

## The Indus Valley Tradition of Pakistan and Western India

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*Over the last several decades new sets of information have provided a more detailed understanding of the rise and character of the Indus Civilization as well as its decline and decentralization. This article begins with a summary of the major historical developments in the archaeology of the Indus Valley Tradition and a definition of terms found in the literature. A general discussion of the environmental setting and certain preconditions for the rise of urban and state-level society is followed by a summary of the major aspects of the Harappan Phase of the Indus Valley Tradition. This summary includes discussions of settlement patterns, subsistence, architecture, trade and exchange, specialized crafts, language, religion, and social organization. The Localization Era or decentralization of the urban centers is also addressed.*

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**KEY WORDS:** Indus Valley Tradition; Integration Era; Harappan Phase; subsistence; trade; specialized crafts; urbanism; belief systems; state-level organization.

### INTRODUCTION

South Asia's earliest urban society has been the focus of scholarly debate since its discovery in the 1920s (Chakrabarti, 1984; Jacobson, 1987). Early interpretations were based primarily on data from the major urban centers. A more balanced perspective has been achieved through excavations at both urban and rural settlements in Pakistan and in western India and adjacent regions and recent studies of previously excavated materials (Bisht, 1982, 1989, 1990; Dales and Kenoyer, 1990b; Jansen and Urban, 1984, 1987; Jarrige, 1986; Mughal, 1982, 1984; Possehl and Raval, 1989).

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The focus of this paper is the origins and character of the Indus urban phenomenon, presenting current interpretations but not burdening the nonspecialist with ceramic sequences and other details. The references direct the reader to discussions of specific topics but are not an exhaustive bibliography.

### EARLIEST STUDIES AND INTERPRETIVE MODELS

Following the first excavations (Mackay, 1928–1929; Marshall, 1931; Vats, 1940) and regional surveys, most early interpretations of Indus civilization (Fairervis, 1956; Gordon and Gordon, 1940; Piggott, 1950; Sankalia, 1974; Wheeler, 1947, 1968) assumed a Near Eastern or external stimulus and used simple diffusion models to explain its development. However, traders and even whole communities were moving between the various regions of Western and Southern Asia from a very early period, so that, by the time farming villages were established and long before the rise of urbanism, overlapping networks stretched from Anatolia to the Indus Valley and from Central Asia to Arabia (Bar-Yosef and Belfer-Cohen, 1989; Kohl, 1979; Lamberg-Karlovsky, 1975, 1985; Lamberg-Karlovsky and Tosi, 1973; Meadow, 1973; Tosi, 1979 etc.). Such interconnections logically preclude the traditional assumption of sharply delimited cultural zones, although this misconception still interprets single sites as points of origin for innovations. However, as more interaction networks are defined, it appears that metallurgy, ceramics, agriculture, animal husbandry, and stratified social systems are the end results of regional and multiregional processes (see below).

Earlier interpretations also treated the Indus civilization as monoethnic and monolingistic, although we know that contemporaneous Mesopotamia was linguistically (Kramer, 1963; Lloyd, 1978; Oppenheim, 1954, 1964) and ethnically complex (Parpola *et al.*, 1977, Parpola 1984; Yoffee, 1988). Only recently has Indus civilization been seen as a complex of many ethnic groups (Mughal, 1990; Possehl, 1982, 1990b; Shaffer and Lichtenstein, 1989; Thapar, 1979), representing several linguistic families (Fairervis and Southworth, 1989).

In recent decades, most studies of Indus civilization have been carried out through institutions in Pakistan and India, with continued involvement of foreign scholars (see bibliography). Various paradigms have now been established (Dyson, 1982; Jacobson, 1979) and theories of migration and diffusion have been replaced by models of regional interaction (Chakrabarti, 1977) and indigenous development (Durrani, 1986; Jarrige and Meadow, 1980; Mughal, 1974b; Shaffer, 1982b).

### DEFINITION OF TERMS AND GENERAL CHRONOLOGY

There is still no consensus on terminology of time and space for the Indus civilization (Possehl, 1984) (Table I). Most terms have become established through use but are not precisely defined.

**Table I.** South Asia: General Archaeological Labels and Chronology

Archaeological Label	General dates
Early Historic Period begins around	600 B.C.
Post Indus	
Northern Black Polished Ware	+700 to 300 B.C.
Painted Grey Ware	+1200 to 800 B.C.
Indus Tradition	
Localization Era	1900 to 1300 B.C.
Integration Era	2600 to 1900 B.C.
Regionalization Era	ca. 5000 to 2600 B.C.
Early Food Producing Era	ca. 6500 to 5000 B.C.

At present, the most common terms for the periods between circa 4000 and 1500 B.C. are Pre-Harappan, Early Harappan, Mature Harappan, and Late Harappan. Pre-Harappan usually refers to cultures that predate the urban Harappan culture and do not appear to have a direct formative relationship to it. However, the Harappan urban phase was related to many of the so-called Pre-Harappan cultures, and Mughal (1970) proposed the term Early Harappan to characterize the pre- or protourban phase. Mature Harappan is usually the full urban phase of the Harappa culture or Indus civilization, as represented at the core urban centers (Dales, 1966; Fairservis, 1967). Some scholars use the term "urban Harappan" (in contrast to preurban and posturban phases) (Possehl, 1977), but there is evidence for urban centers and associated infrastructures both before and after the Mature Harappan (Shaffer, 1981; Mughal 1990).

The terms Early Indus and Mature Indus (Allchin and Allchin, 1982) are used to emphasize the pan-Indus character of the culture. Similarly, the "Greater Indus Valley" includes the plains and deltas of the Indus and Ghaggar-Hakra rivers, the eastern Punjab and Rajputana, and the piedmont and submontane regions to the west and north (Mughal, 1970).

The final phase is referred to as Late Harappan, with local names for regional cultures, such as Cemetery H culture in Punjab and Jhukar culture in Sindh. "Post Harappan" or "Post Indus" usually applies to later assemblages such as Gandhara Grave Culture (Stacul, 1989), Painted Grey Ware Culture (Joshi, 1978; Lal, 1985; Mughal, 1984), Northern Black Polished Ware Culture (Roy, 1986), and the Black and Red Ware Cultures of peninsular India (Singh, 1978). These were thought to have little to do with the Harappan, but recent research is revealing connections (Shaffer, 1988b).

These various terms are ill defined, overlapping, and at times contradictory. Therefore, Shaffer has proposed an overarching terminology that incorporates most regional features and also allows more specific definitions. His central concept is a Tradition: "persistent configurations of basic technologies

and cultural systems within the context of temporal and geographical continuity'' (Shaffer, 1991, p. 442 after Willey and Philips, 1958, p. 37). This allows for (and assumes) stylistic groupings but does not require precise knowledge of cultural relationships. Shaffer identifies three major cultural Traditions and divides each into eras and phases.

Eras do not have fixed boundaries in time or space and more than one era may coexist within a tradition. These are not developmental phases and not all are found in every tradition. The *Early Food Producing Era* has an economy based on food production but lacking ceramics. In the *Regionalization Era*, distinct artifact styles (e.g., ceramics) cluster in time and space (without fixed boundaries) and are connected by regional interaction networks. The *Integration Era* shows pronounced widespread homogeneity in material culture, reflecting intense interaction between social groups. The *Localization Era* has general similarity in artifact styles (comparable to the Regionalization Era), indicating a continued, but altered, presence of interaction networks (Shaffer, 1991, p. 442). Within each era, Shaffer identifies phases, represented primarily by ceramics. A phase is the smallest analytical unit, limited to a locality or a region and to a short interval of time.

Interaction systems are avenues of communication which may crosscut traditions and phases. These are reflected by broad distributions of cultural traits within a brief period. Traditions are not totally distinct phenomena; traditions and phases are connected through economic, social, and ritual interaction systems.

Table II gives major spatial and temporal frameworks. Here, I use Shaffer's framework, as the most coherent approach to the mass of data.

## CHRONOLOGY AND RADIOCARBON DATES

Many radiocarbon dates have appeared since the compilations in 1985 by Shaffer for the northwest (1991) and by Possehl and Rissman (1991) for peninsular India, providing new data on the sequence in each region.

Table III and Figure 4 summarize important recent dates from the Integration Era Harappan Phase. The Harappan Phase begins between 2700 and 2500 B.C. in the core regions of the Indus valley and the Ghaggar-Hakra valley and including Gujarat (Possehl, 1990b; Shaffer, 1991; Chakrabarti, 1990). A date of 2600 B.C. [using the CALIB program (Stuiver and Reimer, 1986; Possehl, 1990a)] marks the approximate beginning of the major integration of urban polities, the use of writing, weights, Harappan-type ceramic designs, etc. Some scholars feel that this urban phase ends by 2100–2000 B.C. (Shaffer, 1991), but recent dates from Harappa suggest that it continues up to 1900 B.C., if not later (Dales and Kenoyer, 1990b; Kenoyer, 1991b). Key elements of this phase

**Table II.** General Correlations of Current Terminologies and Chronologies<sup>a</sup>

Shaffer (1984/1991)	Mughal (1970/1990)	Site sequences (Jarrige <i>et al.</i> , 1980 to 1990)	Posselt (1991)	Lal and Thapar, Joshi, Dikshit	Faiservis (1967)	Dates (1965b, 1976)
Indus Valley Tradition Early Food Producing Era., +6000-5000 B.C. —Gap—No sites discovered	Neolithic, 6500-5000 B.C.  Chalcolithic, 5000-3400 B.C.  Early Harappan, Kot Diji A, 3500-3000 B.C.  Early Harappan, Kot Diji B, 3000-2500 B.C.	Aceramic Neolithic, Period Mehgarh IA, +6000-5000 B.C.  Ceramic Neolithic/Chalcolithic, MRG IB/MRG II, 5000-4300 B.C. Chalcolithic, MRG III, 4000-3500 B.C. Chalcolithic, MRG IV, 3500-3200 B.C.  Chalcolithic, MRG V, 3200-3000 B.C.	Pre-Urban Phase, 3200-2600 B.C.	Pre-Harappan, Sorhi/Kalibangan I, 2900-2700 B.C.	Stage 1. Pastoralism, limited agriculture, +4000-3500 B.C.  Stage 2. Sedentary villages, regionalization, 3300-2500 B.C.	Phase A, Stone Age  Phase B, Neolithic, 5000-4000 B.C. Phase C, Early Chalcolithic, 4000-3500 B.C. Phase D, Growth and spread of settlements, Turkmenia-Indus, 3500-3000 B.C.

Table II. Continued

Shaffer (1984/1991)	Mughal (1970/1990)	Site sequences (Jarrige <i>et al.</i> , 1980 to 1990)	Posselt (1991)	Lal and Thapar, Joshi, Dikshit	Fairservis (1967)	Dates (1965b, 1976)
		Chalcolithic, MRG VI, 3000-2700 B.C. Pre/Early Harappan, MRG VII = Nausharo I, 2700-2500 B.C.			Stage 3, Sedentary Villages, regionalization and intra-regional contact, 2500-2300 B.C. Stage 4, Period of urbanization, 2300-1700 B.C. Stage 5, Decline and abandonment, 1700-1200/800 B.C.	Phase E, Protourban, incipient-urban, 3000-2500 B.C. Phase F, Mature Harappan, Full urban, 2500 B.C.
Integration Era, Harappan Phase, 2500-2000 B.C.	Kot Diji C, 2500-2100 B.C. Mature Harappan, 2500-2000 B.C.	Mature Harappan, NSH II and III, 2500-1900 B.C.	Urban Harappan, 2550-?2000 B.C.	Mature Harappan, 2500-2000 B.C. 2100-1700 B.C.		
Localization Era, Punjab, Jhukar, Kangpur Phases, 2100-1500 B.C.	Late Harappan/ Post Harappan, 2000-1700 B.C., Jhukar, Cemetery H Pirak, 1990-1300 B.C.	Late Harappan/ Post Harappan, NSH IV, Jhukar, Pirak, 1990-1300 B.C.	Post Urban, ?2000-?1700 B.C.	Late Harappan, Jhukar, Cemetery H, Late Harappan, 1700-1000 B.C.  Painted Grey Ware Culture, 1200-800 B.C.		

"The B.C. dates are presented as published and many of the differences are due to the use of different calibrations for the radiocarbon dates (Dates, 1965b, 1976, 1979b; Dikshit, 1984b; Fairservis, 1967; Jarrige, 1984a; Jarrige and Meadow, 1980; Joshi, 1972, 1978; Lal, 1978; Lal and Thapar, 1967; Mughal, 1970, 1990; Posselt and Raval, 1989; Posselt, 1990a, 1990b; Posselt and Rissman, 1991; Shaffer, 1991).

**Table III.** Important Radiocarbon Dates and Calibrations of the Indus Tradition, Integration Era, Harappan Phase<sup>a</sup>

Region and site	Lab. number	Uncalibrated dates		Calibrated dates, CALIB Program (Stuiver and Reimer, 1986)
		5568 half-life	5730 half-life	
Afghanistan				
Shortugai I	MC-1727	3570 ± 95 BP	1725 ± 100 BC	1923 BC
Shortugai I	MC-2447	3725 ± 80 BP	1885 ± 80 BC	2139 BC
Shortugai I	MC-1726	3875 ± 95 BP	2040 ± 100 BC	2542, 2427, 2395, 2374, 2366 BC
Shortugai I	MC-2445	3890 ± 80 BP	2055 ± 80 BC	2455, 2416, 2405 BC
Shortugai I	NY-425	4040 ± 100 BP	2210 ± 105 BC	2580 BC
Shortugai I	NY-430	4075 ± 95 BP	2245 ± 100 BC	2651, 2649, 2610 BC
Shortugai I	NY-429	4395 ± 160 BP	2575 ± 165 BC	3033, 2957, 2946 BC
Baluchistan				
Balakot II	HAR-1993	3890 ± 100 BP	2055 ± 105 BC	2455, 2416, 2405 BC
Balakot II	HAR-1992	4050 ± 130 BP	2220 ± 135 BC	2584 BC
Hisham Dheri	WIS-1703	3270 ± 80 BP	1880 ± 80 BC	2138 BC
Nausharo	BETA-18845	4040 ± 70 BP	2210 ± 70 BC	2580 BC
Rehman Dheri III	WIS-1702	3620 ± 80 BP	1780 ± 80 BC	2018, 2002, 1980 BC
Rehman Dheri III	BM-2063R	3810 ± 150 BP	1975 ± 155 BC	2283 BC
Rehman Dheri III	WIS-1701	3850 ± 70 BP	2015 ± 70 BC	2334 BC
Rehman Dheri III	PRL-673	3900 ± 130 BP	2065 ± 70 BC	2457 BC
Rehman Dheri III	BM-2062R	3960 ± 110 BP	2130 ± 115 BC	2470 BC
Sindh				
Allahdino	P-2295	3760 ± 70 BP	1930 ± 50 BC	2195, 2156, 2147 BC
Allahdino	P-2237	3840 ± 60 BP	2010 ± 50 BC	2315 BC
Allahdino	P-2296	3930 ± 50 BP	2100 ± 50 BC	2464 BC
Jhukar	P-2476	4630 ± 300 BP	2820 ± 310 BC	3371 BC
Mohenjo-daro	P-1182A	3702 ± 63 BP	1865 ± 65 BC	2133, 2064, 2048 BC
Mohenjo-daro	P-1178A	3801 ± 59 BP	1965 ± 60 BC	2279, 2231, 2210 BC
Mohenjo-daro	P-1176	3802 ± 59 BP	1965 ± 60 BC	2279, 2232, 2209 BC
Mohenjo-daro	P-1180	3828 ± 61 BP	1995 ± 65 BC	2297 BC
Mohenjo-daro	P-1179	3913 ± 64 BP	2080 ± 65 BC	2460 BC
Mohenjo-daro	P-1177	3985 ± 64 BP	2155 ± 65 BC	2556, 2546, 2493 BC
Punjab				
Banawali II	PRL-207	3100 ± 100 BP	1245 ± 105 BC	1406 BC
Banawali II	PRL-204	3260 ± 120 BP	1410 ± 125 BC	1523 BC
Banawali II	PRL-203	3800 ± 150 BP	1965 ± 155 BC	2278, 2234, 2209 BC
Banawali II	PRL-205	3810 ± 180 BP	1975 ± 185 BC	2283 BC
Harappa III	WIS-2043	3370 ± 70 BP	1930 ± 70 BC	2268, 2263, 2203, 2147, 2146 BC
Harappa III	WIS-2144	3720 ± 100 BP	1880 ± 105 BC	2138 BC
Harappa III	WIS-2075	3830 ± 60 BP	1995 ± 60 BC	2299 BC
Harappa III	WIS-2140	4290 ± 70 BP	2470 ± 70 BC	2913 BC
Harappa III	WIS-2139	3820 ± 60 BP	1985 ± 60 BC	2288 BC
Harappa III	WIS-2053	3920 ± 210 BP	2090 ± 215 BC	2469 BC
Harappa III	WIS-2074	3700 ± 60 BP	1861 ± 60 BC	2133, 2067, 2047
Harappa III	WIS-2143	3825 ± 60 BP	1990 ± 60 BC	2293 BC
Harappa III	WIS-2145	4020 ± 60 BP	2190 ± 60 BC	2573, 2535, 2506 BC
Harappa III	WIS-2142	4135 ± 65 BP	2140 ± 65 BC	2863, 2812, 2742, 2726, 2696, 2677, 2666 BC

Table III. Continued

Region and site	Lab. number	Uncalibrated dates		Calibrated dates, CALIB Program (Stuiver and Reimer, 1986)
		5568 half-life	5730 half-life	
Harappa III	WIS-2141	3920 $\pm$ 70 BP	2090 $\pm$ 70 BC	2462 BC
Harappa III	QL-4378	3850 $\pm$ 50 BP	2015 $\pm$ 50 BC	2334 BC
Harappa III	QL-4374	3800 $\pm$ 50 BP	1965 $\pm$ 50 BC	2278, 2234, 2209 BC
Harappa III	QL-4376	3810 $\pm$ 50 BP	1975 $\pm$ 50 BC	2283 BC
Kalibangan II	TF-143	3510 $\pm$ 110 BP	1665 $\pm$ 115 BC	1880, 1830, 1829 BC
Kalibangan II	TF-152 (BS)	3570 $\pm$ 125 BP	1725 $\pm$ 130 BC	1923 BC
Kalibangan II	TF-946	3605 $\pm$ 100 BP	1765 $\pm$ 105 BC	1968 BC
Kalibangan II	TF-142	3635 $\pm$ 100 BP	1795 $\pm$ 105 BC	2030, 1990 BC
Kalibangan II	TF-149	3675 $\pm$ 140 BP	1835 $\pm$ 145 BC	2118, 2083, 2041 BC
Kalibangan II	TF-139	3775 $\pm$ 100 BP	1940 $\pm$ 105 BC	2200 BC
Kalibangan II	TF-151	3800 $\pm$ 100 BP	1965 $\pm$ 105 BC	2278, 2234, 2209 BC
Kalibangan II	TF-147	3865 $\pm$ 100 BP	2030 $\pm$ 105 BC	2450, 2348 BC
Kalibangan II	TF-608	3910 $\pm$ 110 BP	2075 $\pm$ 115	2459 BC
Kalibangan II	TF-163 (BS)	3925 $\pm$ 125 BP	2090 $\pm$ 130 BC	2462 BC
Kalibangan II	TF-607	3930 $\pm$ 120 BP	2100 $\pm$ 125 BC	2564 BC
Kalibangan II	TF-160	4060 $\pm$ 100 BP	2230 $\pm$ 105 BC	2587 BC
Mitathal	PRL-291	3600 $\pm$ 110 BP	1760 $\pm$ 115 BC	1961 BC
Mitathal	PRL-290	3820 $\pm$ 130 BP	1985 $\pm$ 135 BC	2288 BC
Gujarat				
Kuntasi	BS-567	3870 $\pm$ 90 BP	2035 $\pm$ 95 BC	2451, 2433, 2392, 2384, 2356 BC
Lothal A	TF-135	3405 $\pm$ 125 BP	1555 $\pm$ 130 BC	1735, 1717, 1701 BC
Lothal A	TF-133	3740 $\pm$ 110 BP	1900 $\pm$ 115 BC	2182, 2166, 2142 BC
Lothal A	TF-29	3740 $\pm$ 110 BP	1900 $\pm$ 115 BC	2181, 2166, 2142 BC
Lothal A	TF-26	3830 $\pm$ 120 BP	1995 $\pm$ 125 BC	2299 BC
Lothal A	TF-27	3840 $\pm$ 110 BP	2005 $\pm$ 115 BC	2315 BC
Lothal A	TF-22	3845 $\pm$ 110 BP	2010 $\pm$ 115 BC	2328 BC
Lothal A	TF-136	3915 $\pm$ 130 BP	2080 $\pm$ 135 BC	2461 BC
Rojdi A	PRL-1285	3740 $\pm$ 140 BP	1900 $\pm$ 145 BC	2181, 2166, 2142 BC
Rojdi A	PRL-1284	3810 $\pm$ 100 BP	1980 $\pm$ 105 BC	2283 BC
Rojdi A	PRL-1089	3870 $\pm$ 120 BP	2035 $\pm$ 125 BC	2451, 2433, 2392, 2384, 2356 BC
Rojdi A	PRL-1093	3920 $\pm$ 110 BP	2090 $\pm$ 115 BC	2462 BC
Rojdi A	PRL-1283	3980 $\pm$ 100 BP	2140 $\pm$ 105 BC	2554, 2548, 2491 BC
Rojdi A	PRL-1087	4010 $\pm$ 110 BP	2180 $\pm$ 115 BC	2569, 2538, 2503 BC
Rojdi A	PRL-1085	4020 $\pm$ 110 BP	2190 $\pm$ 115 BC	2573, 2535, 2506 BC
Surkotada	TF-1294	3620 $\pm$ 95 BP	1780 $\pm$ 100 BC	2018, 2002, 1980 BC
Surkotada	TF-1295	3780 $\pm$ 95 BP	1945 $\pm$ 100 BC	2202 BC
Surkotada	TF-1311	3890 $\pm$ 95 BP	2055 $\pm$ 100 BC	2455, 2416, 2405 BC

<sup>a</sup>These dates have been selected from a continuously updated index of dates from South Asia compiled by Possehl (1990a).



may appear in the Regionalization Era and persist into the Localization Era, but relative dating always assigns them to the Harappan Phase.

## ENVIRONMENTAL SETTING

The setting of the Indus civilization includes the highlands and plateaus of Baluchistan to the west and the mountainous regions of northern Pakistan, Afghanistan, and India to the northwest and north (Fig. 1).

Two major river systems formerly watered the greater Indus plain, the Indus and the Ghaggar-Hakra (now dry). They reached the sea in separate courses, the Indus delta extending into the Arabian sea to the west, and the Ghaggar-Hakra (called the River Nara in Sindh) delta extending into the Greater Rann of Kutch to the east (Flam, 1986, 1991a; Lambrick, 1964; Wilhemmy, 1969). Their floodplains provided vast areas for grazing and agriculture. The chronology of changes in the rivers and the hydrological regime is not certain, particularly for the northern tributaries (Courty, 1989; Francfort, 1989b; Gentelle, 1986), but the two rivers were probably quite different. The Ghaggar-

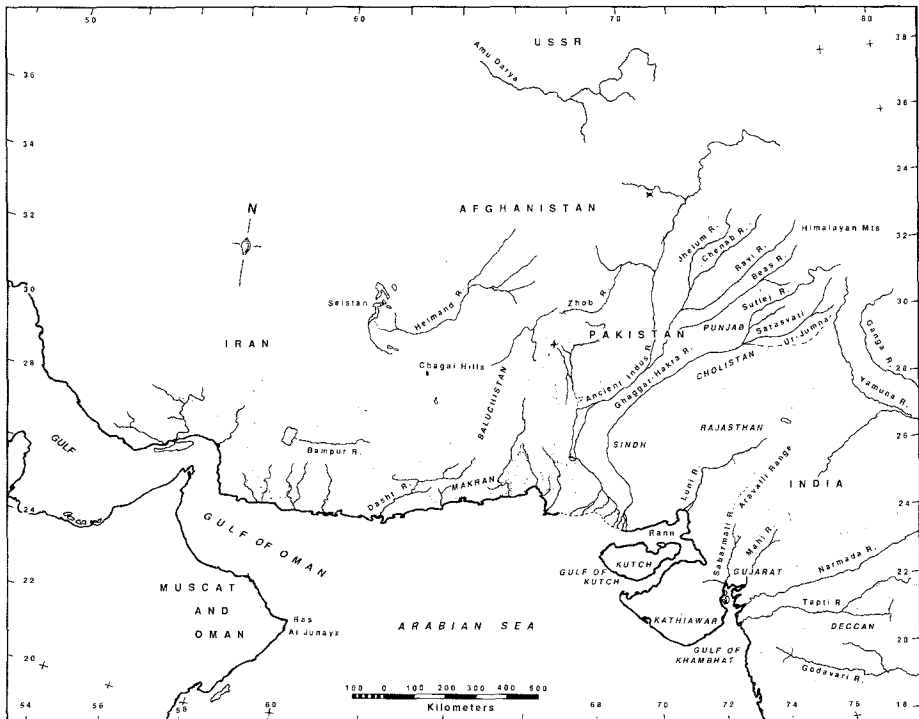


Fig. 1. Major geographical features of the northwestern subcontinent and adjacent regions.

Hakra had a lower gradient, so the floods would not have been so devastating (Fentress, 1985; Ratnagar, 1986). This is apparent from the number of sites preserved along the banks of or in the plain adjacent to the Ghaggar-Hakra (Mughal, 1974a, 1984, 1985), compared with the number associated with the Indus.

There is a significant division of the alluvial plain into northern and southern regions (Punjab and Sindh, respectively), approximately at the change in gradient, where the five major tributaries of the modern Indus become a single river. In the north, there is more rainfall from both the summer monsoon and the winter rains (200 mm or more) (Dutt and Gelb, 1987), whereas rainfall in the south is unpredictable, and in bad years (e.g., 1986–1988), there is little or no rain at all.

The relatively flat plains of the Punjab merge on the east with the drainages of the Yamuna and Ganga Rivers (where many Indus Tradition sites are known). Farther south, the course of the Ghaggar-Hakra is bordered on the east by the great Thar desert, which is itself bounded by the Aravalli ranges (Allchin *et al.*, 1978).

Along the coast, west of the Indus delta, is the arid and rugged mountainous region of the Makran. East of the delta is the insular region of Kutch and the larger peninsula of Saurashtra, which itself may have been a prehistoric island. These two areas are often grouped with the coastal plains of Gujarat, but they are distinct subregions (Bhan, 1989; Joshi, 1972; Possehl and Raval, 1989; Rissman and Chitalwala, 1990). The Gujarat plains are bordered on the north by the southern Aravalli ranges and on the east by the Vindhya and Satpura ranges.

## WEATHER SYSTEMS AND PREHISTORIC CLIMATE

The northwestern subcontinent is dominated by two weather systems, the winter cyclonic system of the western highlands and the summer monsoon system of the peninsula (Snead, 1968). The climatic diversity resulting from this overlap is beneficial and one system may provide water if the other fails. When both fail, the effects are devastating.

There is much debate on the role of climate in Indus prehistory (see Misra, 1984; Meadow, 1989). Some have suggested that increased rainfall coincided with the expansion of settlement into the Indus plains and the eventual rise of urban centers (Marshall, 1931; Wheeler, 1968; Singh, 1971). This is rejected on the basis of hydrographical, zoological, botanical, archaeological, and architectural evidence (Raikes and Dyson, 1961; Raikes, 1965b; Misra, 1984; Vishnu-Mittre, 1974), which indicates no significant change in climate or rainfall since at least 9000 B.P. Specific environmental changes are usually attributable to changing river-flow patterns and humanly induced erosion.

Recent models of global climate indicated that, at 18,000–9000 B.P., southern Asia would have been cooler and drier than today, with a weak summer monsoon. From 9000 to 7000 B.P., there was a stronger summer monsoon, warmer summers and cooler winters (Kutzbach and COHMAP Members, 1988, pp. 1049–50).

### ARCHAEOLOGICAL TRADITIONS

Shaffer (1991) has defined three major cultural traditions for this region (Table IV). The Helmand Tradition, based in the Helmand Valley and Seistan Basin (Tosi, 1968), has evidence for both Regionalization and Integration Eras. (The urban site of Mundigak appears to have been, briefly, a major economic center.) There appears to have been significant contact between the Helmand and the Indus valleys, but the Helmand Tradition had even stronger connections with developments to the west in Elam and Mesopotamia and to the north in Soviet Central Asia (especially the Geokysur Basin) (Shaffer, 1991; Tosi, 1979).

Developments in the highlands and piedmont, the Baluchistan Tradition, were closely related to those of the Indus region itself. As defined by Shaffer, the Baluchistan Tradition has no Integration Era and consists of semiautonomous cultural groups who contributed to changes in both the Helmand and the Indus regions (Lamberg-Karlovsky and Tosi, 1973; Wright, 1985, 1989c). This

**Table IV.** Archaeological Traditions of Northwestern South Asia (After Shaffer, 1991)

Indus Valley Tradition	Baluchistan Tradition	Helmand Tradition
Early Food Producing Era Mehrgarh Phase	Early Food Producing Era Mehrgarh Phase	Early Food Producing Era Ghar-i-mar Phase <sup>a</sup>
Regionalization Era Balakot Phase Amri Phase Hakra Phase Kot Diji Phase	Regionalization Era Kachi Phase Kili Gul Muhammad Phase Sheri Khan Tarakai Phase <sup>a</sup> Kechi Beg Phase Damb Sadaat Phase Nal Phase	Regionalization Era Mundigak Phase Helmand Phase
Integration Era Harappan Phase	Kulli Phase	Integration Era Shahr-i-Sokhta Phase
	Periano Phase	
Localization Era Punjab Phase Jhukar Phase Rangpur Phase	Bampur Phase  Pirak Phase	Localization Era Siestan Phase

<sup>a</sup>The Ghar-i-Mar (Dupree, 1972) and Sheri Khan Tarakai Phase (Khan, Knox and Thomas, 1989) are not identified by Shaffer because the excavations are only recently published or not fully analyzed.

tradition is represented by Mehrgarh, sites in the Quetta Valley, such as Kili Gul Mohammad and Damb Sadaat, and other sites of southern and northern Baluchistan (Shaffer, 1991).

### **The Indus Valley Tradition**

The Indus Valley Tradition as defined by Shaffer (1991) includes all human adaptations in the Greater Indus Region, from around 6500 B.C. until 1500 B.C. and later. Those integrated communities which shared the cultural and economic features discussed below are referred to as the Harappa Culture, or Indus Civilization. In Shaffer's terminology, this is the Harappan Phase of the Integration Era and was the first urban civilization in southern Asia. Some (Fairervis, 1967, 1986; Shaffer, 1982b, 1988b) have questioned the correlation of state-level society with the Harappa urban phenomenon, but others, myself included, feel that the Harappan Phase does represent the earliest state-level society in the region (Jacobson, 1987; and see below).

We will probably never understand precisely why communities in the piedmont and alluvial plains developed agriculture and more permanent settlements, but we can identify interrelated factors that contributed to the development of regional cultures and eventually to urban and state-level society. These factors include the distribution of land suitable for agriculture and pastoralism, the location of specific resources that were selected to define social status, and the environmental setting of highlands and lowlands, coasts, and interior that influenced the patterns of social and economic interaction.

It is most useful to look at the cultural developments from a general systems-ecological approach while still retaining the overall framework proposed by Shaffer. "The functionally interrelated basic components of the complex are environment, population, technology and social organization, with the last conceived as 'an adaptation to the unavoidable circumstance that individuals are interdependent and that the collectivity of individuals must cope with concrete environmental conditions'" (Wheatley, 1972, p. 607). Based on these four basic components, we can summarize the developments as four major preconditions that were fulfilled during the Early Food Producing and Regionalization Eras. My choice of preconditions is derived from various scholars (Butzer, 1982; Flannery, 1973; Redman, 1978; Renfrew, 1972; Trigger, 1972; Watson *et al.*, 1984) and slightly modified to emphasize the factors I feel are most critical. These factors are closely interrelated and, together, provide the necessary foundation for the development of urbanism and state level society in the Indus Tradition.

## GENERAL PRECONDITIONS FOR URBANISM AND THE RISE OF STATE-LEVEL SOCIETY

### **Precondition 1. Diversity of the Subsistence Base and Resource Variability Which Have the Potential for Production of Surplus**

In the greater Indus valley, this precondition is easily filled because of the vast geographical area and ecological diversity. The fertile floodplains were highly productive without massive irrigation systems (Leshnik, 1973; Vishnu-Mittre, 1974; Flam, 1976). Perennial rivers, springs, and lakes in the piedmont provided additional land for agriculture and pasturage. The desert fringes to the east, the highland plateaus and valleys to the west and north, and the higher riverine tracts provided vast pasturelands. There were also numerous localities with accessible lacustrine, estuarine, riverine, and marine resources. The abundant wild fauna found in excavations (Meadow, 1989) show that both the forests and the grasslands were used for hunting.

This juxtaposition of complimentary ecosystems would allow larger populations to be supported in spite of failure in any one system, by relying on surplus resources from elsewhere, available through social and economic interaction networks. Such interaction is documented at Mehrgarh (Jarrige and Lechevallier, 1979; Jarrige, 1984a, 1985; Jarrige and Meadow, 1980), on a major route between the Indus Valley and the highlands of Baluchistan. On the basis of dental comparisons, the Neolithic population at Mehrgarh appears to have Asian, rather than westerly, affinities (Lukacs, 1989), and the early levels of the site document a regional transition to food production and an economy based on wheat-barley, sheep/goat, and cattle (Costantini, 1984; Meadow, 1984a). Some of these domesticates may derive from farther west, but related processes of domestication were occurring simultaneously in the highlands and in the piedmont of Baluchistan.

Other processes of domestication may also have been occurring in the Gangetic basin and Vindhyan plateau of central India, and in the southern peninsula (Allchin, 1963; Paddayya, 1975; Sharma *et al.*, 1980).

### **Precondition 2. The Development of Social and Economic Interaction Networks Between Major Ecosystems and Resource Areas**

There is evidence for the development of trade/exchange systems between all of the major geographical regions from as early as the seventh millennium B.C. at Mehrgarh (Jarrige and Meadow, 1980; Jarrige, 1981). The major systems documented during the Early Food Producing Era and later Regionalization Era are the Southern Indus plain and adjacent western highlands; the

northern Indus and Ghaggar-Hakra region and adjacent western highlands; the highland regions of Baluchistan and Afghanistan (Shaffer, 1974, 1978; Dales, 1976, 1979a; Jarrige and Tosi, 1981; Kenoyer, 1983, 1992; Wright, 1985, 1989c) (Fig. 2). During the Integration Era, the Southern Indus sphere extended to include the regions of Kutch and Saurashtra (Joshi, 1972; Possehl and Raval, 1989; Possehl and Kennedy, 1979) (Fig. 3).

The evidence for trade/exchange is primarily artifacts made from raw materials with restricted sources, such as marine shell, agate, carnelian, lapis lazuli, turquoise, colored cherts and jaspers, serpentine, steatite, and copper. During the Regionalization Era, there was an increase in the import of raw materials from distant sources. Sites such as Mehrgarh become central-place settlements, where raw materials (copper, shell, agate, chert) were processed for local and regional consumption (especially beginning in Mehrgarh, Period III). These centers also began producing specialized ceramics for exchange to

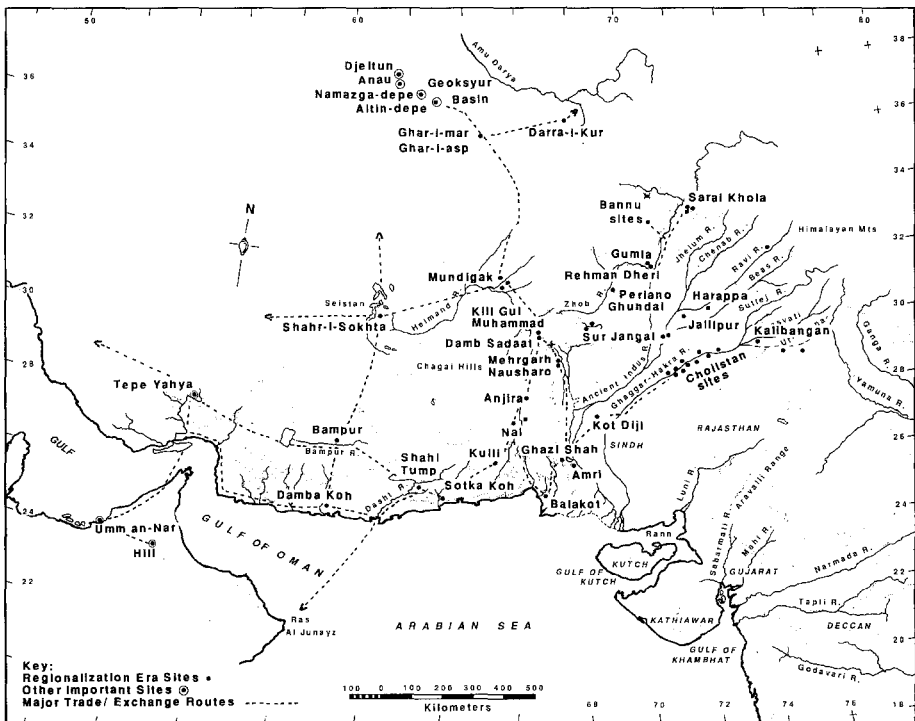


Fig. 2. Major sites and interaction networks of the Indus, Baluchistan, and Helmand Traditions, Regionalization Era.

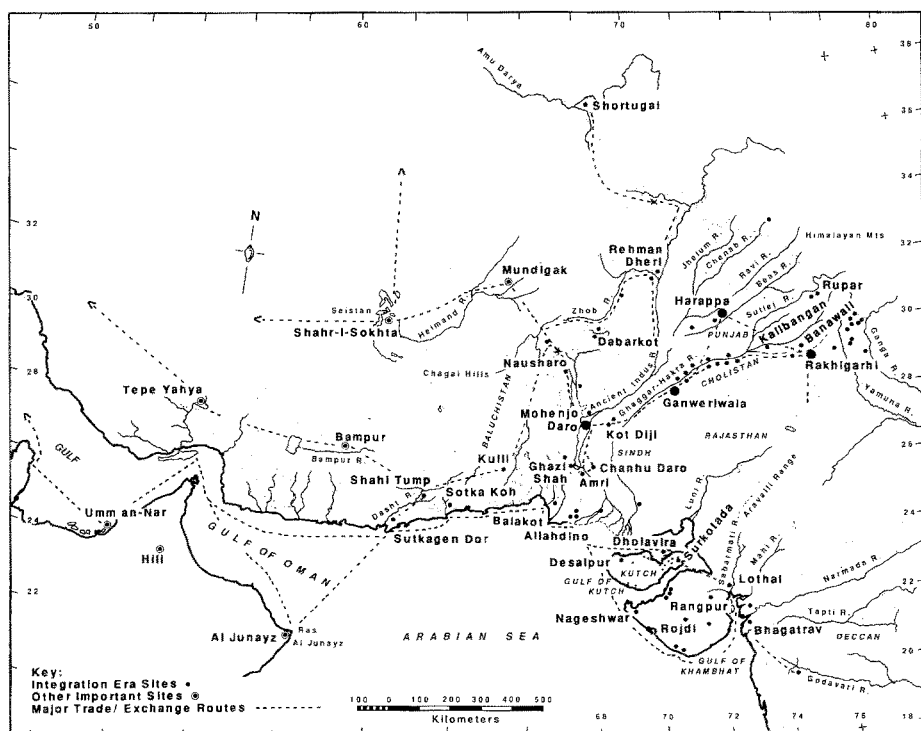


Fig. 3. Major sites and interaction networks of the Integration Era, Harappan Phase.

the hinterlands (Jarrige and Audouze, 1980; Jarrige, 1981, 1985; Wright, 1989b).

Transport of objects during the Regionalization Era was probably overland by human porters, by cattle carts, and on the backs of sheep, goat, cattle, and even dogs. The locations of major settlements were related to the importance of riverine transport (Ratnagar, 1981; Jansen, 1989), which was probably important during the pre- and postmonsoon seasons (Shaffer, 1988a).

The presence of status objects throughout the Indus region indicates a strong socioritual system of beliefs that demanded the acquisition and use of such items. A sufficient supply would have been ensured by economic networks and the spread of specialized artisans and technologies to major sites; there is no evidence for acquisition by force. More important, the acquisition of exotic goods must be seen in the same way as the accumulation of grain or livestock surplus—in an increasing status differentiation between those who have and those who have not.

### **Precondition 3. Technological Capability to Fill Specific Needs of Urban and State-Level Society**

The basic technology needed for an urban society was already present during the early phases of the Regionalization Era and later evolved as needed. Basic objects such as stone, bone, and wooden tools had been in use for thousands of years. Agricultural technology could cope with the different ecosystems; the major grains (wheat and barley), legumes, pulses, and possibly even cotton were cultivated throughout the region. Elaborate irrigation systems were not needed in the alluvial plain, but dams and canal systems were developed in the piedmont zone (Flam, 1986).

A range of specialized crafts was established during the Regionalization Era, which produced status and utilitarian goods that were distributed locally and regionally (Jarrige, 1984b; Kenoyer, 1992; Wright, 1985). Many of these were made in centers quite distant from the sources of raw material, reflecting a stratified production process, increased control of access and distribution by specific individuals in the production centers. For example, the copper/bronze technology indicates a hierarchy of specialists: miners, smelters, metalworkers, traders of raw materials, traders of finished commodities, and consumers. Some of these occupations could have overlapped, but it is unlikely that all of them were performed by one family group or community.

Ceramic technology was highly developed and each region had centers for manufacturing specialized ceramic containers, decorative wares for socioritual purposes, basic domestic wares (Jarrige and Audouze, 1980; Santoni, 1989; Wright, 1989a, b), and figurines (Jarrige, C., 1988).

Probably the most significant development is in architecture. Massive architectural construction indicates the mobilization of a large labor force, while the establishment of norms for settlement plans provided the basis for later urban settlement layout. Regionalization Era sites on or near the floodplain show the construction of massive mud-brick or stone walls and mud-brick platforms [e.g., Kot Diji (Khan, 1964, 1965), Nausharo (Jarrige, 1988a), Rehman Dheri (Durrani, 1986), Harappa (Dales and Kenoyer, 1990a), Kalibangan (Lal and Thapar, 1967; Thapar, 1975)]. Most structures appear to combine walls and platforms. They have been referred to as defensive walls (Durrani, 1986; Khan, 1964; Lal and Thapar, 1967), but a primarily defensive function has never been demonstrated and they are more probably multipurpose, providing protection from flooding, defining the settlement for administrative or ritual purposes, and possibly defensive (Fairervis, 1977; Dales and Kenoyer, 1990b).

Floor plans of individual structures and general site plans are not uniform for the entire Indus region, but many sites have wells, drains, and streets organized in irregular network patterns (Amri, Kot Diji, Nausharo, Rehman Dheri, Kalibangan). In some sites, such as Harappa and Rehman Dheri, the earlier



settlement plan corresponded to the cardinal directions and this is the plan most characteristic of the later Harappan Phase of the Integration Era. Absolute brick sizes and proportions remain the same at Harappa throughout the Regionalization Era, Kot Diji Phase and the later Harappan Phase (Dales and Kenoyer, 1990a). In contrast, at Kalibangan and Banawali there is a change in brick proportions from 1 : 2 : 3 in the Regionalization Era to 1 : 2 : 4 in the Integration Era (Bisht, 1984; Lal, 1978).

War technology is not well represented in the Regionalization Era. Sites were not heavily fortified, nor is there evidence for the accumulation of weapons. The seals, figurines, and pottery designs do not depict armed conflict, raiding, or taking of captives. Furthermore, violent/traumatic death is not evident from the few burials at Mehrgarh dated to the Regionalization Era (Samzun and Sellier, 1985). Episodes of aggression and conflict probably occurred, but armed conflict was not a major activity, nor does the integration of the Indus Valley seem to have been achieved through military coercion. There may be walled settlements, particularly in the piedmont and peripheral zones, but there is no evidence for periods of sustained conflict and a coercive militaristic hegemony.

#### **Precondition 4. Differentiation in Status on the Basis of Access to Essential Resources and the Ability to Control Distribution of Essential Resources**

Status differentiation based on access to essential resources results from cultural choices of which resources are necessary for subsistence and for ideological purposes of social identity and value. Such differentiation develops into control over the distribution of and access to resources. However, the degree of differentiation is difficult to quantify archaeologically, making it difficult to document the transition from ranking to stratification.

During the Regionalization Era, several categories of artifacts provide evidence for groups of people with differential access to essential resources. Seals are thought to indicate individuals or elite groups who controlled access to and distribution of essential goods (Joshi and Parpola, 1987). The sealings were rolled (Jarrige, 1984a) or stamped on clay or bitumen (Jarrige and Lechevallier, 1979) to seal containers or bundles of goods; they probably had ritual meaning as well as serving economic purposes. Various types of seals have been found at many of the early sites (Mehrgarh, Rehman Dheri, Damb Sadaat, etc.) and were eventually elaborated into the exquisite stone seals with script of the Integration Era.

Abstract graphic symbols or graffiti occur in almost all Regionalization Era sites, primarily on fired clay objects or pottery. The graffiti are simple signs

scratched into the wet clay before or after firing. As well as ownership, they may identify vessel contents or socioritual functions (Potts, 1981).

Objects made by potters, metallurgists, and bead and ornament manufacturers also indicate status differentiation. Fine painted wares and specific vessels forms produced at Mehrgarh for local and regional trade (Wright, 1989b; Santoni, 1989) indicate social differentiation and possible stratification among consumers. Bangles of red or black fired terra-cotta, shell, or copper and specific bead shapes of clay and agate may reflect differentiation through the use of different raw materials (Kenoyer, 1991a). This ranking of specialized objects based on raw materials and technology is first seen in the Regionalization Era and becomes more pronounced in the Integration Era.

Finally, there is the division of sites in the southern hills and piedmont region of Sindh Kohistan into two or more sectors, often referred to as the lower town and the higher town or "citadel." Flam (1976, 1986) suggests that this reflects a division of the population into socioeconomic or ritual classes.

It is unlikely that the need to integrate the diverse and widely dispersed regions of the Greater Indus Valley could have evolved within a single community or at a single site. The developments summarized above demonstrate that the basic mechanisms for integration, including trade and regional ideologies, were established on a large scale by 3500–3000 B.C. Further, the diverse subsistence base and technology were capable of sustaining large settlements and large populations of stratified social groups. Thus, the origins of the Indus urban society can be traced to the socioeconomic interaction systems and settlement patterns of the indigenous village cultures of the alluvial plain and piedmont. More importantly, the factors and processes leading to this transformation appear to be autochthonous and not derived from direct stimulus or diffusion from West or Central Asia.

The critical question remaining concerns the transformation from village-level to urban interaction and the development of a stratified and hierarchically structured society. Some favor a long, gradual transformation (Allchin and Allchin, 1985; Fairervis, 1975; Mughal, 1970, 1990) and others suggest that it was rapid, or even explosive (Jansen, 1987b; Possehl, 1986; Shaffer and Lichtenstein, 1989). The major interpretations have been summarized by Possehl (1990b) and Mughal (1990).

Possehl (1990b) feels that there are significant discontinuities in core trends (Adams, 1966) that make the Harappan Phase distinctively urban, e.g., social stratification, craft and career specialization, writing, settlement patterning, urbanization, and state organization itself. Trade with Mesopotamia and important ideological shifts within the Indus society are identified as major factors which promoted a series of rapid developments, within 100–150 years, culminating in the urban phase at about 2550 B.C.

In contrast, Mughal (1990) proposes that a unified, organized, and inte-

grated socioeconomic system at an early stage of urbanism was established in the north and in the south before the full Integration Era. The idea of a gradual development of urbanism seems more in line with the interpretations of those working at sites in the core region: Harappa (Dales and Kenoyer, 1990b), Nau-sharo (Jarrige, 1988a), Rehman Dheri (Durrani, 1986), and Ghazi Shah (Flam, 1991b, personal communication).

Major alliances and kin networks may have been established among ruling elites over several generations (100–150 years), but the mechanisms for maintaining control must have been evolving for much longer. The synthesis of the different systems that existed over such a vast area was most likely achieved through socioeconomic, political, and ritual alliances of more than one community. This balance could have been maintained through coercive mechanisms (ritual, economic, and physical) functioning at different levels. The integration of the regional polities in Sindh, Punjab, Baluchistan, and Gujarat was not a simple process and I do not think that it can be explained by a simple model of punctuated evolution. We should now focus on the development of new models for southern Asia, rather than try to fit the available data into old moulds.

## INTEGRATION ERA

The Integration Era of the Indus Valley Tradition is represented by the Harappan Phase. It is probable that this phase will be subdivided as new and more precise studies of material culture patterning and chronological sequences are completed. Here, I examine the specific aspects of material culture patterning used to define the Harappan Phase.

### Settlement Patterns and Extent

Traditional settlement studies have been biased toward the urban element because these sites are the most massive and well preserved. However, surveys in all the major regions of the Indus Valley Tradition have demonstrated that the Harappan Phase includes a wide range of rural and nonurban sites that are varied in size and function.

There have been several regional settlement pattern studies (M. Adler, in Wright, 1986; Flam, 1976; Mughal, 1980; Possehl, 1980) and four major attempts to categorize all known sites (Chakrabarti, 1976; Fentress, 1977; Jansen, 1980b; Possehl, 1990b). The different conclusions reached can be ascribed to nuances of classification and scale and the difficulty of estimating the size of settlements buried in the alluvium or covered by later occupations. Furthermore, many sites consist of two or more mounds; since the Harappan Phase lasted 500–700 years, it is not clear if all the mounds were occupied simultaneously or if they reflect shifts in occupation. For example, the mounded areas

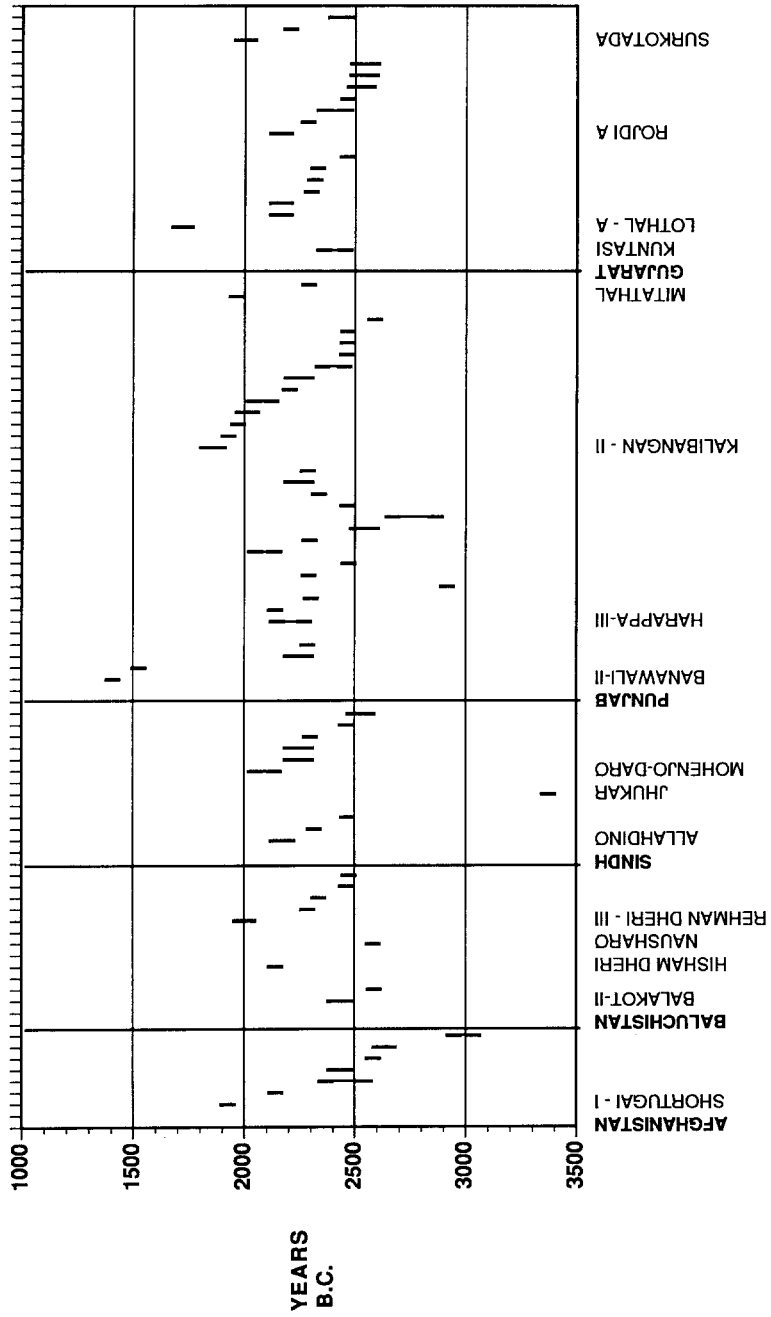


Fig. 4. Important radiocarbon dates of the Indus Tradition Integration Era. Calibrated using CALIB program (Stuiver and Reimer, 1986).

of Mohenjo-daro and Harappa have been estimated as 83 and 76 ha, respectively (Fentress, 1977), but recent work has revealed at least 125 ha (Bondioli *et al.*, 1984) and possibly >200 ha (Jansen, personal communication) of habitation areas around the mounds at Mohenjo-daro, while similar studies at Harappa estimate a site size of 150 ha (Dales and Kenoyer, 1990a). It is unlikely that these were totally occupied during any one period, but without systematic testing and detailed chronologies, we cannot estimate site size for any specific period. For the moment, it is better to correlate the general site size with features such as architecture and centrality. It should also be understood that, although the Harappan Phase sites represent a multitiered settlement pattern, the larger the site, the less reliable the size estimate for any given phase.

Undoubtedly, the largest settlements (>50 ha) are Mohenjo-daro, Harappa, Ganweriwala (81.5 ha) (Mughal, 1980), and possibly Rakhigarhi (80 ha) (Mughal, 1990). At Mohenjo-daro and Harappa, excavations have revealed that, while many of the structures were built of baked brick, there were also many buildings and massive platforms of mud-brick. The locations of these urban centers form a zigzag pattern that covers the northern Ghaggar-Hakra and Gangetic plain, the Punjab, Cholistan, and Sindh. These are four of the six major regions or domains (Possehl, 1982) of the Indus Valley Tradition, the other two being the Makran or Gedrosia and Gujarat. Mughal (1990) estimates the distances between the sites as 350 km (Rakhigarhi-Harappa), 280 km (Harappa-Ganweriwala), and 308 km (Ganweriwala-Mohenjo-daro). The distances between cities on the same major river system are 570 km (Mohenjo-daro-Harappa) and 522 km (Ganweriwala-Rakhigarhi).

On the basis of size, physical structure, and centrality, a second level of settlements can be defined, ranging from 10 to 50 ha, such as Dholavira (possibly larger; Bisht, 1990), Judeirjo Daro, and Kalibangan. Most of their structures were of mud-brick, and baked bricks were used primarily for drains. Where stone was available, as at Dholavira, this pattern is somewhat modified. The distances from the cities to the smaller regional centers vary considerably and may reflect irregular networks defined by accessibility along rivers or overland routes and, possibly, sociopolitical alliances.

A third level of sites is 5–10 ha: Amri, Lothal, Chanhudaro, and Rojdi. These sites consist primarily of mud-brick (or stone rubble) structures, although Chanhudaro is constructed almost entirely of baked brick. Fourth-level sites, ranging from 1 to 5 ha, are Allahdino, Kot Diji, Rupar, Balakot, Surkotada, Nageshwar, Nausharo, and Ghazi Shah. Numerous sites of <1 ha have been reported; many are surface scatters of pottery and other artifacts representing pastoral camps, but others with furnaces and kilns may reflect longer periods of use (Mughal, 1980).

Floating houseboat villages of riverine or lacustrine communities may have existed throughout the Indus region (Shar, 1987) but are not archaeologically

documented. Before modern transportation, such communities were an important component of regional exchange and communication and were undoubtedly so during the Harappan Phase.

The continuing discovery of new sites and the problem of overlapping chronologies based on loosely defined ceramic types make it difficult to estimate the total number of Harappan Phase sites. A recent count identifies 976 settlements (Possehl, 1990b). The geographical extent of these settlements is immense and has been estimated from roughly 680,000 km<sup>2</sup> (Kenoyer, 1987) up to 800,000 km<sup>2</sup> (Possehl, 1990b), an area that is more than double those of contemporaneous urban civilizations. It is likely that this vast area will eventually be subdivided into smaller political entities, possibly centered on the cities and some of the smaller regional centers.

### Urban Settlements

The layout of the Harappan Phase settlements has often been described as being based on a north-south and east-west grid of streets. This is an overstatement; a better description would be "irregular net plan" (Jansen, 1978). Another common misconception is of a rigid division into the higher "citadel" on the west and the lower town on the east. Large sites were divided into mounds, but the lower mounds are often at various points around the higher one. Some of the mounds were occupied contemporaneously and reflect a segregation of the city into quarters, as was seen in the earlier settlements of the Regionalization Era (Flam, 1986). Smaller sites consisting of a single mound may be divided internally, as at Surkotada (Joshi, 1973).

Settlements were usually built within or on top of massive mud-brick walls or platforms (Dales, 1965a). At large sites, like Harappa, massive baked brick revetments or battered facings were erected along some segments of the mud-brick structures. These massive walls have previously been called defensive, but recent excavations at Harappa show that, while some parts of the walls may have been free-standing and associated with an entrance, other parts served as massive revetments raised up to 3 m against the edge of the mound (Dales and Kenoyer, 1990a). The massive walls, platforms, and gateways could have had several functions, including protection from monsoon flooding, protection from erosion and water accumulation in the site itself, the definition of a discrete urban area for administrative purposes, and defense (Dales and Kenoyer, 1990b; Kesarwani, 1984).

In some sites (e.g., Rehman Dheri and Harappa), as the mound grew, the perimeter walls were eventually incorporated into large mud-brick platforms constructed on top of the mound. These secondary platforms appear to have been primarily foundations to provide level living areas on a mound that was growing and eroding simultaneously. Similar patterns of urban growth occur in

almost all Pakistani or Indian towns where mud- and baked brick structures are used today. Research at Mohenjo-daro has focused on whether these large centers gradually built up over earlier settlements or whether they were planned as massive platforms, on top of which the city and an extensive system of wells and segregated neighborhoods was laid out (Jansen, 1987a, 1989). Core-drillings and small-scale surface clearing at Mohenjo-daro (Balista, 1988; Vidale and Balista, 1988) and the recent excavations at Harappa (Dales and Kenoyer, 1990a, b) indicate that the cities grew from an initial settlement on the plain through several phases of platform building and reinforcement.

### Domestic and Public Architecture

Reanalysis of Mohenjo-daro (Jansen, 1980a, 1984) has shown that there is no standardization of five house types as Sarcina thought (1978–1979). Jansen defines three basic architectural units, which include significant variations in scale and complexity. The first group includes private houses oriented toward a central space, with access from the street by an entrance that blocks the view of the interior of the house. The central space provides access to rooms and bathing areas that are not always interconnected. Groups of houses form a neighborhood that is often associated with one or more private wells.

There may be >700 wells in the core area of Mohenjo-daro, based on their density in the excavated areas (Jansen, 1989). Most seem to be within private blocks or neighborhoods, but some are along major streets or in public structures (Mackay, 1938; Marshall, 1931). The number of wells and their association with neighborhoods could indicate a need for discrete and relatively private water sources. In later Hindu caste society, discrete wells and water sources were necessary to maintain ritual purity in an urban context. There is no evidence for a caste organization in the Indus cities, but the abundance of wells may reflect some perception of water purity in a congested urban context.

The second group is large houses surrounded by smaller units, resulting in a complex with many different sizes of rooms and access routes. The outer units could be the living-workshop areas for service groups attached to the central larger house.

The third group includes large public structures that have open access or provide a thoroughfare from one area of the site to another. Examples are large open courtyards, the “Great Bath” of Mohenjo-daro, and the “granaries” at Mohenjo-daro and Harappa. Labels such as “Great Bath” and “granary” are speculative and we do not know the precise functions of these structures. The Great Bath is a large, waterproof tank constructed with great skill, but how and by whom it was used remain unknown (Jansen, 1980a). The so-called granaries at Mohenjo-daro, Harappa, and even Lothal appear to have been massive foundation platforms for a superstructure that is no longer evident. They could thus

be the remains of palaces, temples, public meeting places, or public store rooms; unfortunately, the stratigraphy and associated artifacts are lost or inadequately recorded (Fentress, 1984).

The cities and smaller settlements also had carefully designed and well-maintained drainage systems. Wells and bathing platforms were lined with bricks, and small drains carried water away from the wells or living area to larger street drains. The street drains were equipped with sump-pits and the streets had bins for nonliquid waste, which was presumably collected and dumped outside the settlement.

In summary, the cities reveal an excellent understanding of how to build and maintain settlements on the alluvial plain that would be protected from meandering rivers and seasonal flooding. Further, they had a reliable water supply in the form of wells and did not rely on the river for water.

### Subsistence Strategies

Subsistence strategies have been reconstructed on the basis of botanical and faunal studies, motifs of plants and animals on painted pottery, figurines, depictions on seals, and analogies with traditional practices (McKean, 1983). Because of the environmental diversity, no single subsistence pattern applies to the entire Tradition. The general pattern of Harappan agriculture involved intensive use of specific optimal areas located in diverse environments (Leshnik, 1973). Agriculture was heavily supplemented by animal husbandry, hunting, and gathering (Meadow, 1989). The diversity in subsistence activities is thought to be an important adaptive strategy to support the cities (Fentress, 1985; Leshnik, 1973; Ratnagar, 1986).

By analogy with traditional systems not using intensive irrigation, two major grain crops could have been raised, depending on the annual rainfall or flooding within a specific region (Leshnik, 1973). The *rabi* crop is sown in the fall and, with sufficient winter rain, can be harvested in spring without irrigation. If winter rains are inadequate, irrigation from springs or wells is necessary. These crops would include wheat, barley, pulses, sesamum, peas, vegetables, and possibly perennial cotton (Meadow, 1992).

A second crop, *kharif*, is sown on higher land during the monsoon or in drained land at the end of the monsoon flooding and the crops are harvested in the fall. Traditional *kharif* crops include cotton, mustard, sesamum, dates, melon, and peas. The *kharif* crops of rice, sorghum, and various millets (*Setaria*, *Panicum*, and *Eleusine* spp.) were grown in the Gujarat region by 2600 B.C. although they may not have been the dominant crops (McKean, 1983; Possehl, 1987; Weber, 1992).

Some scholars feel that the *rabi* crops were more important in the alluvial plains and piedmont regions during the Harappan Phase (Meadow, 1989), but



there is little doubt that both *rabi* and *kharif* crops were cultivated in most regions by 2600 B.C. It is likely that different regions emphasized one seasonal crop over the other: *rabi* crops may have predominated in the core areas of the Indus valley and *kharif* crops in the region of Gujarat and possibly the northern Gangetic plain (Weber, 1992).

The Harappans used a variety of methods to control water for agriculture. Water-diversion channels and dams for trapping soil and moisture are well documented in the piedmont (Fairservis, 1967), and at Shortugai, Afghanistan, there were extensive irrigation canals (Francfort, 1989a). At Allahdino, a well and associated drains were thought by Fairservis (1982) to represent an irrigation system, but this pattern is a standard feature of Harappan Phase drainage systems and need not be related to irrigation. At Lothal, a massive tank that was filled by river floodwaters is thought to have been a reservoir; Leshnik and others have argued that the identification of the structure as a dock (Rao, 1973) is highly improbable. Large stone weights found at the edge of the tank may indicate a "shaduf"-like system to lift the water out (Leshnik, 1968).

In the alluvial plains, physical evidence for fields and irrigation systems is difficult to locate because of the meandering rivers and intense cultivation since the prehistoric period. However, a plowed field with east-west furrows 30 cm apart and north-south furrows 1.9 m apart was found at Kalibangan (Lal, 1978). This pattern could indicate the use of the plow and draft oxen, as well as multicrop fields. The use of the draft plow is supported by a toy terra-cotta plow from Banawali (Bisht, 1982).

Most agricultural land in the alluvium was probably watered by simple inundation irrigation (*sailaba*), where the water is diverted by temporary earthworks. This does not require building massive, permanent headworks, which are difficult to maintain even with modern technology (Leshnik, 1973). The unpredictable winter rain in Sindh and Punjab would have necessitated irrigation for *kharif* as well as *rabi* crops.

Recent work in the Ghaggar-Hakra plain has revealed prehistoric irrigation canals that may date to the Harappan Phase (Francfort, 1986, 1989b; Gentelle, 1986). If so, they confirm the intensive nature of Harappan agriculture in the alluvium as well as the engineering capabilities evidenced by the piedmont and highland irrigation systems.

Animal husbandry also played an important role in the subsistence system (Meadow, 1989, 1991; Ratnagar, 1986; Possehl, 1979) and included cattle (humped *Bos indicus* and nonhumped *Bos taurus*), water buffalo (*Bubalus bubalis*), sheep, and goat (Meadow, 1989). These animals are adapted to different types of grazing and so could have exploited the vast grasslands on the meander plain, as well as the forested alluvium which was not being farmed.

Compared with the earlier Regionalization Era, Meadow (1979) has proposed that the urban Harappans used a much more varied spectrum of animals,

including marine and freshwater resources. At inland sites, freshwater fish, tortoise, and shellfish are common, while marine fish and shellfish were important at the coastal sites (Dales and Kenoyer, 1977; Meadow, 1979). Wild fauna occur at both rural and urban settlements and indicate hunting as a source of food and other resources. The animals hunted included large bovids and cervids such as nilgai, deer, gazelle and blackbuck; pig, rhino, elephant, and a wide variety of smaller game (Meadow, 1989, 1991). Recent studies of bone "points" at Harappa suggest that they were link-shafts to hold small detachable points which may have been poisoned. The small copper points found at all Harappan Phase sites are the right size for use with these link-shafts.

In summary, Harappan subsistence economy was diversified, in terms of both surplus production capabilities and location of production areas. The diversity may be due in part to the variety of ethnic groups in the cities, with their own preferences for wild and domestic animals. The pattern reflects the Harappan ability to exploit different environments and to cope with new food resources. This attitude may explain the rapid dispersal of rice and millet as important crops during the later Localization Era (Late Harappan) and post-Harappan phases.

### Specialized Crafts

An important aspect of the Harappan Phase noted by the earliest excavators was the specialized crafts, some of which were apparently segregated in specific areas of the sites. The crafts were seen as producing standardized artifacts that were distributed throughout the Indus region. Occupational specialists and standardized artifacts were thought to be due to centralized control of production, presumably by a state-level organization (Piggott, 1950; Wheeler, 1968). Later interpretations have suggested that artifact uniformity was the result of conservative ideology and not necessarily control or specialization (Fairservis, 1984a; Miller, 1985). Only today are we beginning to understand the role of crafts in Indus society (Bondioli *et al.*, 1984; Kenoyer, 1989; Vidale, 1989; Vidale and Bondioli, 1986).

Some crafts may have been segregated to control production of status items, but others may have been segregated for more basic reasons related to access to materials and labor. Similarly, the standardization of items such as weights or seals may be attributed to centralized control, while other objects, such as pottery and ornaments, may have been standardized by mechanisms that reflect a shared ideology and aesthetic. For example, kin-related learning processes or the spread of kin-related artisans to different settlements can result in high standardization (Kenoyer, 1989).

During the Integration Era, specialized crafts that had roots in the preceding phases became more complex in technology and in the varieties and com-

binations of materials processed. Styles also changed, and although there is a general similarity throughout the greater Indus region, detailed studies of specific types reveal the presence of important local variations (Pande, 1984; Dales and Kenoyer, 1986; Kenoyer, 1984). Certain sites may also have become primary manufacturing centers for items related to socioeconomic or ritual status (Dales and Kenoyer, 1977; Jarrige, 1981; Kenoyer, 1989; Rissman, 1989; Vidale, 1989; Vidale and Bondioli, 1986; Wright, 1989a).

We can distinguish at least four categories of crafts practiced at Harappan sites: (1) those processing local materials using simple technologies—wood-working, terra-cotta production, house-building, etc.; (2) those processing non-local materials using simple technologies—chipped, ground and pecked stone; (3) those processing local materials using more complex technologies—stone-ware bangle manufacture, elaborate painted and specialized ceramics, inlaid woodwork, etc.; and (4) those processing nonlocal materials using more complex technologies—agate bead manufacture, seal production, copper/bronze metal working, precious metal working, shell working, faience manufacture, etc. In general, the first two show more regional variation, while the last two appear more standardized.

The organization of craft production was probably varied. A recent study suggests that there were two types of ceramic production in the cities: a kin-based, small- and large-scale production primarily for local consumption and a more centrally controlled production of high-status items (painted pottery and stoneware bangles) for local or long-distance trade (Wright, 1989a). Similarly, crafts such as shell manufacture produced items for local markets as well as special status items for elite markets and long-distance trade (Kenoyer, 1983, 1984). Steatite seals appear to have been produced in only a few sites and the recent publication of detailed photographs of the seals (Joshi and Parpola, 1987) will be extremely useful for understanding regional styles of glyptic art. A limited study by Rissman (1989) has demonstrated the potential for this type of study.

The localization of production within a site sometimes continues from the preurban to the full urban period (Dales and Kenoyer, 1990a), while industrial areas of other sites reveal changes in the crafts being undertaken (Pracchia *et al.*, 1985). Contrary to the model of craft workshops segregated in the “lower city,” recent studies at Mohenjo-daro indicate that craft activities were dispersed throughout the site in a pattern similar to that traditional neighborhood bazaars (Pracchia *et al.*, 1985).

Sites such as Chanhudaro had many groups of artisans involved in the production of elite status items such as seals, long carnelian beads, and copper objects (Mackay, 1943; Vidale, 1987, 1989). Smaller sites near resource areas concentrated on processing local materials for trade to the large centers and external markets: e.g. Nageshwar, a shell-working site (Bhan and Kenoyer,

1980–1981), and Shortugai, a lapis lazuli mining and processing center (Frankfort, 1984, 1989a).

During the Harappan Phase, some technologies reached very high levels of expertise, especially the manufacture of long carnelian beads (Kenoyer, 1986), steatite seals (Rissman, 1989), stoneware bangles (Halim and Vidale, 1984), compact frit or faience (McCarthy and Vandiver, 1990), and bronze objects (Agrawal, 1984). This ability to create new substances out of more mundane raw materials was highly developed and there is evidence for the trade of Indus objects as far as Mesopotamia (Chakrabarti, 1990) and possibly Egypt (personal observations).

In summary, some crafts were apparently structured on the basis of kin networks and were decentralized in terms of state control. Others may have involved long-distance kin networks and alliances that could be decentralized in terms of direct political control but required some centralized support to maintain long-distance trade relations. Crafts that were difficult to control directly may have been less important for state economy, while easily controlled crafts could have been important for state economy.

### Internal Trade and Exchange

One major mechanism for integrating the widely dispersed settlements of the Harappan Phase appears to have been the socioritual need for specific materials and products distributed by trade and exchange. Internal trade and exchange are indicated by standardized weights, sealings, the sourcing of raw materials, and the identification of specialized production centers (Fentress, 1977; Shaffer, 1982a).

The best indicators of trade are the standardized, cubical, stone weights found at all major sites. They range from 0.871 to 10,865.0 g (Marshall, 1931) and were probably used to measure small amounts of precious stones, metals, and perfumes/incense and larger quantities of other commodities. The very low standard error for specific weight categories indicates rigid control (Mainkar, 1984). Clay sealings used to seal storage vessels or bales of commodities also indicate internal trade. At Lothal, more than 65 sealings were associated with what is identified as a warehouse (Rao, 1979). Many of the sealings have several different seal impressions, indicating the beginnings of bureaucracy and “red tape.”

Internal trade is also shown by the distributions of items made on materials coming from limited areas. Specific varieties of chert, agate, jasper, limestone, and sandstone can be traced to regional sources; various marine shells came from the coasts of Gujarat, the Makran, and Oman. Some artifacts can be traced to specific manufacturing sites; for example, shell objects were made at the coastal sites of Nageshwar (Bhan and Kenoyer, 1980–1981) and Balakot (Dales

and Kenoyer, 1977); long carnelian beads, shell ladles, and steatite seals were produced at Chanhudaro (Mackay, 1943; Vidale, 1989); stoneware bangles were made at Mohenjo-daro (Vidale, in Dales and Kenoyer, 1990a; Halim and Vidale, 1984) and Harappa (Blackman and Vidale, 1992).

There is evidence that internal trade networks were highly stratified (Kenoyer, 1989). The larger cities were directly connected with external regions and to each other by interregional networks. Intraregional networks connected these cities to towns and villages. Local exchange systems redistributed locally produced items and essential commodities to villages, pastoralists, etc.

Three systems of trade/exchange may have existed during the Harappan Phase. The first, based on the standardized weight system, may reflect a centralized authority or a coalition of merchants that maintained the standardized system to control the trade of specific commodities.

The second system was probably regional, involving the exchange of grain for other commodities using generalized measures in baskets, bales, or pottery vessels. Verification of the quantity or value may be represented by post-firing graffiti on pottery vessels (often consisting of what are thought to be numerical symbols) and the use of seals on bales and storage vessels (Rao, 1979; Joshi and Parpola, 1987). Platforms along the streets, special public structures, and open areas in sites may have been market places similar to the bazaars in traditional southern Asian towns (Mackay, 1938; Marshall, 1931).

The third possible form (not reflected archaeologically) is the exchange of goods for services between occupational specialists and those controlling land, grain or livestock. This type would have been more common in rural areas but is also possible in an urban context (Kenoyer, 1989).

Ethnographic studies of shell trading and agate bead trading (Kenoyer, 1989) show that long-distance trade networks often result from extended kin relations or lower-level alliances between producers and consumers. While the networks themselves need not result from centralized authority, the maintenance of trade channels and control of redistribution by elites would have been crucial to reinforce the socioeconomic order.

### **External Trade and Exchange**

Some scholars have suggested that external trade was a major factor in the rise and maintenance of the urban centers (Possehl, 1990b; Ratnagar, 1981), while others have argued that external contacts were not very significant (Shaffer, 1982a, and below).

There is evidence for contacts with all regions adjacent to the Indus (Dales, 1962, 1968, 1971): with the Helmand Tradition in central Afghanistan and sites in southeastern Iran and Central Asia (Chakrabarti, 1990; Lamberg-Karlovsky and Tosi, 1973; Masson and Sarianidi, 1972; Shaffer, 1980), with Chalcolithic

cultures in Peninsular India (Agrawal, R. C., 1984; Misra, 1970, 1973), with cultures in the Arabian Gulf (Cleuziou, 1984; Cleuziou and Tosi, 1989; Frifelt, 1989; Potts, 1978; Tosi, 1987), and with the urban civilizations in southern Iran and Mesopotamia (see Chakrabarti, 1990).

The alluvial plains and piedmont have no sources of copper or tin and the Harappan cities established trade contacts or colonies in Baluchistan and Afghanistan to ensure reliable supplies of these metals. In southern Baluchistan, the Harappan-related Kulli culture (Dales, 1976; Possehl, 1986) and scattered Harappan colonies may have been major suppliers of the metals. In the extreme north, the Harappan site of Shortugai was apparently a trading colony near major sources of lapis lazuli, copper, and tin (Francfort, 1989a; Stech and Pigott, 1986). No Harappan sites are known in the copper-mining regions of the Aravallis to the east, but there is evidence for trade and exchange with this area (D. P. Agrawal, 1984; R. C. Agrawal, 1984). Trade in essential raw materials was probably controlled by more than one community, including the elites in the Indus cities as well as the entrepreneurs/middlemen on the periphery (Dales and Flam, 1969; Possehl, 1986).

The clearest evidence for external trade is the many Harappan artifacts in Oman and along the southern coast of the Arabian Gulf (Potts, 1990; Cleuziou and Tosi, 1989; During-Caspers, 1971, 1972). Harappan pottery, graffiti, and even a bronze stamp seal have been found at Ra's al Junayz (Tosi, 1982, 1987; Vidale, personal communication).

Harappan-style artifacts have been recovered from sites in Mesopotamia dating from 2550 to 1300 B.C. (Chakrabarti, 1990). However, it is becoming evident that there were significant fluctuations during the 700 years of the Harappan Phase. This fluctuation is also reflected in the Mesopotamian texts which refer to trade with a region called Meluha (Gelb, 1970; Oppenheim, 1954), which most scholars interpret as the Indus valley (Parpola *et al.*, 1977; Weisgerber, 1984; Potts, 1990). There is literary evidence that individuals from Meluhha were residing in Mesopotamia and had become acculturated (Parpola *et al.*, 1977).

Dales (1976) suggested that trade to the West shifted from a dominant overland route to a coastal sea route around 2500 B.C., at the beginning of the Harappan Phase. However, it now appears that the sea trade and contacts with the Gulf region and possibly Mesopotamia occurred between 2200 and 2100 B.C., the period after the collapse of the Akkadian empire in Mesopotamia (Cleuziou and Tosi, 1989).

The revised chronology for Baluchistan and the Gulf and evidence from the Indus region itself suggest that trade with the Gulf and southern Mesopotamia was not a primary factor in the development of the Harappan urban polity. Large inland settlements connected by trade networks developed first during the Regionalization Era, Kot Diji Phase (Mughal, 1990), and interior sites such as

Harappa became major centers between 2600 and 2500 B.C. Although trade with southern Mesopotamia may have been important for political development in adjacent regions, such as the Habur Plain (Weiss, 1990; personal communication), this was not the case for the Indus region.

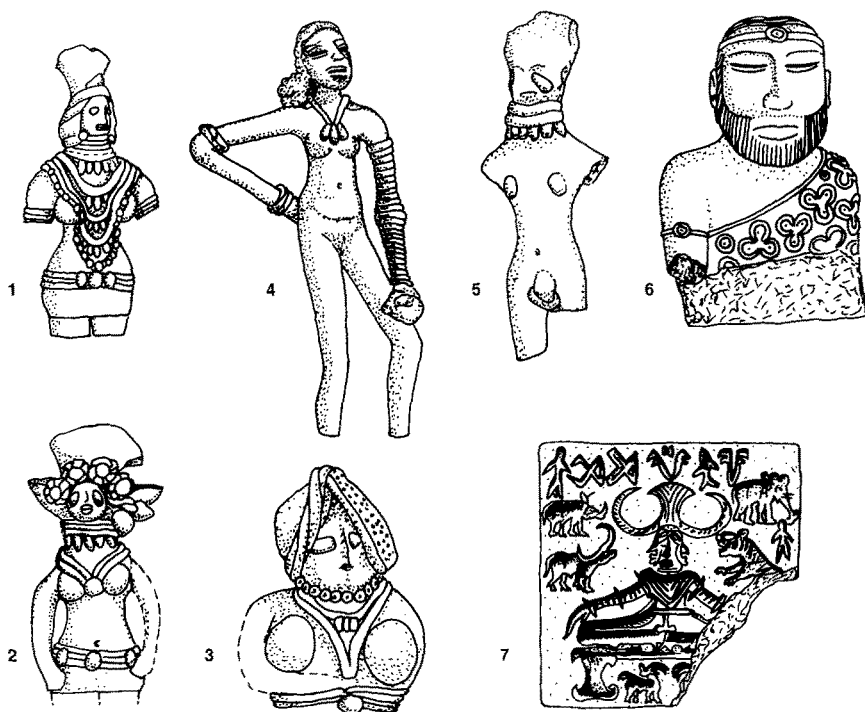
However, once the urban phenomenon was established, external trade was a critical factor to the internal controls that maintained the Indus structure. The importance of Oman as a source of copper and other commodities may reflect a period of confrontation with source areas in Baluchistan or the Aravallis (Cleuziou and Tosi, 1989). Alternatively, entrepreneurs from Oman or from the Indus may have been trying to capture part of the Indus market by introducing new resources from Gulf.

Numerous Indus seals, beads, and shell objects are known from Mesopotamia, but there is little evidence for Mesopotamian goods in the Indus. Identifications of Mesopotamian-derived objects or styles at Harappan sites (During-Caspers, 1982, 1984) are controversial; most of the exotic items, specifically cylinder seals, could have been made locally or derived from intermediate regions such as northeastern Iran (Joshi and Parpola, 1987, pp. xiv–xv). If Mesopotamian goods were reaching Indus cities, they may have been perishable or else raw materials that were reworked into new forms. Current evidence suggests that Indus–Mesopotamia trade was indirect, via the Gulf or southern Baluchistan, and not directly between cities in each region. Any Harappans living in Mesopotamia cities were probably not state-sponsored traders.

Trading seasons and transportation would be determined by the environment and the nature of items traded. Traditional trading is organized around the monsoon, when travel is almost impossible. On the alluvial plains during the dry season, transport would be primarily by oxcart and river boats or rafts (Shaffer, 1982a). Porters and pack animals, such as sheep, goat, dog, or oxen, would provide most transportation in the hills. Shaffer (1988a) has even suggested that the Bactrian camel (Meadow, 1984b) may have been used during the Integration Era. Depictions of boats on seals and graffiti indicate that the Harappans were familiar with large river and seagoing vessels. These were used to transport goods from the river systems to the coasts of Gujarat and the Makran. From there, the vessels could take advantage of the pre- and postmonsoon winds to cross the Gulf of Oman to settlements in Arabia (Tosi, 1982).

### **The Origins and Role of Writing**

A key element differentiating the Harappan from preceding and succeeding phases is the use of writing. Its functions included the identification of ownership of goods or economic transactions, accounting, the recording of sociopolitical or ritual events, and less formal graffiti (Fairservis, 1983; Parpola, 1986) (Fig. 5).



**Fig. 5.** Orment styles of the Harappan Phase. 1. Terra-cotta female figurine (Marshall, 1931, XCIV, 14). 2. Terra-cotta female figurine (Vats, 1940, HP 160.3). 3. Terra-cotta female figurine (Vats, 1940, Pl. LXXVII, 31). 4. Copper/bronze female figurine (Marshall, 1931, XCIV, 6). 5. Terra-cotta male figurine (Dales and Kenoyer, 1990a). 6. White steatite male figurine (Marshall, 1931, pp. 356–357, Pl. XCVIII). 7. Fired steatite intaglio seal (Mackay, 1938, Pl. C).

The origins of this writing system are not clear (Lal, 1962, 1975). There have been attempts to relate it to other scripts, such as proto-Elamite (Fairservis, 1976, 1988), but the graffiti may simply represent a set of symbols (Potts, 1981; Quivron, 1980) that were universal in western and southern Asia. Using computer-aided analysis of symbol sequences, Parpola concludes that the Indus script is not related to any known writing system (Joshi and Parpola, 1987; Parpola, 1986).

There have been over 50 claims for decipherment (Fairservis, 1988), but none is generally accepted. This situation arises because the inscriptions are very short, usually only of about five discrete symbols, and there are no bilingual texts (Parpola, 1979). Most linguists who have studied the script suggest it represents a Proto-Dravidian rather than Indo-Aryan language (Fairservis, 1983; Parpola, 1986). However, Austro-Asiatic, Sino-Tibetan, and Indo-Aryan languages were all present in the subcontinent at this time (Fairservis and South-



worth, 1989), and some of these may have been spoken in the Indus settlements and even written in the Indus script.

Although the script has not been deciphered, careful examination of its use provides information on the socioeconomic and ritual practices of the Harappan Phase (Lamberg-Karlovsky, 1986). The absence of long texts on clay and of bilingual texts cannot be explained by a lack of research. It might indicate that use of the script was confined to elites and that it was not used by the general populace or shared with foreign trading partners.

The script was written on a wide range of objects and in various media and styles. Graffiti on wet clay show that writing was generally from right to left, although longer inscriptions were boustrophedonic, alternating from right to left on succeeding lines. It was incised in negative for making positive impressions, incised in positive, molded, scratched into wet or fired clay, stamped, and painted (Fairervis, 1983; Parpola, 1986).

The most common form of writing is on the intaglio seals, made mostly of carved and fired steatite. The seals usually have a short inscription above various iconographic motifs, generally consisting of a single animal or mythical composite figure drawn behind an object interpreted as an offering stand or a brazier (see Rissman, 1989). Other seals have more complex iconographic scenes that may represent mythological or socioritual events. Most seals had a pierced boss for attaching a cord and were probably worn around the neck or at the waist.

Impressions of seals have been found on pottery, lumps of wet clay, or bullae for sealing containers or rope-tied bales. Sometimes only one seal was used (Joshi and Parpola, 1987; Dales and Kenoyer, 1990b), and sometimes two or more (Rao, 1979). When a seal was not available or appropriate, signs were scratched into the wet clay lumps by hand (Dales and Kenoyer, 1990a).

Script is also found on objects not intended for making impressions. These include incised steatite tablets with or without iconographic motifs, clay or faience tablets with molded bas-relief script, and numerous incised tools and ornaments. The script was inscribed on pottery before or after firing, stamped on pottery, used in molds to make raised symbols on the bases of large storage jars, and incised on potsherds, terra-cotta cakes, or terra-cotta cones (Joshi and Parpola, 1987). No inscriptions have been found on architecture or as painted murals. The script may well have been written on cloth or palm leaves or carved into wooden objects, but the absence of long texts on permanent materials could indicate that such records were not kept at all.

The variety of contexts in which writing was used has led to the suggestion that those using it were dispersed throughout the population, rather than being isolated in certain parts of town (Lamberg-Karlovsky, 1986). However, this dispersed pattern of writing could result from disturbance through erosion, rebuilding, etc., and may not represent the original locations of use. Recent

excavations at Harappa (Dales and Kenoyer, 1990b) have revealed a distribution of seals and inscribed objects that may indicate the restriction of seal-users to certain areas—along major access routes and main streets. Further evidence for the restricted use of writing is that only a few of the more common objects such as terra-cotta bangles, pottery, or copper tools are inscribed. Whatever the meaning of the script and regardless who could read or write, it represents shared symbols and a shared ideology that was distributed over an extremely large area. These shared beliefs were undoubtedly a key factor in the integration of the urban and rural populations.

### Socioritual Belief Systems

Wheeler (1968) emphasized that religious and secular activities were indivisible concepts in ancient times. For example, objects used “ritually” at one time could have been “tools” or “toys” in other contexts. More importantly, belief systems played an important role in maintaining social and economic order. Remembering that socioritual and sociopolitical spheres were closely connected, we look first at socioritual belief systems.

Many objects and symbols have been seen as representing Harappan “religious” practices, and such beliefs were undoubtedly important in the legitimization of the socioeconomic and political order (Miller, 1985). The most comprehensive discussion of Harappan religion is in Marshall’s (1931) excavation report on Mohenjo-daro. Subsequent excavations have revealed other possible “ritual” artifacts and structures: seals, horned male deities, Mother Goddess figurines, fire-altars, etc. Attempts to correlate the scenes from seals or pottery with myths from Mesopotamia or later Hinduism (Allchin and Allchin, 1985; Allchin, 1985; Ashfaque, 1989; Dhavalikar and Atre, 1989; Fairervis, 1975, 1984b; Parpola, 1984, 1988) seem plausible, but it is difficult to assess them without a unified method of analysis and interpretation (Kenoyer, 1989). The major handicap has been the lack of readable texts.

In spite of this, by interpreting the functions of “ritual” objects, Wheeler (1968) proposed that the Harappan religion involved several levels ranging from local cults to a state religion. Unfortunately, most of the objects used to identify a “state religion,” such as stone sculptures and seals, were found discarded in secondary contexts. The stone sculptures are of male figures sitting on one bent leg, with the other leg bent in front. These sculptures have been referred to as deities or priest-kings (Wheeler, 1968), but the posture suggests a supplicant rather than a deity (Gautam Vajracharya, personal communication). At present, we cannot clearly associate the stone sculptures, seals, or any other set of symbols with a “state religion” as opposed to a less structured cult.

Marshall (1931) suggested that Harappan temples could have been in the

form of large houses for deities, as they were in Mesopotamia. Large domestic structures are known but none has been convincingly identified as a temple or shrine. Nevertheless, Fairservis (1986) has proposed that cities such as Mohenjo-daro were primarily ceremonial centers and that "religion" was an "intensifying factor that created and gave form to the Harappan Civilization" (Fairservis, 1961, p. 18). In other words, the Greater Indus Valley was integrated through a complex system of shared beliefs relating to ritual and economic power.

The only way we can examine this extensive and apparently integrated religion is through contextual studies (Miller, 1985) of "ritual" objects and symbols. Some objects, such as seals, ornaments, and pottery designs, represent the distribution of people using similar symbolic objects. The widespread use of identical or very similar styles of beads and bangles made from a range of raw materials may reflect a shared set of symbols that unified individuals from different socioritual or economic groups. There is some regional variation in these symbols, most clearly seen in variations of pottery shapes and painted designs. Even the steatite seals and the writing itself show some regional and possibly chronological variation (Joshi and Parpola, 1987).

Other "ritual" objects are not distributed uniformly throughout the entire region. For example, terra-cotta figurines of animals and humans (female and male) are found primarily in the Indus and Ghaggar-Hakra plains (Dales and Kenoyer, 1991; Mackay, 1938; Marshall, 1931); terra-cotta human figurines are uncommon in Gujarat and the upper Ganga-Yamuna region (Bhan, 1989; Joshi and Bala, 1982; Rao, 1985). Stone sculptures of animals and seated men have been found only at Mohenjo-daro (Ardeleanu-Jansen, 1987) and three sites in Baluchistan (Dales, 1985; Jarrige and Tosi, 1981).

Burials also show localized patterns (Kennedy and Caldwell, 1984). Isolated burials and cemeteries are known from every major region, at sites such as Lothal (Rao, 1985), Rupar (Dutta, 1984; Sharma, 1955–1956), Harappa (Dales and Kenoyer, 1990a; Mughal, 1968; Vats, 1940; Wheeler, 1947), and Kalibangan (Lal and Thapar, 1967). Unfortunately, the cemeteries are small and do not appear to represent the entire society. It is possible that certain groups practiced burial, while others used cremation or exposure (Vats, 1940). The absence of differential dietary stress at Harappa (Kennedy, 1984; Lovell and Kennedy, 1989) may indicate that the individuals buried were from the same class. However, there is some variation in the mode of burial and the quantity of grave goods.

The pattern at Harappa was a north-south, rectangular pit with burial pottery placed in the bottom. The corpse, with head to the north, was laid out on top of the pottery, either in a wooden coffin or in a shroud. Other than pottery, which may have contained food, goods are limited to personal ornaments, such as copper rings, beads of agate, carnelian, or jasper, steatite bead necklaces and

ankle bracelets, shell bangles on the left arms of adult women, copper mirrors with adult women, etc. (Dales and Kenoyer, 1990a). There are no inscribed objects or high-value items such as seals, gold ornaments, long carnelian beads, and large copper tools; such items were apparently not taken out of circulation but were passed down from generation to generation, a practice very different from that in Egypt and Mesopotamia.

Contextual study of "ritual" objects and symbols shows a vertical hierarchy of identical symbols using different qualities of raw materials (Kenoyer, 1991a). For example, beads of certain designs were made in painted terra-cotta, painted steatite, bleached carnelian, and naturally patterned stone. There are also differences in distribution: seals were common over large areas, while terra-cotta figurines were confined to smaller regions. This may reflect the relative importance of beliefs that served to maintain the social and ritual hierarchy within settlements and between the different regions.

### Sociopolitical Organization

One of the important questions concerning Harappan sociopolitical organization is whether it is possible to have an urban society that is not organized as a state (Shaffer, personal communication). Jacobson (1987) presents a recent summary of the debates with a critical analysis of current definitions for urbanism and state-level society. He defines two lines of evidence to demonstrate that Harappan society had a "state-level" organization: "1) data which seem compatible with state-level societies *sensu lato*, and 2) evidence which tends to indicate that Harappan society was organized politically into what Claessen and Skaln  k (1978) would call 'an early state'" (Jacobson, 1987, p. 163). The first category includes cultural and possible linguistic commonality over a broad geographic expanse, multiple urban centers and a three- or four-tiered settlement hierarchy, notational and measurement systems, administrative artifacts (such as seals), a culturewide ideology (painted pottery symbols, figurines, seal motifs, etc.), economic stratification, and effective communication networks. In the second category, he concludes that Harappan society reveals evidence for decision-making by a centrally operating authority or group which "affected behavior in lower order settlements" and that this central force maintained the system and prevented fragmentation for over 500 years.

Although the evidence Jacobson has outlined may appear similar to that cited for contemporaneous civilizations, the aspects of the Harappan Phase discussed above make it clear that the nature of state-level control in the Indus was different from that in Mesopotamia or Egypt. This perception has resulted in the statement that ". . .if pronounced social stratification was present in Mature

Harappan Culture, it is reflected in a different, as yet undetected, set of archaeological traits than is the case in Mesopotamia" (Shaffer, 1982b, pp. 49–50).

Similarly, Miller (1985) has proposed, on the basis of contextual studies, that the processes of differentiation expected of an ancient civilization do not occur in the Indus Tradition and that the lack of variability links together the whole series of "anomalies." He concludes that Indus civilization opposes itself to nature in every possible way, that it represents "a standardization of and around the mundane," and that the controlling individuals "may not have enjoyed privileged wealth or conspicuous consumption, and indeed are more likely to have been conspicuous through asceticism" (1985, pp. 57–61). However, the data presented above make it clear that outdated and secondary sources should not be used for "contextual" analysis.

The absence of royal tombs, monumental palaces, and temples can be explained in several ways. The domestic and administrative structures of the Indus ruling elite were not reliably differentiated due to the biases of early excavators, and the lack of appropriate excavation and recording techniques makes it impossible to reinterpret these structures. Many of the complex and sometimes massive structures at Mohenjo-daro and Harappa could have been elite residences, centralized administrative structures, or even temples, but later disturbances obscured their primary function.

Alternatively, the Indus people may have had values that did not result in the construction of permanent shrines, temples, massive sculptures, and royal tombs. The current focus on the level of technological development and the spatial patterning of craft objects within and between settlements has demonstrated that certain segments of Indus society were trying to differentiate themselves from the rest. These individuals used distinctive pottery styles and wore elaborate ornaments (Fig. 6) made from carefully worked raw materials, including gold, silver, electrum, carnelian, lapis lazuli, turquoise, and shell. They also required ornaments and symbolic objects made from manufactured substances such as bronze, faience, stoneware, and fired steatite. The most distinctive symbols were the inscribed seals and stoneware bangles. Fairervis (1986) and others have suggested that the symbols on seals may reflect clans or moieties. We can assume that some sort of formal lineage system existed, and such lineages or kin relations could have been important for organizing trade, economic alliances, and political integration (Thapar, 1984). Without genealogical texts or genetic trait analyses, it is not possible to show that these were hereditary elites, but at least they must have been an exclusive segment of society.

Other members of the population had the same styles of ornaments, but made from more readily available materials, such as terra-cotta, painted to imitate the precious stones and artificial materials. The use of symbolic objects made from a variety of materials, combined with the evidence of burials, archi-

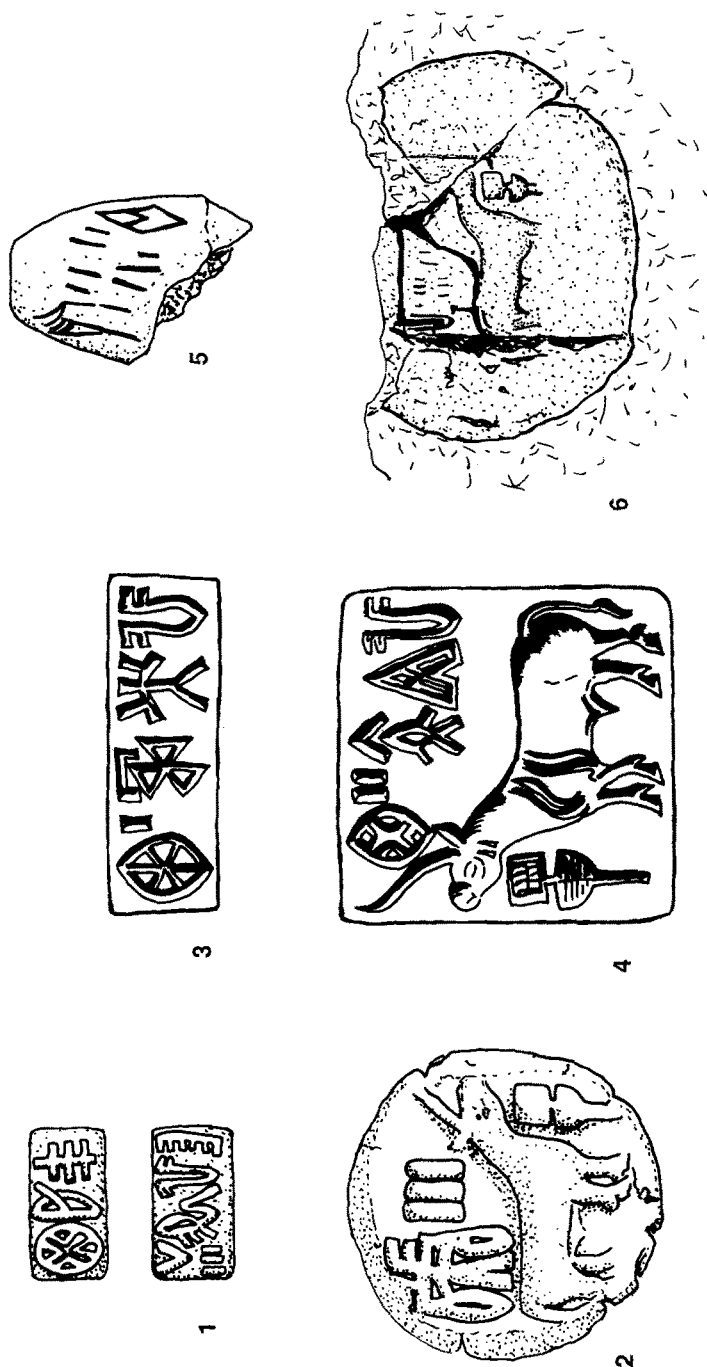


Fig. 6. Harappan script. 1. Faience token (Dales and Kenoyer, 1990a). 2. Faience sealing, (Mackay, 1938, CIII, 11). 3. Fired steatite intaglio seal (Marshall, 1931, CXII, 405). 4. Fired steatite intaglio seal, (Joshi and Parpola, 1987, MD607). 5. Inscribed terra-cotta conical bullae (Dales and Kenoyer, 1990a). 6. Seal impression on stoneware bangle firing jar (Halim and Vidale, 1984).

ture, and settlement patterns, clearly indicates social stratification and the presence of elites.

The difference in scale of this evidence from that of Mesopotamia, Egypt, or later Early Historic states in southern Asia has led to the proposal that the political structure was closer to a chiefdom (Fairervis, 1986; Shaffer, personal communication). Although the degree of territorial unity, social stratification, and political centralization differs from that of some early states, many of our earlier conceptions of state organization are changing (Kohl, 1987; Gledhill, 1988). In Mesopotamia, rival city states existed for almost 500 years before the establishment of the state of Akkad (ca. 2350 B.C.) (Nissan, 1988). Also, while some city states in southern Mesopotamia may have been centralized, others, particularly in the north, appear to have been decentralized in terms of direct control (Stein and Wattenmaker, 1990). These differences are attributable to the distributions of resources and materials needed to define status, and need not correlate with the presence or absence of suprain mechanisms for maintaining social order.

Early states varied in character, depending on the means of control and integration. The later Vedic *gana-sangha* republics and *janapada* confederacies of Early Historic southern Asia (Bongard-Levin, 1986; Prasad, 1984; Thapar, 1984) or the modern segmentary states of East Africa (Southall, 1988) are highly complex organizations that are considered states but have different mechanisms of control. I support Jacobson's identification of state-level organization, but I would argue that the Indus state is an extension of the earlier socioeconomic and ritual relations of the Regionalization Era, rather than a totally new framework of interaction.

In summary, I propose that the Indus state was composed of several competing classes of elites who maintained different levels of control over the vast regions of the Indus and Ghaggar-Hakra Valley. Instead of one social group with absolute control, the rulers or dominant members in the various cities would have included merchants, ritual specialists, and individuals who controlled resources such as land, livestock, and raw materials. These groups may have had different means of control, but they shared a common ideology and economic system as represented by seals, ornaments, ceramics, and other artifacts. This ideology would have been shared by occupational specialists and service communities, who appear to have been organized in loosely stratified groups.

It is probable that the cities were more rigidly stratified and segregated than the rural settlements, which would have included larger numbers of farmers, pastoralists, fishers, miners, hunters and gatherers, etc. The largest cities may have been relatively independent, with direct political control only over local settlements and lands. Political and economic integration of the cities may

have been achieved through the trade and exchange of important socioritual status items.

## THE LOCALIZATION ERA AND SUBSEQUENT DEVELOPMENTS

Traditionally, ancient civilizations have been seen as organisms that were born, grew and flourished, and then collapsed (Butzer, 1982; Tainter, 1988; Yoffee, 1988). Some adaptive responses do become obsolete and disappear, but short of total annihilation, civilizations *sensu lato* continue to change and grow (Butzer, 1982). The period after the Harappan Phase has been viewed as one of social and economic decline, resulting in the collapse of the Harappan social order and a "Dark Age" that separated the Harappan urban culture from the emerging city states of the Ganga-Yamuna plain (Wheeler, 1968). This view was based on old models of culture change and the misperception that all the cities were abandoned and the populations dispersed (Possehl, 1977). New research shows that the final phases of the Harappan phenomenon saw a process of decentralization and localization rather than extinction. The Localization Era (Shaffer, 1991) is the period after the Integration of the Indus Tradition and before the Early Historic urban states, beginning around 700–600 B.C.

Wherever Localization Era sites are known, there is an apparent increase in settlement and a development of regional cultural expression (Bhan, 1989; Jarrige, 1973, 1985; Mughal, 1992; Possehl and Raval, 1989; Shaffer, 1987, 1991). This may represent the rise of regional polities that were no longer integrated by a single ideological and economic system. The reasons for decentralization and localization are complex and regional in nature; only a few factors are emphasized here.

In the core regions of the Indus and Ghaggar-Hakra valley, the overextension of socioeconomic and ritual networks and the fatal disruption of the agricultural base were major contributors to decline. Due to sedimentation and tectonic movement, the Ghaggar-Hakra system was captured by the River Sutlej of the Indus system and the River Yamuna of the Gangetic system (Misra, 1984). The Indus itself began to swing east, flooding many settlements in the process (Flam, 1981, 1991a; Mackay, 1938, 1943). Some scholars proposed that much of the southern plain became submerged, possibly by the tectonic creation of a massive dam (Dales, 1966; Raikes, 1964), but this has been rebutted for many years (Raikes, 1965a; Possehl, 1967; Lal, 1968; Raikes and Dales, 1986). Recent results from coring at Mohenjo-daro show that many of the deposits are a sandy silt apparently derived from melted mud-brick, rather than from standing water or wind-blown silts (Balista, 1988).

The mounds of Mohenjo-daro survived because they are on slightly higher land and were protected by massive mud-brick platforms. Sites such as Harappa continued to be inhabited and are still important cities today. However, many



less fortunate settlements along the dry bed of the Ghaggar-Hakra system were abandoned and their inhabitants were forced to develop new subsistence strategies or move to more stable agricultural regions.

Although the overall socioeconomic organization changed, continuities in technology, subsistence practices, settlement organization, and some regional symbols show that the indigenous population was not displaced by invading hordes of Indo-Aryan-speaking people (Shaffer, 1984, 1988; Jarrige, 1985). For many years, the "invasions" or "migrations" of these Indo-Aryan-speaking Vedic/Aryan tribes explained the decline of the Indus civilization and the second rise of urbanization in the Ganga-Yamuna valley (Wheeler, 1968). This was based on simplistic models of culture change and an uncritical reading of Vedic texts. Current evidence does not support a pre- or protohistoric Indo-Aryan invasion of southern Asia (Shaffer, 1984). Instead, there was an overlap between Late Harappan and post-Harappan communities (Joshi, 1978; Dikshit, 1984b), with no biological evidence for major new populations (Kennedy and Caldwell, 1984).

Late and post-Harappan settlements are known from surveys in the region of Cholistan (Mughal, 1980), the upper Ganga-Yamuna Doab (Joshi, 1978; Joshi, Bala and Ram, 1984; Dikshit, 1984a, 1984b; Lal, 1985, 1986), and Gujarat (Chitalwala, 1976; Bhan, 1989; Joshi, 1972; Possehl, 1977). In the Indus valley itself, post-Harappan settlement patterns are obscure, except for the important site of Pirak (Jarrige and Santoni, 1979). This may be because the sites were along the newly stabilized river systems and lie buried beneath modern villages and towns that flourish along the same rivers. Many post-Harappan settlements in the northwestern subcontinent (Dani, 1967; Jarrige, 1985; Stacul, 1987, 1989) represent continuities of local populations, who were developing new technologies (iron and glass), and adopting new forms of transportation (horse and camel) and more intensive subsistence strategies (multiple cropping) (Jarrige, 1985; Meadow, 1989; Shaffer, 1988b). The post-Harappan Painted Grey Ware culture is an indigenous development (Shaffer, 1988b) and correlates with late Vedic culture, as reflected in the epic tradition of the Mahabharata (Lal, 1981).

Painted Grey Ware settlements in the Ganga-Yamuna Valley and northern Pakistan (1200–800 B.C.) (Dikshit, 1981, 1984b; Mughal, 1984) were followed by the Northern Black Polished Ware culture (700–300 B.C.) (Roy, 1986) that is associated with the rise of urbanism during the second half of the first millennium B.C. It is significant that the core area for the second urbanism was on the periphery of the regional polities remaining from the Indus Tradition, Localization Era. The Ganga-Yamuna region provided the necessary setting for a new and more expansive system of trade networks and a highly stratified society based on occupational and ritual hierarchies. Hindu and Buddhist literature suggests that these social hierarchies were different in structure from the

earlier Indus cities (Bongard-Levin, 1986; Thapar, 1984; Gupta, 1974). However, some stratification based on occupational specialization may have continued and become synthesized with the *varna* ranking documented in the Vedic literature (Kenoyer, 1989; Berreman, 1983).

The new social hierarchies were closely linked to the sociolinguistic, ritual, and political systems (Allchin, 1989, 1990; Erdosy, 1987, 1988; Kenoyer, 1989) that also reflect the syntheses of various autochthonous traditions. New technologies and forms of transportation and the expansion of existing subsistence strategies were necessary to support and reinforce the social order. However, there is, again, much continuity in subsistence (Jarrige, 1985; Meadow, 1989; Shaffer, 1988b), in specialized technologies (Kenoyer, 1983), and, most importantly, in the system of weights (Mainkar, 1984). The similarity of the Indus and Early Historic weight systems, especially in coinage, may reflect an important continuity in economic systems and merchant communities that played a key role in the organization of cities during the second urbanism.

Through the critical analysis of these continuities and discontinuities, we can begin to understand the period after the Indus Integration era. The Indus Valley Tradition may represent the first urban, state-level society in southern Asia, but it is only the beginning of a longer trajectory of sociopolitical development that affected the entire subcontinent.

In closing, I would stress that the interpretations presented here are useful only if they provide directions for future research where they can be tested and refined. Only through patient, constructive dialogue and the concerted efforts of collaborative research will we be able to understand the Indus Valley Tradition and its contributions to later cultural developments in southern Asia and the world in general.

### ACKNOWLEDGMENTS

I would like to thank Dr. George F. Dales of the University of California at Berkeley for his support and encouragement in my studies of the Indus Tradition. This paper incorporates concepts and ideas that have developed in the course of many discussions with colleagues and students. I would like to thank K. Bhan, R. S. Bisht, D. Chakrabarti, G. F. Dales, K. N. Dikshit, G. Possehl, W. Fairservis, L. Flam, K. T. M. Hegde, M. Jansen, J.-F. Jarrige, J. P. Joshi, C. C. Lamberg-Karlovsky, R. H. Meadow, V. N. Misra, M. R. Mughal, J. G. Shaffer, R. P. Wright, H. Weiss, M. Vidale, and many other colleagues for their willingness to share data and openly discuss new ideas. I would also like to acknowledge the important dialogue with graduate students, Carl Lipo, Seetha Reddy, Rose Drees, Heather Miller, Jay Knight, and Lisa Ferin, that has helped me to synthesize many of the ideas presented in this article.

Finally, I would like to acknowledge the financial support without which

I would not have been able to conduct my research over the past several years. Major support for field research has come from Smithsonian Institution Foreign Currency Program grants, and other support has been provided by the National Science Foundation, the Presidential Young Investigator Award, Research Fellowships from the Graduate School of the University of Wisconsin and from the University of California at Berkeley, and private donations from family and friends.

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