SOCIETAL AND SEQUENTIAL ANALYSIS OF DUBI LAKE CLUSTER SITES IN KHAIRPUR SINDH

Qasid Mallah & Tooba Qasid

ABSTRACT

The present paper is one more struggle to comprise on synopsis about societal development in profound temporal framework gathered through numerous seasons of field work with particular emphasis on the lakes situated within sand dunes bordering the Rohri hills near the modern village of Dubi Mirwah in Khairpur district of Sindh Pakistan. Where in total six lakes were investigated, and a total of 34 sites associated with different periods including the Upper Paleolithic, Mesolithic to early historic period were recorded. The sites were located within close proximity of the lake environment as on the flat top surface of sand dunes, on the slopes of dunes and nearby lakeshore(s). All sites consist of surface scatter with greater difference in object assortment and viscosity. A number of sites showed presence of only one period while others reoccupied the very same spot. Hence, the present paper examines the basic questions like when, who, and how the lakes were focused? What was the availability of subsistence resource type and means of exploitation? What types of artifact(s) were left behind and what is their cultural significance in the origin and development of society within Indus valley civilization.

Keywords: Societal Development, field work, Paleolithic, Mesolithic, artifacts, society, Indus Valley Civilization, explorations.

INTRODUCATION

The Indus Archaeologists have focused on the remains left by anceint people equally considering the space and time of occupency. The archaeologists have focused on the places where significat number of objects showing diversity of activities were found and have not left behanind the places where only few artifcats are seen on the ground giving idea of very short occupency "*no more than few hours*" (Renfrew and Bhan1996:46, Mallah 2002, Mallah and Talpur 2011). The archaeology of Indus Valley

has excellent growth pattern (Mughal 1991; Kenoyer and Meadow n.d) Indus Arcaheologists have carried both type of projects such as exploration(s) and excavation(s) within the territory of 186000sq kilometers of the Indus valley civilization(Kenoyer1998). The exploration provides quick social development purview of any given spot/place or region; for instance the exploration of Sindh by NG Mujamdar 1929 and Survey of Cholistan by M. Rafique Mughal 1985 , Survey of Beas river region R.Wright , explorations of lower Harkra Regions of Thar Desert (Mallah 2000 and2002) and many others exploratory works from Indian side. On other hand, the excavation projects like Mohenjo Daro(Marshal Mackay), Harrappa (Dales and Kenoyer) , Mehargarh (Jarriage 1991), Lakhanjodaro (Shaikh *at el* 2004-5, Mallah2017), Nuhato (Mallah 2019) , and many on Indian side took several years for comprhending the cultural sequence of given site and the overall setup.

In Archaeology, the excavation is scientific way for documenting the essential cultural aspecst, like process, arrangements and sequence of settling down, development,change, leaving and finally destruction of any given settlment in chronological manner.

On the other hand, the exploration/survey is also essential for reconstructing the past of ancient socities. Through the exploration module; statistical data is collected to determine the hirarchical system of the given region in which their socail aptitude and level of given communites is determined. Hence, both methodological and procedural pattern are adopted by archaeologists for collecting basic inforamtion(s) which provide a concrte and authentic explanation about the given society. More or less similar strategy was applied in southwertern Germany for studying the early mesolithc land use (Jochim 2006: 206).

In present case, a total of 34 archaological sites were doumented through survey around the six lakes having brakish water, located east of modern Dubi village in Khairpur Sindh (Table 1). Those lakes are named as *Jamal Shah, Khuth, Bakri Waro, Char Baro, Waddi Sim,* and *Tul Sim*. All lakes are situated within sand dunes (Fig.1). These sand dunes are the extended part of the Thar Desert sequence of sand dispersal and are sandwiched in between Rohri Hills in east and Indus alluvail plains on the west. The documented archaeological sites are examined under two concepts (a) horizontal cultural origin and spread and (b) vertical cultural development and change. Under this concept, basic sociotal questions have been answered.

ECOLOGICAL SETUP

The general ecological setup contains (i) hills (ii) sand dunes (iii) lakes (iv) alluvial plains (fig:1). This micro ecological setup is necessary and basic to both human and animals, occur at least one hundred kilometer strip all along western edges of Rhori hills. Where the subisstence resources like flora, driking water and grasses were certainly available and accessible. The archaeological research has shwon the clusters of sites at various spots, for istance, Bypass Cluster in north (Shaikh *at el* 2008/2009) Vessar Valley (Shaikh *et al* 2002- 2003) cluster in south, and there must be other clusters if the region is intesivly explored. Within this ecological strip a samll portion was chosen. Although, the area where present research was conducted, was very small in extent and consisted on only few kilometers radius but represented the much larger societal arena of Indus valley communities. The sand dunes, alluvial plains and the Rohri Hills are parallel to each other and lakes are sandwiched within the sand dunes. The sand dunes are part of Great Thar Desert of South belonging to most recent Quaternary Period Aeolian (wind-deposited) sand of geologic period, which began about 1.6 million years ago. The

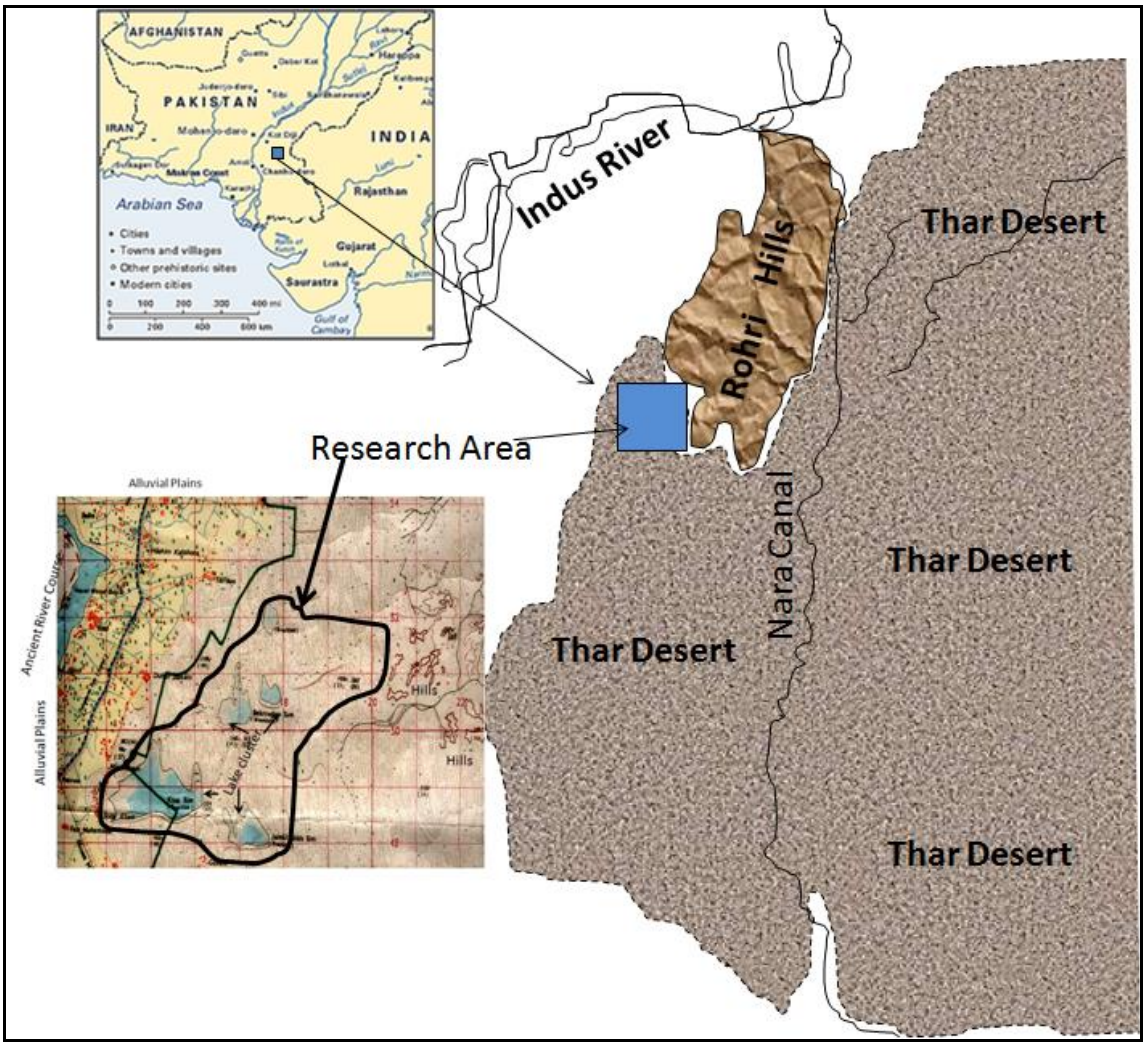

Figure 1- Location of Researh Area.

research suggests that it was established through different geological phases within varied time frame in which some parts are earlier than others of the Quaternary periods (G.S.P. 1964 map as cited by Mallah 2019). Similar research has been carried out which has analysed Ancient Climatic conditions in Rajasthan during different phases. This has also highlighted reasons behind origin of lakes. (See Singh 1971; Agrawal 1982:58) Another studies carried through the *Land, Water and Settlement* project, indicate the "*dramatic weakening in monsoon rain fall after 2200–2100BC"* (Petrie *at el* 2017:18). This paleoclimatic conditions indicate that the lakes were perhaps created through high floods from Indus River supplemented with higher rain runoff from Rohri Hills during similar times when lakes in Rajasthan were created. Nevertheless, the lakes of Dubi region were maintained through the monsoonal rain runoff from Rohri Hills if water was stopped through Indus River floods.

The research indicates that during Upper Paleolithic period the Dubi areas where now lakes existed might have been low-lying alluvial valleys where the Upper Paleolithic hunters infrequently visited. But with climatic conditions of Phase II (8000-7500 BC) in which the lake were created and soon the Mesolithic people densely exploited the resource hub Oasis.

Four ecological elements must have worked together such as first, the scattered hills are located at the distance of 2-3 kilometers from majority of archaeological sites around the lakes, providing the chert as a raw material source for making required implements. The chert nodules still can be found on the surface of sand dunes. Secondly, with little monsoon rainfall; the sand cover of desert becomes very green many grasses grow and plant become green and luxuriant providing ample fodder for herds of goat, sheep, camel and cattle at least for monsoon season. People from surrounding area take their herds and live there until resource(s) are available. They establish temporary huts called '*Wandh'* for taking care of animals.

Thirdly, the alluvial plains of the Lower Indus Basin on the west supplemented subsistence resources which are visible in river beds flowing nearby the sites **[2]**. Finally, formation of lakes and swamps in dessert of Ther is another indicator of the fluctuation in environmental and climatic conditions which brought immense amount of heavy rains and flooding. Consequently, the diverse geography naturally replaced the harsh leaving conditions into favorable living environment must have encouraged local inhabitants to start agriculture to settle in this area. The presence of Upper Paleolithic artifacts in the region attested the inclination towards exploitation of desert subsistence resources which was further intensified during Mesolithic to Kot Dijian periods when many settlements were established permanently. The exploitation of resources is continued in historic periods with very short intervals till today. The villagers does found area useful having

grassy patches which survived in the dessert and changed its behavior from very hostile to very friendly for animals and human.

SURFACE ARCHAEOLOGY

All documented 34 sites consists of the surface scatter having variation in viscosity of the objects of Different periods (Table2;Fig2&3). During exploration, the spots with scanty spread of objects were also considered as an archaeological site.

As mentioned earlier that every sand dune contains slope from at least three sides and the northern side is always steep and very difficult in accessibility. The settlements were recorded with main attention on the collection of diagnostic item(s) and recording on all sort of physical features and activity areas. Any single exotic object like stone bead, shell bangle, and or steatite bead encountered was collected after recording its GPS position on the ground. From the sites some selected artifacts for typological and chronological confirmation were also collected. The observation and recording of two types of micro-artifacts i.e. chert tools and beads were complicated because (a) similar color of objects and soil and (b) size of objects. The color of chert tool and sand is almost alike and the minute size of chert tools and micro beads make them untraceable and very difficult to see with naked eye. A researcher might be stepping over important artifacts if he/she is not carefully observing the surface ground of *the* given site. A profound acquaintance and experience with the region however enables the researcher to pull out and obtain micro-artifacts and activity areas more easily. In spite of these problems, documented settlements have revealed a wonderful societal and sequential pattern that the shores of lakes, flat tops and slopes of dunes were strategically and intensively occupied.

S.No.	S. Name	East Longitude	North latitude	Abbreviations
1.	Dubi-1	68°.40'.22"	27°.08'.24	DU1
2.	Dubi-2	68°.40'.26"	27°.08'.24"	DU2
3.	Dubi-3	68°.40'.33"	27°.08'.25"	DU3
4.	Dubi-4	68°.40'.48"	27°.08'.34"	DU4
5.	Dubi-5	68°.40'.41"	27°.08'.23"	DU5
6.	Dubi-6	68°.40'.30"	27°.08'.17"	DU6
7.	Char Baro-N	68°.40'.42"	27°.08'.04"	CBN
8.	Char Baro-S1	68°.40'.34"	27°.07'.64"	CBS1
09.	Char Baro-S2	68°.40'.52"	27°.07'.97"	CBS2
10.	Char Baro-S3	68°.40'.56"	27°.07'.48"	CBS3
11.	Bakri Waro-E	68°.41'.33"	27°.07'.92"	BWE

S.No.	S. Name	East	North	Abbreviations

		Longitude	**latitude**	
12.	Bakri Waro-S	68°.40'.86"	27°.07'.64"	BWS
13.	Bakri Waro-N1	68°.41'.35"	27°.08'.37"	WSN1
14.	Wadi Sim-N	68°.41'.22"	27°.08'.56"	WSN2
15.	Wadi Sim-S	68°.41'.43"	27°.07'.96"	WSS
16.	Veeker valley-NE	68°.42'.38"	27°.07'.91"	VVNE
17.	Veeker valley- S	68°.42'.24"	27°.07'.26"	VVS
18.	East of lakes-1	68°.42'.80"	27°.07'.12"	EL1
19.	East of lakes-2	68°.43'.77"	27°.09'.05"	EL2
20.	East of lakes-3	68°.43'.31"	27°.08'.97"	EL3
21.	East of lakes-4	68°.42'.15"	27°.07'.85"	EL4
22.	East of lakes-5	68°.43'.02"	27°.06'.82"	EL5
23.	East of lakes-6	68°.43'.08"	27°.06'.89"	EL6
24.	Jamal Shaah-N1	68°.41'.44"	27°.07'.01"	JSN1
25.	Jamal Shaah-N2	68°.14'.27"	27°.07'.22"	JSN2
26.	Jamal Shaah-N3	68°.41'.11"	27°.07'.47"	JSN3
27.	Jamal Shaah-N4	68°.40'.97"	27°.07'.52"	JSN4
28.	Jamal Shaah-S1	68°.41'.22"	27°.06'.39"	JSS1
29.	Jamal Shaah-S2	68°.41'.48"	27°.06'.51"	JSS2
30.	Jamal Shaah-S3	68°.41'.33"	27°.06'.58"	JSS3
31.	Jamal Shaah-E1	68°.41'.80"	27°.06'.95"	JSE1
32.	Jamal Shaah-E2	68°.41'.56"	27°.06'.77"	JSE2
33.	Tul	68°.42'.09"	27°.09'.33"	TL
34.	Tali	68°.40'.44"	27°.08'.45"	T

Table1: Location coordinates of the sites

DEPOSITION AND CONTEXT OF OBJECTS

The deposition and context of objects is considered from ecological perception and physical type of object(s). For instance, at some sites only chert objects are present and at other spots/sites have mixed variety objects was observed. Similarly, some spots/sites are very close to the lakes and others are located away from the lakes purely in the sand dunes. Area was intensively vistied by humans where thirty foure places fall under the category of an archaeological site. When all sites were exmained closely; showed at least six chronological classes, starting from upper paleolithic (Table 2&3; fig2). The presence of artificats showed that various sites were occupied repreatedly and some were occupied single time (fig3).

S. No.	site Abbrivation	Upper Paleo	Meso.	Hakra	Kot Diji	Indus	Other*	Total periods
01	DU1	---	P	---	---	---	---	1
02	DU2	---	P	P	P	---	P	4
03	DU3	---	---	---	P	P	P	3
04	DU4	---	P	P	P	P	P	5
05	DU5	---	P	---	P	P	P	4
06	DU6	---	P	---	---	P	P	3
07	CBN	---	P	---	---	---	---	1
08	CBS1	---	P	---	P	---	---	2
09	CBS2	---	P	---	---	---	---	1
10	CBS3	---	P	P	---	---	P	3
11	BWE	---	P	P	P	P	P	5
12	BWS	---	P		P			2
13	WSN1	---	P	---	P	P	P	4
14	WSN2	---	---	---	---	P	P	2
15	WSS	---	P		P		P	3
16	VVNE	---	P	---	P	---	---	2
17	VVS	---	P	---	---	---	P	2
18	EL1	---					P	1
19	EL2	P	---	---	---	---	P	2
20	EL3	---	---	---	---	P	P	2
21	EL4	---	P	P	P	---	P	4
22	EL5	---	---	P	---	---	P	2
23	EL6	P	P	---	P	---	P	4
24	JSN1	P	P	---	---	---	P	3
25	JSN2	---	P	---	---	---	P	2
26	JSN3	---	P	---	P	P	P	4
27	JSN4	---	---	---	P	P	P	3
28	JSS1	P	P	P	P	P	P	6
29	JSS2	---	P	P	P	---	---	3
30	JSS3	---	P	---	P	---	---	2
31	JSE1	P	P	---	---	P	P	4
32	JSE2	---	P	---	---	---	P	2
33	TL	---	P	---	---	---	P	2
34	T	---	---	---	---	---	P	1
	Total	05	26	08	17	12	26	

Table2: Horizontal Presence of periods and vertical sequence of sites

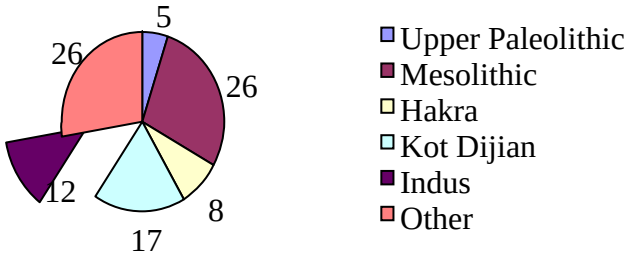

Figure 2- Pie Graph showing Total number of Archaeological Sites periods

SETTLEMENT TYPES AND CONFIRMATION OF OCCUPATION

Archaeological sites consisting of surface scatter showed multiple occupational periods. The sites were located separately in three different types of spots such as (a) the flat top surface of sand dunes, (b) on the slopes and (c) nearby lakeshores. All sites consist of the surface scatter with greater variation in artifact density and repertoire. At least three types of artifact scatter were classified such as (i) localities with significant density and diversity of artifacts; (ii) spots with less quantity and of objects littered on the surface and (c) isolated artifact clusters.

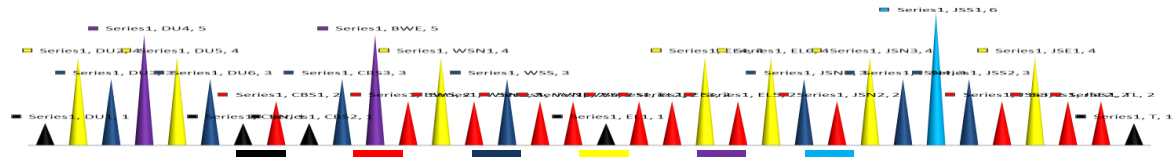

Figure3: Graph showing number of occupational periods on each site.

S.N	Type	Identification
1	T1	Upper Paleolithic
2	T2	Mesolithic
3	T3	Hakra
4	T4	Kot Dijian
5	T5	Indus
6	T6	Other

Table3: Types and Chronological sequence of sites

Out of 34 sites, some sites were chosen to conduct excavation just to confirm the occupation status. At majority of sites, a 4x4 meter gird was laid by dividing 1x1 meter trench; all artifacts present on the surface of each trench were collected. The first ten centimeters of sand from the trench was very carefully scraped. After which ten centimeters were scraped thoroughly. After removal of at least half meter of sand cover nothing was found and no any continuity of cultural objects was observed. It is concluded that all documented sites occupied superficially without any subsurface cultural material assemblage deposition and does not provided carbonized material for Radio Carbon Dating purpose. All artifacts on the surface were mixed together confirming reoccupation of same spot repeatedly.

SETTLEMENT PATTERN

As mentioned above that all 34 documented sites are located separately on the flat top surfaces of sand dunes, on the slopes and nearby lakeshores (fig4). All sites consist of surface scatter with greater artifact variation and density. At some dunes the pottery is spread very thinly in such a manner that it was hard to demarcate boundary line in

between two localities. In this situation wherever a good density of cultural material was present it was designated as an archaeological site. In contrast, at some places, just three or four pieces of either pottery or stone scattered within two to three square meters area were present as an isolated cluster shape for which it was inappropriate to designate as an individual site. These types of ancient remains were not left unobserved from documentation; their location coordinates were recorded, and the diagnostic artifact representative of any cultural aspect or phase was collected.

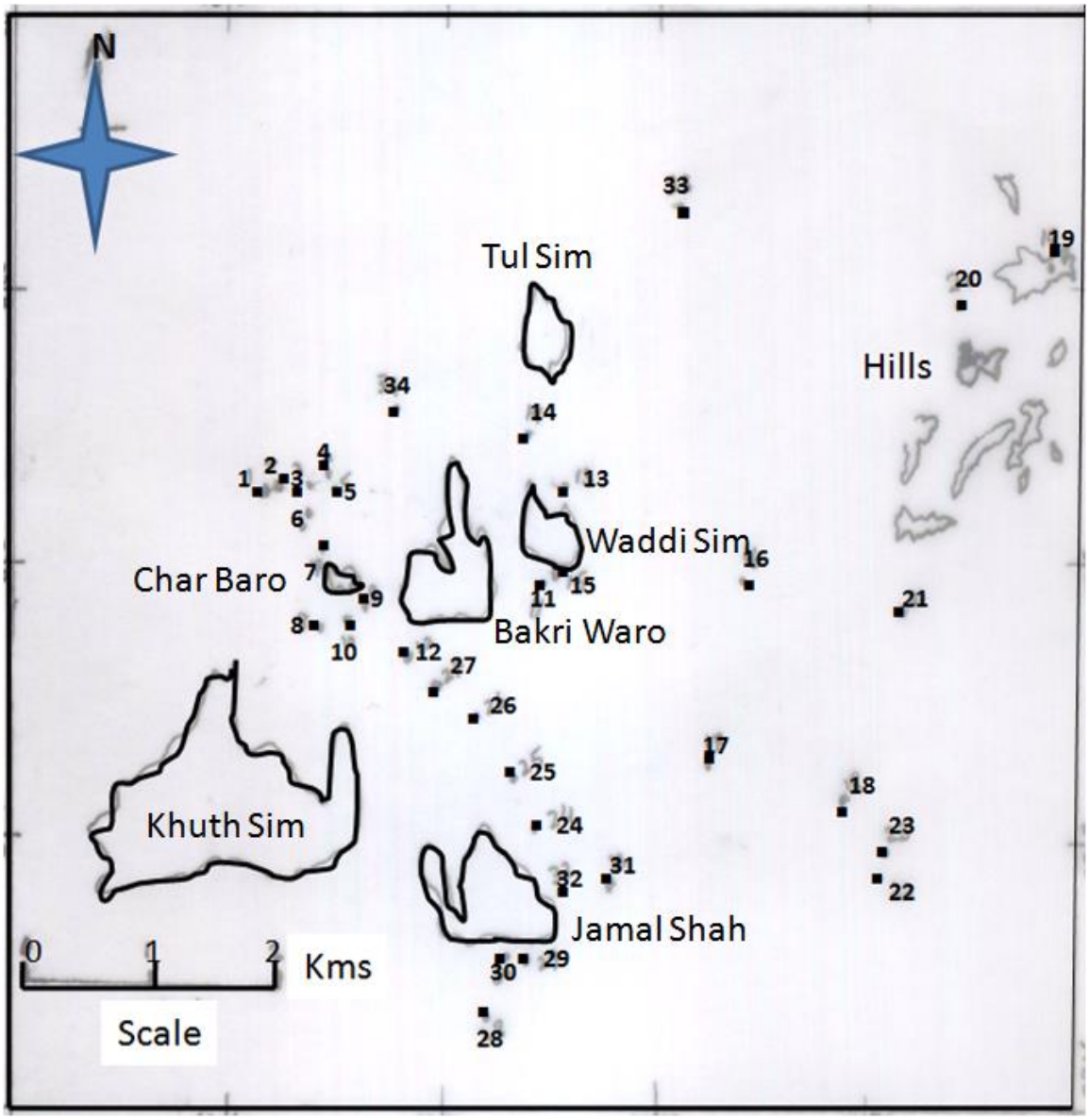

Figure 4: Location map and major Lakes where exploration was carried.

After preliminary analysis of material; it was comprehended that the area under investigation was occupied from Upper Paleolithic period onwards. The graph clearly explains the grater occurrence of the Mesolithic sites and less presence of the Hakra to Indus period that might raise the question to the reader for reduction in number of

settlement. This is because the Mesolithic people had left two types of remains as 'home bases' and the 'hunt area'; this type of Mesolithic strategy is discussed later in this period. Nevertheless, the settlement occurrence indicates the resource use and the mobility pattern. There are no any remains of upper Paleolithic near the Indus plains just to assume that Upper Paleolithic people ever visited the adjacent Indus plains along the western side of desert. But theoretically, if the site catchments model applied; then the western Indus plain is located within the circle of five kilometers range from where the upper Paleolithic sites are located. On the contrary, Mesolithic sites are situated very close to the Indus plain thus the dweller must have reached the plains, used the available resources and roamed densely over the given region around.

Hakra period people were happy camper and did not have permanent house bases; like the Kot Dijian and Indus period that established permanent houses and had access to all type of resources within their catchments area and beyond. Another point to understand in this discussion is about the analytical category of 'other period' sites. This category actually combine all subsequent periods from late Indus onwards which certainly needs further research to have the complete understanding of the settlement pattern within this region. Finally the pie-graph describes the percentage of occurrence of sites within each cluster of the research area.

UPPER PALEOLITHIC SETTLEMENTS

From northern part of Rohri Hills several Paleolithic sites have been discovered (Allchin, *et al* 1978; Mallah 2001; Mallah *et al* 2002; Shaikh *et al* 2008-2009). Constant research has increased the number of sites in the Rohri Hills only where ten workshops were recorded at different locations within the Rohri Hills (Allchin *et al* 1978; Negrino and Kazi 1996); **[3].** This data was added with documentation in northern portions of Rohri hills at Bypass area(Shaikh *at el* 2008/2009); where 13 workshops were recorded on only one hill and the astonishing number of 95 workshops was recorded only in the Vessar valley (Shaikh *et al* 2002- 2003). It is noticed that people moved to the adjacent Thar Desert area and the documentation of five sites showed the intensity of activities of upper Paleolithic period. Archaeologically, this data set has convincing clues about the cumulative clustering and dispersal of upper Paleolithic people towards the rich resource niches of Thar Desert [**4**].

Around the lakes named as EL2, EL6, JSE1, JSN1, and JSS; the cultural objects like end scraper, side scraper, discoid scraper, large flake, blade and core; all associated with hunting, cutting, scraping and digging; suggested that the Upper Paleolithic people apparently started dispersing into desert for hunting for limited trip(s) and then may have returned back to their home bases in Rohri Hills (if any). The Vessar valley confirms the extension and utilization of Desert resources up to the alluvial plains of Indus in west. How long this activity was continued – there is no confirmation; the presence of no any

particular workshop or a prominent habitation site is yet documented in the survey area. It seems that the culture might have still in formative phase. However, the presence forthcoming culturally advanced period remains; we call the Mesolithic was present in area.

MESOLITHIC PERIOD SETTLEMENTS

Following the universal definition and identification of the Mesolithic period through the presence and absence of the micro and geometric stone tools type; numerous sites only from Thar Desert were recorded (Biagi and Vessar 1998/99). The Mesolithic sites also occurred in southern Sindh along Karachi coastal area (Biagi 2006) and southern Baluchistan near Taung Valley (Mallah 2007). The sites in Thar have represented variation in presence and concentration of artifact assemblage. From all these sites traditional style of stone tools in all verities have been recorded. There technological studies, analysis of their shapes, sizes and natures complete flora and fauna of the sites and area around them can be understood. Huge diversity of cultural objects and others were present in nearby area as well. Some fragments of these objects also referred to their function as hunting tools, in which perhaps the ancient behavior of 'watch and hunt' was basic motive. Similar interpretation of hunting behavior of inhabitants living during that period and tools which they were using for hunting has been made in another work. (Shaikh et al 2002-2003).

If Mesolithic phase of this region is examined within South Asian context horizontally; some features are needed to be considered such a) upper Paleolithic stone objects are not distinctive in their existence; b) Similar type of material was also recorded in Mehargarh, Balochistan and from some sites in Rajasthan. For more information, one can go through the works of Indus scholars. (Misra 1973, Possehl 2002; 32).

EARLY INDUS PHASE 1: HAKRA PERIOD SETTLEMENT

The vertical examination of distinctive artifact assemblage from eight sites was associated with Hakra period which increase total number to the thirteen by adding five previously reported settlements in Thar Desert (Shaikh *et al* 2001, Mallah 2000). This is newly emerging cultural phase dated 38000 to 32000 BCE representing material similarities throughout the Indus valley. The communities were settled in India and Pakistan. The evidences have been traced from Binjor in India (Mughal 2006; 29). In Pakistan, several region show the presence such as: Gomal Plain at Sher Khan Tarakai (Khan et al 2002); in Ravi plains at Harappa (Kenoyer 2003) Baluchistan highlands (Jarrige 1991, Possehl 2002,) Cholistan (Mughal 1997) and in Thar Desert (Mallah 2000). However, the pattern of emergence is somehow variable in regional setup from two perspectives (a) the nature of sites and (b) cultural sequence within Baluchistan, Cholistan and Thar. In Baluchistan this phase has emerged continuing from earlier period showing transition towards new cultural traits of settled life, for instance, the Togau

Phase 4300-3800 BC (Possehl 200). In Cholistan, this shows an independent primary occupation without and prior cultural sequencing and great concentration of settlements occurred with degree of permanence and socio-economic complexity (Mughal 1997). In Thar Desert, the Hakra material appeared either with Mesolithic type artifacts or Kot Dijian type material on the surface of sand dunes and only one single period village site with autonomous existence was recorded (Mallah 2000).

Whatever were the basis of emergence of this new cultural phase; a comprehensive transition in shape of sedentism, food production and cultural material produced through involvement of technology started which ultimately resulted in great intensity, in pervasive interaction, exchange and exploitation of raw material resources. The exploration and utilization of new resources, like shell, semi-precious stone, and clay were commonly exercised for manufacturing a series of cultural items for daily use, ritual and commercial purposes.

In material culture, various sizes and kinds of pottery objects, different shapes of chert stone tools, shell bangles, bangles, TC beads and figurines of different animals were present. The pottery was both handmade and wheel turned; objects were decorated in different incised and appliqué designs and with various colors like black, red, and cream. Working with clay requires a systematic procedure; the important steps are (a) use the proper clay and its plastic nature; (b) manufacture techniques of an object formation including design of pot; (c) applying colorants and creating decorations and (f) firing techniques. All steps are interlinked and show the organization and the planning of craftsman which requires tools, labor, skill, and infrastructure to complete the process. This was one of the best cultural achievements of humankind which is still in use during the microchip digital era.

The Hakra was the first cultural phase of Indus civilization in which a degree of social complexity was first perceived; a three tire settlement hierarchy consisting towns, villages, and campsites appeared in Cholistan out of 95 settlements, at least four large towns occupied 20-30 hectares of total size, appeared and the majority of which were campsites (Mughal 19970. This settlement hierarchy did not appear everywhere, for instance in Thar Desert a two tiers of settlement hierarchy was recorded with the majority of sites campsites [**5**]. Artifacts were found either mixed with Mesolithic micro-geometric stone or the Kot Dijian period material mainly the pottery. This phenomenon suggests that Hakra period people of Thar Desert occupied same spot and exploited similar resource niches as of their ancestors and it was followed by the Kot Dijian period people.

To sum up, the discovery of eight spot having Hakra phase material demonstrate the transition from Mesolithic hunting gathering way of life into and pastoralist way of life which ended with sedentary villages of the Kot Dijian period. This transitory Hakra

period overlapped the Neolithic period in Thar Desert regions particularly, if not anywhere else throughout the Indus Valley.

EARLY INDUS PHASE II : KOT DIJIAN SETTLEMENTS

At this stage of research, at least 139 sites are reported; among which, 122 previously reported (Possehl 2002:44, Mallah 2000, Shaikh *et al* 2001, 2002, Biagi and Vessar 1998/99) **[6]**. The seventeen newly discovered sites were different in their nature and existence. There is no any mounded deposition but the cultural material is lying on the surface of mounds in thick concentration denoting the concept of a village consisting of typical thatch houses. The *Saccharum bengalense* Rtz. (*sarr* or *kana* from *Boro*) was used at Kot Diji Site (Madella 1995: 93-108). This type of grass is very important as it provides fodder for cattle, buffalos and the whole plant is commercially used for producing *Pattar* & *Trooho* (roof cover) *Moro* (chair/ table), *Kharo* (Basket), *Chajj* (winnower) and *Wann* (ropes). The whole plant can be used for roof cover and walls of house. The houses made of *Sarr* combined with other are very strong and compatible to every season especially during hot summers and severe monsoon. The thatch houses after construction require less maintenance and are good for several years (personal observations). Archaeologically, these types of hoses will never produce a huge mound after destruction specifically in sandy regions. There will be only thick deposition of the cultural material as observed through present research. At many sites a thick crust of the pottery as well as huge quantity of identical material and artifacts have been recovered.

From these archaeological evidences, we can determine and reconstruct economical condition of those people which primarily consisted of herding because there is no suitable land in immediate vicinity for cultivation – the Indus plains are more than three kilometers away and this distance does not favor for cultivation because the cultivated crop need close and intensive care therefore, the people of Kot Dijian period in this area presumably preferred herding.

The settlement system consisted on three tiers hierarchy in which the Kot Dijian site was perhaps at the top of tier where every needed thing was available. This way they maintained interaction networks system through which they received exotic items specifically, pottery, terracotta bangles, stone beads, shell and copper items. During site documentation neither hearths nor kilns were found. However, the presence of core, hammer, stone, and flaking debris indicated the manufacturing of stone tools. The majority of Kot Dijian sites contained geometric which are in fact associated with the previous period. (i.e. Mesolithic/ Hakra) but simultaneously enlighten us about the stone tool manufacturing technology which was not new to the Kot Dijian people who had manufactured various type of implements from locally available raw material resources of Rohri Hills. The tools manufactured within Kot Dijian settlements were larger and heavier as compared with micro tools of the earlier periods. One thing can be assumed at this point, that they might have exchanged the chert tool production (of course other

perishable stuff as well) with those communities who lived in the Indus Basin and beyond, where chert was considered as an exotic commodity. Trace element analysis would rectify this assumption scientifically.

Nonetheless, Kot Dijian settlements around the lakes of Dubi desert area on the one hand, were at peripheral points for consumption of goods that were produced at then existing towns within Indus valley. This peripheral consumption through trade/exchange system was one of the key factors for existence of Indus period urban centers which developed gradually within Indus Basin proper and beyond.

INDUS PERIOD SETTLEMENT

The Indus period artifact occurred on at least 12 sites demonstrating cultural connections from Kot Diji an to Indus period.

In panoramic arena the Indus period is amalgamation of cultural phases that finally appeared slowly and indigenously as a gigantic civilization spread over huge geographic region. Several cities developed connecting and exploiting their immediate and peripheral resources. In this region the populous city of Mohenjo Daro was central to all that had its own infrastructure and maintained connections with all other cities, towns, and villages scattered within immediate zones and peripheries. Thar comprised on the eastern periphery of Mohenjo Daro, where Rohri Hills chert Industry was also located wherefrom the various forms of raw and finished stone goods along with perishable items were traded with cities (Mallah 2000). The economy of Thar including Dubi region settlement was historically dependent on animal husbandry and production of perishable items like ropes, leather, antler, slat, bags, etc. (Mallah 2000;227). During present investigation no indication of craft activity is yet noticed, however, some Indus period towns were situated amid the Thar desert along ancient Channel of Hakra river including Ghob, Bhir, Deariro, Doonger Magrio and Oddi Bhit (Mallah 2000, Shaikh *et al* 2001). At these towns, slag and kilns indicate some sort of pyrotechnical craft activities. The pottery including dish-on-stand and terracotta cakes, bangles, white disc beads, shell bangles and chert blades were collected; many of them were brought here from elsewhere. The existence of exotic artifacts, even though sporadic indicated their connection and interaction networks with the neighboring city centers like Kot Diji and Lakhan-Jo-Daro in North; Taloorji Bhit and Chanhu Daro in South and Southwest and Mohenjo-Daro in west.

These links could be scientifically proved after electronic trace element analysis which would also provide information on what was coming from where and which city center was dominating on the interaction network system. However, the settlements around the lakes of Dubi were more linked with major cities and town located in the Indus Plains. Whatever the situation was the sand dunes of Thar Desert played pivotal role in growth and development of urbanism in Indus valley.

OTHER PERIOD SETTLEMENT

A least from 26 sites artifacts are recorded (as shown in table 2) whose chronological association is not yet confirmed. Thus, this category combines all cultural periods from Painted Gray Ware to Late historic 1300 to 1800 century ACE. There is a huge settlement like Tali where the ground surface is literally covered with artifacts mainly pottery. Hearths, pottery molds, weight and a coin is collected. Probably, the pottery was produced here and sold elsewhere. After proper analysis, the chronology of these 26 sites will be produced and further description will be established. However, the presence of such type sites indicated that region was continuously occupied up until recent historic times.

SIGNIFICANCE OF CULTURAL ASSEMBLAGE

As mentioned above that the sites reported from area of investigation mainly consist of surface scatter with great variation in artifact type and density. The primary examination of cultural objects has indicated a good sequence of utilization of resources and establishing the interaction system. Taking account of upper Paleolithic people who used the raw material available in immediate vicinity i.e. Rohri Hills. During this period huge workshops were established in Rohri Hills and Vessar valley where they produce several type of different artifacts. However, the sites in Dubi area does not represent diverse artifact repertoire; only core, flake and some scraper types were collected.

It was the Mesolithic period when, not only mechanical zenith was perceived but a series of artifacts were produced for different utility purposes including hunting, cutting and scraping. Workshops were discovered strategically located surrounding the food procurement spots. The triangles, lunates, trapezes, halfters, tanged / leaf shape arrowheads were common part of cultural assemblage. Once, this assemblage is morphologically compared with other communities of Mesolithic period living in India and Pakistan; this show great similarity, however, the other factors like mobility and interaction may not or may have been limited and restricted only around the lakes of Dubi.

A significant change was seen during the Hakra period when there was less reliance on those micro-geometric tool and greater use of pottery though very simple specifically in the Dubi region. The Hakra people were exceptionally mobile with nomadic style of life and kept simple and few objects. They lived short period at any given spot and continued their movement. The potsherds found were plain, rough, and handmade. Only one type of potsherd having with cloth impressions from inside needs serious attention about its manufacturing and utility.

Kot Dijian period assemblage was again rich with tremendous variety of exotic items. The pottery was built in various form, sizes and decorations. Several exotic items like steatite beads, black stone beads, bits of lapis lazuli stone, terracotta figurines,

bangles etc. all suggest the Kot Dijian people of Dubi area were part of overall phenomenon. One fragment of a steatite piece with similar decoration as on the steatite button seal has been reported from Harappa (Kenoyer 2006:23 fig.: 5:7).

The Indus period people did not build the great permanent burnt brick houses but lived in simply in thatch houses for which material was locally available. They did not manufacture any item (may be some perishables from animal by-products and plant by products like *wann* etc.) thus their cultural assemblage remained limited but as similar as has been with the communities living in cities. These people did not practice agriculture and had greater reliance on the pastoralist style.

The people of later periods for example Tali site again show tremendous richness in cultural assemblage. Pottery was produced within settlement in various form, sizes and decorations, weights in round/ hemispherical shape in various sized and categories, coins, shell bangles were part of their material culture.

SUMMARY

The preliminary examination of cultural objects indicated that majority of settlements were reoccupied for several times (**Table: 2**). Making a general chronological chart of the given region, the settlements are associated with Upper Paleolithic, Mesolithic to onwards until late historic period even the region is still visited by contemporary Baloch nomadic groups whose origin can be traced somewhere in the upland hilly region of Baluchistan.

The presence of Upper Paleolithic sites has stretched chronological extent of the Thar region. The number and distribution of sites suggests that Upper Paleolithic people started occupying desert region and consequently, during Mesolithic period further expansion and intensity occurred in which the lake shores were strategically occupied for specific reason of hunting animals and birds. This occupational intensity supports G. Singh's (1971) "four phase scheme of climatic condition". If applied here, then it was probably the time when lakes of Thar Desert including these six lakes of Dubi were created through high flood from Indus River and monsoon rain feed rivulets from Rohri Hills. On the other hand, the meager nature of Hakra period artifact repertoire collected from the settlements located in area with abundant subsistence resource area with favorable climatic conditions; raises the question about cultural development and stability. The horizontal expansion of Upper Paleolithic peoples into desert and towards plains was a vertical tendency on the way to cultural growth and change. Later on; it was time when old traditions changed into Mesolithic with reduction in size of tools and an addition of a new item i.e. handmade grit mixed pottery and provided path to subsequent periods.

During Kot Dijian period a vertical step was taken as many villages were established permanently and continued into Indus period with preference of Indus Plains for permanent settlements. The collected cultural objects like shell bangles, micro white

beads, copper pieces and valued pottery object i.e. dish-on-stand show horizontal intensity of cultural traditions and their use and presence by smaller rural communities indicated that the people living around the lakes must have shared the pervasive interaction system. The presence of subsequent period settlements and the regular seasonal visits of the contemporary nomads suggest archaeological vitality of resources and reflect ancient behavior of the settlers. Finally, the interpretation and conclusion provided in this paper is subject to future confirmation as research work progress.

NOTES

1. Administratively these lakes are located in the Taluka Nara of the district Khairpur but the Dubi village is very close to these lakes thus the local administrative borders are mainly ignored for the easy approach to the investigation area.

2. The date of this river channel is yet to be determined but it is flowing nearby ancient settlements like Pirsarihyo, Kot Diji of Kot Dijian period and Taloor ji Bhit Indus period site towards medieval/historic period site of Mansurah.

3. Allchin et al (1978) reported six workshops; one near Rohri, two at Chancha Balouch (Chandia Balouch) and three at Nawab Panjabi. Negrino and Kazi 1996:32 mention four workshops between the Ziarat Pir Shahban and Shiraz area.

4. The Vessar Valley is located in Southwest of Rohri hills where the height of hills diminishes and appear as low-lying hills at the bottom of sand dunes.

5. The Description of campsites is totally different in Cholistan and Thar. Rafique Mughal while survey in Cholistan defines camps as thick concentration of potsherds present on the surface. During the survey of Thar three types of surface scatters were recorded based on the concentration of artifacts; the campsites were observed having very thin surface scatters (see Mallah 2003 for further details).

6. Possehl reports total number 111 and Shaikh et al (2001-2) brings up seven more sites during the recent research. Biagi and Vessar (1998/99) add four more sites from Thar. This makes total number 142. However, this number will continuously change because of the ongoing research.

REFERENCES

Agrawal. (1982). The Archaeology of India. London; Curzon Press.

Allchin, B. and R. Allchin (1982). The Rise of Civilization in India and Pakistan. London: Cambridge University Press.

Allchin, B., Andrew Goudie, Karunakara Hegde (1978). The Prehistory and Palaeogeography of the Great Indian Desert. Academic Press.

Biagi, Paolo and M. M. Kazi. (1995). Mesolithic site near Thari in the Thar Desert (Sindh, Pakistan). Ancient Sindh. Vol. 2.

Biagi, Paolo and Sheikh (1998-99). Preliminary Report of the Survey and Excavation Carried out by Members of the "Joint Rohri Hills Project" in January-February 2000. Ancient Sindh. Vol. 5.

Biagi, Paolo and G.M. Vessar (1998-99). An Archaeological Survey in the Neighbourhood of Thari in the Thar Desert (Sindh, Pakistan). Ancient Sindh. Vol. 5.

Jarrige, Jean-Francois. (1991). Mehrgarh: Its Place in the Development of Ancient Cultures in Pakistan. In Forgotten Cities on the Indus. Mainz, Germany.

Jochim, Michael. (2006). Regional Perspective on Early Mesolithic Land use in Southewestern Germany. Journal of Anthropological Archaeology 25, pp 204–212

Khan, Farid, J.R. Knox, K.D. Thomas. (2000). Settlement and settlement systems in the Southwest Gomal Plain in the Proto-Historic Period. Journal of Asian Civilizations. Vol. XXIII, No.2.

Kenoyer, J.M. (2003). Regional Cultures and Chronologies of the Indus Civilization: New Perspective from Harappa. A paper presented in an International Conference on Pakistan Archaeology held at SALU KHp.

Kenoyer, J.M. (2006). The Origin, Context, and Function of Indus Script: Recent Insights from Harappa. In, Proceedings of the Pre-symposium of RIHN and 7th ESCA Harvard-Kyoto Roundtable. Edited by Osada Toshiki and Hase Noriko.

Kenoyer J. M. and Richard H. Meadow n.d. Fifty-five Years of Archaeological Research in Pakistan: The Prehistoric Periods. (un published).

Lechevallier, Monique. (1991). Stone-Working in Mehrgarh. Forgotten Cities on the Indus: Early civilization in Pakistan from the 8th to the 2nd Millennium BC. Mainz, Germany.

Mallah, Qasid Hussain. (2001). "Role of Rohri Hills and Thar Desert in the Development of Civilization in Indus Valley: New Research". In, Indus Valley Civilization. Ministry of Minorities, Culture, Sports, Tourism and Youth Affairs, Islamabad. International Colloquium on Indus Valley Civilization at Islamabad.

Mallah, Qasid Hussain, Nilofer Shaikh, and G. M. Veesar. (2002). Complementary Role of the Rohri Hills and the Thar Desert in the Development of Indus Valley Civilization: New Research. In Asia pacific Perspective an electronic journal. Volume 11(No1). Publication of the University of San Francisco Center for the Pacific Rim.

Mallah, Qasid Hussain (2000) Archaeology and Ethno-archaeology of Thar Desert. Ph.D., University of Wisconsin- Madison USA. Unpublished.

Mallah, Qasid Hussain (2002) "Spatial Analysis of Campsites from Thar Desert of Sindh Pakistan". Journal of Asian Civilizations, Vol. XXV, No.2 Islamabad. PP: 52-68.

Mallah, Q.H. Mumtaz H. Talpur. (2011). Spatial Analysis of the Contemporary Settlement Pattern in the Thar Desert: An Ethnoarchaeological Investigation. Pakistan Heritage Vol.3. pp 81-88.

Mallah, Qasid Hussain. (2017). Salvage Excavation of Lakhan-Jo-Daro. A excavation project by Antiquity Department of Government of Sindh (Unpublished)

Mallah Q.H. (2019). Excavation Report of Nuhato: An Indus Valley Civilization Settlement. In Sindh Antiquities Biannual JournalVol.No.5: 5-67. Directorate General Antiquities and Archaeology Culture, Tourism and Antiquities Department Government of Sindh.

Meadow, Richard. (1989). Continuity and change in South Asian Agriculture and Animal Husbandry: the Paleobiological Evidence. Old Problems and New Perspectives in the Archaeology of South Asia. Wisconsin Archaeological Reports, Vol. 2: pp64.

Misra, V.N. (1971). Two Microlithic Sites in Rajasthan- a preliminary investigation. The eastern Anthropologist 24 (3):237-88.

--- (1973). Bagor- a Late Mesolithic Settlement in North-West India. World Archaeology 5 (1): 92-110.

Mughal, M. Rafique. (1997). Ancient Cholistan: Archaeology and Architecture. Ferozsons (Pvt.) Ltd.

Mughal, M. Rafique. (2006). The Hakra cultural Horizon in the Greater Indus Valley. In, Proceedings of the Pre-symposium of RIHN and 7th ESCA Harvard-Kyoto Roundtable. Edited by Osada Toshiki and Hase Noriko.

Mughal, M. Rafique (1991). The Cultural Patterns of Ancient Pakistan and Neighbouring Regions circa 7000· 1500 B.C. In Pakistan Archaeology, No.26: 218-237.

Negrino, F. M.M. Kazi (1996). The Paleolithic Industries of the Rohri Hills (Sindh, Pakistan). Ancient Sindh. Vol. 3.

Petrie, Cameron A., Ravindra N. Singh, Jennifer Bates and others. (2017). Adaptation to Variable Environments, Resilience to Climate Change: Investigating Land, Water and Settlement in Indus Northwest India. Current Anthropology Volume 58, Number 1.

Renfrew, Colin and Paul Bhan. (1996). Archaeology: theories, Methods and Practice (Second Edition). Thames and Hudson Ltd., London.

Shaffer, Jim G. and Diane A. Lichtenstein. (1989).: Ethnicity and Change in the Indus Valley Cultural Tradition. Old Problems and New Perspectives in the Archaeology of South Asia. Wisconsin Archaeological Reports, Vol. 2: 117-126.

Shaikh, Nilofer, G.M. Vessar, and Qasid H. Mallah. (2001). The Thar Desert: An archaeological and Ethnoarchaeological Survey. Second Year Report; submitted in the Department of Archaeology, Shah Abdul Latif University Khairpur. Un-published.

Shaikh, Nilofer, G.M. Vessar, and Qasid H. Mallah. (2002). The Thar Desert: An archaeological and Ethnoarchaeological Survey. Second Year Report; submitted in the Department of Archaeology, Shah Abdul Latif University Khairpur. Un-published.

Shaikh, Nilofer; Veesar, G.M and Mallah, Q.H. (2004-2005). "The Excavation of Indus Period Site Lakahan-Jo-Daro 2006". Ancient Sindh Volume 8, pp7-194.

Shaikh, Nilofer; Mallah, Q.H. Veesar, G.M. (2008-2009). Paleolithic Discoveries in Bypass Rohri Hills of Sindh Pakistan. Ancient Sindh Volume 10, pp7-26

Singh, G. (1971). The Indus Valley culture (seen in the context of post-glacial climate and ecological studies in north-west India). Archaeology and Physical Anthropology in Oceania 6: 177-189.