands were sampled for macro-botanical remains and phytoliths. From this work it is clear that there is a difference between the type of sites that are found in the coastal lowlands and the mountainous highlands suggesting that these two areas have separate prehistoric economies.

Large mounded sites dominate the coastal and riverine areas of Orissa. These have thick stratigraphy and multiphase occupation. The sites of Golbai Sasan and Gopalpur, near

EASAA 2005

Handbook of Papers and Panels

Bhubaneswar, have been investigated so far and have rich archaeobotanical results. They have similar economies based predominantly on rice and pulses. This area is also likely to have been an area of possible domestication of a number of plant species including rice and Pigeonpea (*Cajanus cajan*).

Highland sites in western and northern Orissa are much more ephemeral and seem to be from periodic use by hunter-gatherers or shifting cultivators. There are few botanical remains present on these sites and this may indicate a different tradition of plant exploitation to the settled coastal farmers. In this area in the recent past tribal groups practiced shifting cultivation, which is a possible economic strategy for these prehistoric groups. This paper will give an archaeobotanical perspective on these two differing prehistoric economies as well as contrasting these data with other contemporary prehistoric groups from other areas of India.

Excavations at Sisupalgarh: An Early Historic City in Eastern India

M.L. Smith: UCLA, Los Angeles

R.K. Mohanty: Deccan College, Pune

The walled city of Sisupalgarh presents an ideal opportunity to examine the growth and development of urbanism in the Early Historic period (c. 3rd century B.C. to 4th century A.D.). Excavations in 2005 have concentrated on two areas of the site: the habitation area within the walls, and the upper portion of the rampart wall itself. Excavations within the habitation area were undertaken to provide information about the domestic architecture within the fortification walls of Sisupalgarh and to extend the area of architectural remains recovered in the 1948 excavations. To provide new material for chronological dating, one area of the habitation zone was also taken for a deep sounding to natural soil, documenting the presence of over 5 meters of cultural deposits including well-preserved faunal and botanical remains. Excavations at the top of the rampart revealed a stone and brick wall at the crest of the rampart along with a considerable amount of pottery indicative of the use of settlement debris for the uppermost reconstruction of the city's encircling rampart.

Storage bins from Chalcolithic deposits at Lahuradewa

Rakesh K. Srivastava: U.P. State Archaeology Department

A good number of earthen storage bins have been recovered during the course of recent excavations at Lahuradewa (26 046'N: 82 057 'E). Lahuradewa is located about 5 km south to the Bhujaini crossing which is situated between Basti and Gorakhpur on national highway No.28, and comes under Khalilabad tehsil of the newly formed Sant Kabir Nagar district of Uttar Pradesh). In the deposits representing advance agriculture community. These deposits have been placed under period II of Laluradewa which is marked on the basis of some copper artefacts and placed between c.2000 and 1200 BC E. The storage bins in question are circular to oval on plan with different measurements. It appears that these structures were made for the storage of grains hence identified as storage bins/silos. The occurrence of such structures in a considerable number in almost every trench indicates surplus agricultural production comparable earthen structures have also been found at Imlidih Khurd (Distt. Gorakhpur) and Checher Kutubpur

EASAA 2005

Handbook of Papers and Panels

(district Vaishali) in the middle Ganga Plain in the contemporary deposits, and other region of the country.

The proposed paper is aimed to discuss the structural and other aspects of the bins/silos in question with special reference to Lahuradewa.

EASAA 2005

Handbook of Papers and Panels

PANEL: The Hephthalites (Wednesday July 6 9.30 – 4.30)

Convenors: Dr. Madhuvanti Ghose (Dept. of Art & Archaeology, SOAS, London) and Dr. Etienne de la Vaissière (EPHE, Paris)

This panel aims to discuss current issues pertaining to the Hephthalites in South and Central Asia. The current research on various aspects of the study of the Hephthalites through numismatic and textual sources as well as art and archaeology will be presented and certain conclusions about our knowledge about these people will be reassessed through discussion. Some of the key questions will include the identification of the different nomadic groups, tracking their history and chronology, discussing the Khingila question, new finds which can throw light on these issues from Gandhara, Kashmir, and Sogdia as well as questions related to the art produced during this time in areas under the Hephthalites will be addressed.

Rethinking the Hephthalites: political and ethnic denominations in Central Asia

Dr. Etienne de la Vaissière: EPHE, Paris

XIXth c. historiography has focused the historical researches on ethno-linguistic affiliations while it seems that with the available data, and especially Chinese sources, it is possible to sustain the opinion that most of the different waves of invaders in IV-Vth c. Central Asia were political entities devoid of any idea of a common ethnic background. It is not sure at all that any idea of an Hephthalite language for instance should be maintained in XXIth c. historiography.

The Hephthalites in the Bactrian documents

Prof. Nicholas Sims-Williams: SOAS, London

Some years ago Helmut Humbach recognized the name of the Hephthalites in the abbreviation “ēb” found on some of their coins. This is now confirmed by the full form “ēbodalo” and its derivatives, which occur many times in the recently discovered Bactrian documents, both in the legal and economic documents which I published in 2001 (*Bactrian documents from Northern Afghanistan*, Vol. 1, OUP 2000 [2001]) and in the still unpublished letters. In this paper I will examine these references to see what they can tell us about the Hephthalites and their relations with other peoples such as the Bactrians and the Persians.

Numismatic evidence of the Hephthalites

Mag. Klaus Vondrovec :Austrian Academy of Sciences, Vienna

Based on purely numismatic evidence the Hephthalites represent one of the four main groups of the so called “Iranian Huns”, next to the Kidarites, Alchon and Nezak-Shah. Only a few coin types can be attributed to the Hephthalites for sure, although numerous specimens exist. Their origins can be traced to the drachms from the Sasanian ruler Peroz, which are modified to an independent type. Latest finds not only provide us with new coin-types but show a developing pattern of their circulation, together with other coins. Combined with archaeological data, their internal chronology will be reconsidered in this paper.

EASAA 2005

Handbook of Papers and Panels

Hephthalite images on the Bactrian sealings and elsewhere

Dr Judith A. Lerner New York, USA

In addition to the linguistic evidence for Hephthalites in the Bactrian documents (to be presented by Prof. Sims-Williams) several of the clay sealings associated with the documents offer visual testimony for a Hephthalite presence in the northern Hindu Kush, specifically in the vicinity of Rob (modern Rui), the source of many of the documents. A series of male “portrait” busts, typically in three-quarter view, with tulip crowns or simple diadems, along with male busts in profile and a “double portrait” of a man and woman seem to represent the period of Hephthalite rule. This paper will analyze these and images on other seals and in other media that have been identified as “Hephthalite.” By drawing on representations from the Hephthalites’ immediate spheres of Central Asia and India as well as eastward in Xinjiang and northwest China, and by examining such details as physiognomy, headdress, hairstyles and dress, I hope to establish some stylistic and chronological markers for the figural art of this period.

Manych bowl

Dr Tigran Mkrtichev and Iliya Ahmedov: State Museum of Oriental Art, Moscow, and Historical Museum, Moscow, Russia

This spherical silver bowl with a multi-person composition was found in the North Caucasus near the river Manych and presented to the Historical Museum in Moscow in 1967. Its diameter is 14 cm, and height 5.8 cm. The exterior surface of the bowl is cast and then engraved. It is decorated with a multi-person narrative composition and has a large ring medallion at the bottom which encloses an embracing and kissing couple. The narrative composition is divided into probably four scenes. We can propose the existence of a main hero – a bearded elder with a staff, shown in three of the scenes.

The narrative composition and some features of the iconography (figure of the bearded man with staff) show that the bowl represents one of the last stages of Hellenistic tradition with the person’s garment and dancing couples demonstrating the links with the Dionysian cult, which had existed in the Orient for a long time. One can also see some Indian influence in the iconography of the bowl. On the basis of analysis of the iconography, we propose that the bowl was made by local craftsmen in Tokharistan around c.5th -6th centuries, and was probably a copy from an earlier object.

The Hephthalite empire as reflected in the Sogdian funerary reliefs from Northern China

Prof. Frantz Grenet & Pénélope Riboud: CNRS, Paris

Most of the funerary couches from Northern China which are now known date from the 570's and 580's. It can be assumed that the “exotic scenes” connected with the carrier of the defunct refer to an earlier period corresponding to the peak of their carriers, when the Hephthalite empire was still the dominant power in the western Tarim basin, Central Asia and Northwest India. Several scenes from the couch in the Miho Museum and from those which were carved in Xi'an for the *sabaos* An Qia and Wirkak can be connected with the various directions of Hephthalite expansion.

EASAA 2005

Handbook of Papers and Panels

Western Turks as Patrons of Buddhist Monuments in the Hindu Kush: Reconsidering the Hephtalite Contribution

Prof. Deborah Klimburg-Salter: University of Vienna, Austria

Until recently, most researchers have followed Ghirshman (1948) in attributing the Buddhist monuments in the Bamiyan Valley to Hephtalite patronage. This contribution will summarize the most recent studies reviewing this question including Kuwayama's re-evaluation of the Hephtalite hypothesis presented in a number of articles begun in the 1970's and published in a collected volume in 2002. Based on archaeological and literary evidence, Kuwayama defines more precisely the areas controlled by the Hephtalites and the Western Turks. The political-military disposition of the confederation of the Western Turks in turn encouraged the development of a "new" trade route traversing the Bamiyan Valley as an alternative to the earlier route passing through the territory of the Hephtalites.

Kuwayama's hypothesis will be placed within the context of the most recent evidence for the dating of the main complex of images and painted caves in the Bamiyan Valley and the art historical and archaeological evidence for Buddhist art elsewhere in the Hindu Kush and south of the Hindu Kush (e.g. Verardi and Inaba in *Verardi and Paparatti 2004*). Recent studies demonstrate the late flourishing of a Buddhist culture in central Afghanistan from the second half of the 6th century with significant activity continuing well into the 8th and 9th centuries. Some of these studies also demonstrate the importance of the Khalaj Turks as patrons of Buddhist monuments in the region during this period. In closing I shall propose that the model defined by Di Cosmo (1999) as Trade-Tribute Empires (551-907), the second phase within his framework for the periodization of Inner Asian history, may assist us in better understanding the dynamic relationship between the political, economic, and military institutions in central Afghanistan from the 6th century to *ca.* the 8th century.

Hephtalites in Gandhara: some more archaeological evidences

Dr M. Nasim Khan: University of Peshawar, Pakistan

The history of ancient Gandhara, particularly after the Great Kushans to the arrival of Islam, has always remained a matter of great dispute. This is evidently due to the lack of sufficient data as source material for reconstruction of the history of the region. Although serious work has been done in this regard, the Hephtalite period could not be fairly reconstructed by the scanty information retrieved from different archaeological and other sources. Archaeological investigation currently taking place in Pakistan has brought to light some of the darker aspects of Gandharan history. The recent discovery of Hephtalite antiquities at Kashmir Smast and other areas, especially Bajaur, are of great significance. The aim of the present paper, therefore, is to extend previous research further and strengthen the history of the Hephtalites in ancient Gandhara.

Is there a Hephtalite style in Indian art?

Dr Madhuvanti Ghose: Dept. of Art and Archaeology, SOAS, London

EASAA 2005

Handbook of Papers and Panels

This paper will examine some objects that have been dated to the 4th and 5th centuries CE from Gandhara and northern India in order to determine whether one can label them “Hephthalite”. Comparisons with Hephthalite objects from Central Asia and the Gupta art of India will be made in order to come to some new definitions.