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Fifty-Five Years of Archaeological Research in Pakistan: The Prehistoric Periods

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Archaeological research in Pakistan is an international endeavor involving scholars from many nations and institutions. While the breadth of academic involvement has been stimulated by the diversity of the archaeological record, fieldwork in Pakistan would not have been—and would not be—possible without the policy of active cooperation and assistance followed by the government of Pakistan and, for archaeology, by the Department of Archaeology and Museums of the Federal Ministry of Culture and Heritage in particular. The recognition of the importance of international collaboration has resulted in much joint research between Pakistani and non-Pakistani scholars, and this in turn has promoted a better understanding of the archaeology and early history of the region. Even so, the archaeology and early history of the geographical area encompassed by Pakistan is still rather poorly known. Although great strides have been made since the founding of Pakistan, there remains much to do, particularly given the pace of industrial and agrarian development.

The purpose of this chapter is not to present a summary of all of the major discoveries made in the last fifty–five years, but rather to highlight those that have resulted in major shifts in research paradigms and interpretive frameworks. The main focus is on studies of the prehistoric period, beginning even before the earliest evidence for toolmaking hominids and continuing through the rise and decline of the Indus Valley Civilization. Special emphasis is placed on contributions by American scholars and Pakistani archaeologists trained in America and on collaborative projects that are helping to build a foundation for the next fifty years of research.

Although American contributions to archaeological research in northwestern South Asia began before Pakistan's independence, there was a marked increase beginning in the 1950s and continuing until the present. Many American scholars have been based in Departments of Anthropology, with the result that projects have tended to be multi-disciplinary including personnel specializing in Physical Anthropology (study of hominoid and hominid remains), Ethnology (study of material culture in its present context), Zooarchaeology (study of animal remains from archaeological sites), Palaeoethnobotany (study of plant remains resulting from human activity), Palynology (study of pollens), Geoarchaeology (study of past human influence on the landscape), Experimental Archaeology (attempting to replicate past technological processes), and

Ethnoarchaeology (study of modern practices to formulate models useful for investigating past behaviors). For the earliest periods, specialists in Geology (study of rock deposits), Paleontology (study of premodern faunas including Taphonomy, Paleoecology, and Biostratigraphy), and Chronostratigraphy (use of various dating techniques) have also played a major role. In addition to site survey, collection, mapping, and excavation, various field projects have included site and object conservation, training courses, and site and museum development.

PRIMATE EVOLUTION AND EARLY TOOLMAKERS IN PAKISTAN

Pakistan has a largely untapped geological resource of fossils that covers the evolution of most organisms, beginning as early as the Archaean Epoch, some 3.8 billion years ago, and continuing to the present. In 1933, the Yale–Cambridge expedition to what is now northern Pakistan and Kashmir, led by Helmut de Terra and T. T. Paterson, began studying Stone Age sequences in Kashmir and on the Potwar Plateau of the Punjab (de Terra & Teilhard de Chardin 1936; de Terra & Paterson 1939). Although many of their original interpretations have since been modified and updated, their studies provided an important basis for future research on early environments and cultures in South Asia.

The Potwar Plateau of northern Pakistan contains some of the world's richest fossil beds from the Miocene Epoch. Beginning in the early 1970s a number of American teams initiated long-term research projects in collaboration with the Geological Survey of Pakistan to investigate the biostratigraphy and chronostratigraphy of the Siwalik deposits of this region. Eventually coming to work closely together, investigators from Dartmouth College (Noye Johnson and Gary Johnson), the University of Arizona (Everett Lindsay), LaMonte Geophysical Laboratory (Neil Opdyke later at the University of Florida, Gainesville), and Yale University (David Pilbeam, continuing the project now from Harvard University, Elwyn Simons, Grant Meyer, and S. Mahmood Raza) focused on the Potwar Plateau with forays into the Suleiman and Bukhti ranges. At about the same time a team from Howard University (Taseer Hussein) worked in the Trans–Indus region. The result of this research has been the establishment of a remarkable chronological sequence into which almost any geological outcrop can be situated to within about 100,000 years (see Table 10.1). The Siwalik sequence in the Potwar is now the best collected, best dated, and best documented long land sequence in the world for the Miocene, comparable in quality to that established for the subsequent five million years in East Africa (Pilbeam et al. 1977; Badgley & Behrensmeyer, eds. 1995; Barry et al. 2002). In the course of these investigations many new species of mammals—large and small—have been identified. Of particular importance has been the recovery of rodent remains through a comprehensive program of screen washing of

sediments. This biostratigraphic work together with the results of isotope studies has permitted identification of significant climatic and related temperature and environmental shifts in the late Miocene (10.7 to 5.7 Ma). At that time when the Himalaya were being formed, the climate became increasingly seasonal, with the carbon dioxide content of the atmosphere being affected and C-4 (more arid-adapted) grasses replacing C-3 (more temperate/tropical) grasses in the area of study. In addition, numerous fragments of Miocene primate fossils (especially *Sivapithecus*) were recovered, providing important data for reconstructing the complex evolutionary processes that preceded the emergence of hominids (Pilbeam 1978, 1979).

Table 10.1. Geological and Archaeological Terms and Dates

Epoch	Approximate Dates
Holocene	Present to 10,000/12,000 BP
Pleistocene:	
Upper/Late Pleistocene	10,000 to 100,000 (or 127,000) BP
Middle Pleistocene	100,000 BP to about 1 (or 0.7) Ma
Lower/Early Pleistocene	1 my to about 2 (or 1.9 or 1.7) Ma
Pliocene	2 my to about 5 (or 5.26) Ma
Miocene	5 my to about 25 (or 23) Ma
Oligocene	25 my to about 36 Ma
Archaeological Periods	**Approximate Dates**
Neolithic (Food Production)	9000 to 8000 BP and later
Epipaleolithic (Transitional period)	10,000 to 9000 BP
Upper Paleolithic (Hunting–Gathering)	30,000 to about 10,000 BP
Middle Paleolithic (Hunting–Gathering)	100/70,000 to about 30,000 BP
Lower Paleolithic (Hunting–Gathering)	+ 2 Ma to 100/70,000 BP

Key: Ma = million years ago, BP = before present

Fragmentary deposits dating to the Pliocene (circa 5 to 2 Ma) have been located in the Potwar, but so far no hominid fossils have been discovered. At present, the earliest hominid fossils, such as Australopithecus, Paranthropus, and Homo have been found only in Africa, dating to the Pliocene and Pleistocene Epochs. On the basis of fossils in Africa, most scholars assume that the earliest toolmaking species, *Homo habilis* (2.3 to 1.7 Ma) and later *Homo erectus* (1.8 or 1.5 Ma) originated in Africa and migrated to Europe and Asia. Nevertheless, the presence of early hominids in Pakistan is suggested by finds in dated contexts of what are thought by some researchers to be stone tools. Since 1979 the British Archaeological Mission to Pakistan, working in collaboration with the Geological Survey of Pakistan, has been studying the geology and documenting

Paleolithic sites in the Potwar Region (Dennell 1991). In 1983 and 198[illegible] members of the project discovered near the town of Riwat what appeared to be stone tools dating to before 2 million years ago (Dennell 1984; Dennell et al. 1988; Hurcombe & Dennel 1992; Rendell et al. 1989). Although there has been controversy regarding the identification of these flaked stone pieces as tools and with the dating of the geological strata, discoveries of Lower Palaeolithic tools in the Jammu area from Upper Siwalik beds dating to before 2.8 Ma (Sharma 1995:105 in Korisettar 2002:13) also suggests the presence of early hominids in this part of the world. Only further work in the region will resolve the debate. Once such work is begun we expect that it will be only a matter of time before more widespread evidence is turned up.

By 500,000 years ago there is considerable evidence for the descendants of the earlier toolmakers throughout most of the subcontinent. Most recently, surveys by an Italian team in collaboration with Shah Abdul Latif University, Khairpur, have discovered evidence for Paleolithic tools at sites in the Rohri Hills of northern Sindh (Biagi & Pessina 1994; Negrino & Kazi 1996), which provide good evidence for the antiquity of human populations in the heart of the Indus Valley itself. Presumably these individuals were some form of *Homo erectus*, or an archaic Asian form of *Homo* that has not been preserved in the fossil record (Allchin & Dennell 1990; Dennell et al. 1990; Allchin 1994).

These discoveries have two major implications. First, South Asia, and specifically northern Pakistan, was an important region of development for hominoids. Second, tool-using hominids may have been present in South Asia as early as they existed in Africa. If the latter is true, as some have argued, then we will have to rethink the models currently proposed for human origins (Lukacs 1984; Dennell et al. 1990; Kennedy 1994).

EARLY FOOD-PRODUCING COMMUNITIES

Following the Paleolithic, the next important phase in the archaeology of Pakistan is the period of initial settling down and the beginnings of plant and animal domestication. Until recent discoveries at the site of Mehrgarh, it was assumed that the staple domestic grains and animals were brought to South Asia from Western Asia. Now it is possible to suggest more complex models that include aspects of an indigenous transition from hunting and gathering to food production. While regions of Balochistan and the Indus valley were not isolated from what was going on farther west, there was considerable indigenous potential that seems to have contributed to the local domestication of some plants and animals.

The foundation for current research by Pakistani and international projects was established through the pioneering efforts of several scholars who surveyed and excavated in the rugged terrain of Balochistan, Makran, and Sindh, following up on earlier surveys conducted during the period of British rule. This

work in Pakistan has been complemented by surveys in Afghanistan to the west and in the deserts of India to the east.

Although the work of Louis Dupree (e.g., 1992) focused primarily on Afghanistan, it is appropriate to recognize his important contributions involving the investigation of Upper Paleolithic and early Neolithic sites that had connections with what was going on in Balochistan and the Indus Valley. Dupree's evidence suggests that in Northern Afghanistan, during the Middle Paleolithic and especially during the Upper Paleolithic (30,000 to 15,000 BP), potential domesticates such as wild sheep and goat, and possibly cattle, were being heavily exploited (Perkins 1972; Shaffer 1978a; Meadow 1989).

Some of these same sites have nonceramic Neolithic occupations with the remains of domesticated sheep/goat and possibly domesticated cattle being reported. Sickle blades, stone hoes, ground stone querns, and mullers have also been recovered along with the faunal materials, but no architectural structures were discovered. Dupree suggested that these Neolithic sites, dating to perhaps as early as 8500 BC, represent the temporary camps of specialized pastoral populations. (All BC dates cited in this paper are in calibrated years, which approximate calendar years.) Although he was never able to follow up on his discoveries, research by other scholars in Balochistan, and specifically the excavations at Mehrgarh support the possibility that there were mobile communities in the highlands and that these communities were interacting with settled agriculturists and artisans and moving in seasonal migration patterns of vertical transhumance (highlands to lowlands and back).

Although Dupree's projects included a more anthropological approach to archaeological research in the region, the major credit for introducing American archaeological methods to Pakistan belongs to Walter Fairservis, a class fellow of Dupree, who began his graduate studies at Harvard University in 1948. Starting with his initial Ph.D. research in 1949, and continuing throughout his association with the American Museum of Natural History in New York, Fairservis conducted numerous surveys in Balochistan and Afghan Seistan (Fairservis 1952, 1956, 1959, 1961). During the course of these surveys he and his team members located many sites belonging to prehistoric and historic periods. Small-scale excavations at the site of Kili Gul Mohammad and Damb Sadaat near Quetta revealed the presence of preceramic Neolithic and early Chalcolithic occupations that anticipated the more extensive discoveries at the site of Mehrgarh some twenty years later. He also conducted surveys in the Las Bela valley and excavated at the Harappan site of Allahdino near Karachi (Fairservis 1982). His exhaustive studies of prehistoric figurines, ceramics, and other artifacts have remained a point of reference for all subsequent research.

In addition to his new discoveries, Fairservis was introducing new ways to analyze and interpret the data that he recovered. This resulted in a major clash with the leading British scholar of the day, Sir Mortimer Wheeler (Fairservis 1985). Wheeler did not believe that there was much evidence for the development in Balochistan of cultural practices that would lead to the Indus Civilization, and even though he began to modify his views in his later years, he

preferred to invoke the mechanisms of diffusion to explain culture change (Wheeler 1968; Fairservis 1985).

Fairservis drew part of the inspiration for his work from Jim Ford (an archaeologist who worked in Peru) and Robert Redfield (an anthropologist who worked in Mexico and wrote about the Near East). In contrast to Wheeler's "orthogenetic interpretation of history whereby period followed period much as do Egyptian dynasties, or the succession of monarchs in England," Fairservis viewed the stratigraphic units in his excavations "as arbitrary units in a time flow within which cultural stability and change could be discerned" (Fairservis 1985: 344–345). He used ethnographic observations from Balochistan and other regions of the world to argue for a cultural evolution that linked the early settled communities in Balochistan to the emergence of the Harappan or Indus Civilization.

The importance of Balochistan in the overall development of the Indus Valley region that was anticipated by the work of Fairservis has to some extent been confirmed through the research in Afghanistan and Balochistan by Shaffer (Shaffer 1974, 1978b), Dales and Flam (Dales & Flam 1969; Dales 1971, 1973, 1977a, 1977b), and numerous other scholars (e.g., Mughal 1974, 1977; Tosi 1979; Besenval 1992, 1994). The most important confirmation has come from excavations at the site of Mehrgarh, located at the foot of the Bolan Pass, which connects the Indus Valley with the highland plateau of Quetta.

The site of Mehrgarh was excavated by the French Archaeological Mission to Pakistan under the direction of Jean-François Jarrige from 1974 to 1986 (Jarrige & Lechevallier 1979; Jarrige & Meadow 1980; C. Jarrige et al. 1995) and again from 1996 to 2000 (Jarrige 2000). A major contribution of these excavations is the picture they present of the process of settling down and establishing domestic plants and animals as the major source of subsistence. In contrast to the purely diffusionary models proposed by earlier scholars (e.g., Wheeler 1968), the transition to food production in northwestern South Asia can now be seen as a process with major indigenous components that is likely to have involved communities throughout the highland region and all along the piedmont zone of Balochistan (Costantini 1984; Meadow 1995, 1999; Meadow & Patel 2002). In Balochistan itself the earliest highland villages have not yet been located or excavated, possibly because they are hidden under large mounds or modern villages. Kili Gul Mohammed in the Quetta Valley is the only site yet excavated in the highlands where there is possible evidence for the early exploitation of cereals (Fairservis 1956, 1975). Yet from remains found at Kili Gul Mohammed and Mehrgarh, we can determine that the early food-producing communities probably had trade networks extending from the highlands to the west, out into the Indus Plains to the east, and south to the Makran coast (Kenoyer 1995b; Possehl 1999).

The population of Mehrgarh Periods I-IIA is well represented by numerous burials found between the mud-brick structures. After carefully studying the shape of the teeth in these early burials, John Lukacs (University of Oregon) feels that they do not reflect peoples who moved into the region from the West

because they do not have strong links in dental morphology to known Neolithic populations of West Asia (Lukacs 1989). On the contrary, characteristics of their teeth associate them with a distinctively Asian gene pool. This early pattern is the more significant because there is a distinct change in tooth shapes during the later Chalcolithic period (Mehrgarh Period III) when the dental remains begin to show greater similarities to West Asian populations (Lukacs 1989). This change could be explained by an increase in trade, communication, and other forms of interaction and corresponding gene flow between the Indus region and West Asian cultures during the fifth and fourth millennia BC.

In conjunction with the biological evidence, the material culture of the Neolithic occupation at Mehrgarh, from ca. 6500 to 5500 BC shows how the basic subsistence economy of the Indus Valley became established and how trade and craft specialization developed. The subsistence of the earliest inhabitants of Mehrgarh was focused primarily on hunting and gathering, supplemented by cultivation of barley and some wheat (Costantini 1984) and the herding of domestic goats (Meadow 1981, 1984, 1993b, 1995, 1999; Meadow & Patel 2002). By the end of the aceramic Neolithic, domestic plants and animals became the dominant subsistence resources and with barley being the dominant cereal and cattle the dominant animal.

In the earliest Neolithic period, there is evidence for local production of stone and bone tools (Russell 1995), but most of the ornaments appear to have been traded to the site as finished objects (Jarrige & Meadow 1980; Kenoyer 2000). During the later Chalcolithic periods at Mehrgarh there was a dramatic change in production strategies whereby raw materials from distant areas were brought to the site and processed locally. The general trends in the production, display, and eventual deposition of tools and ornaments during the Neolithic and Early Chalcolithic period at Mehrgarh provide important background for understanding later developments at sites in the Indus valley itself. No centralized structures for political, economic, or ideological control have been found at the site, and yet there is a change from the trade of finished goods to the localized production and redistribution. Along with this change in economic strategies, craft production itself was gradually transformed from relatively simple forms of processing to highly specialized manufacture involving both local and exotic materials and complex pyrotechnologies.

Additional evidence for these important transitions comes from surveys and excavations in Balochistan (Franke-Vogt et al. 2000; Franke-Vogt 2001; Besenval 1994, 1997), Punjab (Mughal 1970, 1981, 1982, 1990, 1997; Mughal et al. 1996), Sindh (Flam 1986, 1993b), and the Northwest Frontier Province (Dani 1970–1971, 1975; Durrani 1986, 1988; Khan et al. 1990; Durrani et al. 1991; Khan 1992). In addition, the continued efforts by scholars from Shah Abdul Latif University, Sindh, have opened up a new perspective on the Neolithic and early Chalcolithic cultures in the regions around Rohri and in the Thar desert of Sindh (Shaikh 1997, Mallah 1998, 2000).

During the next 2,500 years the communities living in the Indus Valley and adjacent regions developed new technologies to produce pottery and figurines of

terracotta, elaborate ornaments of stone and metal, tools and utensils, and architectural styles that together reflect regional cultures named after the sites where they were first identified. Of these the most important are the Amri and Kot Diji cultural phases that are found in the southern and northern regions of the Indus Valley, respectively. By approximately 3000 BC there is evidence for the expansion of Kot Dijian interaction networks, linking them to the southern Amrian regions, and by 2800 BC we see the first development of large settlements surrounded by smaller villages and hamlets.

Dr. M. Rafique Mughal, then a field officer in the Department of Archaeology and Museums, government of Pakistan, was the first to show systematically that these cultures represent the formative stage of the later Indus Valley urban civilization (Mughal 1970). Although his interpretations and the name he applied to the phenomenon—"Early Harappan"—were criticized by many scholars in both Pakistan and India, some of whom had been trained by Wheeler, his propositions have subsequently been confirmed through surface surveys and excavations at numerous sites.

Mughal's interpretation goes one step beyond that proposed by Fairservis. Whereas Fairservis focused on the role played by the highland villages of Balochistan, Mughal argued that the foundation for the emergence of cities on the Indus plain came from people inhabiting the plain itself. It was they who developed the basic technologies, trade networks, subsistence practices, and sociopolitical organization that underlay the establishment of cities. While there were certainly some population movements within the Indus Valley and between the Indus Valley and surrounding areas, there is currently little evidence to support the model proposed by Fairservis of a population shift from the highlands to the plains during the first half of the third millennium BC (Kenoyer 1998, 2000).

One of the most important sites of the Kot Diji Phase is Rehman Dheri excavated by Dr. F. A. Durrani of Peshawar University (Durrani 1986, 1988). Rehman Dheri provides concrete evidence for the establishment of planned settlements with massive mud-brick walls and the early use of graffiti and seals during the period just prior to the rise of the Indus cities. Other sites in Pakistan that have demonstrated the important changes and continuities leading to the urbanism of the Harappa Phase are the site of Harappa itself (Kenoyer 1991a, 1991b; Meadow & Kenoyer 1994, 1997, 2000), Ghazi Shah in Sindh (Flam 1993a, 1993b), and Nausharo in Balochistan (Jarrige 1986, 1988, 1989, 1990; Jarrige & Meadow 1992; Quivron 1994; C. Jarrige et al. 1995). Of particular importance are Louis Flam's survey and subsequent excavation work in Sindh Kohistan. Following Sir M. Aurel Stein (1931) and Robert Raikes (1965), Flam has underlined the importance of the massive installations of diversion and check dams in the hills and foothills to the west of the Indus Valley. In addition he has defined for this region a pattern of "acro-sanctums"—high mounds overlooking lower settlements—that was previously thought to exist only for the urban Harappan settlements. Finally, working in part with geomorphologists Stanley Schumm, Michael Harvey, and David Jorgensen, he has provided us with a good understanding of the dynamics of the Indus River with particular reference to changes in its course through time and their significance for understanding settlement patterns in Sindh (Flam 1976, 1981, 1993c, 1999; Jorgensen et al. 1993).

Discoveries from these various excavations and new interpretations, such as those presented by Mughal, required a major reassessment of the models used to understand developments leading to the first urban civilization of South Asia. In light of major changes in American archaeological theory and methodology that took place in the 1960s and 1970s, it is not surprising that critical summaries and new interpretive models were presented (Possehl 1977; Jacobson 1979; Dyson 1982). In 1984 Jim Shaffer proposed a comprehensive framework for discussing the increasingly complex sets of archaeological data that had been accumulated though surveys and excavations. The central concept of his scheme was the Tradition—"persistent configurations of basic technologies and cultural systems within the context of temporal and geographical continuity" (Shaffer 1992b). He identified three major cultural traditions that existed in the geographical regions extending from Eastern Iran to the Greater Indus Valley: the Indus Valley Tradition, the Balochistan Tradition, and the Helmand Tradition. He further divided each of these Traditions into Eras and Phases. The Early Food Producing Era refers to a cultural context in which the economy is based on food production and there is an absence of ceramics (e.g., Mehrgarh, Period IA). The Regionalization Era refers to cultures that are becoming regionally differentiated in artifact styles (e.g., ceramics). These artifact styles cluster in time and space (without fixed boundaries), and are connected by regional interaction networks (e.g., the Kot Dijian and Amrian phases). The Integration Era refers to a period of pronounced homogeneity in material culture over a large geographical area, reflecting an intense level of interaction between social groups (e.g., the urban Harappan Phase). Finally, the Localization Era sees the breakdown of integration and the emergence of local cultures with interaction networks that are different from those present during previous eras.

Shaffer's framework is flexible enough to allow for the definition of new analytical units, such as the Ravi Aspect of the Hakra Phase at Jalilpur and Harappa (Kenoyer & Meadow 2000), and it can be expanded to incorporate later cultural developments of the early Historic period (Kenoyer 1995a, 1997a).

There is still much to learn about the formative stages of the Indus Civilization, and several research projects are examining the earlier periods in conjunction with more extensive excavations of the urban Indus or Harappan Phase.

INDUS CIVILIZATION

One of the leading American scholars to study settlements of the urban Harappan Phase of the Indus Civilization was George F. Dales. Dales undertook a survey along the Makran coast in 1961 with his wife Barbara, T. Cuyler Young, Jr., and

M. Rafique Mughal. They sank some test trenches into the important Harappan outpost of Sutkagen Dor and discovered another at Sotka Koh (Dales 1962a, 1962b; Dales & Lipo 1992). In 1964 to 1965 Dales excavated at Mohenjo-daro for one season using modern excavation and collection techniques. On the basis of a new approach to one of the most important sites in Pakistan, he was able to reveal information that challenged many of the earlier theories about the character of the urban settlement as well as reasons for its decline (Dales 1964, 1965, 1966, 1984; Dales & Kenoyer 1986). Returning to the coastal zone he excavated at the Harappan coastal town of Balakot (Dales 1979a & b; also Franke-Vogt 1997) bringing a team of students and specialists who are continuing to analyze the data from that project relating to chronology, site planning, fishing, crafts, trade, and subsistence. Then in 1986 he began a long-term research project at Harappa (Dales 1989) where he and his team were able to establish the first detailed chronology of an Indus urban center, excavate in the important Harappan cemetery, and collect new information on the origin of the most ancient city of the subcontinent. In all of his excavations Dales made a special effort to train students and collaborate with Pakistani scholars, a program that is still being implemented at Harappa. Detailed analysis of specific categories of artifacts, the careful redocumentation of the excavated ruins, and the study of surface distributions of craft indicators and other artifacts (Jansen 1991, 1993) are all part of that program.

Harappa, however, was accessible for excavation. Beginning in 1986, the Harappa Project, directed by George F. Dales and J. Mark Kenoyer in collaboration with the Department of Archaeology and Museums, government of Pakistan, established a permanent research facility with an on-site conservation laboratory (Dales 1989; Dales & Kenoyer 1993). Three major goals of the project were to understand the growth and development of the ancient city, to conserve the objects and excavation areas, and to train American and Pakistani students in modern archaeological research methods.

THE HARAPPA ARCHAEOLOGICAL RESEARCH PROJECT

Until the recent excavations at Harappa, urban aspects of the Indus Civilization were known primarily from discoveries made in the 1920s and 1930s at the sites of Mohenjo-daro and, to a lesser extent, at Harappa. The architecture, artifacts, and internal organization particularly of Mohenjo-daro in Sindh came to be the standard against which all discoveries at other sites were compared. Today, careful stratigraphic and spatial recording and quantitative studies are revealing new information about development, structure, and change at Indus sites and in ancient Indus society. Thus, although no excavations have been allowed at Mohenjo-daro since 1965, a new understanding of the site was obtained in the 1980s through the detailed analysis of specific categories of artifacts, the careful redocumentation of the excavated ruins, and the study of surface distributions of craft indicators and other artifacts (Jansen 1991, 1993).

The authors of this paper served respectively as Field Director and Zooarchaeologist, until 1992 when the ill health of Dr. Dales led to Dr. Meadow assuming the role of Project Director while Dr. Kenoyer has continued to serve as Co–Project Director and Field Director (Meadow & Kenoyer 1993). At this time Dr. Rita P. Wright became Assistant Project Director, and since 1995 she has been involved in a regional survey of the region around Harappa in collaboration with Dr. M. R. Mughal and Dr. Joseph Schuldenrein. Numerous scholars and students from the United States of America, Pakistan, Europe, and Japan have collaborated in this project and continue to conduct research on the many categories of artifacts and data recovered from the excavations.

Since its inception, the Harappa Project has been the principal focus of American involvement in the pre- and protohistoric archaeology of Pakistan. Between 1986 and 2002, a total of 163 team members (not including local labor or assistants) were associated with the project of whom 83 were Pakistani, 64 American, 16 of other nationalities. While training of both Pakistani and American students has taken place during all field seasons (1986 to 1990; 1992–2002), for four seasons (1994–1997) a formal training program was cosponsored by PIATR (Pakistan Institute for Archaeological Training and Research, Lahore) and partly funded by Fulbright Foundation (USEFP) grants to J. M. Kenoyer and Steven Weber.

In addition to those enrolled in the training program, more than a score of educated young men from Harappa City and surrounding communities have been integrated into the project and have received training in many different aspects of field archaeology. A local potter and local carpenter have also been closely affiliated with the project and have also been closely affiliated with the project and have been guided in their attempts to replicate ancient techniques and styles of craftsmanship. In sum, the HARP has been intensively and continuously involved in the training of both Pakistani and American students and young professionals.

Current excavations and conservation research are implementing new techniques, which are proving quite successful. Of particular importance has been the on-site objects conservation laboratory staffed by conservators from the Conservation Analytical Laboratory of the Smithsonian Institution. As the result of more than a decade and a half of commitment to field conservation, the materials recovered from Harappa are among the most stable of any excavated in South Asia. Integrating conservation with excavation has been extremely successful in advancing general knowledge about the ancient city, stabilizing and conserving specific areas of the site, providing archaeological remains for visitors to see, and educating the local inhabitants about the cultural heritage that they need to protect and develop.

THE INDUS CIVILIZATION AND HARAPPA

The earliest levels of the site, currently thought to date to before 3300 BC, have revealed the remains of a village culture making primarily stone and bone tools but with the use of copper tools beginning as well (Kenoyer & Meadow 2000) (see Table 10.2). Pottery was almost solely hand-built with minimal if any use of the potter's wheel and then only for final finishing of the upper part of the vessel. Vessels included both heavy coarse ware cooking pots and delicate pieces with polychrome decorations. These early settlers developed extensive trade contacts with surrounding resource areas to obtain copper, lapis lazuli, and carnelian (Kenoyer in press). Their technological accomplishments included glazing steatite (soapstone) beads, growing wheat and barley, and husbanding animals—especially humped (zebu) cattle and sheep.

Table 10.2. Provisional Prehistoric Chronology of Harappa

Periods 1A and 1B: Ravi Aspect of the Hakra Phase	> 3300 BC–ca. 2800 BC
Period 2: Kot Diji (Early Harappa) Phase	ca. 2800 BC–ca. 2600 BC
Period 3A: Harappa Phase A	ca. 2600 BC–ca. 2450 BC
Period 3B: Harappa Phase B	ca. 2450 BC–ca. 2200 BC
Period 3C: Harappa Phase C	ca. 2200 BC–ca. 1900 BC
Period 4: Harappa/Late Harappa Transitional	ca. 1900 BC–ca. 1800 BC(?)
Period 5: Late Harappa Phase	ca. 1800 BC(?)–< 1300 BC

By 2800 BC, during the Early Harappa or Kot Diji Phase, the site had expanded to a large town. It was at this time that the basic structure of Indus cities emerged. Streets and houses were oriented to the cardinal directions, wheel-made pottery became common, and the initial stages of a formalized writing system manifested itself in the form of incised graffiti on pottery vessels. At this time the first glazed steatite seals were produced, anticipating the later development of the distinctive Indus seals (Kenoyer 1998).

The full urban phase of the city is associated with the Harappa Phase occupations, from 2600 to 1900 BC. By this time the settlement had developed into a complex city organized into distinct walled sectors with craft areas, bazaars, and domestic structures as well as some impressive monumental public buildings (e.g., Meadow & Kenoyer 1993, 1994, 1997, 2000, in press a & b).

Studies of the artifacts recovered during the recent excavations are providing new information on the organization of craft production (Kenoyer 1992a; Wright 1991, also 1993), social hierarchy as reflected in ornament styles and material wealth (Kenoyer 1992b, 1998, 2000), and the distribution of crafts within the city (Kenoyer 1993; Miller 1997a & b, 1999; Kenoyer & Miller 1999). One of the most important new developments in the study of Indus crafts is the on-going analysis of raw materials being undertaken by Randall Law (in press a, b, & c). After conducting extensive surveys of potential raw material

source areas throughout Pakistan and parts of western India, he has begun to compare these samples with materials from the site of Harappa using a variety of high-resolution techniques. Preliminary results indicate that it will be possible to differentiate specific sources for steatite, chert, different types of sandstone, granite, gypsum, lead, and many other varieties of minerals and lithic materials. Other areas of study that are still in progress are the analysis of ceramic assemblages from the Cemetery and the habitation areas of the site by Chris Jenkins (1994, 2000) and the stylistic and chronological analysis of terracotta figurines by Sharri Clark (in press a & b).

Analyses of the mammalian fauna (Meadow 1991, 1993a; L. Miller, in progress) as well as of fish remains (Belcher 1991, 1993, 1994a, 1994b, 1997, 1998), together with study of carbonized plant remains (Weber 1998, 1999), are providing insights into the acquisition of subsistence resources and their distribution within the city.

Excavations in the Harappan cemetery and studies of the human remains have led to a new understanding of mortuary practices (Dales & Kenoyer 1989, 1990, 1991) as well as of the physical characteristics and health of the people of this early urban community (Hemphill et al. 1991). The individuals buried in the Harappan cemetery were generally quite healthy when they died with little evidence of trauma, disease, or malnutrition (Kennedy 1984, 1990, 1992; Lovell 1994, 1997; Lovell & Kennedy 1989). The major problem area appears to have been in the realm of dental health, as many of the older individuals exhibited high incidences of caries, antemortem tooth loss, and abscesses (Lukacs & Pastor 1990; Lukacs & Minderman 1992).

During the urban period, the city was part of extensive trade networks spanning the greater Indus Valley, western India, Afghanistan, and Central Asia. Important new discoveries relate to massive gateways and city walls used to limit and control access into and out of the city and the control of craft production as an important factor in state economy (Meadow & Kenoyer 1994; Kenoyer 1997a). Large numbers of new seals and other inscribed objects have been recovered that provide a new window on the use of writing (Meadow & Kenoyer 1994, 2000; Kenoyer & Meadow 1996) and eventually may help in the decipherment of the still enigmatic Indus script (Possehl 1996).

In the Late Harappan or Cemetery H levels, from approximately 1800 BC to perhaps as late as 1500 BC, the city continued to be a major center for regional trade and technological developments. The earliest glass beads in South Asia were formed along with exquisite glazed faience ornaments made to imitate turquoise and lapis lazuli (Kenoyer 1997b). During this period, the disappearance of the Indus script and standardized weights, along with changes in burial customs have traditionally been associated with the rise of a new culture associated with the introduction of Vedic Aryan religion and culture. It is clear however that the changes were not the result of an invasion, but reflect local transformations of social organization and ideology (Shaffer & Lichtenstein 1989; Kenoyer 1995a).

In conjunction with the excavations at Harappa, Dr. Rita P. Wright and Dr. Joseph Schuldenrein conducted a regional survey project in collaboration with Dr. M. R. Mughal and the Punjab Survey of the Department of Archaeology and Museums. They reexamined sites originally discovered by the Punjab Survey to the south and west of Harappa along the bed of the Old Beas River. In addition to documenting more details about cultural aspects of the settlements, they have tried to reconstruct the landscapes that surrounded the sites before, during, and after their occupation (Schuldenrein 2002). Combining information from various sampling procedures they have been able to define three complete cycles of alluviation and soil formation. Two of these cycles span the end of the Pleistocene and the present and represent 11,000 years of warm and moist environments. Initial examination of the sites and surrounding landscapes indicates that a comprehensive chronostratigraphic and paleoenvironmental context can be developed for the Beas settlement area that will have important ramifications for the reconstruction of landscapes associated with the establishment of Harappan culture.

Many questions about the origins and character of Harappa still remain to be answered, but our recent work at the site clearly demonstrates that this city and the civilization of which it was a part can no longer be described as monotonous and unchanging. These studies reveal a society that was continuously reinventing itself in response to a wide range of pressures, and there is now absolutely no basis for the earlier notion that the Indus Civilization burst onto the scene fully formed and then, after a period of fluorescence, suddenly disappeared. Through careful excavation and artifact analysis it is possible to make inferences about continuity and change in social, economic, and ideological aspects of this society even without the aid of written texts. Furthermore, many of the patterns revealed in the archaeological record are similar to those that result from cultural processes that still occur in the modern cities of South Asia. Continued excavations into the ancient city of Harappa and ethnoarchaeological studies in the living city of Harappa will serve to promote an ever better understanding of the birth, life, and transformation of one of the oldest cities of the ancient world.

OTHER CONTRIBUTIONS

Although the major focus of this article has been on archaeological research in Pakistan, it is not possible to understand any of the prehistoric periods of the northwestern subcontinent without consideration of discoveries taking place in northwestern India. Whereas most of the advances in these regions have been made by Indian scholars, some American scholars have been involved in major excavation and survey projects. Jim Shaffer's research in Haryana and the Eastern Punjab has provided important new information on the Harappan settlements and their cultural transformations (Bhan & Shaffer 1978; Shaffer 1987). His more recent work in South India is opening up a whole new area of research on the peninsular cultures that were contemporaneous with the Early

Harappan and Harappan Phases of the Indus Valley (Shaffer 1991, 1992a). Another scholar who has greatly impacted Pakistan archaeology from his work in India is Gregory Possehl (University of Pennsylvania). While he has also made significant contributions to the archaeology of Pakistan (Possehl 1967, 1975, 1986) his major focus has been on the region of Gujarat, India. Here he implemented a series of long-term research projects that included the sites of Rojdi, Oriyo Timbo, and Babar Kot in Saurashtra. The results of his research and that of Indian colleagues from M.S. University of Baroda, Deccan College (Pune), the Gujarat State Department of Archaeology, and the Archaeological Survey of India (summarized yearly in *Indian Archaeology, a Review*) have shown that this region, which had previously been considered peripheral, played an important role in shaping the character of the Indus Civilization (Possehl & Raval 1989; Possehl 1990, 1992, 1999, 2002; Possehl & Mehta 1994).

CONCLUSION

In the preceding summary we have focused on studies, and especially those by American and Pakistani scholars, that have had a major impact on our understanding of the ancient foundations of modern cultures in northwestern South Asia. We have seen that there have been important strides made for the very early periods (e.g., the Late Miocene) and for the Middle Holocene (c. 7000–2000 BC), while there are tantalizing clues for the Late Pliocene and Early Pleistocene. Otherwise, there remain major gaps. Those of particular significance are (1) during the Late Pleistocene and Early Holocene just before the development of agricultural and pastoralism, and (2) during the period immediately following the fluorescence of the Indus Civilization when the foundations were being formed for the Gangetic Civilization of the first millennium BC. And even the period during which farming and herding began is known in detail only from one site—Mehrgarh. Indeed for an area so rich in ancient remains, we have only just begun to scratch the surface. In this regard it is important to note that the continued promise of such research in Pakistan depends to a great extent on the growing number of Pakistani scholars and their continued collaboration with their foreign colleagues.

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BIBLIOGRAPHY

Allchin, B.
1994 Palaeolithic sites in the plains of Sind and their geographical implication. *Ancient Sindh* 1: pp 131–151.

Allchin, B. & R. W. Dennell
1990 Palaeolithic survey in Potwar region 1980–88: history and results. *Pakistan Archaeology* 24: pp 1–20.

Badgley, C. & A. K. Behrensmeyer, eds.
1995 Long records of continental ecosystems. *Palaeogeography, Palaeoclimatology, Palaeoecology* 115 (1–4): whole issue.

Barry, J. C., M. E. Morgan, L. J. Flynn, D. Pilbeam, A. K. Behrensmeyer, S. M. Raza, I. A. Khan, C. Badgley, J. Hicks & J. Kelly
2002 Faunal and environmental change in the Late Miocene Siwaliks of northern Pakistan. *Paleobiology Memoirs* 3, supplement to *Paleobiology* 28(2).

Belcher, W. R.
1991 Fish resources in an early urban context at Harappa. In *Harappa Excavations 1986–1990*, edited by R. H. Meadow, pp 107–120. Prehistory Press, Madison.
1993 Fishing of the third millennium B.C.: ongoing research in the Greater Indus Valley. *Marine Reference Collection Centre Newsletter* 1(3): pp 2–3.
1994a Butchery practices and the ethnoarchaeology of South Asian fisherfolk. In *Proceedings of the 7th meeting of the ICAZ Fish Remains Working Group*, edited by W. VanNeer, pp 170–176. Annales du Musée Royal de l'Afrique Centrale, Science Zoologiques, Tervuren.

1994b Riverine fisheries and habitat exploitation of the Indus Valley Tradition: an example from Harappa. In *South Asian Archaeology 1993*, edited by A. Parpola & P. Koskikallio, pp 71–80. Suomalainen Tiedeakatemia, Helsinki.
1997 Marine and riverine resource use during the Indus Valley Tradition: a preliminary comparison of fish remains from Balakot and Harappa. In *South Asian Archaeology 1995*, edited by B. & R. Allchin, pp 173–185. Oxford & IBH, New Delhi.
1998 *Fish Exploitation of the Baluchistan and Indus Valley Traditions: an Ethnoarchaeological Approach to the Study of Fish Remains*. Ph.D. Dissertation. University of Wisconsin, Madison.

Besenval, R.
1992 Recent archaeological surveys in Pakistani Makran. In *South Asian Archaeology 1989*, edited by C. Jarrige, pp 25–36. Prehistory Press, Madison.
1994 The 1992–1993 field-seasons at Miri Qalat: new contributions to the chronology of protohistoric settlement in Pakistani Makran. In *South Asian Archaeology 1993*, edited by A. Parpola & P. Koskikallio, pp 81–92. Suomalainen Tiedeakatemia, Helsinki.
1997 Entre le Sud–Est iranien et la plaine de l"Indus" le Kech-Makran: Recherches archéologiques sur le peuplement ancien d'une marche des confins indo-iraniens. *Arts Asiatiques* 52: pp 5–36.

Bhan, S. & J. G. Shaffer
1978 New discoveries in northern Haryana. *Man and Environment* 2: pp 57–68.

Biagi, P. & A. Pessina
1994 Surveys and Excavations in the Rohri Hills (Sindh, Pakistan): a Preliminary Report on the 1993 campaign. *Ancient Sindh* 1: pp 13–76.

Clark, S. R.
(in press a) Representing the Indus Body: Sex and Gender and the Anthropomorphic Terracotta Figurines from Harappa. *Asian Perspectives* 42(2).
(in press b) In search of the "Mother Goddess": The Terracotta Figurines from Harappa and Cultic Interpretations. In *South Asian Archaeology 2001*, edited by C. Jarrige & V. Lefèvre. Paris.

Costantini, L.
1984 The beginning of agriculture in the Kachi Plain: the evidence of Mehrgarh. In *South Asian Archaeology 1981*, edited by B. Allchin, pp 29–33. Cambridge University Press, Cambridge.

Dales, G. F.
1962a Harappan outposts on the Makran Coast. *Antiquity* 36: pp 86–92.
1962b A search for ancient seaports. *Expedition* 4(2): pp 2–10, 44.
1964 The mythical massacre at Mohenjo-daro. *Expedition* 6(3): pp 36–43. [also pp 293–296 in *Ancient Cities of the Indus*, edited by G. L. Possehl. Vikas Publishing House, New Delhi, 1979.]
1965 New investigations at Mohenjo-daro. *Archaeology* 18(2): pp 145–150. [also pp 192–195 in *Ancient Cities of the Indus*, edited by G. L. Possehl. Vikas Publishing House, New Delhi, 1979.]

1966 The decline of the Harappans. *Scientific American* 214(5): pp 92–100. [also pp 307–312 in *Ancient Cities of the Indus*, edited by G. . Possehl. Vikas Publishing House, New Delhi, 1979.]

1971 Early human contacts from the Persian Gulf through Baluchistan and southern Afghanistan. In *Food, Fiber and the Arid Lands*, edited by W. G. McGinnies, B. J. Goldman & P. Paylore, pp 145–170. University of Arizona Press, Tucson.

1973 Archaeological and radiocarbon chronologies for protohistoric South Asia. In *South Asian Archaeology*, edited by N. Hammond, pp 157–169. Duckworth, London.

1977a Shifting trade patterns between the Iranian Plateau and the Indus Valley in the third millennium B. C. In *Le plateau iranien et l'Asie Centrale des origines à la conquête islamique*, edited by J. Deshayes, pp 67–78. C. N. R. S., Paris.

1977b Hissar IIIC stone objects in Afghan Sistan. In *Mountains and Lowlands: Essays in the Archaeology of Greater Mesopotamia*, edited by L. D. Levine & T. C. Young, Jr., pp 17–27. Bibliotheca Mesopotamica 7. Undena Publications, Malibu.

1979a The Balakot Project: summary of four years of excavations in Pakistan. *Man and Environment* 3: pp 45–53.

1979b The Balakot Project: summary of four years excavations in Pakistan. In *South Asian Archaeology 1977*, edited by M. Taddei, pp 241–274. Istituto Universitario Orientale, Seminario di Studi Asiatici, Naples.

1984 Sex and stone at Mohenjo-daro. In *Frontiers of the Indus Civilization*, edited by B. B. Lal & S. P. Gupta, pp 109–115. Books & Books, New Delhi.

1989 Harappa: a new look at the type site of the Indus Civilization. In *Old Problems and New Perspectives in the Archaeology of South Asia*, edited by J. M. Kenoyer, pp 127–131. Wisconsin Archaeological Reports 2. Department of Anthropology, University of Wisconsin, Madison.

Dales, G. F. & L. Flam

1969 On tracking woolly Kullis and the like. *Expedition* 12(1): pp 15–23.

Dales, G. F. & J. M. Kenoyer

1986 *Excavations at Mohenjo Daro, Pakistan: The Pottery*. University Museum Press, Philadelphia.

1989 Excavation at Harappa—1988. *Pakistan Archaeology* 24: pp 68–176.

1990 Excavation at Harappa—1989. *Pakistan Archaeology* 25: pp 241–280.

1991 Summaries of five seasons of research at Harappa (District Sahiwal, Punjab, Pakistan) 1986–1990. In *Harappa Excavations 1986–1990*, edited by R. H. Meadow, pp 185–262. Prehistory Press, Madison.

1993 The Harappa Project 1986–1989: new investigations at an ancient Indus city. In *Harappan Civilization*, second revised edition, edited by G. L. Possehl, pp 469–520. Oxford & IBH, New Delhi.

Dales, G. F. & C. P. Lipo

1992 *The Makran Coast of Pakistan: A Search for Ancient Seaports*. Archaeological Research Facility, University of California, Berkeley.

Dani, A. H.

1970–1971 Excavations in the Gomal Valley. *Ancient Pakistan* 5: pp 1–177.

1975 Origins of Bronze Age cultures in the Indus basin—a geographic perspective. *Expedition* 17(2): pp 12–18.

Dennell, R. W.

1984 The Importance of the Potwar Plateau, Pakistan, to the studies of early man. In *South Asian Archaeology 1981*, edited by B. Allchin, pp 10–20. Cambridge University Press, Cambridge.

1991 *Pakistan's Prehistory: A Glimpse at the First Two Million Years*. Ancient India and Iran Trust, Cambridge.

Dennell, R. W., L. Hurcombe, R. Jenkinson & H. Rendell

1990 Preliminary results of the Palaeolithic Programme of the British Archaeological Mission to Pakistan, 1983–1987. In *South Asian Archaeology 1987*, edited by M. Taddei, pp 17–30. IsMEO, Rome.

Dennell, R. W., H. M. Rendell & E. Hailwood

1988 Late Pleistocene Artefacts from Northern Pakistan. *Current Anthropology* 29(3): pp 495–498.

Dupree, L.

1972 Prehistoric research in Afghanistan (1959–1966). *Transactions of the American Philosophical Society* 62(4): pp 1–84. Philadelphia.

Durrani, F. A.

1986 *Rehman Dheri and the Origins of Indus Civilization*. Ph.D. Dissertation. Department of Anthropology, Temple University.

1988 Excavations in the Gomal Valley: Rehman Dheri Excavation Report No. 1. *Ancient Pakistan* 6: pp 1–232.

Durrani, F. A., I. Ali & G. Erdosy

1991 Further excavation at Rehman Dheri. *Ancient Pakistan* 7: pp 61–151.

Dyson, R. H.

1982 Paradigm changes in the study of the Indus Civilization. In *Harappan Civilization*, edited by G. L. Possehl, pp 417–427. Oxford & IBH, New Delhi

Fairservis, W. A.

1952 Preliminary report on the prehistoric archaeology of the Afghan–Baluchi areas. *Novitates*, American Museum of Natural History No. 1587.

1956 Excavations in the Quetta Valley, West Pakistan. *Anthropological Papers of the American Museum of Natural History* 45(2): pp 165–402.

1959 Archaeological Surveys in the Zhob and Loralai Districts, West Pakistan. *Anthropological Papers of the American Museum of Natural History* 47(2): pp 273–448.

1961 Archaeological studies in the Seistan Basin of southwestern Afghanistan and eastern Iran. *Anthropological Papers of the American Museum of Natural History* 48(1): pp 1–128.

1975 *The Roots of Ancient India*. University of Chicago Press, Chicago.

1982 Allahdino: an excavation of a small Harappan site. In *Harappan Civilization*, edited by G. L. Possehl, pp 107–112. Oxford & IBH, New Delhi.

1985 Sir Mortimer Wheeler and I: archaeological methodologies in the Indo–Iranian Borderlands. In *Orientalia Iosephi Tucci Memoriae Dicata*, edited by G. Gnoli & L. Lanciotti, pp 343–354. IsMEO, Rome.

Flam, L.
1976 Settlement, subsistence and population: a dynamic approach to the development of the Indus valley civilization. In *Ecological Backgrounds of South Asian Prehistory*, edited by K. A. R. Kennedy and G. L. Possehl, pp 76–93. Cornell University Press, Ithaca, NY.
1981 *The Paleogeography and Prehistoric Settlement Patterns in Sind, Pakistan (c. 4000–2000 BC).* Ph.D. Dissertation. University of Pennsylvania, Philadelphia.
1986 Recent explorations in Sind: paleography, regional ecology and prehistoric settlement patterns. In *Studies in the Archaeology of India and Pakistan*, edited by J. Jacobson, pp 65–89. Oxford & IBH, New Delhi.
1993a Excavation at Ghazi Shah, Sindh, Pakistan. In *Harappan Civilization*, second revised edition, edited by G. L. Possehl, pp 457–467. Oxford & IBH, New Delhi.
1993b Excavations at Ghazi Shah 1985–1987: an interim report. *Pakistan Archaeology* 28: pp 131–158.
1993c Fluvial geomorphology of the lower Indus basin (Sindh, Pakistan) and the Indus Civilization. In *Himalaya to the Sea*, edited by J. F. Shroder, Jr., pp 265–287. Routledge, London and New York.
1999 Ecology and population mobility in the prehistoric settlement of the lower Indus Valley, Sindh, Pakistan. In *The Indus River: Biodiversity, Resources, Humankind*, edited by A. Meadow & P. S. Meadows, pp 313–323. Oxford University Press, Oxford.

Franke–Vogt, U.
1997 Reopening research on Balakot: a summary of perspectives and first results. In *South Asian Archaeology 1995*, edited by R. and B. Allchin, pp 215–235. Oxford & IBH, New Delhi.
2001 The Southern Indus Valley during the later 2nd and 1st millennia BC: The Dark Age. In *Migration und Kulturtransfer*, edited by R. Eichmann and H. Parzinger, pp 247–290. Rudolph Habelt, Bonn.

Franke-Vogt, U., S. S. ul-Haq & M. H. K. Khattak
2000 Archaeological exploration in the Kanrach Valley (Las Bela, Balochistan). In *South Asian Archaeology 1997*, edited by M. Taddei and G. De Marco, pp 189–213. Istituto Italiano per l'Africa e l'Oriente, Rome.

Hemphill, B. E., J. R. Lukacs & K. A. R. Kennedy
1991 Biological adaptations and affinities of Bronze Age Harappans. In *Harappa Excavations 1986–1990*, edited by R. H. Meadow, pp 137–182. Prehistory Press, Madison.

Hurcombe, L. and R. W. Dennell
1992 A Pre-Acheulean, Lower Palaeolithic industry in the Pabbi Hills, Northern Pakistan. In *South Asian Archaeology 1989*, edited by C. Jarrige, pp 133–136. Prehistory Press, Madison.

Jacobson, J.
1979 Recent developments in South Asian prehistory and protohistory. *Annual Review of Anthropology* 8: pp 467–502.

Jansen, M.
1991 Mohenjo-Daro—a city on the Indus. In *Forgotten Cities on the Indus*, edited by M. Jansen, M. Mulloy & G. Urban, pp 145–165. Phillip von Zabern, Mainz am Rhein.
1993 Mohenjo-daro: type site of the earliest urbanization process in South Asia. In *Urban Form and Meaning in South Asia: The Shaping of Cities from Prehistoric to Precolonial Times*, edited by H. Spodek & D. M. Srinivasan, pp 35–52. National Gallery of Art, Washington.

Jarrige, C., J.-F. Jarrige, R. H. Meadow & G. Quivon, editors
1995 *Mehrgarh Field Reports 1975 to 1985—From the Neolithic to the Indus Civilization.* Department of Culture and Tourism, Government of Sindh and the French Foreign Ministry, Karachi.

Jarrige, J.-F.
1986 Excavations at Mehrgarh-Nausharo. *Pakistan Archaeology* 10–22: pp 63–131.
1988 Excavations at Nausharo. *Pakistan Archaeology* 23: pp 149–203.
1989 Excavation at Nausharo 1987–88. *Pakistan Archaeology* 24: pp 21–67.
1990 Excavation at Nausharo 1988–89. *Pakistan Archaeology* 25: pp 193–240.
2000 Mehrgarh Neolithic: new excavations. In *South Asian Archaeology 1997*, edited by Maurizio Taddei and Giuseppe de Marco, pp 259–283. Istituto Italiano per l'Africa e l'Oriente, Rome.

Jarrige, J.-F. & R. H. Meadow
1980 The antecedents of civilization in the Indus Valley. *Scientific American* 243(2): pp 122–133.
1992 Mélanges Fairservis: a discourse on relations between Kachi and Sindh in prehistory. In *South Asian Archaeology Studies*, edited by G. L. Possehl, pp 163–178. Oxford & IBH, New Delhi.

Jarrige, J.-F. & M. Lechevallier
1979 Excavations at Mehrgarh, Baluchistan: their significance in the prehistoric context of the Indo-Pakistan borderlands. In *South Asian Archaeology 1977*, edited by M. Taddei, pp 463–536. Istituto Universitario Orientale, Seminario di Studi Asiatici, Naples.

Jenkins, P. C.
1994 Cemetery R37: new perspectives on style and chronology. In *From Sumer to Meluhha: Contributions to the Archaeology of South and West Asia in Memory of George F. Dales, Jr.*, edited by J. M. Kenoyer, pp 105–112. Madison, Department of Anthropology.
2000 The pottery from Cemetery R37: chronology and the changing social structure of Harappan society. In *South Asian Archaeology 1997*, edited by M. Taddei & and G. DeMarco, pp 35–53. Istituto Italiano per l'Africa e l'Oriente, Rome.

Jorgensen, D. W., M. D. Harvey, S. A. Schumm, and L. Flam
1993 Morphology and dynamics of the Indus river: implications for the Mohen jo Daro site. In *Himalaya to the Sea*, edited by J. F. Shroder, Jr., pp 288–326. Routledge, London and New York.

Kennedy, K. A. R.
1984 Trauma and disease in the ancient Harappans. In *Frontiers of the Indus Civilization*, edited by B. B. Lal & S. P. Gupta, pp 417–424. Books & Books, New Delhi.
1990 Reconstruction of trauma, disease and lifeways of prehistoric peoples of South Asia from the skeletal record. In *South Asian Archaeology 1987*, edited by M. Taddei, pp 61–78. IsMEO, Rome.
1992 Biological anthropology of human skeletons from Harappa: 1928–1988. *Eastern Anthropologist* 45(1–2): pp 55–86.
1994 Evolution of South Asian Pleistocene hominids: demic displacement or regional continuity? In *South Asian Archaeology 1993*, edited by A. Parpola & P. Koskikallio, pp 337–344. Suomalainen Tiedeakatemia, Helsinki.

Kenoyer, J. M.
1991a The Indus Valley Tradition of Pakistan and Western India. *Journal of World Prehistory* 5(4): pp 331–385.
1991b Urban process in the Indus Tradition: a preliminary model from Harappa. In *Harappa Excavations 1986–1990*, edited by R. H. Meadow, pp 29–60. Prehistory Press, Madison.
1992a Harappan craft specialization and the question of urban segregation and stratification. *Eastern Anthropologist* 45(1–2): pp 39–54.
1992b Ornament styles of the Indus tradition: evidence from recent excavations at Harappa, Pakistan. *Paléorient* 17(2—1991): pp 79–98.
1993 Excavations on Mound E, Harappa: A systematic approach to the study of Indus urbanism. In *South Asian Archaeology 1991*, edited by A. J. Gail & G. J. R. Mevissen, pp 165–194. F. S. Verlag, Stuttgart.
1995a Interaction systems, specialized crafts and culture change: The Indus Valley Tradition and the Indo–Gangetic Tradition in South Asia. In *The Indo–Aryans of Ancient South Asia: Language, Material Culture and Ethnicity*, edited by G. Erdosy, pp 213–257. W. DeGruyter, Berlin.
1995b Shell trade and shell working during the Neolithic and Early Chalcolithic at Mehrgarh. In *Mehrgarh Field Reports 1975 to 1985—From the Neolithic to the Indus Civilization*, edited by C. Jarrige, J.-F. Jarrige, R. H. Meadow & G. Quivron, pp 566–581. Department of Culture and Tourism, Government of Sindh and the French Foreign Ministry, Karachi.
1997a Early city–states in South Asia: comparing the Harappan Phase and the Early Historic period. In The *Archaeology of City–States: Cross Cultural Approaches*, edited by D. L. Nichols & T. H. Charlton, pp 51–70. Smithsonian Institution Press, Washington, D. C.
1997b Trade and technology of the Indus Valley: new insights from Harappa, Pakistan. *World Archaeology* 29(2): pp 262–280.
1998 *Ancient Cities of the Indus Valley Civilization*. Oxford University Press, Karachi.
2000 Wealth and socio-economic hierarchies of the Indus Valley Civilization. In *Order, Legitimacy and Wealth in Early States*, edited by J. Richards & M. Van Buren, pp 88–109. Cambridge University Press, Cambridge.
(in press) Bead technologies at Harappa, 3300–1900 BC: a comparative summary. In *South Asian Archaeology 2001*, edited by C. Jarrige & V. Lefèvre. Paris.

Kenoyer, J. M. & R. H. Meadow
1996 New inscribed objects From Harappa. *Lahore Museum Bulletin* 9(1): pp 1–29.
2000 The Ravi Phase: a new cultural manifestation at Harappa (Pakistan). In *South Asian Archaeology 1997*, edited by M. Taddei and G. DeMarco, pp 55–76. Istituto Italiano per l'Africa e l'Oriente, Rome.

Kenoyer, J. M. & H. M. -L. Miller
1999 Metal technologies of the Indus Valley Tradition in Pakistan and western India. In *The Archaeometallurgy of the Asian Old World*, edited by V. C. Pigott, pp 107–151. University Museum Monograph 89 & MASCA Research Papers in Science and Archaeology 16. University of Pennsylvania Museum, Philadelphia.

Khan, F.
1992 Recent discoveries from the North–West Frontier, Pakistan. *South Asian Studies* 8: pp 67–80.

Khan, F., J. R. Knox & K. D. Thomas
1990 Sheri Khan Tarakai: A Neolithic village in Bannu District, NWFP. In *South Asian Archaeology 1987*, edited by M. Taddei & P. Callieri, pp 111–127. IsMEO, Rome.

Korisettar, R.
2002 The archaeology of the South Asian Lower Palaeolithic: history and current status. In *Indian Archaeology in Retrospect, Volume 1 (Prehistory: Archaeology of South Asia)*, edited by S. Settar and R. Korisetttar, pp 1–66. Indian Council of Historical Research, New Delhi.

Law, R.
(in press a) Potential steatite source areas of the Indus Valley Civilization. *Proceedings of the International Colloquium on Indus Civilization, April 6–8, 2001*, Islamabad.
(in press b) Regional interaction in the prehistoric Indus Valley: initial results of rock and mineral sourcing studies at Harappa. In *South Asian Archaeology 2001*, edited by C. Jarrige & V. Lefèvre. Paris.
(in press c) Moving mountains: the trade and transport of rocks and minerals within the greater Indus Valey region. In *An Odyssey of Space: 2001: 34th Chacmool Conference Proceedings*. University of Calgary Press, Calgary.

Lovell, N. C.
1994 Spinal arthritis and physical stress at Bronze Age Harappa. *American Journal of Physical Anthropology* 93: pp 149–164.
1997 Anemia in the ancient Indus Valley. *International Journal of Osteoarchaeology* 7(2): pp 115–123.

Lovell, N. C. & K. A. R. Kennedy
1989 Society and disease in prehistoric South Asia. In *Old Problems and New Perspectives in the Archaeology of South Asia*, edited by J. M. Kenoyer, pp 89–92. Wisconsin Archaeological Reports 2. Department of Anthropology, University of Wisconsin, Madison.

Lukacs, J. R.
1984 Hominoid adaptations and hominid origins: evidence from South Asia. In *Studies in the Archaeology and Palaeoanthropology of South Asia*, edited by K. A. R. Kennedy & G. L. Possehl, pp 1–16. Oxford & IBH, New Delhi.
1989 Biological affinities from dental morphology: the evidence from Neolithic Mehrgarh. In *Old Problems and New Perspectives in the Archaeology of South Asia*, edited by J. M. Kenoyer, pp 75–88. Wisconsin Archaeological Reports 2. Department of Anthropology, University of Wisconsin, Madison.

Lukacs, J. R. & L. L. Minderman
1992 Dental pathology and agricultural intensification from Neolithic to Chalcolithic periods at Mehrgarh (Baluchistan, Pakistan). In *South Asian Archaeology 1989*, edited by C. Jarrige, pp 167–180. Prehistory Press, Madison.

Lukacs, J. R. & R. F. Pastor
1990 Activity induced patterns of dental abrasion in prehistoric Pakistan. In *South Asian Archaeology 1987*, edited by M. Taddei, pp 79–110. IsMEO, Rome.

Mallah, Q. H.
1998 Archaeological survey in southeastern Pakistan: the Thar Desert of Sindh. *Scientific Sindh* 5: pp 165–178.
2000 *Archaeology and Ethnoarchaeology of the Thar Desert*. Ph.D. dissertation, University of Wisconsin, Madison.

Meadow, R. H.
1981 Early animal domestication in South Asia: a first report of the faunal remains from Mehrgarh, Pakistan. In *South Asian Archaeology 1979*, edited by H. Härtel, pp 143–180. Dietrich Reimer Verlag, Berlin.
1984 Animal domestication in the Middle East: a view from the eastern margin. In *Animals and Archaeology: 3. Early Herders and their Flocks*, edited by J Clutton-Brock and C. Grigson, pp 309–337. BAR S202. British Archaeological Reports, Oxford.
1989 Prehistoric wild sheep and sheep domestication on the eastern margin of the Middle East. In *Early Animal Domestication and its Cultural Context*, edited by P. J. Crabtree, D. Campana & K. Ryan, pp 24–36. MASCA Research Papers in Science and Archaeology, Special Supplement to Volume 6. The University Museum of Archaeology and Anthropology, Philadelphia.
1991 Faunal remains and urbanism at Harappa. In *Harappa Excavations 1986–1990*, edited by R. H. Meadow, pp 89–106. Prehistory Press, Madison.
1993a The past, present, and future of bioarchaeological studies in Pakistan with specific reference to Mohenjo-daro and the Indus Civilization. *Pakistan Archaeology* 28: pp 183–215.
1993b Animal domestication in the Middle East: a revised view from the eastern margin. In *Harappan Civilization*, second revised edition, edited by G. L. Possehl, pp 295–320. Oxford & IBH, New Delhi.
1995 The origins and spread of agriculture and pastoralism in South Asia. In *The origins and spread of agriculture and pastoralism in Eurasia*, edited by D. R. Harris, pp 390–412. Institute of Archaeology, University College London, London.
1999 Pre- and proto-historic agricultural and pastoral transformations in northwestern South Asia. *The Review of Archaeology* 19(2): pp 12–21.

Meadow, R. H., editor
1991 *Harappa Excavations 1986–1990*. Prehistory Press, Madison.

Meadow, R. H. & J. M. Kenoyer
1993 Excavation at Harappa 1992 &1993. *Pakistan Archaeology* pp 28: 55–107.
1994 Excavations at Harappa 1993: the city walls and inscribed materials. In *South Asian Archaeology 1993*, edited by A. Parpola & P. Koskikallio, pp 451–470. Suomalainen Tiedeakatemia, Helsinki.
1997 Excavations at Harappa 1994–1995: new perspectives on the Indus script, craft activities, and city organization. In *South Asian Archaeology 1995*, edited by R. & B. Allchin, pp 139–172. Oxford & IBH, New Delhi.
2000 The "tiny steatite seals" (incised steatite tablets) of Harappa: some observations on their context and dating. In *South Asian Archaeology 1997*, edited by M. Taddei and G. DeMarco, pp 321–340. Istituto Italiano per l'Africa e l'Oriente, Rome.
(in press a) Harappa excavations 1998–1999: new evidence for the development and manifestation of the Harappan phenomenon. In *South Asian Archaeology 1999*, edited by K. R. van Kooij & E. M. Raven. Leiden.
(in press b) Excavations at Harappa 2000–2001: new insights on chronology and city organization. In *South Asian Archaeology 2001*, edited by C. Jarrige & V. Lefèvre. Paris.

Meadow, R. H. & A. K. Patel
2002 From Mehrgarh to Harappa and Dholavira: prehistoric pastoralism in northwestern South Asia through the Harappan Period. In *Indian Archaeology in Retrospect, Volume 2 (Protohistory: Archaeology of the Harappan Civilization)*, edited by S. Settar and R. Korisettar, pp 391–408. Indian Council of Historical Research, New Delhi.

Miller, H. M. -L.
1997a Locating ancient manufacturing areas: high-temperature manufacturing debris from surface surveys at Harappa, Pakistan. In *South Asian Archaeology 1995*, edited by R. & B. Allchin, pp 939–946. Oxford & IBH, New Delhi.
1997b Pottery firing structures (kilns) of the Indus Civilization during the third millennium B.C. In *The Prehistory and History of Ceramic Kilns*, edited by P. Rice & D. Kingery, pp 41–71. Ceramics and Civilization 7. American Ceramic Society, Columbus, Ohio.
1999 *Pyrotechnology and Society in the Cities of the Indus Valley*. Ph.D. Dissertation. University of Wisconsin, Madison.

Mughal, M. R.
1970 *The Early Harappan Period in the Greater Indus Valley and Northern Baluchistan (c. 3000–2400 B.C.)*. Ph.D. Dissertation. Department of Anthropology, University of Pennsylvania, Philadelphia.
1974 Explorations in northern Baluchistan, 1972: new evidence and fresh interpretation. In *Proceedings of the 2nd Annual Symposium on Archaeological Research in Iran*, edited by F. Bagherzadeh, pp 276–286. Iranian Centre for Archaeological Research, Tehran.

1977 Cultural links between Pakistan and Iran during the pre-historic period. In *Iran–Pakistan: A Common Culture; Articles written by twenty six Pakistani scholars*, pp 33–82. Iran Pakistan Institute of Persian Studies, Islamabad.

1981 New research on the origins of the Indus Civilization. *Sind Quarterly* 9(3): pp 45–51, 60.

1982 Recent archaeological research in the Cholistan desert. In *Harappan Civilization*, edited by G. L. Possehl, pp 86–95. Oxford & IBH, New Delhi.

1990 Archaeological field research in Pakistan since Independence: an overview. *Bulletin of the Deccan College Post-Graduate & Research Institute* 49: pp 261–277.

1997 Ancient Cholistan: Archaeology and Architecture. Ferozsons, Rawalpindi.

Mughal, M. R., F. Iqbal, M. A. Khan & M. Hassan

1996 Archaeological sites and monuments in Punjab: preliminary results of explorations: 1992–1996. *Pakistan Archaeology* 29: pp 1–474.

Negrino, F. & M. M. Kazi

1996 The Paleolithic industries of the Rohri Hills (Sindh, Pakistan). *Ancient Sindh* 3: –38.

Perkins, D.

1972 The fauna of Aq Kupruk caves: a brief note. *Transactions of the American Philosophical Society* 62(4): p 73.

Pilbeam, D.

1978 Rethinking human origins. *Discovery* 13(1): pp 2–9.

1979 Recent finds and interpretations of Miocene hominoids. *Annual Review of Anthropology* 8: pp 333–352.

Pilbeam, D., G. E. Meyer, C. Badgley, M. D. Rose, M. H. L. Pickford, A. K. Behrensmeyer, S. M. Ibrahim Shah

1977 New hominoid primates from the Siwaliks of Pakistan and their bearing on hominoid evolution. *Nature* 270(5639): pp 689–695.

Possehl, G. L.

1967 The Mohenjo Daro floods: a reply. *American Anthropologist* 69(1): pp 32–40.

1975 The chronology of gabarbands and palas of western South Asia. *Expedition* (Winter): pp 33–39.

1977 The end of a state and continuity of a tradition. In *Realm and Region in Traditional India*, edited by R. G. Fox, pp 234–254. Duke University Program in South Asian Studies, Durham, N.C.

1986 *Kulli: An Exploration of an Ancient Civilization in South Asia*. Carolina Academic Press, Durham, N.C.

1990 The Sorath Harappan: a new regional manifestation of the Indus urban phase. In *South Asian Archaeology 1987*, edited by M. Taddei, pp 295–320. IsMEO, Rome.

1992 The Harappan Civilization in Gujarat: The Sorath and Sindhi Harappans. *Eastern Anthropologist* 45(1–2): pp 117–154.

1996 *Indus Age: The Writing System*. University of Pennsylvania Press, Philadelphia.

1998 Sociocultural complexity without the state: the Indus Civilization. In *Archaic States*, edited by G. M. Feinman and J. Marcus, pp 261–291. School of American Research Press, Santa Fe.

1999 *Indus Age: The Beginnings*. University of Pennsylvania Press, Philadelphia.

2002 *The Indus Civilization: a contemporary perspective*. AltaMira Press,

Possehl, G. L. & D. P. Mehta

1994 Excavations at Rojdi, 1992–1993. In *South Asian Archaeology 1993*, edited by A. Parpola & P. Koskikallio, pp 599–602. Suomalainen Tiedeakatemia, Helsinki.

Possehl, G. L. & M. H. Raval

1989 *Harappan Civilization and Rojdi*. Oxford & IBH and AIIS, New Delhi.

Quivron, G.

1994 The pottery sequence from 2700 to 2400 BC at Nausharo, Baluchistan. In *South Asian Archaeology 1993*, edited by A. Parpola & P. Koskikallio, pp 629–644. Suomalainen Tiedeakatemia, Helsinki.

Raikes, R.

1965 The ancient gabarbands of Baluchistan. *East and West*, n.s. 15: pp 3–12.

Rendell, H. M., R. W. Dennell & M. A. Halim

1989 *Pleistocene and Palaeolithic Investigations in the Soan Valley, Northern Pakistan*. BAR S544. British Archaeological Reports, Oxford.

Russell, N.

1995 The bone tool industry at Mehrgarh and Sibri. In *Mehrgarh Field Reports 1975 to 1985—From the Neolithic to the Indus Civilization*, edited by C. Jarrige, J.–F. Jarrige, R. H. Meadow & G. Quivon, pp 583–613. Department of Culture and Tourism, Government of Sindh and the French Foreign Ministry, Karachi.

Schuldenrein, J.

2002 Geoarchaeological perspectives on the Harappan sites of South Asia. In *Indian Archaeology in Retrospect, Volume 2 (Protohistory: Archaeology of the Harappan Civilization)*, edited by S. Settar and R. Korisetttar, pp 47–80. New Delhi, Indian Council of Historical Research.

Shaffer, J. G.

1974 The prehistory of Baluchistan: some interpretative problems. In *Arctic Anthropology*, Supplement 11: pp 224–235.

1978a The later prehistoric periods. In *The Archaeology of Afghanistan: From Earliest Times to the Timurid Period*, edited by F. R. Allchin & N. Hammond, pp 71–186. Academic Press, London.

1978b *Prehistoric Baluchistan*. B & R Publishing, Delhi.

1987 Cultural development in the eastern Punjab. In *Studies in the Archaeology of India and Pakistan*, edited by J. Jacobson, pp 195–236. Oxford & IBH, New Delhi.

1991 Archaeological Research at Watgal, Raichur District, Karnataka: A Report on the 1990–1991 Activities. Department of Anthropology, Case Western Reserve University, Cleveland, Ohio.

1992a Archaeological Research at Watgal, Raichur District, Karnataka: a Report on the 1991–1992 Activities. Case Western Reserve University, Cleveland, Ohio.

1992b The Indus Valley, Baluchistan and Helmand Traditions: Neolithic through Bronze Age. In *Chronologies in Old World Archaeology* (3rd Edition), edited by R. Ehrich, Vol I: pp 441–464; Vol. II: pp 425–446. University of Chicago Press, Chicago.

Shaffer, J. G. & D. A. Lichtenstein

1989 Ethnicity and change in the Indus Valley cultural tradition. In *Old Problems and New Perspectives in the Archaeology of South Asia*, edited by J. M. Kenoyer, pp 117–126. Wisconsin Archaeological Reports 2. Department of Anthropology, University of Wisconsin, Madison.

Shaikh, N.

1997 Recent Exploration of Archaeological Sites and Monuments of Khairpur District. In *South Asian Archaeology 1995*, edited by F. R. Allchin and B. Allchin, pp 309–322. Oxford & IBH, New Delhi.

Sharma, K. K.

1995 Quaternary Stratigraphy and Prehistory of the Upper Indus Valley, Ladakh. In *Quaternary Environments and Geoarchaeology of India*, edited by S. Wadia, R. Korisettar & V. S. Kale, pp 98–108. Geological Society of India, Bangalore.

Stein, Sir M. A.

1931 *An Archaeological Tour in Gedrosia*. Memoirs of the Archaeological Survey of India 43. Calcutta.

de Terra, H. & P. Teilhard de Chardin

1936 Observations on the Upper Siwalik formation and later Pleistocene deposits in India. *Proceedings of the American Philosophical Society* 76: pp 791–822.

de Terra, H. & T. T. Paterson

1939 *Studies on the Ice Age in India*. Publication 493. Carnegie Institute, Washington, D.C.

Tosi, M.

1979 The Proto-urban cultures of Eastern Iran and the Indus Civilization. Notes and suggestions for a spatio-temporal frame to study the early relations between India and Iran. In *South Asian Archaeology 1977*, edited by M. Taddei, pp 149–171. Istituto Universitario Orientale, Seminario di Studi Asiatici, Naples.

Weber, S. A.

1998 Out of Africa: The initial impact of millets in South Asia. *Current Anthropology* 39(2): pp 267–274.

1999 Seeds of urbanism: palaeoethnobotany and the Indus Civilization. *Antiquity* 73: pp 813–826.

Wheeler, R. E. M.

1968 *The Indus Civilization* (Third Edition). Cambridge University Press, Cambridge.

Wright, R. P.

1991 Patterns of technology and the organization of production at Harappa. In *Harappa Excavations 1986–1990*, edited by R. H. Meadow, pp 71–88. Prehistory Press, Madison.

1993 The Harappa Museum pottery collections: some typological and technical evidence. *Pakistan Archaeology* 28: pp 231–241.