

**THE HARAPPAN SETTLEMENT SYSTEMS AND  
PATTERNS IN THE GREATER INDUS VALLEY  
(Circa 3500-1500 B.C.)**

**M. Rafique Mughal**

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**INTRODUCTION**

With the availability of information through regional surveys, attempts are being made to focus on the general patterns of Harappan settlements in the Greater Indus Valley mainly based on the size of sites and their locations (Mughal 1973; Jansen 1981; Chakrabarti 1979; Possehl 1980 : 49—86; Thapar 1982; Chitalwala 1979 and K. Bhan 1989).

Any attempt to construct a picture of the general pattern of settlements in any region is seriously limited by (a) incomplete information on overall site size (b) imprecise identification of sites and their cultural association, (c) lack of proper classification of sites and categorization based on functions, and (d) lack of full survey record of a geographically circumscribed region. Some of these difficulties are reflected in the results of analysis of old data (Chakrabarti 1979; Jansen 1981).

Admittedly, the surface survey data and that found in the test pits are not possible to date precisely, necessitating comparisons with known materials for determining their approximate time range. The suggested chronological bracket itself becomes weak with the revision of dates of the chronological framework being used and also due to exclusive reliance on a few categories of material, especially pottery types. In Gujarat for example, the chronological framework which hinged on Lothal and Rangpur has now been refined through important excavations such as Surkotada (Joshi 1972, 1973) and Rojdi (Possehl and Raval 1989). The field surveys carried out in different parts of the Greater Indus since the 1970s are beginning to show new methodologies in the recording of settlement features which include information on existing environmental features, precise location and size. In brief, serious limitations of incomplete information could not encourage the formulation of ideas on changing hierarchical social structures during the Harappan Period on the basis of settlement size and their functions. It is only with the availability of fresh data that attempts can be made to study the settlement patterns. Before analyzing the data, certain general observations are made on the areas of settlement study, the nature of data and related problems.

The study of settlements within their ecological and cultural systems was pioneered by Professor Gregory L. Possehl (1974, 1980) in Gujarat. In his fieldwork in Bhavnagar District of Saurashtra, he emphasized environmental factors influencing settlements and dispersal and their relation with the flowing water resource and (black cotton) moisture retentive soil suitable for dry farming during the Late Harappan Period. In the 1970's, the evidence demonstrated that as compared to eighteen sites of the Harappan Period in Gujarat (comparable with Rangpur II A), the total jumped to ninety-five in Late Harappan times. Possehl's important inference was that an increase in the number of settlements was not due to population increase but came as a consequence of a shift in subsistence strategy and the introduction of millets (Possehl 1974 : 161—62; 1980 : 54; 1986 : 249; Sankalia 1981).

In the Indian states of the Punjab, Haryana, northern Rajasthan and Western Uttar Pradesh, intensive field work has been done by a

succession of archaeologists. However, the published information on explorations other than those of excavated sites, does not generally permit their functional categorization and size configurations. An impressive number of 837 sites (Joshi *et al* 1984) differentiated by their cultural association and with precise coordinates could reveal a great deal of information on settlement hierarchy and, by implication, their organizational patterns if the size of each site was also published. At present, the data is not possible to compare with that from the adjacent areas of the Punjab and Haryana. The new data from the recent field work in Indian Punjab and Haryana (Bhan 1971-72; Bhan and Shaffer 1978) compensates to some extent for the lack of information on settlement size and spatial distribution. The published information on the settlements is however confined to ten (Mature) Harappan or Late Harappan sites.

In Cholistan, 377 protohistoric sites (264 belonging to the Indus Civilization) were recorded during a survey carried out between 1974 and 1977 (Mughal 1980, 1981, 1982, 1984, 1987). Taking into consideration the surface features, the sites could be separated and grouped into various categories of settlement, seasonal camp sites, industrial (for production or firing of various items) and multifunctional sites which combined craft related activities with habitation areas. The evidence of camps, industrial areas, habitation and multifunctional sites has focused attention on an internally organized settlement grid inter-linked with production and redistribution centres and diversified economy which included agriculture and pastoral nomadism.

The data on size of settlements in Cholistan has also provided insight into the hierarchical patterning of sites through the Early, Mature and Late Harappan times on which the discussion on the settlement hierarchy (below) is based.

The regional studies of the Harappan settlement systems and patterns in southwestern Sindh by Louis Flam (1981) bring up ecological differences and similarities of the Early Harappan (Kot Dijian and Amrian) and Mature Harappan settlements and cultural responses of the populations. It became evident that Sindh Kohistan was a high

density area for the Amrian settlements and, to a lesser degree, the Kirthar pediment region in contrast to the Kot Dijian sites which show a preference for the riverine flood plain.

During the Mature Harappan Period, the Kirthar piedmont and Indus Kohistan areas contained at least nineteen settlements (Flam 1981 : 139) and, significantly, an equal number dotted the Lower Indus Basin. Like the Kot Dijian settlement system, the Mature Harappan reflects diversity of ecological location at least in the southwestern part of the lower Indus Valley. As it was a period of maximum expansion of the Harappan Civilization, the Mature Harappan settlements with or without fortifications were established as outposts (like those of the Kot Dijian in the Amrian region) beyond the Indus Valley proper. It is evident by the three coastal sites on the Arabian Sea, namely, Sutkagendor, Sotka Koh, Balakot and Shortugai in northern Afghanistan, and in Kutch which was culturally an integral part of the lower Indus Basin where Flam (1981 : 139-153) notes twenty-eight Mature Harappan sites.

In the north and northwest of the upper Indus Valley, the evidence of Harappan settlement comes from three areas, namely Taxila and Gomal Valleys and the Bannu Basin. The sample size of Harappan sites (Early and Mature) discovered so far in each area is small; four in the Taxila Valley, seven in the Gomal valley, and eight in the Bannu Basin. The local environmental factors in each area vary but still, stability of residence and continuity of occupation of the Early Harappan Period is indicated beginning in the Gomal Valley from the second half of the fourth millennium B.C. to well into the later half of the third millennium when direct contacts with the Mature Harappan are documented. Three Mature Harappan sites (one of which is related to industrial activities) are reported in the Gomal Valley but none in the Taxila Valley and the Bannu Basin so far, though settlements of pre-*Early Harappan* (pre-Kot Dijian) are known to exist there. Most of the sites are located near seasonal or perennial streams and in the case of Taxila Valley, which falls within the zone of early onset and late retreat of monsoon and winter rainfall, the people might have practiced dry farming as well. A full picture of settlement systems and also of patterns in the upper Indus Valley has yet to emerge for comparisons and drawing general conclusions.

## CATEGORIES OF CITIES, TOWNS AND VILLAGES

An important aspect of Harappan settlement studies is the definition and distinction of village, town, city, metropolis, and urban centre. To date no such distinction exists. The terms for a town and city, or city and urban centre are used interchangeably resulting not only in confusion of categories of settlements but also in interpretative statements and comparative analysis. The cities such as Mohenjodaro and Harappa are usually defined in terms of size but the size concept varies among the scholars or according to the lines of argument being discussed. When the size is disregarded and a city is defined on the basis of its lay-out or important components, such as a citadel and "lower" town as in case of Kalibangan which is 4.5 ha. but still called a metropolis and city, it becomes very confusing. Another criterion could be population size which is itself difficult to estimate in proto-historic context. As a consequence of various limiting factors, a clear distinction of various categories of Harappan settlements and a study of their patterns through time have not been made.

It seems that other regions where such studies on settlement patterns have been done are no exception to this confusion of terminology. Robert McC. Adams' nomenclatures of village, town and cities are not consistent with their size as is evident from the definitions and usage in two works (1965; Adams and Nissen 1972) :

city	: more than 1 sq. km.
urban centre	: more than 50 ha.
small urban centre:	more than 30 ha. and less than 100 ha. (1 sq. km.)
urban area	: more than 30 ha.
large town	: more than 10 ha.
small town	: 4-10 ha.
town	: 6. 1-25 ha. Also more than 6 and less than 30 ha.
village	: more than 1 and less than 4 ha.
hamlet	: less than 1 ha.

Broadly speaking, Adams' definition of a village covers an area between 0.1 and 6 ha; and that of a town between 4.1 and 25 but less than

30 ha. An urban area or centre is placed between 30 and 50 ha. but less than 100 ha; and for a city the area should be more than 100 ha. or 1 sq. km. In the later publication (1981 : Table 14A p. 62) on classificatory scheme, Adams groups the sites according to their size : Less than 4 ha.; 4.1-10 ha.; 10.1-20 ha.; 20.1-40 ha.; 40.1-200 ha.; and more than 200 ha. (city).

Philip Kohl (1984) in his study of settlement patterns in southern Central Asia classified settlements into three broad categories : Villages between 0 and 5 ha.; towns 5-20 ha. and cities more than 20 ha. in size. Thus, Kohl's towns (5-20 ha.) in Turkmenia would fit Mesopotamian "town", "small town" and "large town" and the size of a "city" in Turkmenia would equate with an "urban" area in Mesopotamia.

In the case of South Asia and in particular the Indus Valley, the choice of terminology and its application has been dependent on individual convenience. At times this has been mixed with functional aspects of a settlement rather than its size and with the assumed role of a site. In a long list of Harappan sites in India (Joshi *et al* 1984), the sites falling between 4.0 and 16 ha. are called villages; those between 25 and 81 ha. are regarded "towns" and the cities are defined to be under 225 ha. in size.

The Cholistan region in Pakistan has given a fairly good picture of the various size of Harappan settlements beginning from the earliest known Hakra Wares Period of the mid-fourth millennium B.C. through the Early, Mature and Late Harappan time and extending up to the Painted Grey Wares of the first millennium B.C. (Mughal 1980; 1981; 1982; 1987). In that region, the sites are identified by their functions as industrial, camps and settlements. The settlements including those having areas demarcated for specialized craft activities were grouped according to their size without labelling them as villages and towns. The categories were made on the basis of size in hectares originally but were modified and reduced to six only for the purpose of present discussion. The size categories consist of : 01-5 ha.; 5.1-10ha.; 10.1-20 ha.; 20.1-30 ha.; 30.1-40 ha. and more than 80 hectares. These groupings are arbitrary but have the advantage of further subdivision as presented by

the author in the original report (1980). If labels are to be given for convenience instead of numbers of size categories, the following sizes seem to be useful for discussion and somewhat closer to the categorizations of both Kohl and Adams :

small villages	: 0.1- 5 ha.
large villages	: 5.1-10 ha.
small towns	: 10.1-20 ha.
large towns	: 20.1-30 ha.
cities	: 30.1-40 ha. and more

The camp sites marking temporary occupation of nomadic people or graziers as identified in Cholistan would be a separate category. The hierarchy of settlement size would be very sharp if the number of categories are reduced.

The Harappan settlements of the Mature Period possessed a feature in their size which seems to be peculiar to the Indus Valley. Even small settlements such as Kalibangan (4.5 ha.) had "twin mounds" (citadel and city) like the major cities as if a true replica of large cities. This feature gives a different meaning to the Harappan city if defined on the basis of size or estimated population numbers and opens up the question of function or role of small settlements which duplicated the features of major centres in having fortifications and planned layout, especially when some settlements were located at almost an equal distance from other major cities.

#### SETTLEMENT DENSITY, SIZE AND HIERARCHY

With the background of insufficient data on settlement systems which impeded analytical research, some of the recent surveys aimed at site location and recording have been done with an apparent awareness of these problems. The available data set even though restricted to a region is allowing us to derive certain conclusions pertinent to a specific area (Mughal 1980, 1982; Possehl 1980; Flam 1981).



**Cholistan**

The Cholistan has given a good sample size of 414 sites among which 264 sites belong to Early, Mature and Late Harappan Periods of the Indus Civilization. In addition, 99 sites represent an earlier period called Hakra while 14 sites belong to the Painted Grey Wares of the first millennium B.C., making a total of 337 sites (Fig. 1).

All the sites are not settlements but as observed on the surface, fall into several distinct categories ; industrial, where craft related activities and kilns for firing of pottery and other materials are concentrated ; multifunctional sites combining settlements with specialized activity areas in or near the settlements; purely habitational sites; camp sites marking temporary occupation by the herders and grazers; and two cemetery sites. All the sites are located along or near the changing course of the Hakra River which ultimately dried up around the beginning of the first millennium B.C. The area now consists of wide open and level mud flats partially covered with drift sand that has advanced 30 to 35 kilometers eastward from the original limits of the Thar Desert.

The numbers and percentages of various categories of sites of each cultural horizon are quite revealing (Tables 1 and 2, Figs. 2-7). During the Hakra Wares, 52 sites (or 52.5% of the total in that period) were camp sites and 45 (or 45.45%) were settlements only. Limited industrial or craft related activity is indicated by the presence of kilns at two sites only but in the succeeding Early Harappan Period, it increases to 35% of the total number because kilns were found at 14 settlement sites. The settlements only of the Early Harappan Period constitute 57.5% of the total (or 23 in number). There is very significant change from the nomadic to settled life because camp sites dropped from 52.5% in the Hakra Wares Period to only 7.5% in the Early Harappan. If we combine the multifunctional settlements (those also having craft related activities) with exclusively habitation sites, the total comes to 37 (out of 40) or 92.5%. It is evident that the populations were well settled in Cholistan by the beginning of the Early Harappan Period and items were produced locally at the settlement sites.



**Table 1:—Cholistan. The Number and Percentage of all Categories of Sites by Cultural Period (after Mughal 1980).**

	Hakra Wares	Early Harappan	Mature Harappan	Late Harappan	P.G. Wares
TOTAL SITES	99	40	174	50	14
All industrial	0	0	79	9	0
	0	0	45.40%	18.00%	0
Settlements with kilns	2	14	33	14	0
	2.02%	35.00%	18.96%	28.00%	0
Settlement sites only	45	23	50	14	14
	45.45%	57.50%	28.74%	28.00%	100.00%
Camp sites	52	3	10	13	0
	52.52%	7.50%	5.75%	26.00%	0
Cemetery sites	0	0	2	0	0
	0	0	1.15%	0	0

**Table 2:—Cholistan. The Number of Settlements by Size Categories and their Occupied Area with Relative Percentages during the Hakra, Early, Mature and Late Harappan and Painted Grey Wares Periods.**

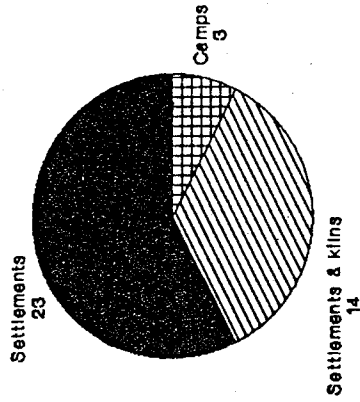
		SITE CATEGORIES						
		0.1-5 ha.	5.1-10 ha.	10.1-20 ha.	20.1-30 ha.	30.1-40 ha.	Over 80 ha.	Total
HAKRA	Number of Sites	21	5	7	4			37
	Percentage	56.75%	13.51%	18.91%	10.81%			
	Area	52 ha	36.1 ha	109 ha	87.6 ha			284.7 ha
	Percentage	18.2%	12.7%	38%	30.8%			
EARLY HARAPPAN	Number of Sites	19	8	3	2			32
	Percentage	59.37%	25%	9.37%	6.25%			
	Area	46.51 ha	54.8 ha	49.9 ha	49.8 ha			210.01 ha
	Percentage	21.67%	26.09%	23.76%	23.71%			
MATURE HARAPPAN	Number of Sites	44	20	8			1	73
	Percentage	60.27%	27.39%	10.95%			1.36%	
	Area	111.4 ha	141.18 ha	113.6 ha			81.5 ha	447.68 ha
	Percentage	24.88%	31.53%	25.37%			18.5%	
LATE HARAPPAN	Number of Sites	12	7	6		1		26
	Percentage	46.15%	26.92%	23.07%		3.84%		
	Area	28.73 ha	51.1 ha	98.3 ha		38.1 ha		223.33 ha
	Percentage	23.86%	22.88%	44.01%		17.05%		
PAINTED GREY WARES	Number of Sites	12		1				13
	Percentage	92.30%		7.19%				
	Area	22.1 ha		13.7 ha				35.8 ha
	Percentage	61.73%		38.26%				



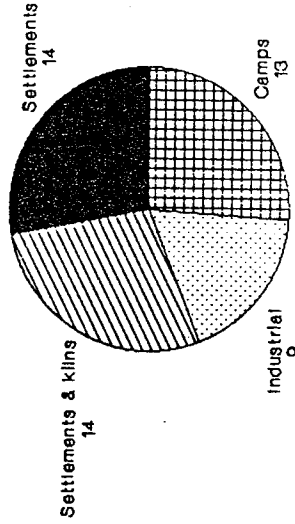
Period, there was an increase in the number of camp sites to 26% of the total in that period and reduction to 18% of the exclusively industrial sites. The percentage total of the purely settlement sites remained constant but an increase of nearly 10% which was 28% over and above that of the preceding period occurred in the number of multifunctional sites. The succeeding Painted Grey Wares (hereafter PGW) Period consisted of all settlement sites only. The relative increase and decrease in the number of various categories of sites in Cholistan through time was very pronounced (Figs. 3 and 4). The size of settlements (excluding camp and industrial sites) in each Period is equally revealing.

Taking into consideration only the settlements and those settlements which had some industrial activity on or near them, the resulting sample size consists of 181 sites : Hakra 37; Early Harappan 32; Mature Harappan 73; Late Harappan 26 and PGW 13. Their sizes in hectares are grouped into six analytical units instead of eight as originally presented by Mughal (1980 : Table 13 A and B) : 0.1-5 ha.; 5.1-10 ha.; 10.1-20 ha.; 20.1-30 ha.; 30.1-40 ha.; and over 80 ha. (Table 2). The settlement data on their numbers and percentages together with the area of occupation and relative percentages, demonstrates that the sites between 0.1 and 5 ha. in size (or small villages) progressively increased in numbers and also in the relative percentage of occupation area from the Hakra to Mature Harappan Period. The real changes in settlement numbers and occupation areas occurred at the beginning of the Late Harappan (Cemetery H related) Period and with the PGW. There were 21 small villages between 0.1-5 ha. in size, or 56.75% of the total during the Hakra Period, but the total occupation area was 52 ha. (out of 284.7 ha.) which constitutes 18.2%. In the succeeding Early Harappan Period, small villages were 19 (or 59.37% of the total number) and their total occupation area was 46.51 ha. (out of 210.01 ha.) marking an increase of 21.67% in relative percentage of the total occupation area from the Hakra Period. A further but significant increase in the number (44) and their percentage of the total number (60.27%) in occupation area (111.4 ha. out of 447.68 ha.) and relative percentage (24.88) occurred during the Mature Harappan Period. This increase in settlement sites was pronounced in all the

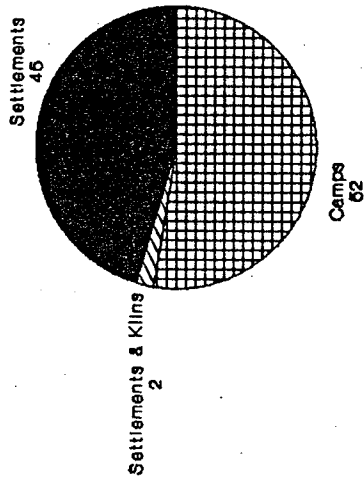
### Early Harappan Sites



### Late Harappan sites



### Hakra Wares Sites



### Mature Harappan sites

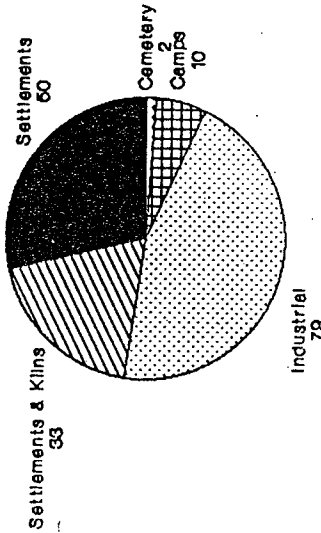


Fig. 3. Cholistan: The sites of various Periods by numbers

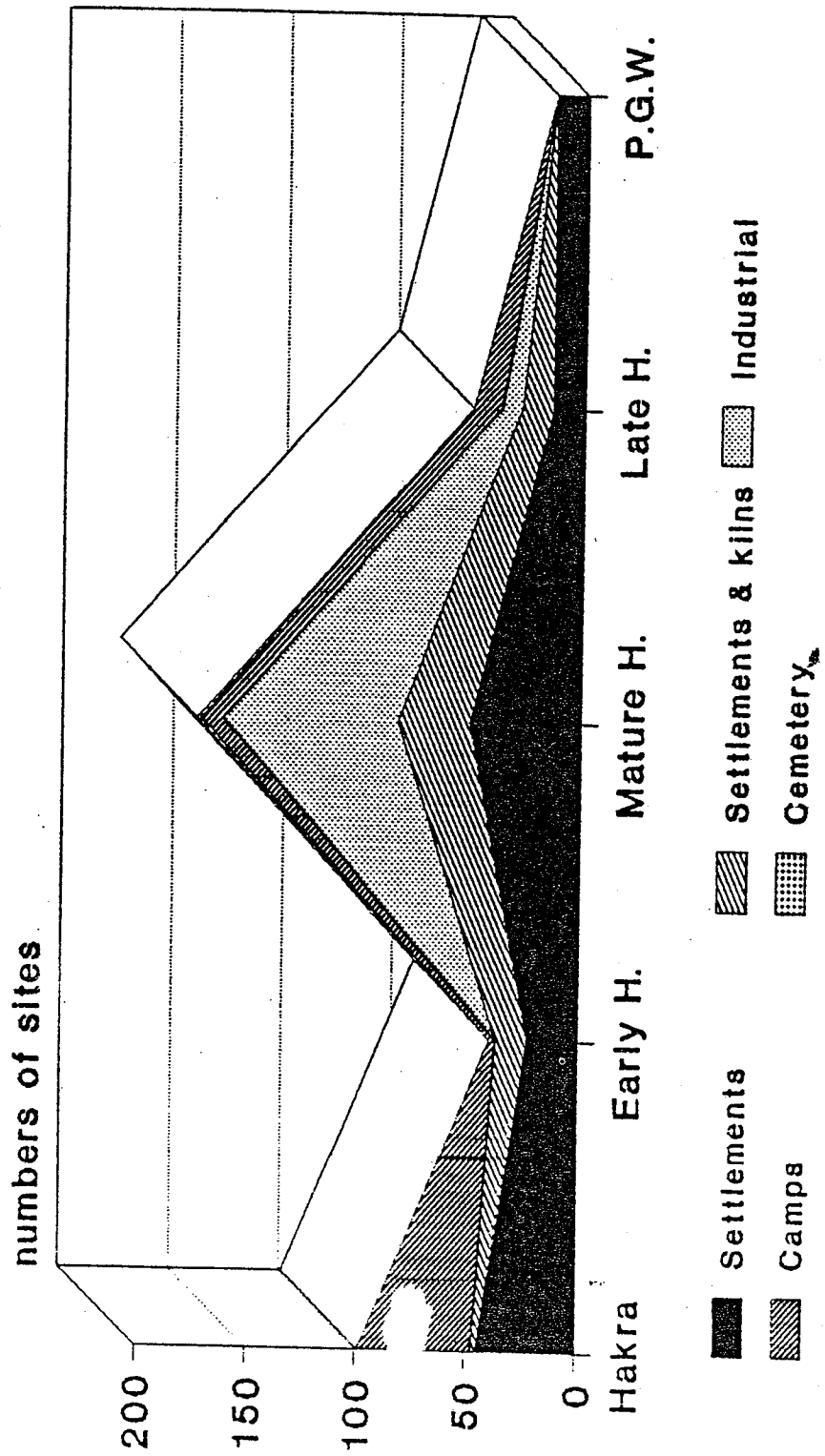


Fig. 4. Cholistan: Fluctuations in the number of various categories of sites

three categories of sites ranging from 0.1-5 to 10.1-20 ha. in size in their number and occupation areas including relative percentages of numbers and areas as compared to the preceding Early Harappan Period. An overall increase in all kinds of sites in number as well as size is evident with the emergence of a very large settlement (Ganweriwala) measuring 81.5 ha. together with what seems to be a citadel mound constituting 18.5% of the total occupied or settled area during the Mature Harappan. In the earlier Kot Dijian and Hakra Periods, there was no site within the size range of 30 and 40 ha. The largest Early Harappan site in Cholistan (so far known in the Greater Indus Valley) is Gamānwala measuring 27.3 ha. and the largest known Hakra settlement is Lathwala II (26.3 ha.) (Mughal 1980 : 36), both falling within 20.1-30 ha. range or large towns. The settlements falling within 20.1-30 ha. size range never emerged in Cholistan after the Early Harappan Period, though those between 0.1 and 20 ha. persisted even after the Harappan Period up until the PGW times. It seems that the four tiered settlement hierarchy that began with the Hakra Wares Period persisted until the Mature Harappan Period and even until the Late Harappan. The evidence shows that at least in Cholistan, there was no hierarchical patterning of settlements during the PGW Period. It ended with the Late Harappan approximately by the end of the second millennium B.C.

An identical pattern of progressive increase is conspicuous in the settlement size, number and relative percentages ranging between 5.1 and 10 ha. from the Hakra to the Mature Harappan Period. The number of such settlements increased from five (13.51%) in the Hakra Period to eight (25%) in Early Harappan going up to 20 (27.39%) in the Mature Harappan. The occupation area also increased from Hakra sites being 36.1 ha. (12.7%) to 54.8 ha. (26.09%) in the Early Harappan and jumping up to 141.18 ha. (31.53%) during the Mature Harappan Period. The data illustrates the fact that the small and large villages respectively within 0.1-5 and 5.1-10 ha. in size increased progressively in both numbers and settlement area from the later half of the fourth millennium to the middle of third millennium B.C. in Cholistan. This evidence when studied with changes in the cultural manifestations assumes significance for the emergence, development and climax of the Indus Civilization in this area which has also been regarded as the core centre of the Harappan culture.



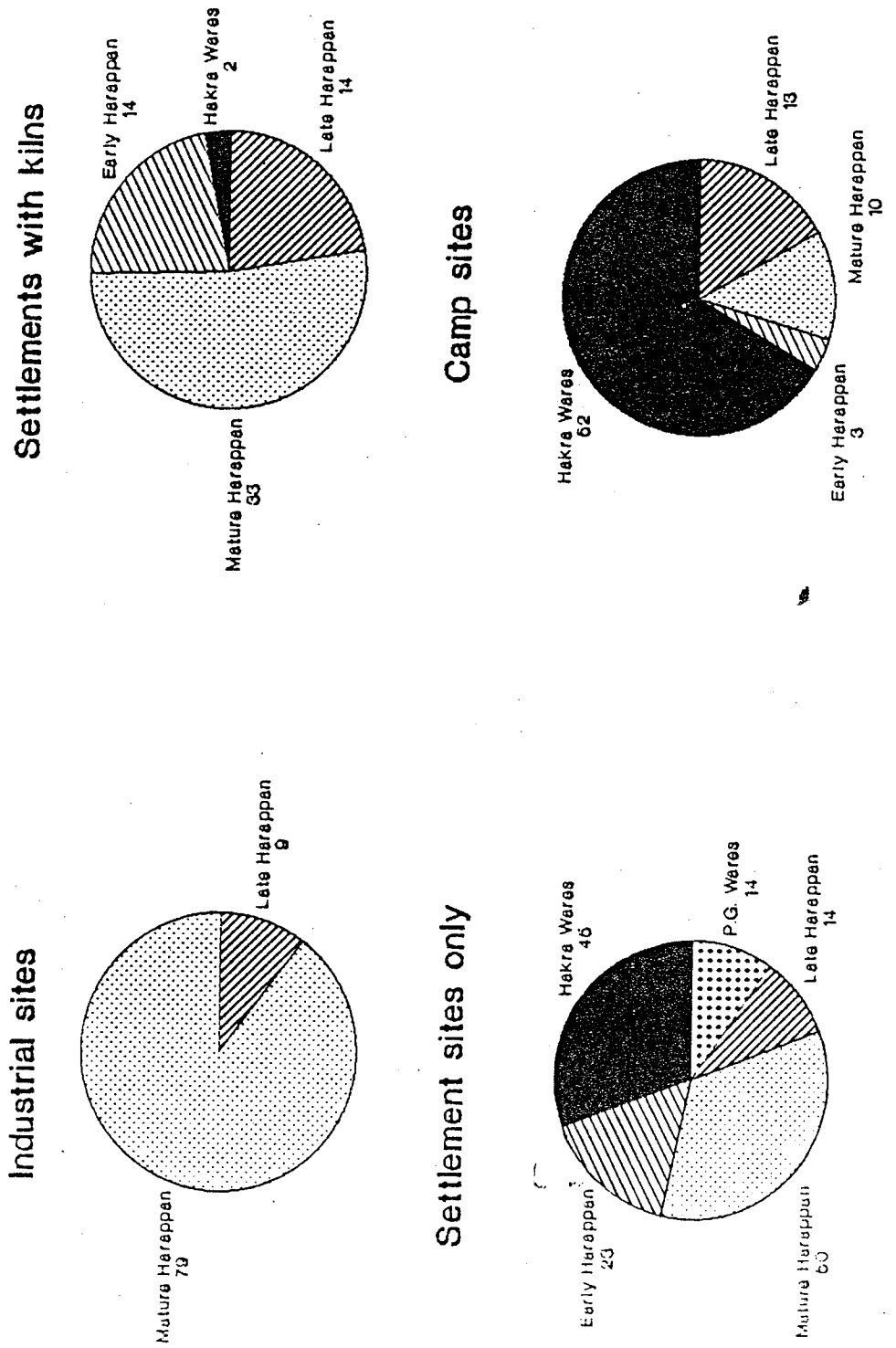


Fig. 5. Cholistan: Number of all sites by Periods .

During the Hakra Period, seven sites (18.91%) ranged between 10.1 and 20 ha. in size covering 109 ha., or 38% of the total occupied area of 284.7 ha. in that period. The sites covering 20.1-30 ha. size category were four (10.81%), occupying 87.6 ha. or 30.8% of the total settled area. Eleven sites of both the categories in fact covered more occupied area (68.8%) than that of 26 sites between 0.1-10 ha. size (30.9%), which is more than twice the area of small villages. This ratio changed during the Early Harappan Period when a drop in the number and occupied area of settlements (between 10.1 and 30 ha.) occurred from 68.8% in the Hakra Period to 47.47% in the Early Harappan in the relative percentage of total occupied area. Concomitant with this drop in the large settlements, there was an appreciable increase in the total number of small sites which is quite well marked in the percentage of total settled area (47.76%), almost equal to the area occupied by larger settlements. It is interesting to note that the total occupied area during the Hakra Period was 284.7 ha. for 37 sites of all sizes which shows reduction to 210.1 ha. for 32 Early Harappan sites. In terms of relative percentage and the total areas occupied by the settlements of 10.1-20 and 20.1-30 size during the Early Harappan Period, the ratio is remarkably similar.

The Mature Harappan small towns of the size between 10.1 and 20 were eight in number; which were about 11% of the total 73 settlements but covered 25.37% out of total 447.68 ha. area at that time. These small towns in fact not only demonstrate an increase over those of the Early Harappan mostly in number but slightly in area too. The hierarchical ordering of settlements was further sharpened by the one city over 80 ha. in size and with a complete absence of any site falling within 20 to 40 ha. size range. It is also significant that although there were eight towns (of 10.1-20 ha. size) covering 113.6 ha. area (or relatively 25.37% of the total) during the Mature Harappan, as compared to 44 small villages (of 0.1-5 ha. size), the total occupied area of villages was 111.40 ha. (or 24.88%), which is slightly less than that of the Mature Harappan towns.

The settlement data pertaining to the Late Harappan in Cholistan clearly demonstrates a major change in settlement size and

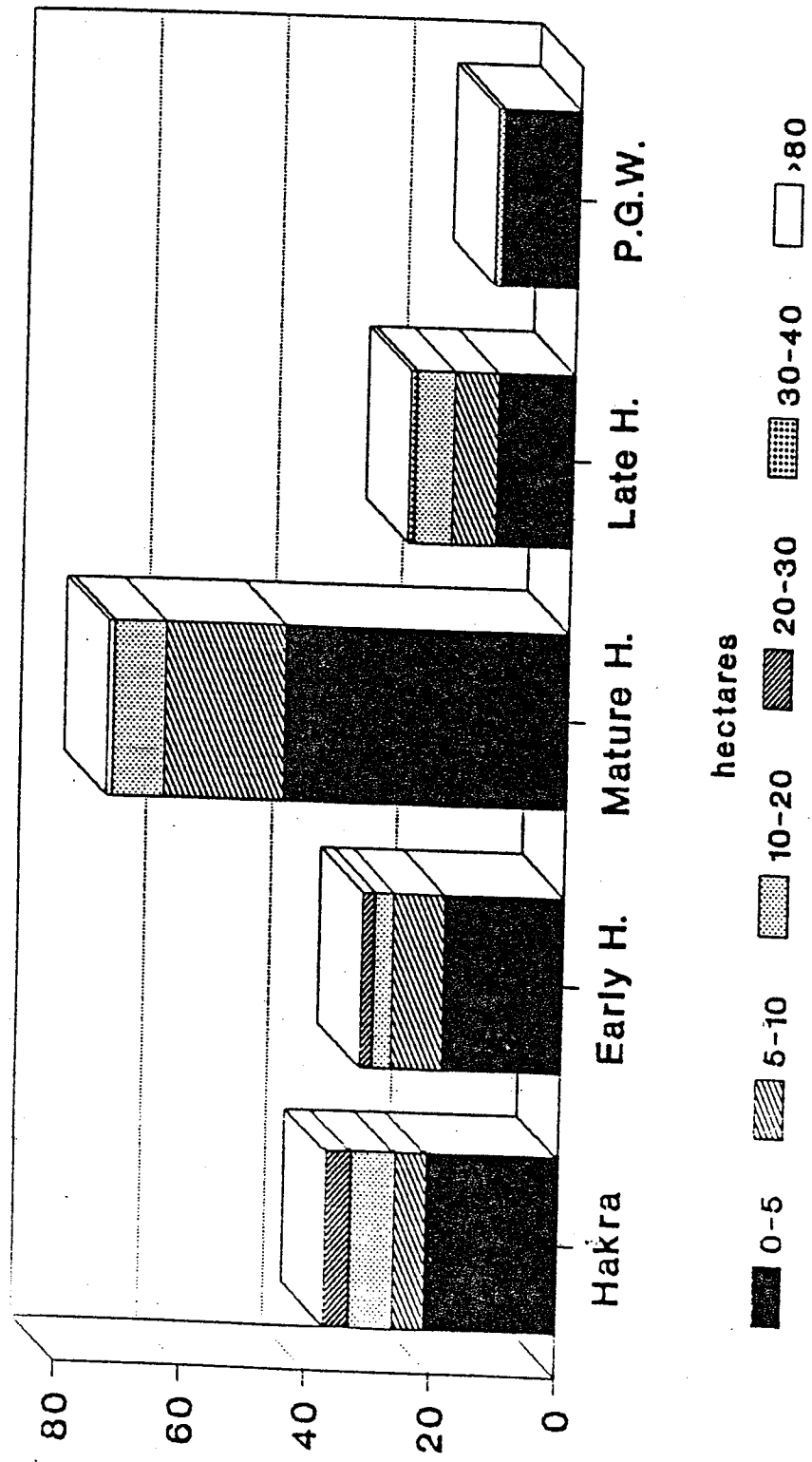


Fig. 6. Cholistan: Number of size categories of settlements by various Periods

number. The four-tiered site hierarchy of the Mature Harappan times persisted, though the size of the largest site was 38.1 ha., much less than Ganweriwala of the Mature Harappan. The largest site, Kudwala, represented 17.05% area of the total and there was no site falling within its preceding category of 20.1-30 ha. The next or second largest site was Shahiwala (20 ha.) and four out of six settlements in 10.1-20 ha. size were between 15.8 and 20 ha. The group of sites between 10.1-20 ha. represented relatively 44.01% of the total occupied area during the Late Harappan. The villages in 0.1-5 ha. and 5.1-10 ha. size range significantly decreased in number and in occupation area from 24.88% in the Mature Harappan to 12.86% and from 31.53% to 22.88% during the Late Harappan respectively.

The Late PGW occupation on the Hakra River in Cholistan was restricted to relatively small area. Twelve settlements were up to 5 ha. in size covering 22.1 ha. or 61.73% of the total occupied area, and only one site was 13.7 ha. in size, but it represented 38.26% or more than half of the total area occupied by 12 sites. No hierarchy of settlements is evident as there is also no cultural or chronological continuity in Cholistan of the Indus Civilization to the PGW period.

The foregoing detailed analysis of data from Cholistan clearly demonstrates that the four-tiered hierarchy of settlements had already come into existence by the later half of the fourth millennium B.C. identified in the central Indus Valley with the Hakra Period. The large settlements or towns if we may call them, occupying an area between 10 and 20 ha. and 20 to 30 ha., constituted nearly 70% of the total settled area, though in sheer numbers, the small settlements or villages up to 5 ha. and between 5 and 10 ha. constituted about 70% of the total number of sites.

Similar four-tiered hierarchical pattern continued during the Early Harappan Period but villages (0-5 and 5-10 ha.) increased in number occupying about 48% of the total area. An increase in villages corresponded with a decrease in the total occupied area of towns or large settlements making it almost equal in relative percentage of the total.

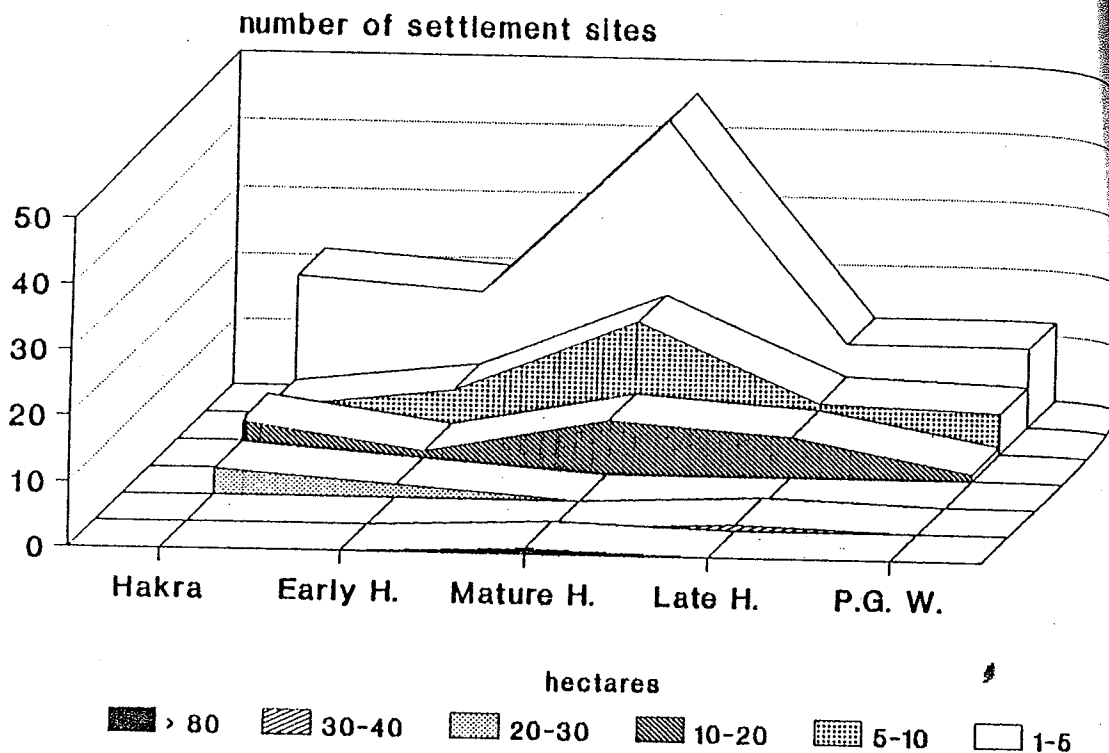


Fig. 7. Cholistan: Settlement size hierarchy through time

The Mature Harappan Period was marked by a sharp increase in the number and relative percentage of settlement area of three size categories: 0.1-5 ha. to 10 ha., and 10. ha. to 20 ha. and the emergence of at least one principal centre covering more than 80 ha. As noted earlier, the size category of 20-30 ha. of the Early Harappan Period was replaced by a very large settlement in the Mature Harappan. In the following Late Harappan Period, the four-tiered pattern continued but on a reduced scale. The principal site then covered 38.1 ha. area and there was no site between 20.1 and 30 ha. In brief, the settlement hierarchy is so well pronounced in Cholistan not only during the Early, Mature and Late Harappan Periods, but also in the earliest known cultural assemblage of the Hakra Wares. The material culture should also demonstrate a link between the Hakra and Kot Dijian related Early Harappan Period. If we combine the first two categories of 0.1-5 ha. and 5.01-10 ha. size settlements, the resulting picture will reflect, three-tiered (instead of four) hierarchical pattern of settlements throughout, from the middle of the fourth to the end of the third millennium B.C.

### Rajasthan, East Punjab and Haryana

On the Indian side of the Thar Desert and in particular in continuation of the Hakra River course called Ghaggar in India, extensive surveys done since the 1920s by a succession of archaeologists (Stein 1942; Ghose 1952; Dalal 1980; Dikshit 1984; Joshi 1984; Francfort 1986) have given a long list of sites of the Harappan Civilization and the later period (Figs. 8, 9 and 10). These works are generally reported only in the preliminary reports and as a result, the lists of site names with coordinates, their identification and cultural association assigned by the scholars have to be relied upon. It is, however, unfortunate that vital statistics on the size of settlements of different cultural horizons in northern Rajasthan are not available in published form to enable a critical review of the settlement patterns and systems in that important region contiguous to Cholistan and to make a general statement. New fieldwork is expected to overcome these deficiencies.

A new picture of the settlement patterns in the eastern Punjab and Haryana is beginning to emerge as a result of intensive fieldwork carried out first by Suraj Bhan (1973, 1975) and later by Jim G. Shaffer (1986). The cultural sequence of that region has undergone reassessment independently which previously was narrowly tied with that of Kalibangan for the Early and Mature Harappan Periods (Shaffer 1981). Based on the old and new survey data (Fig. 11) and the stratigraphy of some sites, Shaffer's revised sequence consists of four interconnected units of protohistoric periods labelled as Siswal A to D, though admitting that Siswal A (Early Harappan, Kot Dijian-Kalibangan I) and Siswal B (Mature Harappan) are difficult to delineate archaeologically at each of the early sites because of mixed materials found at few sites. However, Siswal A (or Suraj Bhan's Early Siswal) occupation has been recognized stratigraphically at three sites and on the surface of four other sites. What has been defined locally as (Mature) Harappan is reported to occur or is detected to be present at a total of nine sites. Banawali, Kotla Nihang Khan and Rakhi Shahpur are the only three out of 262 sites along the ancient beds of Ghaggar (Saraswati) and Chautang (Drishadwati) Rivers where (Mature) Harappan occupation was found in the Punjab, and only at two sites,

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Fig. 8. The Early Harappan sites in Eastern Punjab and beyond (after Joshi *et. al.* 1984)

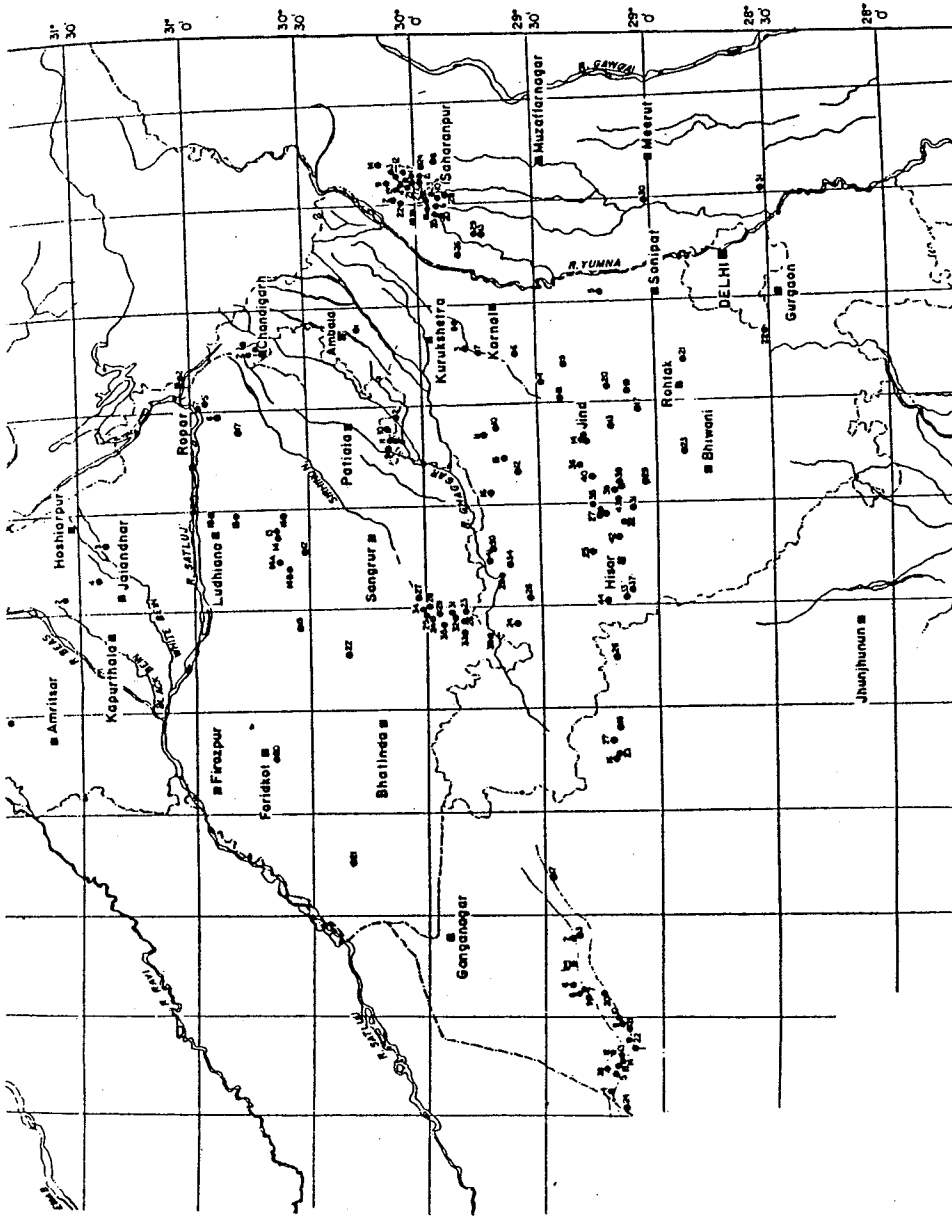


Fig. 9. The Mature Harappan sites in Eastern Punjab and beyond (after Joshi *et. al.* 1984)



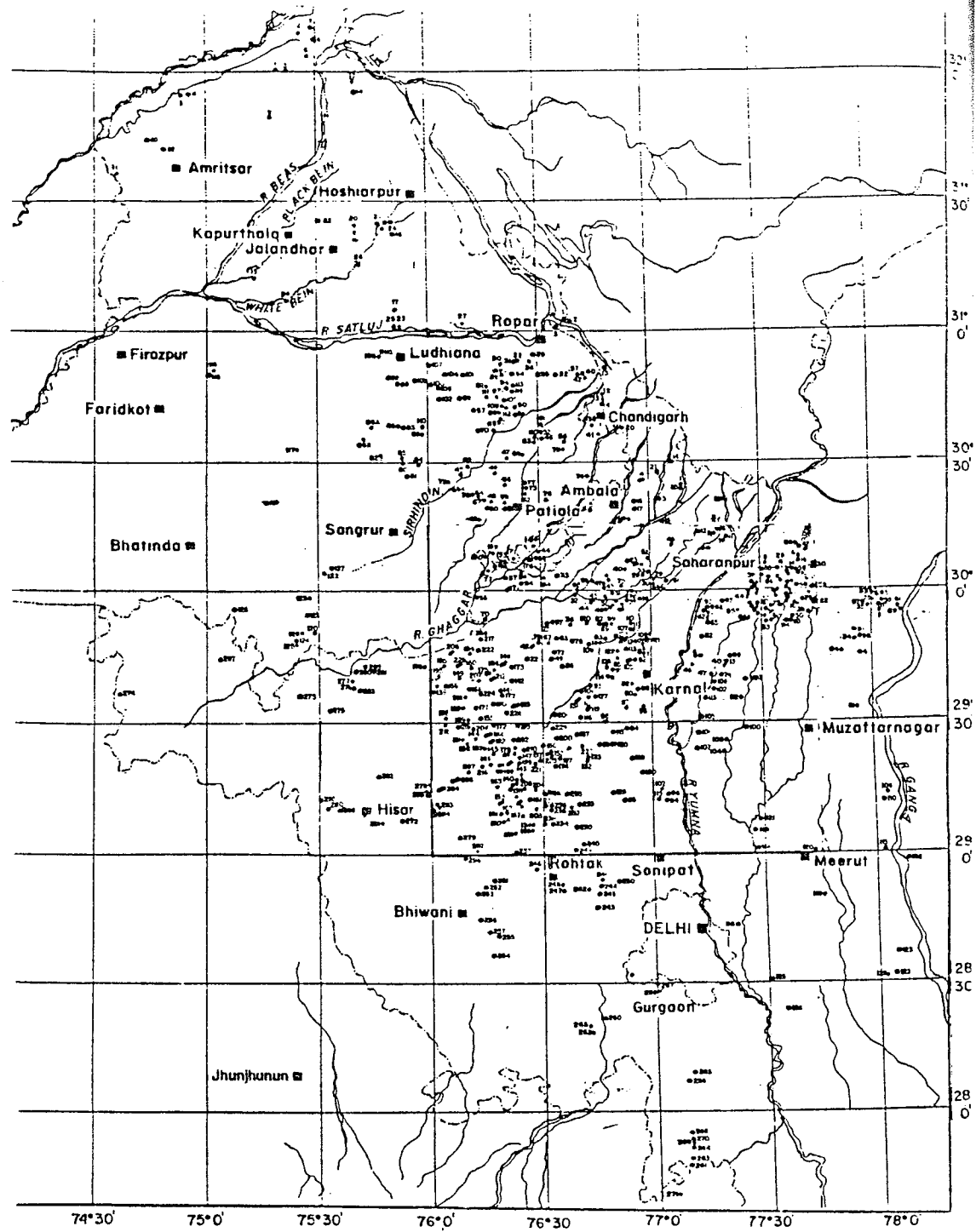


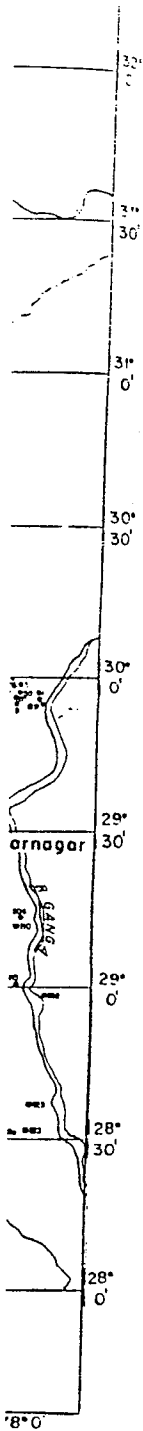
Fig. 10. The Late Harappan sites in Eastern Punjab and beyond (after Joshi *et. al.* 1984)

namely Balu and Nauli (among 180 sites), it was found in Haryana (Fig. 11). Shaffer contends (1988) that the occurrence of Mature Harappan pottery in Haryana and Punjab is "indicative of interaction of indigenous social group" and does not reflect the movement of people. It is, however, not certain if this statement would be applicable to other parts of Punjab and Haryana including northern Rajasthan where hundreds of "Harappan" (Mature and Late) sites have been reported.

Siswal C is represented by the material assemblages falling within the late or last phase of the Harappan culture. The few ceramic types are reminiscent of the Cemetery H pottery basically in forms and also in painted designs. This phase is variously labelled in the literature as "Late" or "Degenerate" Siswal, "Late" or "Late Mature Harappan," and "Mitathal B". Siswal C does constitute a separate group with chronological difference as pointed out by Shaffer because more than one hundred sites of single Siswal C occupation are reported. It is also found mixed with Siswal B occupation at six sites and 127 sites are assigned to Siswal C-D, just as there are 33 Siswal A-B sites. Siswal D is defined by the Painted Grey Wares occupation and is represented at 134 sites.

The real shift in the settlement pattern took place during the Siswal C-D phase or occupation corresponding to the Late Harappan Period (Shaffer 1986 : 227) due to an eastward shift of the river water. At the same time, rice, water buffalo and pig appear to have been introduced. It seems that environmental disturbance caused by the changes in river courses seriously altered the subsistence base of the population and settlement location. In this process, summer sown crops (*Kharif*) and other animals were introduced as distinct from winter sown, summer harvested cereal cultivation in the Early and Mature Periods.

Despite extensive field work in the eastern Punjab, complete information on all the sites is not available for analysis of settlement patterns. Ten Mature Harappan sites of which measurements are available fall into four size categories. Two groups of four sites each are between 0.1 and 5 ha. and 5.1 and 10 ha. One site is between 20.1



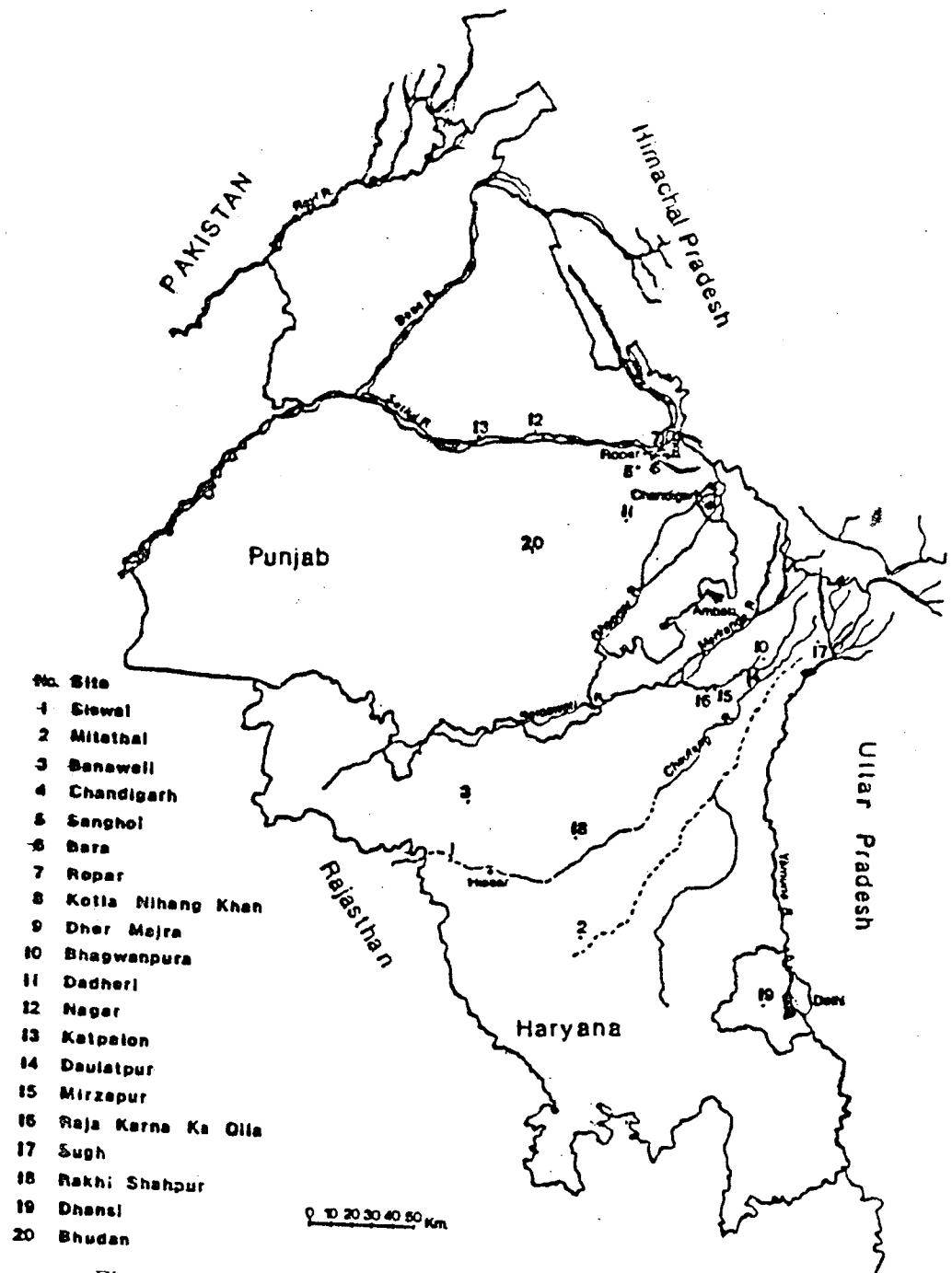


Fig. 11. The Early, Mature and Late Harappan sites in East Punjab (after Shaffer 1986)

and 30 ha. and one is about 80 ha. The sample size is too small to offer a comment. However, absence of any site with 10.1-20 ha. size is intriguing. In Cholistan, the settlements of this size persisted from the Hakra Wares Period to the Late Harappan. It is the 20-30 ha. size category settlement which is absent in Cholistan during the Mature Harappan, and in case of southwestern Sindh (discussed below), this size category is absent in both the Mature and Late Harappan Periods. The present evidence from the eastern Punjab shows an absence of Mature Harappan settlement within 10.1-20 ha. size range, the sites which are otherwise present elsewhere in the Indus Valley. The 20.1-30 ha. size category settlements which are present in eastern Punjab, are missing both in Cholistan and southwestern Sindh during the Mature Harappan Period.

#### **Kutch and Saurashtra**

Gregory L. Possehl's pioneering research (1980) emphasizing environmental determinants influencing human settlement locations and in particular "water and soil" in Saurashtra, focused our attention on the human adaptive response to the changes in subsistence practices and consequent shifts in the settlement patterns during the second millennium B.C. His list of sites based on the survey in Bhavnagar district consists of 28 sites of the Late Harappan Period with reference to Rangpur II B and C including four flint knapping sites and three Mature Harappan sites (Fig. 12). Flam accounts for 28 'Harappan' sites (1981 : 361) but further classification is not made. As regards size, 19 Late Harappan and two Mature Harappan are up to 5 ha. and only five Late Harappan sites fall within 5.1-10 ha. size range. There is only one Mature Harappan site between 10.1 and 20 ha. in size and four of the same size belong to the Late Harappan Period. The total count of sites in both Kutch and Saurashtra (Gujarat) was 196 (Possehl 1980 : 60) among which 32 belonged to the Mature Harappan and 34 to the phase associated with Rangpur III. A number of summary reports on further explorations in Gujarat so far available do not provide adequate data on settlement size and there are also problems of precise identification of sites as regards their cultural association.

Chitalwala (1979 : 112) provides information on the size of 25 Harappan settlements in Rajkot District of Saurashtra. The sample size is too small but something can be stated even if general conclusions applicable to a large area cannot be drawn at present. Taking into consideration only those sites identified as Harappan and Late Harappan and adding all the sites labelled as "Harappan and Late Harappan" to Late Harappan categories, with the exception of the excavated site of Rojdi which is counted as both Harappan and Late Harappan, 20 sites could be regarded as Late Harappan and six as Harappan. Eighteen Late Harappan sites fall into 0.1-5 ha. size category and two are within 5-10 ha. range, respectively representing 22.5 ha. (or 64.2%) and 12.5 ha. (or 35.7%) of the total settlement area of 34.97 ha. Five Harappan sites have an occupied area of 12.19 ha. or (65.2%) in the 0.1-5 ha. size category. The remaining single site represents 6.5 ha. (or 34.7%) of the total settlement area of 18.69 ha. There is no settlement hierarchy in the Rajkot area (Table 3). Out of 18 Late Harappan sites, 10 are less than one ha. in size and four are below 2 ha. Although 0.1-5 ha. sites are the largest in number, their settlement area is only 22.47 ha. One Harappan site of 6.5 ha. in size represents almost half the total area occupied by the five sites in 0.1-5 ha. category.

From the known evidence, Kutch apparently represents an extension of the lower Indus Valley culturally. There, the Mature 'Harappan' settlements are greater in number than those in Saurashtra. Kotada (Kotado) or Dholavira demonstrates 'twin' mounds and reportedly measures 40 ha. in size (*IAR* 1984-85 : 14). Kotada, Desalpur (nearest to Mature Harappan site of Kot Kori in Pakistan) and Surkotada were reportedly fortified. In the absence of information on the size of all the Harappan sites in Kutch and Saurashtra, a detailed analysis of fluctuation of settlement densities and ranked patterns cannot be attempted at present. The whole of Gujarat forms a distinct ecological region in terms of geographical location, climate, river drainage and soil and therefore could give an insight into variations in the settlement patterns and systems from the Mature Harappan to the later times. Being different from the cultural environment of the Indus River Valley, the settlement related data from Gujarat is expected to reveal different adaptive responses of the

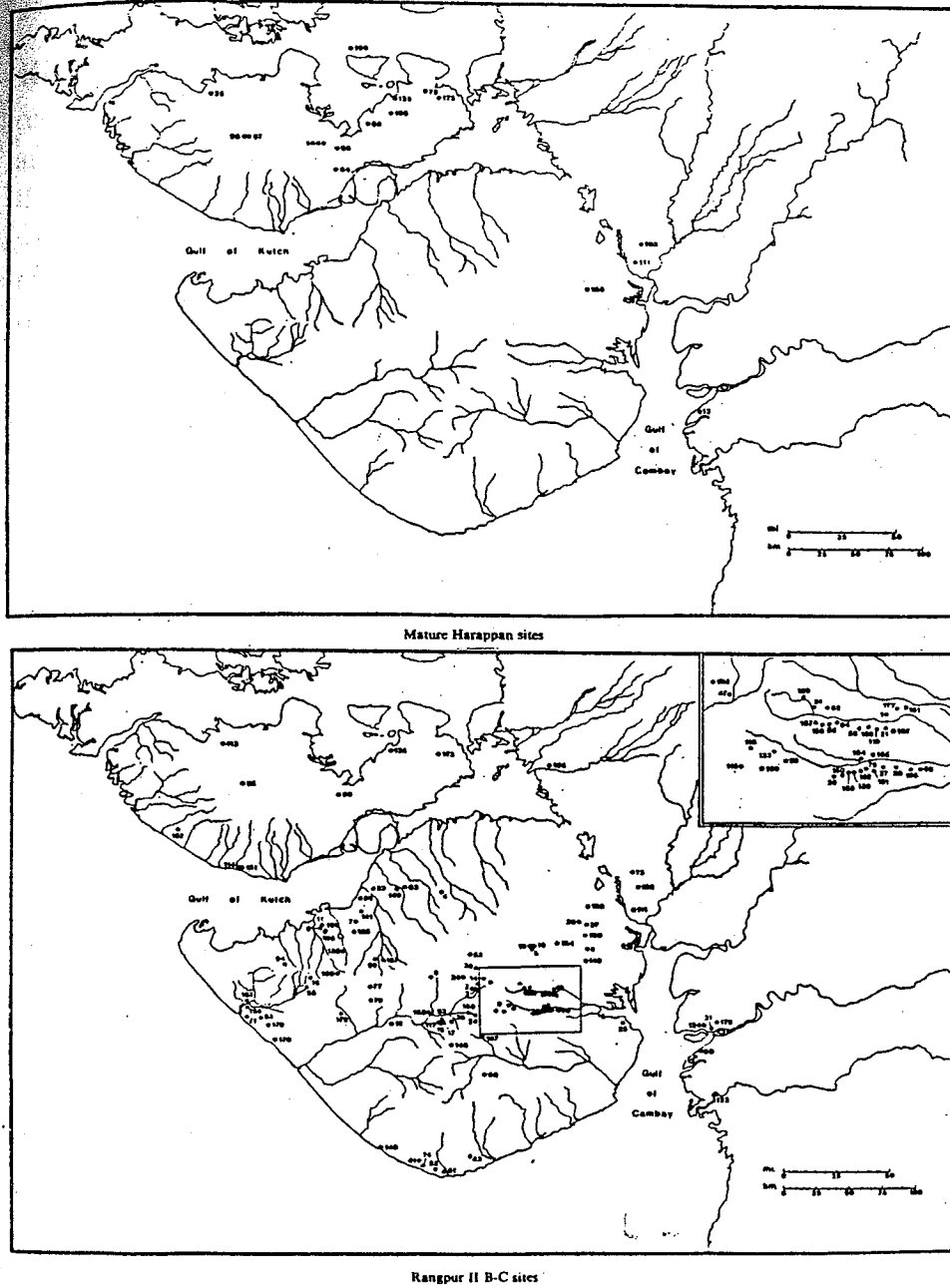


Fig.12. The location of the Mature and Late Harappan settlements in Gujarat (after Possehl 1984)

population to the local environment already indicated by the dispersal of settlements during the second millennium B.C.

**Table 3** Rajkot District, Gujarat (India). The Number and Percentage of Site Categories, and their Occupied Area with Percentage of total area.

*Note:*—The sites given below are included in Kuldeep K. Bhan's lists of 6 "Mature Harappan" 65 "Initial Late Harappan" and 38 "Final Late Harappan" sites (1989).

		Site Categories		
		0.1-5 ha.	5.1-10 ha.	TOTAL
HARAPPAN	Number of Sites	5	1	6
	Percentage	83.3%	16.6%	
	Area	12.19 ha.	6.5 ha.	18.69 ha.
	Percentage	65.2%	34.7%	
LATE HARAPPAN	Number of Sites	18	2	20
	Percentage	90%	10%	
	Area	22.5 ha.	12.5 ha.	34.97 ha.
	Percentage	64.2%	35.7%	

**Table 4:**—Southwestern Sindh. The Number and Percentage of Early and Mature Harappan Sites by their Size Categories and Occupied Area and Percentage.

		SITE CATEGORIES					Total
		0.1-5 ha.	5.1-10 ha.	10.1-20 ha.	30.1-40 ha.	over 80 ha.	
EARLY HARAPPAN (Kot Dijian & Amrian)	Number of Sites	13	4	2	0	0	19
	Percentage	68.42%	21.05%	10.52%	0	0	
	Area	13.46 ha.	33.72 ha.	21.76 ha.	0	0	68.94 ha.
	Percentage	15.52%	48.91%	31.56%	0	0	
MATURE HARAPPAN	Number of Sites	18	0	2	1	1	22
	Percentage	81.81%	0	9.09%	45.45%	45.45%	
	Area	27.07 ha.	0	27.6 ha.	34.4 ha.	83	172.07 ha.
	Percentage	15.73%	0	16.03%	19.99%	48.23%	