

1970/8
Reprinted from

Harappan Civilization

Edited by
GREGORY L. POSSEHL



OXFORD & IBH PUBLISHING CO.
New Delhi Bombay Calcutta

1982

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7. Recent Archaeological Research in the Cholistan Desert

INTRODUCTION

IN 1974, the Department of Archaeology and Museums, Pakistan launched a major program of field research in the Cholistan Desert of former Bahawalpur State in the East-Central Indus Valley. The purpose of this preliminary survey was to locate and identify the full range of archaeological remains in this little-known region. The Cholistan Desert, an area of extreme aridity, was originally watered on its western fringes by a river now called the Hakra in Pakistan and the Ghaggar in India. Of particular interest was the now dry bed of this river.

A part of this region was first explored by Sir Aurel Stein in 1941 (Stein 1942). In 1955 Henry Field (1959) re-examined a part of Stein's track. On the Indian side, the dry bed of the Ghaggar River was surveyed by A. Ghosh (1952) and later by B.B. Lal and B.K. Thapar, who extensively excavated the Harappan site of Kalibangan. A zone along the Sutlej River was explored by K.N. Dikshit and the area near Anupgarh and Nohar on the Ghaggar river reviewed by Katy F. Dalal (1980). The major work in Haryana and the Punjab (east) was carried out by Suraj Bhan (1973 and 1975) which he continued in 1977 with Jim G. Shaffer (Suraj Bhan and Shaffer 1978).

RECENT SURVEYS

Our surveys were concentrated along 300 miles of the dry bed of the Hakra River, within an approximately 10 to 15-mile-wide strip (Mughal 1980a. b). The

project was directed by the author for four seasons between 1974 and 1977. Beginning at the Indian border near Fort Abbas, we covered 110 miles, to Fort Derawar, during the first season. The settlement pattern that emerged from the first season's work was most encouraging in terms of understanding the character, distribution and location of various sites of the Harappan Civilization. The highest concentration of sites was found around Fort Derawar and to its southwest (Figs. 7.1 and 7.2), an area which had not been previously explored. As the work progressed, the pivotal importance of this region began to emerge. It is now clear that this is a key region for understanding the developmental stages of the Harappan (or Indus) Civilization.

THE SITES

A total of 414 sites have been mapped along 300 miles of the Hakra River bed (Mughal in press). They range in time from at least the fourth millennium B.C. to the Medieval Period. The protohistoric sites fall into the various periods of development (Table 7.1).

The sites cover the long, continuous sequence of development and change of the Indus Civilization, encompassing the period from the fourth to the beginning of the first millennium B.C. The protohistoric settlement pattern in Cholistan has largely remained undisturbed to the present time and it is an important laboratory for the study of prehistory. The main features of each cultural phase are briefly reviewed in the following pages.

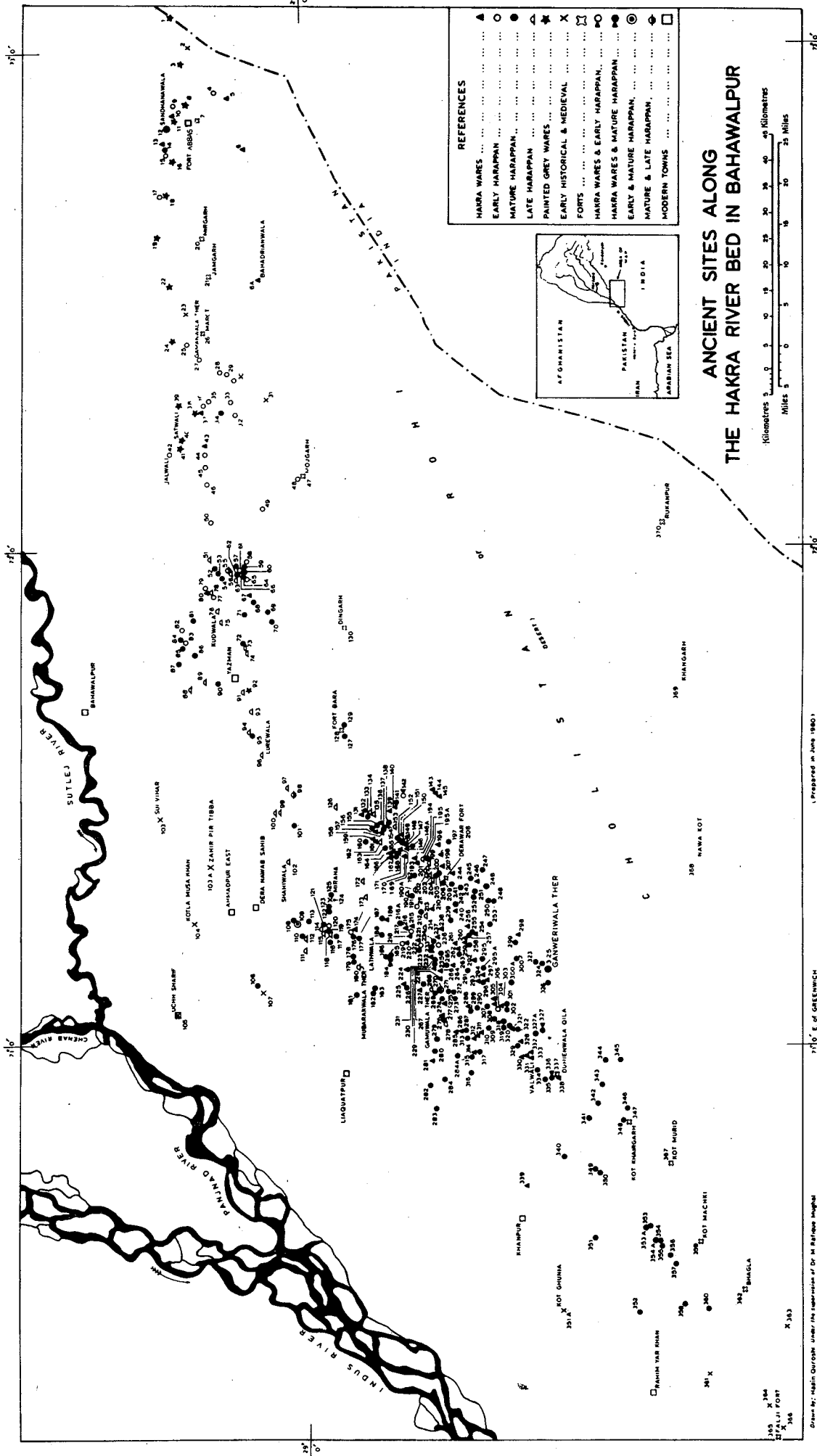


Fig. 7.1. Ancient sites along the Hakra River bed in Bahawalpur.

Drawn by: HABIB GHOSHANI under the supervision of Dr. M. FARUQ HUSSAIN

Prepared in June 1980

71°0' E of GREENWICH

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Fig. 7.2. Ancient sites in the Central Hakra region.

Table 7.1

Approximate time range	Cultural association	Number of sites
Fourth millennium B. C.	Hakra Wares (Jalilpur I related)	99
Early third millennium B. C.	Early Harappan (Kot Diji related)	40
Mid and late third millennium B. C.	Mature Harappan (Mohenjodaro and Harappan related)	174
Early second millennium B. C. and later	Late Harappan (Cemetery H related)	50
End second and early first millennium B. C.	Post or non-Harappan (Painted Gray and Black-and-Red Wares related)	14

Note: Some sites have more than one cultural phase.

KEY TO THE MAPS OF SITES

Site No.	Name of site	Site No.	Name of site	Site No.	Name of site
1.	Raowali	27.	Gamanwala	54.	Wariyal-F
2.	Chak 258 HL	28.	Ladulai	55.	Wariyal-H
3.	Chak 265 HR	29.	Gujranwala	56.	Wariyal-G
4.	Ahmadwala Toba	30.	Chak 337 HR	57.	Hanaswala
5.	Channanwala Ther	31.	Kandianwali	58.	Guddal-B
6.	Theriwala	32.	Chapliwala (West)	59.	Guddal Ther
6A.	Bahadrianwala	33.	Chapliwala (East)	60.	Guddal-A
7.	Phulra Fort	34.	Chapuwala	61.	Wakkarwala
8.	Chak 270 HR	35.	Chak 341	62.	Bokhariyanwala
9.	Chak 271 HR	36.	Jathewali	63.	Bokhariyanwala-A
10.	R.D. 66	37.	Chak 353 (West)	64.	Bazariwala
11.	Rajuwala	38.	Mansura	65.	Jatowala-A
12.	Sandhanawala	39.	Chak 323 HR	66.	Jatowala-B
13.	Satkui (East)	40.	Satwali	67.	Kuchanwala
14.	Satkui (West)	41.	Gharanwali	68.	Ahmadwala Ther
15.	Chak 280 HR	42.	Jalwali	69.	Lal Patel
16.	Chak 281 HR	43.	Trillar	70.	Tarsoolwala
17.	Quraish Ther	44.	Akhera	71.	Jatowala Ther
18.	Chak 285 HR	45.	Malhalewala Ther	72.	Hakim Ali Ther
19.	Chak 298 HR	46.	Bokharaiwala	73.	Chak 88
20.	Mirgarh Fort	47.	Mojgarh Fort	74.	Chak 88A (West)
21.	Jamgarh Fort	48.	Mojgarh Ther	75.	Chak 69
22.	Chak 308 HR	49.	Chipwala	76.	Kudwala
23.	Chak 314 HR	50.	Kalepar (Bhoot)	77.	Wariyal-A
24.	Kirarwali	51.	Khewtal	78.	Wariyal-B
25.	Chak 315 HR	52.	Wariyal Ther	79.	Wariyal-D
26.	Marot Fort	53.	Wariyal-E	80.	Wariyal-C

<i>Site No.</i>	<i>Name of site</i>	<i>Site No.</i>	<i>Name of site</i>	<i>Site No.</i>	<i>Name of site</i>
81.	Gharaiyanwala	127.	Bagrauwala Ther	174.	Hotewala-II
82.	Ali Mohd Wala Ther	128.	Bara Fort	175.	Hotewala Ther-A
83.	Chak 45	129.	Bara Ther	176.	Hotewala Ther-B
84.	Maujhalwala	130.	Dingarh Fort	177.	Garakwala
85.	Chak 45B (North)	131.	Dabli (West)	178.	Jamuwali-A
86.	Chak 45A (South)	132.	Dabli (East)	179.	Jamuwali-B
87.	Chak 44	133.	Sullewala	180.	Mubarakwala Ther
88.	Boharwala Ther	134.	Cheelanwali	181.	Butewala
89.	Chak 51	135.	Cheelanwala-B	182.	Lunida-II
90.	Kaliyar	136.	Killianwali-D	183.	Lunida-I
91.	Rohatwala	137.	Jiwaiwali	184.	Sanukewala-II
92.	Chak 103	138.	Waddanwala	185.	Sanukewala
93.	Chak 107	139.	Bahilawala-C	186.	Sanukewala-III
94.	Chak 61 (East)	140.	Bahilawala-B	187.	Kalharwala
95.	Chak 61 (West)	141.	Bahilawala Ther	188.	Drigwala
96.	Lurewala	142.	Nahranwala	189.	Kalharwala-B
97.	Ratta Ther	143.	Turawewali-C	190.	Kaiyanwala-II
98.	Dunkkian	144.	Turawewali Theri	190A.	Trekoe
99.	Turanwala	145.	Turawewali-B	191.	Kaiyanwala-I
100.	Phukhi Ther	146.	Khingarwali	192.	Dilwashwala
101.	Kuruwala	146A.	Naharwali-B	193.	Payunewali Bhit-II
102.	Shahiwala	147.	Khan Kandewala-A	194.	Payunewali Bhit-III
103.	Sui Vihar	148.	Khan Kandewala-E	195.	Payuna Bhit
103A.	Zahir Pir Tibba	149.	Akkanwali Theri	195A.	Mehruband Ther
104.	Kotla Musa Khan	150.	Khan Kandewala-B	196.	Qadir Bux Theri
105.	Uchh Sharif	151.	Khan Kandewala-D	197.	Shikarwala Ther
106.	Mehmudabad	152.	Achharwala	198.	Litanwala
107.	Sukkarwala	153.	Wavriwala	199.	Goongal Mar
108.	Chak 75	154.	Waddanwali	200.	Magrejewali
109.	Chak 76	155.	Killianwali-C	201.	Bazariwali-C
110.	Dundkianwali	156.	Killianwali-B	202.	Bazariwali-B
111.	Shaikhanwala Ther	157.	Killanwali	203.	Bazariwali-A
112.	Dabli Theri	158.	Bandwali	204.	Singharwali
113.	Chak 97	159.	Lundwali-III	205.	Gadiwali
114.	Siddhuwali-E (or Lumrywala)	160.	Dhedaniwala Ther	206.	Mahiwali
115.	Siddhuwali-F	161.	Lundewali-IV	207.	Thoom Thali
116.	Bulbaliwala	162.	Lundewali-II	208.	Derawar Fort
117.	Khohi Siddhuwali	163.	Lundewala Ther	209.	Derawar Ther
118.	Siddhuwala Ther	164.	Jalwali-A	210.	Chaudhryanwala
119.	Siddhuwali-B	165.	Khan Kandewala-C	211.	Jhumtiwala
120.	Siddhuwali-C	166.	Jalwali-B	212.	Charhoyanwala
121.	Siddhuwali-D	167.	Changalawala-C	213.	Ghumharianwala
122.	Khatranwali-II	168.	Changalawala Ther	214.	Marechiwala
123.	Khatranwali-I	169.	Naharwali	215.	Merechi Kanda
124.	Chak 131	170.	Oinwala Ther	216.	Merechi Kanda-II
125.	Mirana	171.	Changalawala-B	216A.	Garewala
126.	Rawewala	172.	Daiwala	217.	Merechi Kanda-III
		173.	Gopawala	218.	Luppewala-III

Site No.	Name of site	Site No.	Name of site	Site No.	Name of site
219.	Lathwala	267.	Musafarwali	311.	Khiplewali-II
220.	Lathwala-II	268.	Gamuwala Ther	312.	Khiplewali
221.	Luppewala	269.	Gamuwala Dahar	313.	Khiplewala
222.	Luppewala-II	270.	Gamuwali	313A.	Khiplewala
223.	Chiheywali	271.	Mehrianwala Ther	314.	Jhandewala-II
224.	Baggewali	272.	Mehrianwali-II	315.	Jhandewala Ther
225.	Gajjuwala-II	273.	Adhi-III	316.	Burhanewala Ther
226.	Gajjuwala Ther	274.	Adhi-II	317.	Mashinewala
227.	Sadwala Kanda	275.	Adhi-I	318.	Develiwala-II
228.	Hasilwala Ther	276.	Bhootanwala-C	319.	Develiwala Ther
229.	Niwaniwala Ther (West)	277.	Bhootanwala-A & B	320.	Mehwali
230.	Niwaniwala Ther (East)	277A.	Bhootanwali-II	321.	Mehwali-II
231.	Niwaniwala-II	278.	Bhootanwali	322.	Mahawala Ther
232.	Niwaniwala-III	279.	Noor Shah Ther	323.	Barula-II
233.	Azimwala-II	280.	Ambrawala Ther	324.	Barula-I
234.	Azimwali	281.	Ambrawali	325.	Ganweriwala
235.	Azimwali-A	282.	Ghaziwala Ther	326.	Bilewali
236.	Azimwali-B	283.	Laluwala Ther	327.	Thoriwala
237.	Azimwali-C	284.	Baghwala Ther	327A.	Tharwala
238.	Shidiwala-A	284A.	Sanghewala	328.	Safuwala-III
239.	Batoorwala	285.	Sohniwali	329.	Safuwala-IV
240.	Khanpuri-II	286.	Sohniwali-II	330.	Safuwala Ther
241.	Sauransanda	287.	Khiplewala-II	331.	Safuwala-II
242.	Khanpuri	288.	Jawaiwala-II	332.	Valwala-II
243.	Kikriwala Ther	289.	Jawaiwala Ther	333.	Valwali
244.	Abduwali	290.	Kuppianwala	334.	Thakowala
245.	Kikri	291.	Chorewala	335.	Dhuhinwala Ther
246.	Kikri-II	292.	Lakhman	336.	Dhuni
247.	Bhagriwala	293.	Jhalar	337.	Duhienwala Qila
248.	Qasaiwala	294.	Jafawala-III	338.	Dhuni (South)
249.	Tharulawala Ther	295.	Chandnewala-III	339.	Moniwala
250.	Janiwali	295A.	Jafewali Theri	340.	Gaddawala Ther
251.	Dadwala-II	296.	Jafawala	341.	Jejalum
252.	Dadwala Ther	297.	Jafawala-II	342.	Rajbai
253.	Runwali	298.	Rahmanwali	343.	Shadiwala Ther
254.	Darkhanwala Ther	299.	Barriwala Ther	344.	Sheikhwali
255.	Darkhanwala-II	300.	Rappwala Ther	345.	Karowala
256.	Sheruwala-II	300A.	Chakwali	346.	Sanasiwala
257.	Sheruwala Ther	301.	Badalwala-II	347.	Khairgarh Fort
258.	Chandnewala Ther	302.	Badalwala	348.	Khairgarh Ther
259.	Chandnewala-II	303.	Jangipar	349.	Malluwali-I
260.	Sheruwala-III	304.	Badalwala-III	350.	Malluwali-II
261.	Chikrala	305.	Badalwala-IV	351.	Onchi Ther
262.	Parhara	306.	Badalwala-V	351A.	Kot Ghunia
263.	Parharewala-A	307.	Mehrindawala Ther	352.	Shah Garh Ther
264.	Chore	308.	Sheikhri-II	353.	Ratta-I
265.	Wasuwala Ther	309.	Bootewali	353A.	Chak 124
266.	Musafarwali-II	310.	Khiplewali-III	354.	Ratta-III

Site No.	Name of site	Site No.	Name of site	Site No.	Name of site
354A.	Chak 121	360.	Ghatoro	366.	Chak 143 P
355.	Ratta-II	361.	Pattan Minara	367.	Kot Murid
356.	Baggapura Ther	362.	Bhagla Fort	368.	Nawan Kot
357.	Baggapura-II	363.	Jummewala Tibba	369.	Khangarh Fort
358.	Chak 112 P	364.	Chak 139 P	370.	Rukanpur
359.	Machki Fort	365.	Falji Fort		

Note: Among 414 sites listed, the map shows 385 sites. In the map, an area about thirty miles long on southwest and entire desert on south containing sites of the Medieval Period are omitted. The sites not shown on the map are: Medieval/Early Historical = 14, Hakra = 5, Mature Harappan = 8, and Late Harappan = 2. The final report on Bahawalpur Survey (in press), however, contains details of all the listed sites.

THE HAKRA WARES PERIOD

The oldest known cultural assemblage in Cholistan is represented by 99 sites of varying dimensions. These settlements are generally low mounds in lesser Cholistan (Bahawalnagar and Bahawalpur Districts) and are located close to, or in, the *dahars* (mud flats). In greater Cholistan (Rahimyar Khan District), they also occur on sand dunes. This assemblage has been called "Hakra" because of the initial area of discovery and the great concentration of sites along the Hakra flood plain.

Hakra ceramics are very distinctive. They are both wheelmade and handmade red wares with a variety of surface treatments. The most frequent and conspicuous pottery types include: (a) those treated on the external surface with a secondary coating of mud mixed with bits of pottery called "mud applique" (Pl. 7.1); and (b) pottery with a series of incised lines on the external surface called Hakra Incised (Pl. 7.2). Most of the Hakra Mud Applique Ware consists of handmade, thick-bodied vessels tempered with clay. There are also some wheelmade, thin-bodied pots with a fine fabric. The thin-bodied pottery has an everted rim and is painted in black on a deep red or chocolate slip which is confined to the shoulder just below the rim. The resemblance of the Hakra Mud Applique Ware in vessel form and surface treatment to some of the handmade pottery from the earliest levels of Amri IA (Casal 1964: Fig. 45) is most striking. At Amri, this pottery occurs in levels which would certainly date to earlier than 3500 B.C. by radiocarbon. Also included in the Hakra Wares is red pottery with a black slip all over the body. The black slip on many specimens appears to be burnished to a glossy finish. A Hakra Wares site called RD 89, located just few kilometers east of Pakistan's border

in Anupgarh Tehsil in Indian territory, has yielded precisely identical black-slipped or burnished pottery along with Hakra Mud Applique and Incised Pottery (Dalal 1980: Figs. 8 and 9). Material comparable to this Hakra black-slipped or burnished pottery is not yet known in the Greater Indus Valley at fourth millennium B.C. sites. However, the exposed levels at Periano Ghundai in the Zhob Valley of northern Baluchistan (west of the Gomal Pass) that have been grouped under the term "Periano A" (Mughal 1972a: 140) yielded black burnished/slipped pottery in association with a handmade basket-marked ware.

The Hakra Wares assemblage also includes a small percentage of distinctive buff wares. These were wheelmade and painted black in a style that recalls the fourth millennium B.C. ceramic tradition of the Pakistan-Iranian borderlands.

It is too early to say whether or not the combined form and decorative styles of the Hakra Wares indicate the beginnings of the diagnostic Kot Dijian ceramic assemblage. It is known, however, that such pottery forms overlap the Kot Dijian Wares at Jalilpur (Mughal 1972b and 1974).

Other finds of the period include: animal figurines with short, joined legs including those of bulls and cows; shell and terracotta bangles with triangular and rectangular sections; fragments of grinding stones; bits of copper and a great number of other implements. The lithic industry has parallel-sided blades, most of which have reworked edges; microblades, borers, leaf-shaped arrowheads, scrapers and cores (Pl. 7.3). Typologically it appears to compare well with the lithic materials from Jalilpur I and II, the Neolithic Period I of Sarai Khola (Halim 1972), Gumla I (Dani 1971) and even Rahman Dheri (Khan 1979).

The Hakra Wares sites are heavily concentrated

around Derawar Fort and to the southwest with a few sites to the east of Derawar. Most of the sites are single period settlements with only Hakra Wares; but two (Nos. 67 and 142 on Fig. 7.1) were occupied in the succeeding Early Harappan Period and four sites (Nos. 184, 233, 327 and 336) have Mature Harappan remains. None of the Hakra Period sites was occupied during the Late Harappan Period. Among 99 sites, 52.5 percent were camp sites; 45.4 percent were settlements; while 2 percent contain kilns within the settlement areas.

THE EARLY HARAPPAN PERIOD

The cultural phase that follows the Hakra Wares Period in Cholistan is represented by characteristic Kot Dijian ceramics and associated materials. These are already well known from other sites in the Greater Indus Valley and can be assigned by radiocarbon dating to the early third millennium B.C. Within the Greater Indus Valley there is a basic similarity of material culture at this time, despite the presence of some regional variation. Equally to the point, however, is the apparent continuity of development in the material culture between this Early Harappan and the succeeding Mature Period. Thus, Kot Dijian and Kot Dijian-related sites in Pakistan and parts of India together constitute the full Early Harappan Period, or the early urban, formative stage of the Harappan Civilization. It was during the Early Harappan Period that cultural processes leading to full urbanization began (Mughal 1980b).

In terms of material culture, continuity of several ceramic forms in the Early Harappan and Mature Harappan levels of Kot Dijian is fully documented. A very recent reanalysis of small finds from the type site (Kot Dijian) also clearly demonstrates this continuity throughout the lower (Early Harappan) and upper (Mature Harappan) levels. There are, however, certain exceptions (Mughal 1980a: 95 and 1980b).

Forty sites of the Early Harappan Period have been located in Cholistan. Most of these have a single occupation with ceramics related to the Kot Dijian, Kalibangan I, Siswal A (Suraj Bhan 1972) and Binjor 1 and 3 (Dalal 1980) (Pls. 7.4 and 7.5). They are also comparable in form and surface treatment to pottery from Jalilpur II, Sarai Khola II, Gumla II-IV, Rahman Dheri and other contemporary sites in Bannu Basin and Taxila Valley (Mughal in press). Only three sites (Nos. 12, 109 and 270) were re-

occupied during the Mature Harappan Period in Cholistan. This is a pattern found elsewhere in the Greater Indus Valley and Baluchistan.

The Early Harappan Period is marked by an increase in the size and number of functionally articulated sites, at least as compared to the preceding Hakra Wares Period. There is a very sharp decline in the number of camp sites: 7.5 percent of the total during the Early Harappan Period against 52.5 percent during the Hakra Period. There is a slight increase (57.5 percent) in the frequency of purely settlement sites. But, the interesting change is an increase to 35 percent in multifunctional settlements, that is, those combining residential functions with specialized/industrial activities. In the Hakra Wares Period only two percent of the sites were of this type. This shift seems to be significant in terms of socio-cultural changes that occurred by the beginning of the Early Harappan Period in Cholistan.

About 60 percent of the Early Harappan sites here are smaller than five hectares in overall size. Twenty-five percent are between five and ten hectares. One site, Gamanwala (No. 27 on Fig. 7.1) spreads over an area of 27.3 hectares, while another Early Harappan site, Jalwari (No. 42) is 22.5 hectares in size. Gamanwala is so far the largest known settlement of the Early Harappan Period. It is larger than Rahman Dheri (21.7 hectares), and also Kalibangan, where the total area occupied during the Early (KLB-I) and Mature (KLB-II) Harappan Period measures 22 hectares, excluding the cemetery area. Gamanwala is close to half the size of Harappa (which is 65 hectares or 160.6 acres without cemeteries) and was certainly not a small town. It is thus evident that during the Early Harappan Period, large settlements—towns, if not large cities—emerged amidst a cluster of smaller settlements. This is a distinctive feature of Harappan settlement patterns, especially in Cholistan, where original cultural patterns have remained largely intact.

During the Early Harappan Period the main focus of occupation appears to have been between Yazman and Fort Abbas, where there are few settlements of the Hakra Wares Period. This pattern seems to extend across the border in India past Kalibangan, to Banawali near Fatehbad, and even beyond, along the ancient course of the Chautang River in Hissar and Rohtak districts. The succeeding Mature, or fully urbanized stage of the Harappan Civilization, is marked by a major shift in the settlement pattern

along the Hakra as regards area of settlement concentration.

THE MATURE HARAPPAN PERIOD

This phase of cultural development is best represented at the cities of the Indus Civilization and at 174 sites in Cholistan (Pls. 7.6, 7.7 and 7.8). The most striking aspects of the Mature Harappan Period in Cholistan are: (1) a general shift of sites from the northeast to the southwest, around and beyond Derawar Fort, (2) an increase in the number (47.7 percent of the total), size and height of settlement sites, among which at least one (No. 325), Ganweriwala at 81.5 hectares in size, is essentially the same size as Mohenjodaro, and (3) a profusion of industrial sites (45.4 percent) and their clear separation from habitation areas. However, sites combining both residential and industrial functions (19 percent out of 47.7 percent total settlements) also occur. In the preceding Early Harappan Period industrial areas were located close to, but outside the residential area at fourteen sites or 35 percent of the total number in that period. Although this feature persists in the Mature Harappan Period, some industrial areas at this time were demarcated exclusively for craft activities such as the firing of pottery, bricks, small terracotta objects, the glazing of faience objects and the melting, if not smelting, of copper. Cholistan, it may be pointed out, is located close to the copper sources of Rajasthan.* The Khetri-Singhana source in Jhunjhunu District was reportedly worked during Mauryan and Mughal times; although it is not certain that these sources were also worked in the proto-historic times. It may, however, be added that Sir Aurel Stein found a copper ingot at the (Late) Harappan site of Siddhuwala Ther (No. 118 on Fig. 7.1), located near Derawar. This site also contains numerous kilns.

The emergence of separate Mature Harappan industrial sites, or production centers, and the increased number of kilns during the Mature Harappan Period are indicative of: (1) marked social stratification, (2) the intensification of specialized activities responsible for making standardized products on a large scale, and (3) the existence of intersettlement trade or exchange.

The maximum expansion of the Harappan Civil-

ization outside the primary Indus River Valley occurred in Mature times. After reaching a fully urbanized stage at its core, which may have been the central part of the Indus Valley, it spread towards the Baluch Hills, and along the Arabian Sea Coast. This corresponds in time to intense Harappan long distance sea trade or exchange.

THE LATE HARAPPAN PERIOD

By about the middle of the second millennium B.C. there are changes in Harappan material culture. These resulted from readjustments or changes in the socioeconomic and political organization of Harappan society. These may have been caused by: (1) the gradual depletion of economic resources resulting from the overutilization of land, (2) changes in the hydrographic pattern of the Indus Valley, (3) increased population pressures, (4) insecurity created by invading or intruding groups of people, or (5) a combination of various causes. But, whatever the reasons, it is certain that the pan-Indus integration of the Greater Indus Valley, which climaxed during the Mature Harappan Period, was weakened but not destroyed by the mid-second millennium.

The population regrouped and adjusted to the changed situation in the three principal regions. It thus managed to survive in a recognizable form for a considerable period of time, but some changes are reflected in the material culture found in each region of Harappan concentration: the Cemetery H Culture in the Punjab; the Jhukar Culture in Sind; and the Degenerate, Post or Late Harappan Culture in Gujarat. Regional differentiations, still within the Harappan ceramic tradition, can be seen in the pottery of each group. However, the characteristic square steatite seals with script, standard cubical weights, "mother-goddess" figurines and most metal tools disappeared.

In the upper Indus Valley, a distinctive body of ceramics was recovered from the surface of Harappa, as well as from a cemetery designated "H" at the same site. Similar material has been reported from two sites found by Stein in Bahawalpur. Indian archaeologists have also located and probed several sites with the Cemetery H Ware. These are generally located in the Punjab (east), even to the east of the Yamuna River, suggesting a spread of the Harappan

*Editor's note: See R.C. Agrawala's paper in this volume for a discussion of these sources.

tradition during the second millennium B.C. Until this research in Bahawalpur, the Late Harappan Phase was virtually unknown in Pakistan.

The recent survey of Bahawalpur has brought to light 50 sites with Cemetery H-related materials. Cemetery H material is essentially confined to the upper Indus Valley, just as the Jhukar-related materials of the Late Harappan Period generally occur in the lower Indus region.

In Cholistan the sites of the Late Harappan Period (Cemetery H-related) are large, high settlement mounds near the Hakra bed. There are also small sites concentrated around Derawar where the Hakra River once formed an inner delta as with the Helmand River in Seistan. There is an apparent concentration of site concentration in Cholistan during the Late Harappan occupation, as compared to that of the Mature Harappan (see Fig. 7.1). But it should be emphasized that Late Harappan sites are concentrated in the very same area where Mature Harappan sites are located, but where there are few Early Harappan settlements.

Exclusively industrial sites account for only 18 percent of total of Late Harappan sites. Settlement sites, and settlements with kilns or specialized activities areas, represent 28 percent of the total. Camp sites which decreased to only 5.7 percent in the Mature Harappan Period, increase markedly to 26 percent in the Late Harappan times.

Some sites with classic Cemetery H materials are high mounds. For example, the highest parts of Lurewala (No. 96), Shahiwala (No. 102) and Kudwala (No. 76) are respectively 41, 42, 46 feet above plain level. Without excavation, it has not been possible to determine how much of the occupation on these high mounds belongs to the Late Harappan Phase. Some sites, however, are quite extensive, spreading over 20, even 38 hectares.

The beautiful red pottery (Pls. 7.9 and 7.10) is often treated with a thick glossy slip and painted with black designs. Many vessel forms and other materials from the Late Harappan settlements in Cholistan compare well with what is known from contemporary sites in Pakistan and India. New wares of the Late Harappan Period include one with raised knob-like, elongated decorations. These form regular patterns on the external surface which appear to have been made on a thick secondary layer of clay. This type of ware has been christened "Harappan Wet." Its parallels in the Greater Indus Valley come only from

Harappa where a complete vessel with similar surface treatment was found in association with burial pots of Stratum I (Vats 1940; Pl. LIX, 10).

THE POST OR NON-HARAPPAN PERIOD

Settlements of this period are concentrated in north-eastern Cholistan where 14 sites with the well-known Painted Gray Ware (PGW) have been identified. This is the first time that PGW has been found in Pakistan. It is reported from 320 sites in India. These are located in northern Rajasthan, Haryana, the Punjab and western Uttar Pradesh (Tripathi 1975). The date of PGW and its cultural association have provoked a great deal of controversy that has led to considerable field research in India. It is generally assigned to the end of the second and the beginning of the first millennium B.C. (Lal 1977-78; 1978), although differing opinions still exist. Early excavations revealed a hiatus between the Late Harappan and the PGW assemblages, but recent work at Bhagwanpura, Dadheri and a few other sites has led to the claim of continuity between the Harappan tradition and the PGW Period (Joshi 1978). Connected to this is the question of the Black and Red Wares as regards their association with PGW in western Uttar Pradesh and eastern Rajasthan and their significance in the context of contemporary assemblages of East Punjab.

PGW sites in Cholistan are generally located in the middle of the former Hakra River bed. With the exception of one site (Satwali, No. 40), which covers 13.7 hectares, all the settlements are less than four hectares in size.

The classic PGW ceramic (Pl. 7.11) never constitutes more than five percent of the total surface collections from any site. The remaining pottery consists of red wares, often with stamped and relief designs on the external surface (Pl. 7.12), few black and red potsherds and dishes in red ware resembling the PGW form.

CONCLUSION

This survey of Cholistan has yielded a wealth of information on the cultural sequence in the central Indus Valley. It has given a new perspective and orientation for planning future research on the Indus Civilization. Sites of various periods, and their concentration or distribution, provides a reliable basis for recon-

structing various changes in the course of the Hakra River, often identified with the Sarasvati of the Vedic period. The hydrographic history of the Sutlej-Yamuna Divide has often been discussed during the last one hundred years. This is summarized by Lambrick (1964) and Wilhelmy (1969). However, the most recent reconstruction of the changing courses of the Sarasvati, as proposed by Bimal Ghose and his colleagues (1979 and 1980), will require confirmation by archaeological or other dateable evidence.

On the Pakistan side, archaeological evidence now available overwhelmingly affirms that the Hakra was a perennial river through all its course in Bahawalpur during the fourth millennium B.C. (Hakra Period) and the early third millennium B.C. (Early Harappan Period). About the middle of the third millennium B.C., the water supply in the northeastern portion of the Hakra, roughly between Fort Abbas and Yazman (near Kudwala) was considerably diminished or cut-off. But, abundant water in the lower (southwestern) part of this stream was still available, apparently through a channel from the Sutlej; this is attested by the heavy clustering of sites in that area during the late third and early second millennium B.C. (Mature and Late Harappan Periods respectively). About the end of the second, or not later than the

beginning of the first millennium B.C., the entire course of the Hakra seems to have dried up and a physical environment similar to that of present day Cholistan set in. This forced the people to abandon most of the Hakra flood plain. A few Painted Gray Ware settlements, most of them smaller than four hectares in size, are located along the upper part of the Hakra River. These were sustained by a meager water supply reaching there with seasonal regularity from the Ghaggar.

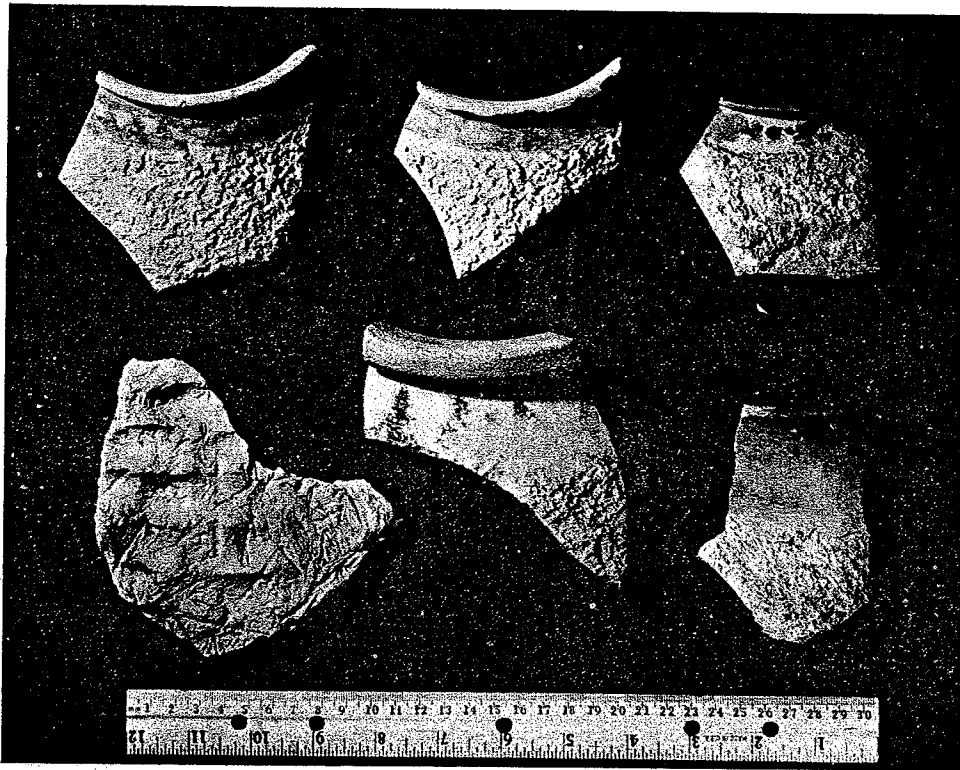
Though the physical environment of Cholistan has changed since protohistoric times, the original mosaic of the settlement pattern is well preserved. The recent field research reported here has revealed functionally differentiated sites within chronologically defined cultural horizons. This will enable one to recognize and reconstruct changes in this region that have not yet been recognized elsewhere in South Asia. Furthermore, archaeological evidence is a reliable guide for the history of dune formation in Bahawalpur. For example, the presence of Hakra Ware sites on top of old, reddish-brown sand, as observed on the south and southwest of Derawat, would seem to indicate that the Cholistan part of the Thar Desert had already advanced close to Derawat prior to the fourth millennium B.C.

NOTE

Dr. Mughal was not a participant in the Srinagar conference. His work in Cholistan is so important, however, that this paper was solicited.

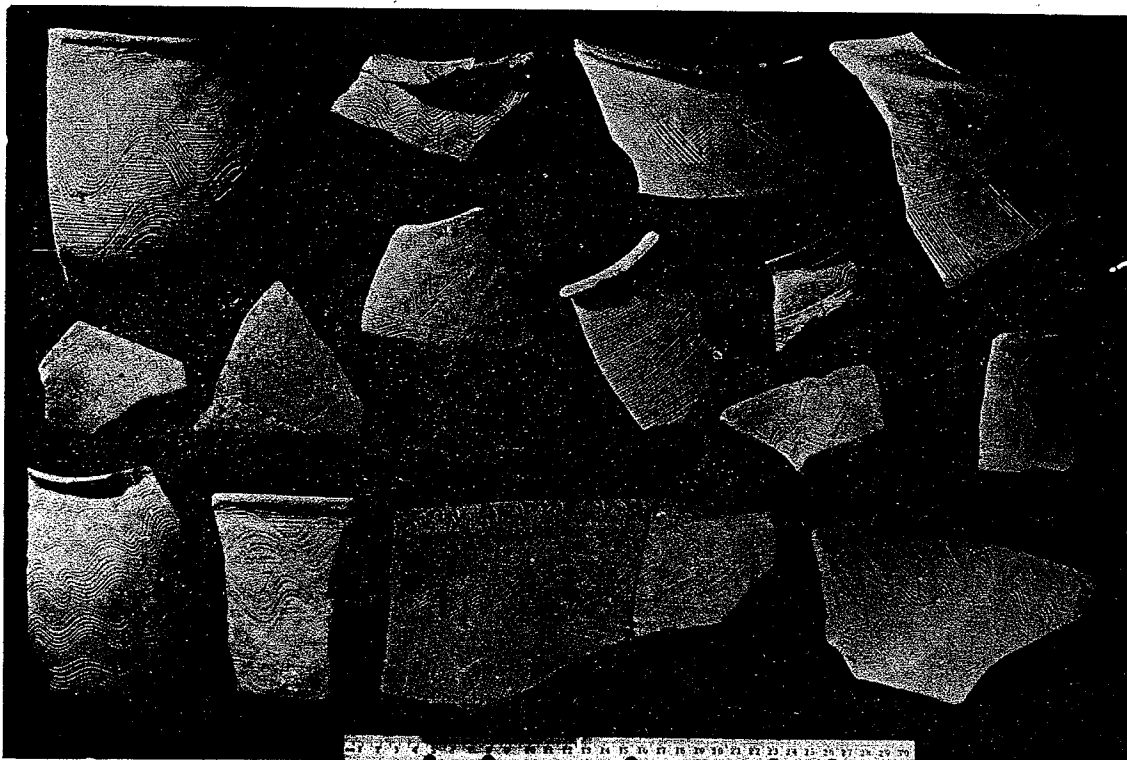
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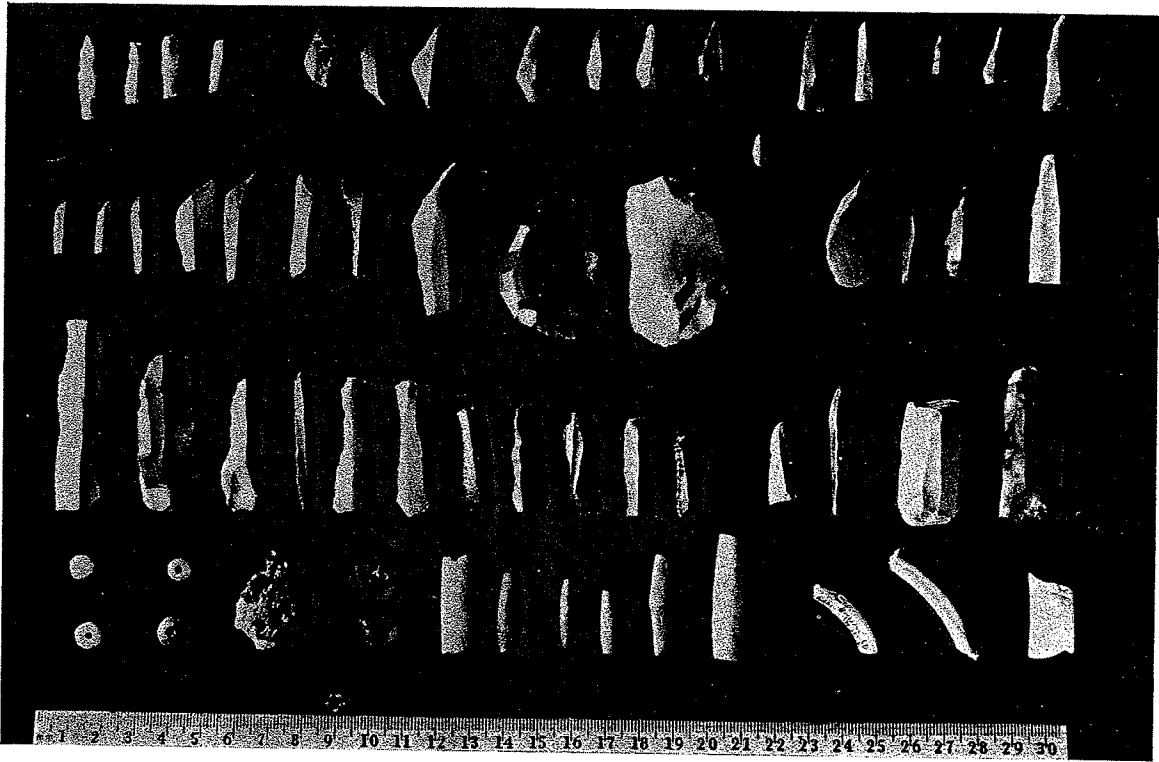
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Pl. 7.1. The Hakra Wares. Mud applique pottery with painting in black on red or chocolate slip near the neck. Straw marked disk (extreme lower left) has finger impressions.

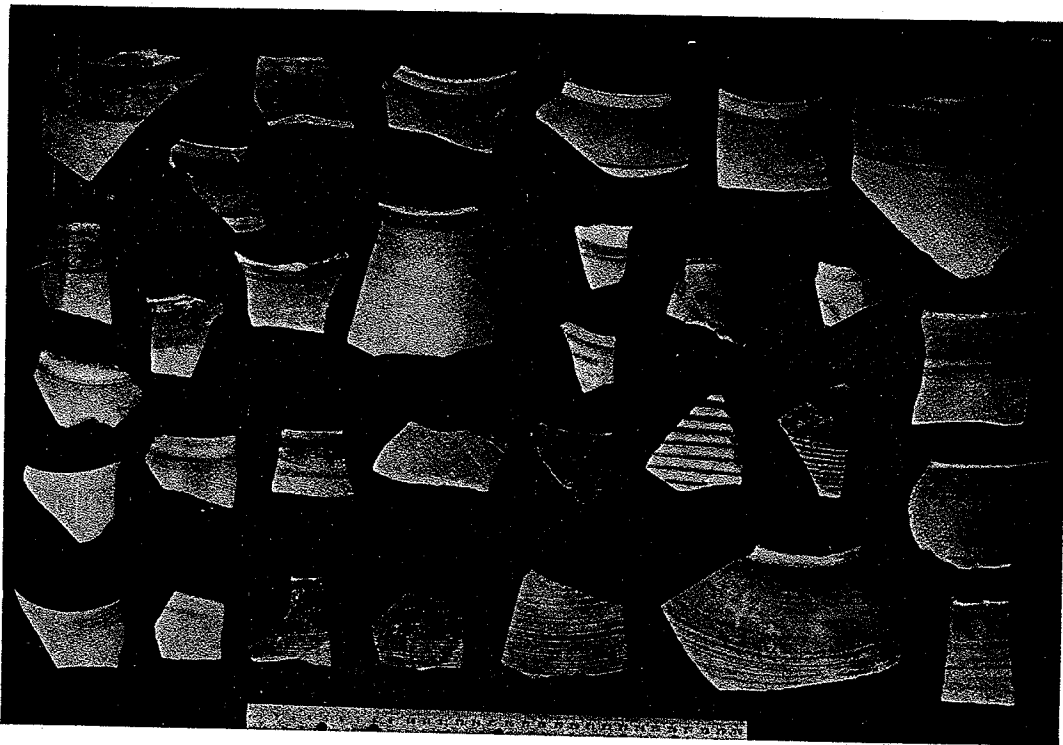
Pl. 7.2. The Hakra Wares. Surface treated with multiple incised lines.

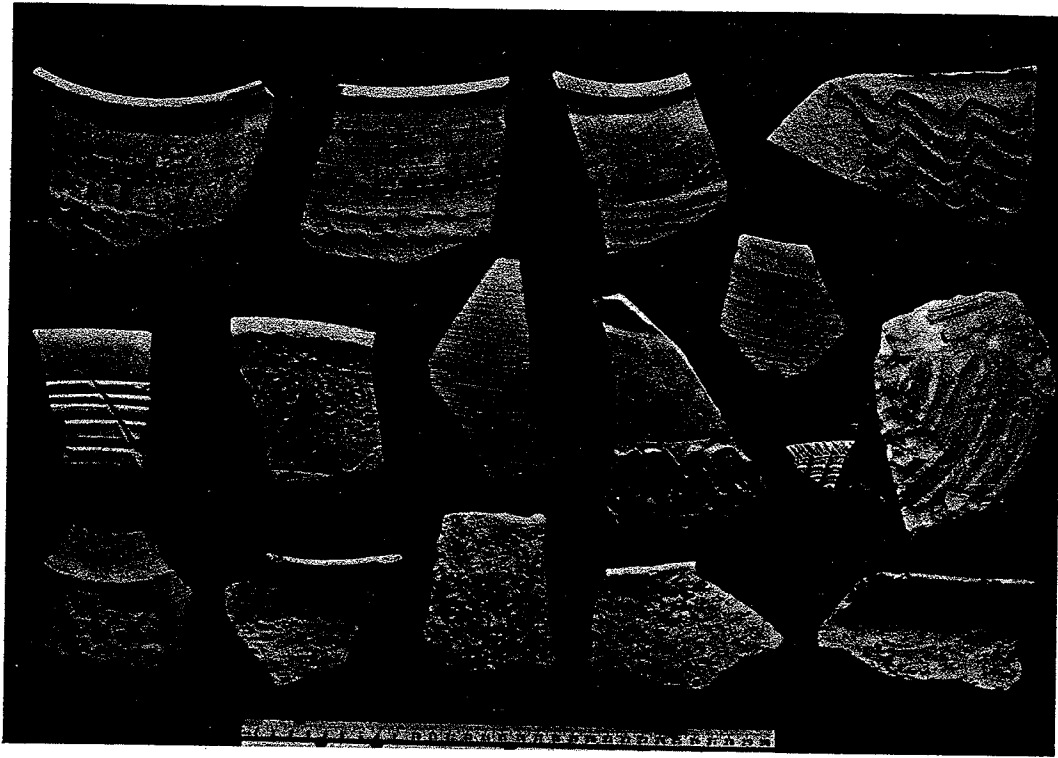




Pl. 7.3. The lithics associated with the Hakra Wares including (from the left in the lowest row) stone beads, copper, cylindrical beads of stone and terracotta and shell bangle pieces.

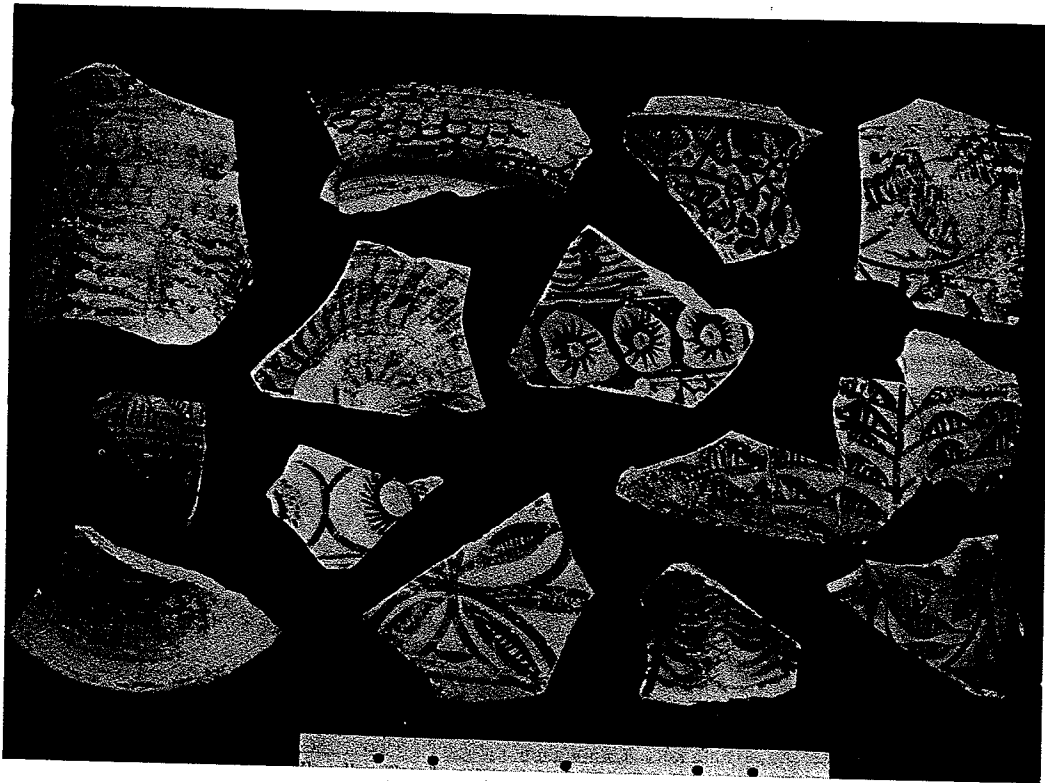
Pl. 7.4. Pottery of the Early Harappan (Kot Dijian) Period.

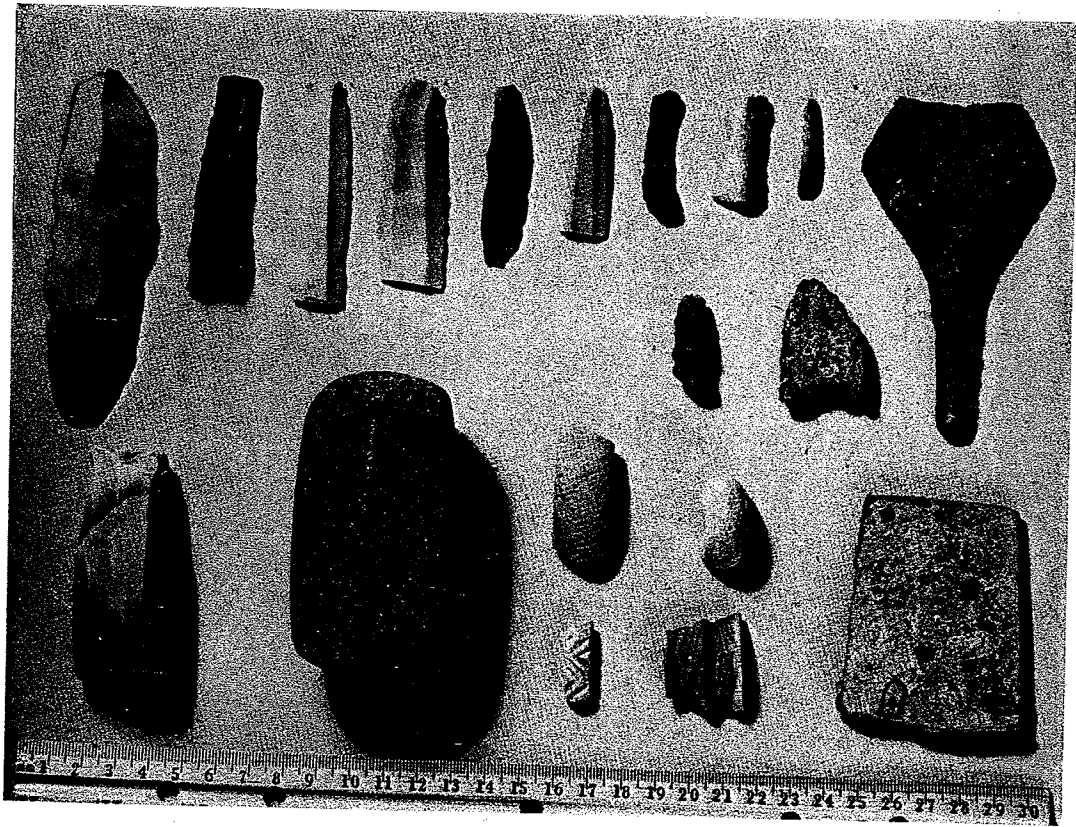




Pl. 7.5. Miscellaneous pottery from Early Harappan sites including mud applique surface treatment in the Hakra Ware style.

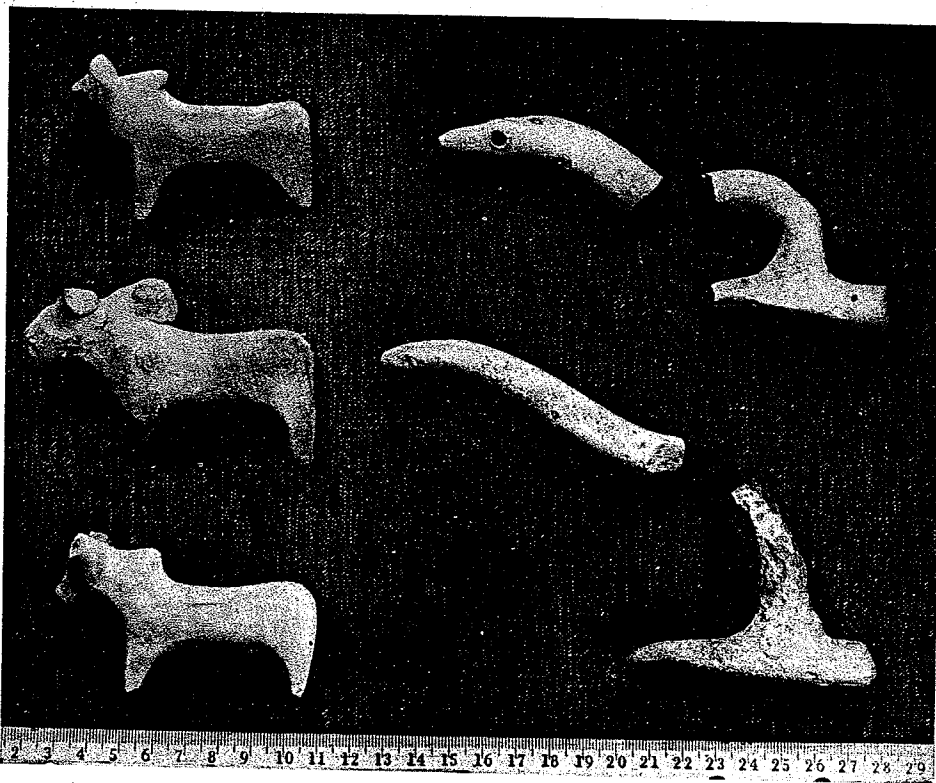
Pl. 7.6. Painted pottery from Mature Harappan sites.

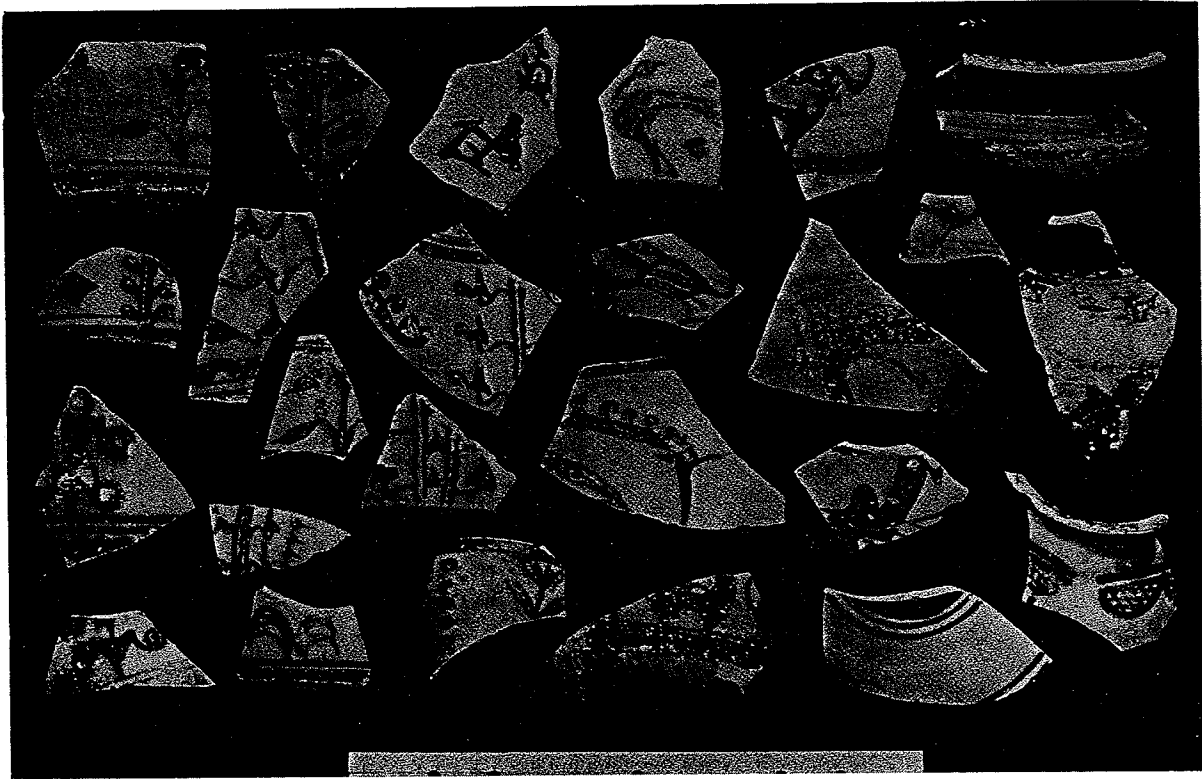




Pl. 7.7. Stone, copper and faience objects from Mature Harappan sites.

Pl. 7.8. Terracotta humped bull figurines and models of the plough—direct evidence for agriculture—from Mature Harappan sites.

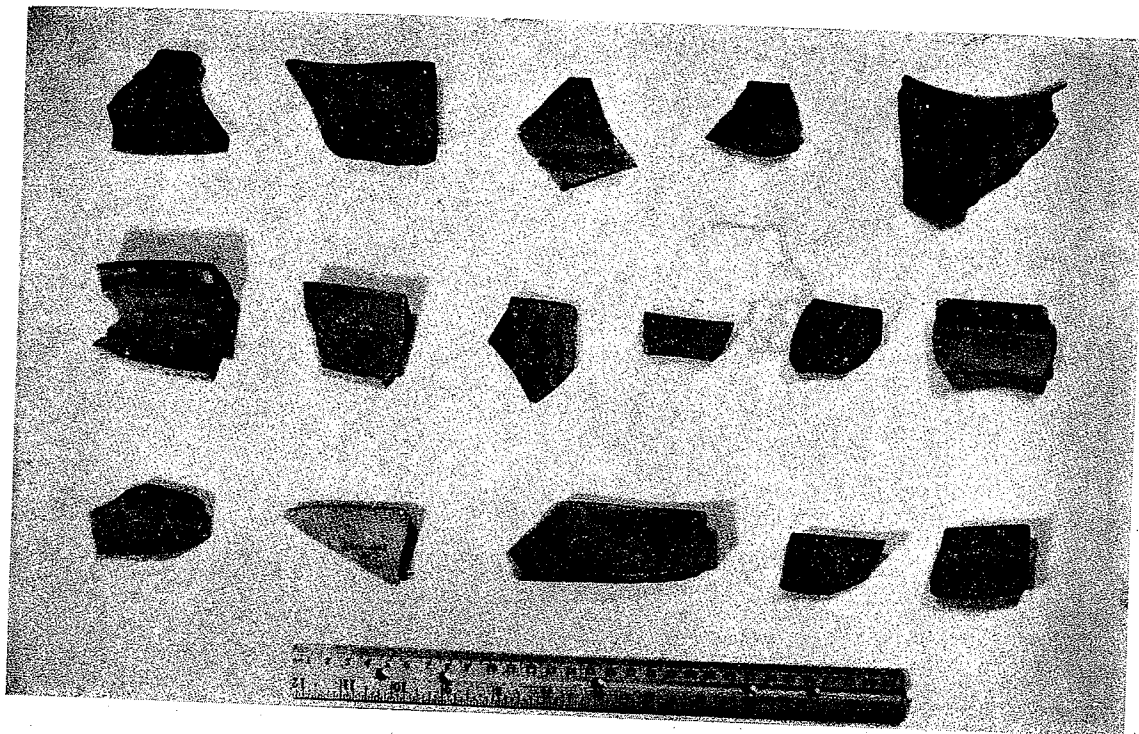




Pl. 7.9. Painted pottery of the Late Harappan Period (Cemetery H related).

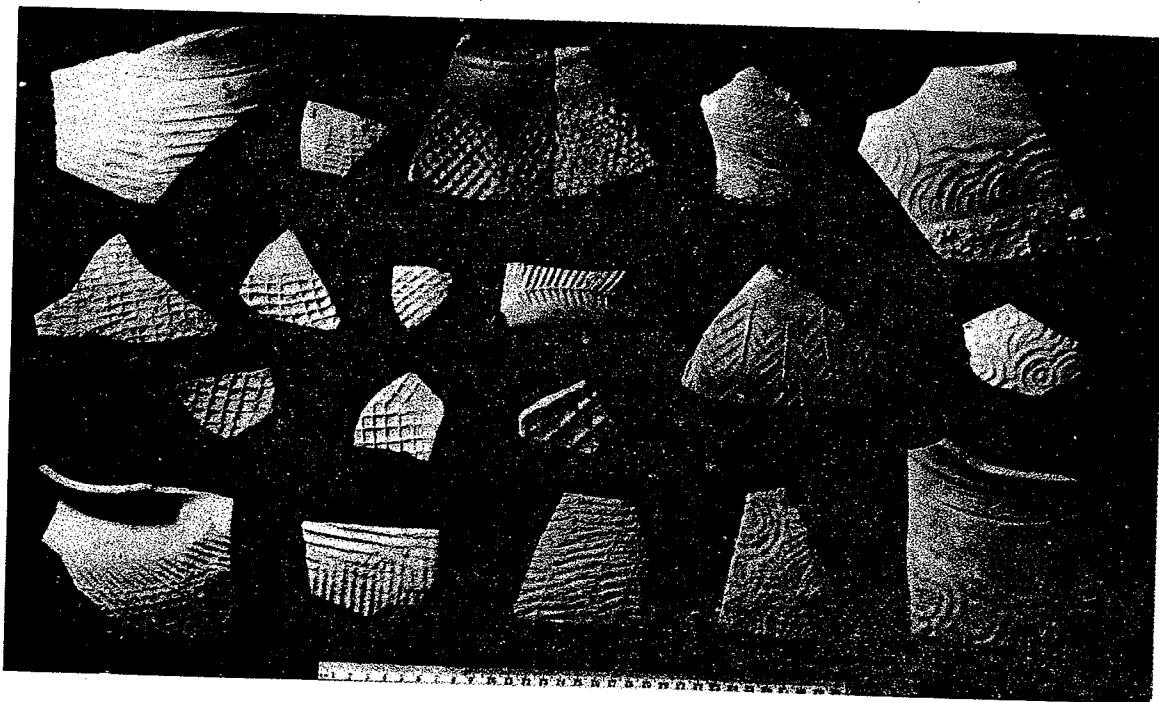


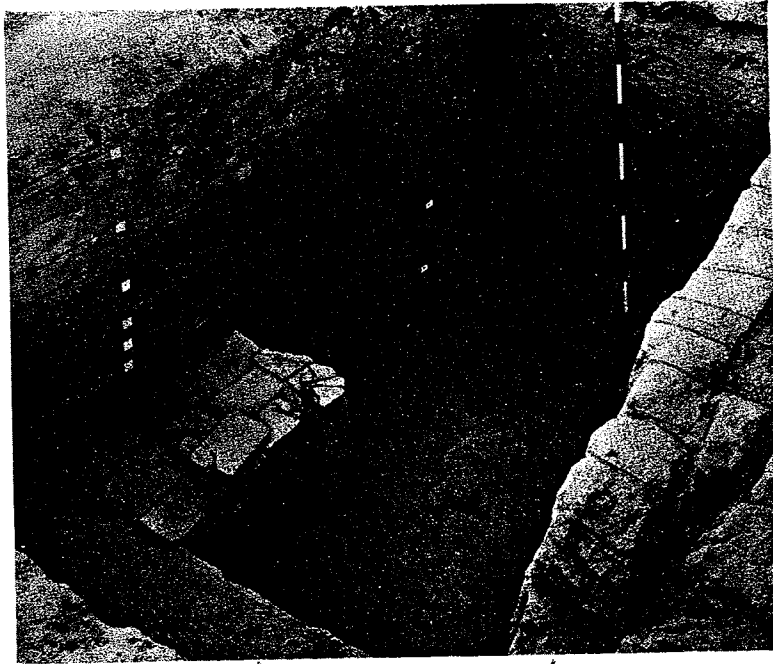
Pl. 7.10 Burial pot from Kudwala,
a Late Harappan site.



Pl. 7.11. Painted gray and plain gray pottery from PGW sites.

Pl. 7.12. Red pottery with impressed designs from PGW sites.





Pl. 10.1. The baked brick structure of Pre-Indus times may be seen below in excavation. Mud bricks are seen above on the right.

Pl. 10.2. Pre-Indus structures made of bricks of regular size.

