

Present State of Research ON the Indus Valley Civilization

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A GREAT deal of research has been done on various aspects of the Indus Civilization since its discovery fifty years ago, but much remains to be accomplished to enhance our understanding of this highly developed, fully urbanized and most extensive civilization of South Asia. During the last fifty years, most research in the Indus Valley proper, and the adjoining Indian territory, was oriented towards further elaboration of certain specific aspects of the Indus Civilization. With new discoveries, the interest of scholars has been further intensified and they are now offering fresh interpretations of both old and new data, and are asking many new questions about cultural and chronological reconstructions. In this process of healthy debate, we may agree or disagree with any or none of the views expressed, but it is all indicative of the world-wide interest which the Indus Civilization has aroused. This paper is intended to review past developments in research which have contributed to our understanding of this Civilization in relation to its origin, growth and decline, and also its geographical extent within and beyond the Indus river valley proper, during the third and second millennia B.C.

The initial impact of the discovery of identical remains of material culture at two widely separated and very large settlements, Harappa and Moenjodaro, was considerable

and immediately led to prolonged excavations at Moenjodaro between 1922 and 1931, first under the general supervision of Sir John Marshall, and then by E.J.H. Mackay.¹ It goes to the credit of a succession of early excavators of the old Archaeological Survey of British India, to uncover a considerable part of the city and to collect a wide range of material equipment. The emphasis has been, understandably, to expose the city plan and recover as many antiquities as possible to enable the excavators to present a fairly good picture of the Civilization's material aspect. The same trend was witnessed at Harappa where, between 1921 and 1937, D.R. Sahni, M.S. Vats and K.N. Sastri uncovered the city plan with a citadel, recalling, in general lay-out, that of Moenjodaro.² However, some specific details of the buildings and, especially, the stratigraphic position of artifacts, necessary for understanding the growth of the cities, were left out by early excavators. In 1946, Sir Mortimer Wheeler added new dimensions to the defensive aspect of the Indus Civilization by excavating the huge mud-brick fortification at Harappa.³ The search for a similar feature led him to excavate at Moenjodaro in 1950, where he and his Pakistani colleagues also tried to reach the waterlogged lower levels near the citadel mound⁴ (PL. I). But the problem of the high water-level frustrated all attempts to plumb the earliest horizons. During the excavations of

¹ Sir John Marshall, *Moenjodaro and the Indus Civilization*, 3 vols. (London, 1931); and E.J.H. Mackay, *Further Excavations at Moenjodaro*, 2 vols. (Delhi, 1938). The spellings of MOENJODARO as written in this paper are currently being followed in Pakistan.

² M.S. Vats, *Excavations at Harappa*, 2 vols. (Calcutta, 1940).

³ R.E.M. Wheeler, 'Harappa 1946: The Defence and Cemetery R 37', *Ancient India* (Delhi, 1947), no. 3, pp. 59-130.

⁴ Full report is not yet published. Preliminary account by Leslie Alcock, in *Pakistan Quarterly* (Karachi, 1952), vol. 2 (1), pp. 12-16.

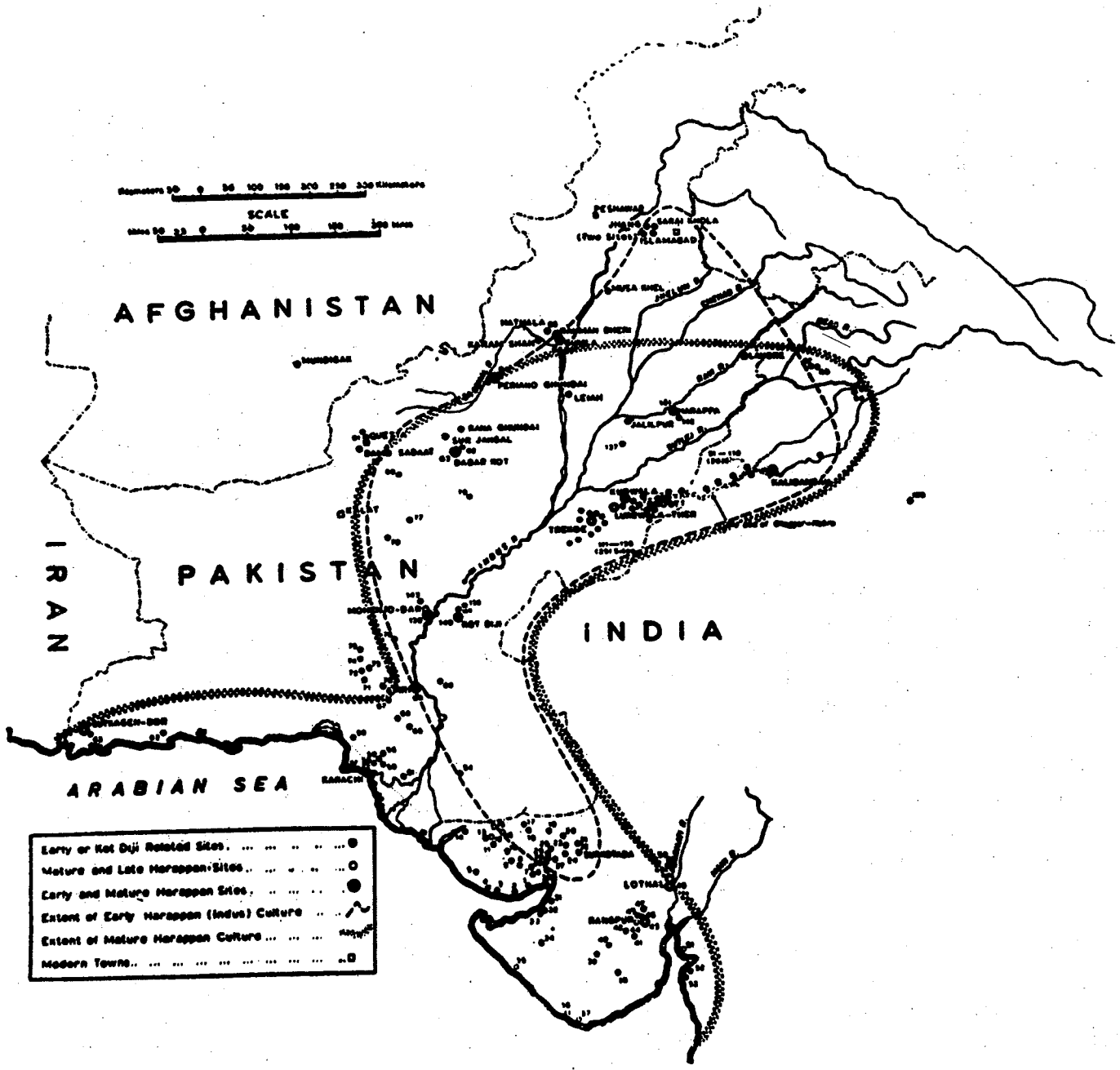


Fig. 1. The Indus Civilization during its mature and later periods covered almost the same area which was previously dominated by the early cultures (Amri, Kot Diji and Sothi) of the late fourth and early third millennia B. C.

1964, Dr. George F. Dales carried out three test borings at the site PL. 1-b, which indicated signs of an ancient habitation 39 feet below the present surface on which the existing mound, 35 to 40 feet high, stands.⁵ Thus, we are made aware of the fact that the excavated remains at Moenjodaro represent about half the total history of its growth. Unfortunately, the gradually rising level of the ground water is progressively complicating our efforts to probe the early horizons of Moenjodaro.⁶

When large-scale excavations were in progress at Moenjodaro and Harappa, N.G. Majumdar located a number of settlements contemporary with Moenjodaro, and even of an earlier date, during his explorations in 1927-31 along the west bank of the Indus in Sind.⁷ Later, in 1942, numerous settlements of the Indus or Harappan culture were recorded by Sir Aurel Stein along the dried bed of the Ghaggar-Hakra river in the central Indus Valley near Bahawalpur.⁸ The number of Harappan sites in the Indian territory, as known in 1947, was few. The known sites, including the major ones, were mostly located in Pakistan, a situation which prompted Indian archaeologists to carry out an intensive search along the borders of Pakistan. As a result, an impressive number of settlements, contemporary with Harappa and

Moenjodaro and of a later period, have been mapped in Rajasthan and Gujrat.⁹ Three principal sites—namely, Kalibangan, Lothal and Rangpur—have also been subjected to systematic excavations for nearly a decade.¹⁰ Recently (1972), Mohammad Sharif of Pakistan's Department of Archaeology has recorded a large Harappan settlement (No. 54), known as Gharo Bhro, in south-eastern Sind, located on the route which was followed by the people of the Indus Civilization on their migration to Kutch and Saurashtra. Today, the northernmost limit of the Indus Civilization is not Rupar only, but extends up to the Gomal Valley, located at the eastern foot of the Sulaiman range where Dr. A.H. Dani has recorded a group of nine prehistoric sites, among which two sites, Gumla and Rahman Dheri, seem to be very important.¹¹

The settlement pattern of the Indus Civilization has not yet received serious attention. As the distribution of the Harappan sites reveals, the Indus Civilization was confined essentially to the vast plain of the *Greater Indus Valley*—the Indus and Ghaggar-Hakra river systems—and along the coast of the Arabian Sea. The Indus culture does not seem to have penetrated deeply into the Baluchistan hills. All the known sites, including those identified by the present

5 George F. Dales, 'New Investigations at Moenjodaro', *Archaeology* (New York, 1965), vol 18(2), pp. 145-150; 'Civilization and Floods in the Indus Valley', *Expedition* (Philadelphia, 1965), vol. 7(4), pp. 10-19, and 'Re-opening Moenjodaro Excavations', *Illustrated London News*, May 29, 1965.

6 Various schemes for lowering the Water-table were prepared and many Unesco experts have studied the problem. For technical reports, see *Preservation of the Monument of Moenjodaro, Pakistan* (Paris, 1964), Unesco; F.A. Khan, *Preservation of Archaeological Remains at Moenjodaro* (Karachi, 1970), Deptt. of Archaeology; and *Master Plan for the Preservation of Moenjodaro* (Karachi, 1972), Deptt. of Archaeology. Document No. 9-4-1972-Arch.

7 N.G. Majumdar, *Explorations in Sind*, *Memoirs of the Archaeological Survey of India*, No. 48 (Delhi, 1934); K. Deva and E.D. McCown, 'Further Exploration in Sind: 1938', *Ancient India*, No. 5 (Delhi, 1949), pp. 12-30.

8 A Stein, 'A Survey of Ancient Sites Along the "Lost"

Sarasvati River', *Geographical Journal* (1942), Vol. 99 (4), pp. 173-182. Some sites were revisited by Henry Field in 1955, 'An Anthropological Reconnaissance in West Pakistan, 1955', *Papers of the Peabody Museum of Archaeology and Ethnology, Harvard University*, Vol. LII (Cambridge, Mass. 1959), pp. 162-177 and 189-192.

9 Reported in *Indian Archaeology: A Review* (New Delhi), 1953 through 1968-69.

10 For preliminary accounts, *ibid*; also in *Illustrated London News*, March 24, 1962; S.R. Rao in *Lalit Kala* (1957), Nos. 3-4, pp. 82-89, and *loc. cit.*, No. 11, pp. 14-30, 1962; *Ancient India* (1963), Nos. 18 and 19, pp. 5-207.

11 Ahmad Hasan Dani, 'Excavations in the Gomal Valley', *Ancient Pakistan (Peshawar)*, 1971, Special Number 5, pp. 22-34 *passim*. The other Harappan sites include, Hisan Dheri, Bud-ki-dherai & Mahra Sharif in the Gomal Valley; Musa Khel, thirteen miles north of Miānwali, and Laiya, north of Dera Ghazi Khan, both sites located east of the Indus.

author in 1972, are situated along the hilly borders, at the strategic passes and on the main overland routes, such as the site of Pathani Damb on the Mula river, Gudri in the Bolan Pass, Dabar Kot and Kaonri in the Loralai Valley, located on the ancient line of communication leading to southern Afghanistan, and Periano Ghundai in the Zhob Valley of northern Baluchistan, which joins the Gomal Pass. The evidence shows that the area covered by the Indus Civilization was larger than any of the known civilizations of the ancient world. Starting from the borders of Afghanistan, in northern Baluchistan (at Periano Ghundai), and the Iranian border on the Mekran coast (at Sutkegan-Dor), it extended east and south-east and covered the entire Mekran coast, the Greater Indus Valley and Gujrat. Beyond the vast plain of the Punjab, including that part which was formerly drained by the Ghaggar-Hakra river, remains of the Indus culture have also been found near Delhi in the Ganges-Yamuna *Doab* (Fig. 1). This enormous area could not have been limited to only 144 sites (the number so far securely indentified) and, indeed, claims have been made for the discovery of twenty-seven sites of Harappan affinity in east Punjab and the *Doab* near Saharanpur¹² (Fig. 5).

Lately, Indian, and some Western, archaeologists have been insisting on a change of name, and favour the term 'Harappa Culture' instead of the 'Indus Civilization', since the former follows the site-name where the Civilization was first discovered and recognized. However, despite the discovery of new sites in Indian

territory, an overwhelming number of Harappan sites occurs west of the Ganges-Yamuna *Doab*, in the vast plain drained by the Indus river and its present or former tributaries, which include the dried-up Ghaggar-Hakra river. The Rann of Kutch itself is formed by and lies in the Indus deltaic region. Thus, in addition to the archaeological evidence revealed by the distributional pattern of the Harappan settlements, there are geographical considerations to justify retention of the name, Indus Valley Civilization, which conveys the highly evolved expression of the Harappan culture. The spread of Harappan culture beyond the main Indus Valley should not astonish for, likewise, cultural traits of the Mesopotamian Civilization are found in Khuzistan in south-western Iran, in Saudi Arabia and along the Arabian coast of the Persian Gulf.

The distribution of the Harappan sites, at first sight, gives an impression of an Indus 'Empire', encompassing Pakistan and the western part of modern India. Such an impression would be erroneous because we have yet to determine how many Harappan settlements were contemporary with each other at one specific time. Already, the Harappan remains excavated at several sites, some of which have been dated by radiocarbon tests, have indicated that most sites in the Kutch and Saurashtra area, and those which penetrated into the *Doab*, represent later movements of the people from the Indus Valley proper. It is, however, not yet certain what circumstances forced such a migration and what fate befell the principal

¹² About one hundred sites are listed in R.E.M. Wheeler, *The Indus Civilization*, Third Edition (Cambridge, 1968), pp. 138-140, with further bibliographical references. More Harappan sites, mostly unpublished, in the Bahawalpur-Bikaner area are listed by M.R. Mughal, *The Early Harappan Period in the Greater Indus Valley and Northern Baluchistan* (c. 3000-2400 B.C.), (Ph.D. Dissertation, University of Pennsylvania, 1970) pp. 158-160. In addition to the sites in the Gomal Valley (Dani, *op. cit.*), nearly one hundred sites are reported by Suraj Bhan in the east Punjab & Northern Rajasthan, in D. P. Agrawal and A. Ghosh (eds.) *Radiocarbon and Indian Archaeology* (Bombay, 1973), in press and *New Archaeological*

sites in Lasbela (Karachi, 1973). For listing of sites in Gujarat (Kutch and Saurashtra), S.R. Rao, 'Excavation at Rangpur and other exploration's in Gujrat', *Ancient India*, No. 18-19 (1963), pp. 205-7; and B.M. Pande and K.S. Ramachandran, *Bibliography of the Harappan Culture* (Florida, 1971), pp. 37-42. The listing of sites located in Pakistan is incomplete given in the above publication. Most recently, Abdur Rauf Khan of the Geography Department, University of Karachi, has located several Harappan sites near Karachi, which are reported in *Ancient Settlement in Karachi Region* (Karachi, 1968).

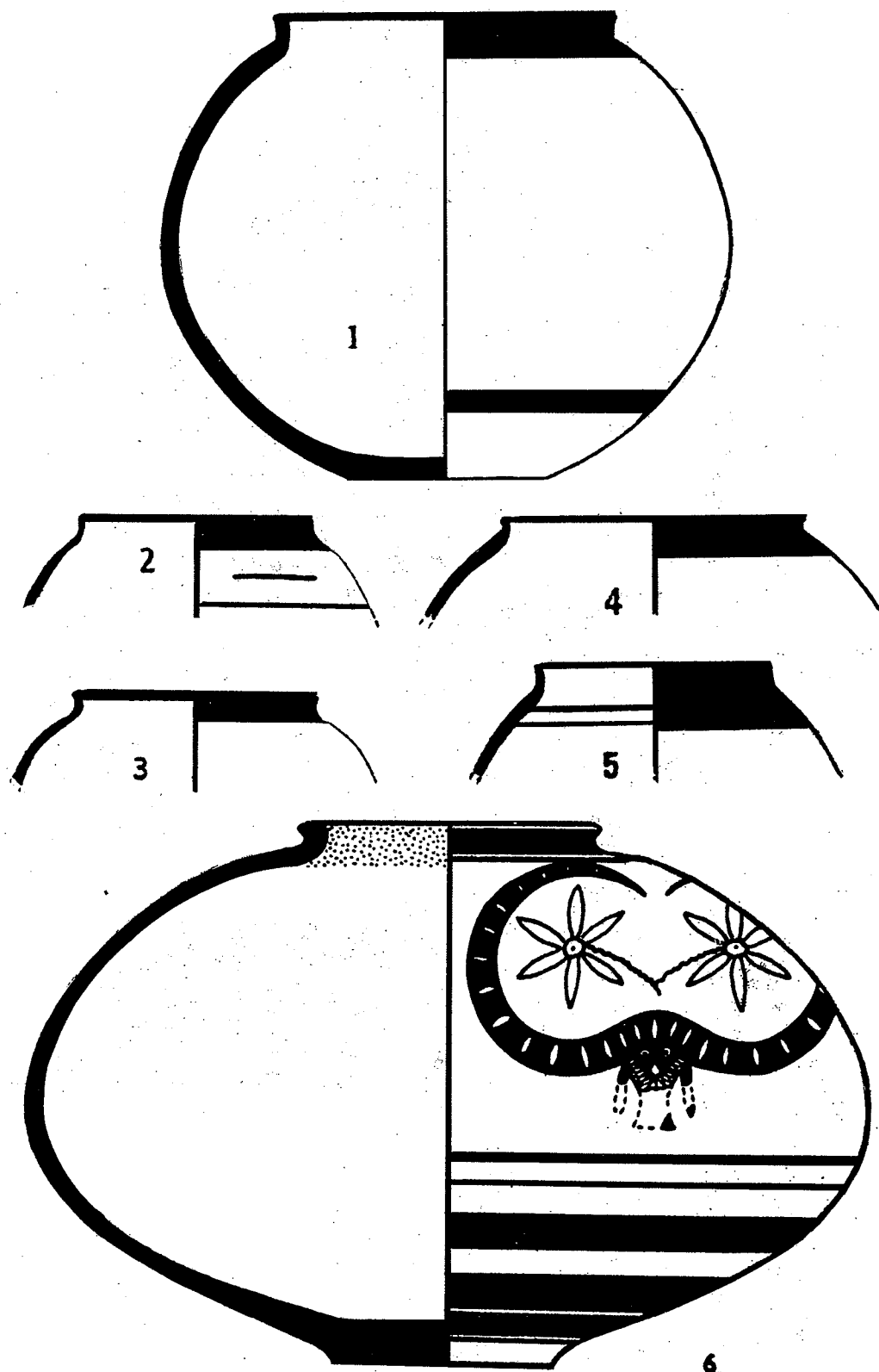
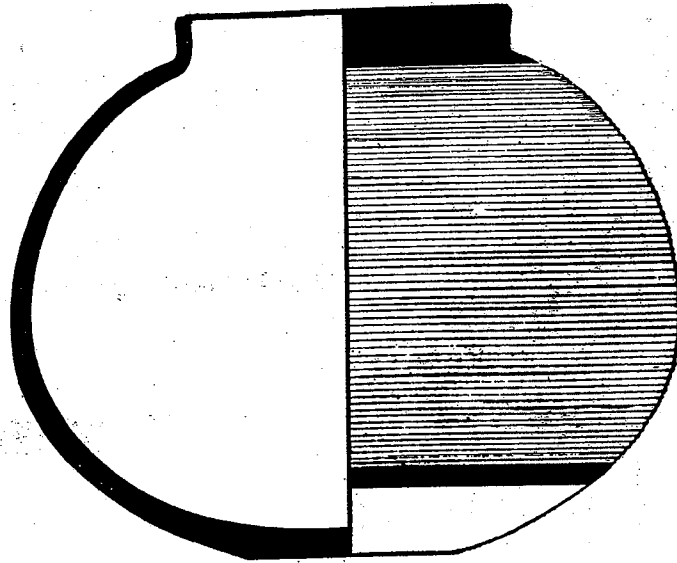
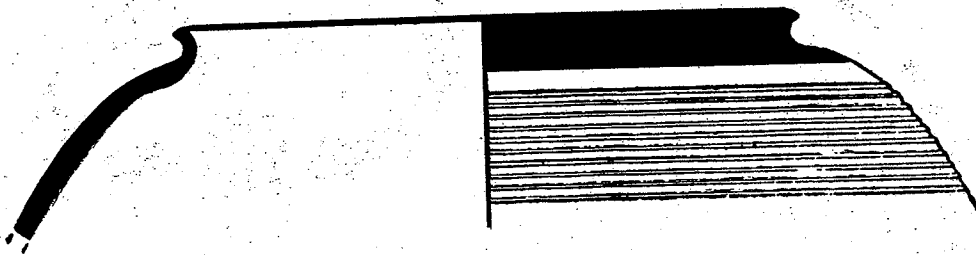


Fig. 2. The Kot Dijian ware of the early third millenium B.C. which occurs at several sites in the Greater Indus Valley. 1, Sarai Kholā-II; 2-3, Harappa (pre-defence levels); 4-6, Kot Diji. The horned motif on human head is identical to those found at Gumla-II & III.



1



2

Fig. 3. Kot Dijian vessel forms with distinctive black painted bands usually on the neck. The external surface is marked with horizontally-drawn grooves, a feature which is peculiar to the Kot Dijian wares of the central and northern Indus Valley and also of the Zhob Valley. 1, Saraj Kholā-II; and 2, pre-defence levels of Harappa (see also Pls. IV & V).

urban centres of Moenjodaro, Harappa and Kalibangan.

The picture of the Indus Civilization, as presented to us through many years of excavation, is that of a highly disciplined society, possessing sufficient economic wealth to mobilize labour and to support full-time craftsmen. It also possessed resources to engage in long-distance trade or exchange of products. The existence of interrelated but highly developed socio-political and religious institutions, as reflected through their well-planned cities, public buildings, large fortifications, granaries and standardization of material equipment through mass production, is evident. Further excavations at the same sites and new investigations at other sites are adding more detail to the picture. At most sites, the Harappan culture is encountered in its mature and developed form. This phenomenon has led to much discussion on the question of its origins.

The question of origins or the beginning of the Indus Civilization, it may be stated, has two aspects: (a) a clear delineation of those cultural materials which are chronologically earlier than the fully developed Harappan culture and a reconstruction of the early cultural phenomenon vis-a-vis the Indus Civilization; (b) reconstruction of processes which may have developed into urbanization. Due to lack of information relevant to this problem, it was popularly thought that, if not the people, at any rate, the idea or inspiration came from the west (i.e. Mesopotamia), where urbanization had taken place earlier than in the Indus Valley. This suggestion was based on certain tangible evidence of contacts between the Indus and Mesopotamian Civilizations. As regards the cultural phenomenon which existed in the Indus Valley prior to urbanization, investig-

ations carried out at a number of early sites during the last fifteen years or so have provided considerable data which, ultimately, might alter our theoretical and conceptual framework regarding the emergence of urbanization in South Asia. It seems necessary to emphasize the relevant information on the fundamental question of the early developmental phase of the Harappan culture and its ultimate growth into full urbanization.

In 1946, a total of 191 potsherds of non-Harappan character were found at Harappa from the pre-defence levels and the building materials of the fortification wall. Among these, 35 came from two clearly stratified layers (26) and (26A) lying under the defence wall, and were thought to represent an occupation by a community having a variant or even alien culture.¹³ This "alien" culture at Harappa, received proper definition and elaboration by Dr. F.A. Khan's excavations at Kot Diji (1955 and 1957), a fortified settlement located on the left bank of the Indus river and opposite Moenjodaro.¹⁴ There, below an occupation containing mature Harappan cultural materials, an accumulation of occupational debris, about 16 feet thick, revealed an abundance of pottery identical to that recovered from the pre-defence layers at Harappa (Figs. 2 and 3, and PL II-6, 7). Although most of the Kot Dijian pottery forms reflect a basic difference in pottery tradition, some forms and decorative designs, such as fish-scale and intersecting circles, and other materials, namely terracotta toy-cart frames, wheels and triangular 'cakes', which are otherwise considered to be the characteristic elements of mature Harappan culture, occurred in the mid-levels of Kot Dijian occupation. Two radiocarbon dates from the upper and lower (last but two) Kot Dijian levels in the citadel mound fall between 2605±145 and 2090±140 B.C., when calculated on a

¹³ R.E.M. Wheeler, 'Harappa 1946: the Defences and Cemetery R37, *Ancient India*, No. 3 (1947), Figs. 8-9 and PL: XL-XLII.

¹⁴ Excavations at Kot Diji, *Pakistan Archaeology*, No. 2 (Karachi, 1965), pp. 11-85.

half-life of 5730 years (or 3155 and 2590 B.C. with appropriate MASCA factors added).¹⁵ The first occupation in the unwallled outer area, corresponding to the mid-levels of the citadel, gave two C-14 dates: 2335±155 and 2255±140 B.C. (or 2885 and 2805 B.C. with MASCA factors added). Chronologically, the priority of the Kot Dijian occupation over the succeeding Harappan culture is evident. The Indus Civilization is known to have been at a mature stage by 2371 B.C., contemporary with Sargon of Akkad in Mesopotamia. Seven carbon-14 dates are available from the upper levels of Moenjodaro which fall between 2083±66 and 1760±115 B.C. (or 2583 and 2060 B.C. as adjusted).

The relevant information from the 'early' levels of Moenjodaro itself has not received proper emphasis from scholars. It may be recalled that in 1932, E.J.H. Mackay excavated a small area, 18 x 14 feet, in the DK Area, Section G (House III, Room No. 76), down to 42 feet from an arbitrary 'datum'. The 'early' levels as defined by Mackay, start at the depth of 28 feet below the 'datum'. Some potsherds recovered by him between the depths of 31.8 and 42 feet were unlike most of the characteristic Harappan ceramics. Among a few illustrated examples, two are precisely identical in fabric and surface decoration with the so-called 'wet' ware, commonly found in Damb Sadaat levels I and II in the Quetta valley and distributed extensively in northern and central Baluchistan¹⁶ (PL. II). Damb Sadaat I and II are assignable

to 2510±70 and 2200±76 B.C. (or as corrected by MASCA to 3060 and 2700 B.C.). The most significant evidence is the occurrence of wet ware, of the type found in early levels of Moenjodaro, in association with the characteristic Kot Dijian ware at Damb Sadaat. It should be added that the famous piece of a carved steatite vessel having analogies with those from several sites in Iran and Mesopotamia was found along with 'wet' ware at Moenjodaro (PL. II, 4 and 5). A similar change in ceramics was noted during the excavation of 1950. Pottery from the water-logged levels, as reported by Leslie Alcock was "... crude, vigorous, and unstandardized", and was thought to belong to a period "... far earlier than anything previously discovered on the site (of Moenjodaro)".¹⁷ The available evidence pertaining to early Moenjodaro is limited but very intriguing, and raises the possibility of finding materials comparable to Kot Diji or related cultures, but this would involve deep digging, which can be undertaken only when present obstacles have been removed.

New field researches justify our affirmation that the Kot Dijian occupation was not an isolated phenomenon at Kot Diji only, but was widespread throughout the Greater Indus Valley and in the valleys of northern and central Baluchistan.¹⁸ It extended even south-east up to the Great Rann of Kutch where, at Surkotada, J.P. Joshi is finding early materials lying below the Harappan remains.¹⁹ Another astonishing feature, as demonstrated by the geographical

15 All C-14 dates quoted in this paper are calculated on a new half-life of 5730—40 years (instead of the old half-life of 5568—30 years) as published in *Radiocarbon* (New Haven, Connecticut) annually since 1959. Recently, new correction factors were proposed by the Museum Applied Science Center for Archaeology (MASCA) of the University Museum of Pennsylvania University, see E.K. Ralph and H.N. Michael (eds.), *Dating Techniques for Archaeologists* (Cambridge, Mass., and London, 1971), pp. 1-48, and also 'Radiocarbon Dates and Reality', *MASCA Newsletter*, Vol. 9(1), (Philadelphia, 1973).

16 M.R. Mughal, *The Early Harappan Period in the Greater Indus Valley and Northern Baluchistan (c. 3000-2400 B.C.)*, Ph.D. Dissertation, University of Pennsylvania, 1970, pp. 76-79.

For specific parallels, Mackay, *Further Excavations at Moenjodaro* (1938), II. PL. LXVII, no. 1-2 cf. W.A. Fairservis, Excavations in the Quetta Valley, West Pakistan, *Anthro. Pap. of the American Museum of Natural History*, (1956), Vol. 45 (2), pp. 268-270; also found by the author during explorations of Baluchistan in 1972.

17 Leslie Alcock, 'Exploring Pakistan's Past: The First Years' Work', *Pakistan Quarterly* (Karachi, 1962), Vol. 2 (1), pp. 12-16.

18 Mughal, *op. cit.*, pp. 98-100 and Table 4, pp. 156 and 117-124.

19 Jagat Pati Joshi, 'Exploration in Kutch and excavation at Surkotada and new light on Harappan migration', *Journal of Oriental Institute* (Baroda, 1972), Vol. 22 (1-2), pp. 122-137.

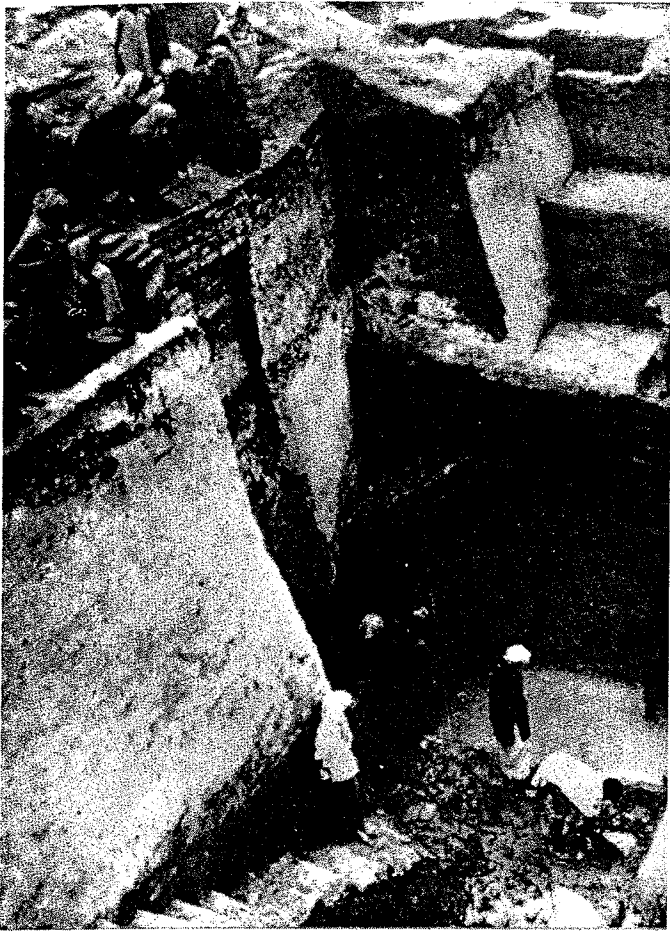
extent of the Kot-Dijian-related early (Harappan) cultural assemblages is the fact that the very same area was later dominated by the mature Harappan culture (Fig. 1). To date, Kot Dijian ceramics or other related artifacts have been identified at nearly thirty sites and their number is likely to increase with further explorations. Some sites have already been excavated either extensively or briefly: Kalibangan by B.B. Lal and B.K. Thapar (1961-1968) Mitathal and Siswal by Suraj Bhan (1968 and 1970), Sarai Khola near Taxila by F.A.Khan and M.A. Halim (1968-1972), Gumla in the Gommal Valley by A.H. Dani (1971), Jalilpur in the central Indus Valley by the present author (1971), and Surkotada, south of Rann of Kutch by J.P. Joshi (1971-1972).²⁰ The evidence from Harappa has already been pointed out. To this list may be added Amri, located in south-western Sind on the right bank of the Indus, and long known to us by a distinctive group of bichrome ware called Amrian. The site was excavated for four years by J.M. Casal (1959-1961), and four developmental phases of Amrian occupation have been identified lying below the Harappan settlement.²¹ From the middle levels of Amri, two radiocarbon dates fall between 2670 ± 113 and 2900 ± 113 B.C. (or 3320 and 3600 B.C. with MASCA factors added). The wheelmade Kot Dijian ware first appears in the earliest level IA at Amri among the dominant handmade Amrian ware. The inference would be that the radiocarbon date of 2605 ± 145 (or 3155 B.C.) from lower level (14) at Kot Diji might be too 'late' and calls for reconsideration. The first occupation at Kot Diji might have begun towards the end of the fourth millennium B.C. At another contemporary site, Kalibangan, the earliest levels, occurring below the mature Harappan remains, produced pottery comparable with that

from the pre-defence levels of Harappa and with Kot Dijian ware, along with a new white-and-black on red pottery called 'Sothi'. Eight C-14 dates from the Sothi levels or Kalibangan-I fall between 2370 ± 115 and 1825 ± 110 (or 2920 and 2125 as adjusted), a surprisingly low date. The Kot Dijian wares in Gumla levels II-III (underlying the mature Harappan occupation at that site) are assignable to 2248 ± 74 (or 2798 B.C.). It is important to note that some materials which are generally associated with the mature Harappan culture, are found among these early Harappan cultural assemblages at all the sites, which were either reoccupied later by the mature Harappan culture (Kalibangan, Harappa, Gumla, Kot Diji and Amri) or were deserted (Jalilpur and Sarai Khola). Furthermore, despite regional diversity marked in pottery, there is a general pattern of uniformity in the ceramic types and other materials among these early Kot Diji-related settlements throughout the Greater Indus Valley. These similarities are not restricted to pottery alone; we observe that fortifications had already emerged at Kalibangan, Kot Diji and contemporary Amri-related sites of Kohtras Buti and Pokhran in south western Sind, indicating that changes in the socio-economic structure had already begun. In domestic architecture, a stability of residence is suggested by prolonged and intensive occupation, and a gradual change was occurring from simple enclosures to multiroomed houses. A degree of class or occupational stratification is evident from the uniformity of ceramics distributed over a large area. The presence of the bull among found remains and terracotta figurines, toy-cart frames and wheels suggest the availability and use of means of transport for frequent interaction among various populations in the Indus. Long-

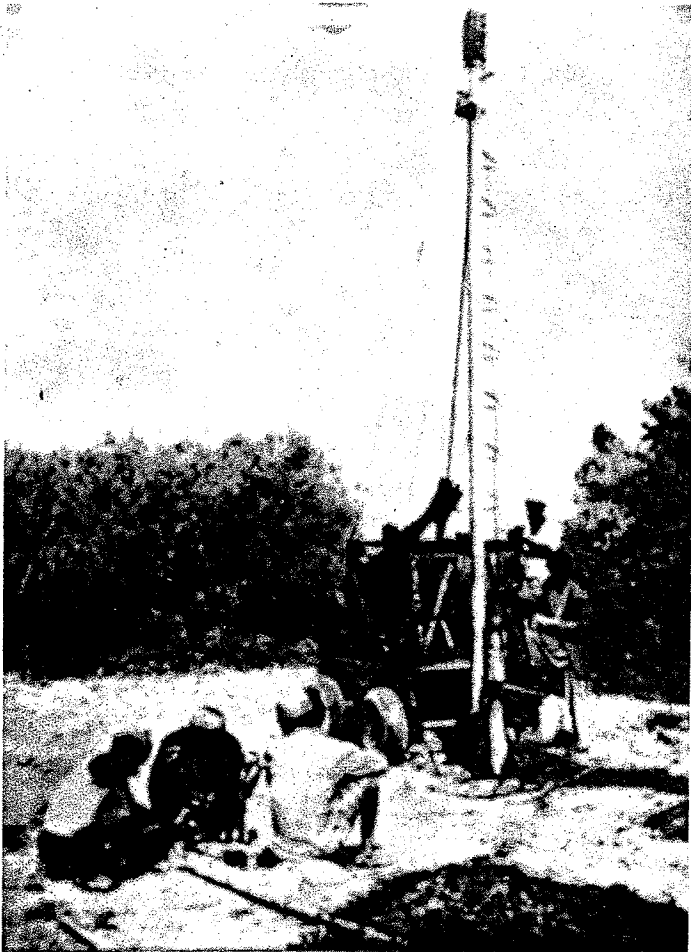
20 *Indian Archaeology: A Review* (New Delhi, 1961-62), pp. 39-44; (1962-63), pp. 20-31; (1963-64), pp. 30-39; and (1967-68), pp. 42-45 for Kalibangan; *Pakistan Archaeology* (Karachi, 1972), pp. 23-89 for Sarai Khola; *Ancient Pakistan* (Peshawar 1971), Vol. 5 for Gumla. *Journal of Haryana Studies* (Kurukshetra, 1969), Vol. I (1), pp. 1-15 for Mitathal; and *Puratattva*.

Bulletin of the Indian Archaeological Society, (New Delhi, 1971-72), No. 5, pp. 44-46 for Siswal. The report on Jalilpur is under preparation by M.R. Mughal.

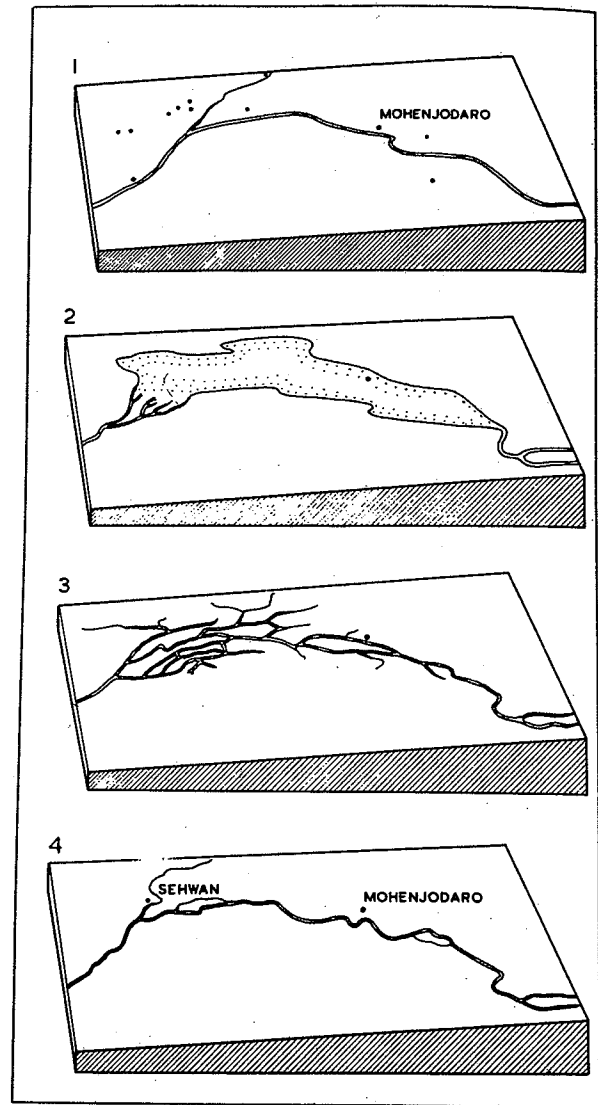
21 Jean-Marie Casal, *Fouilles d'Amri*. 2 Vols. (Paris, 1964), with summary in English.



a



b



c

(a) Excavations at Moenjodaro in 1950. The lowest levels could not be reached because of high water-table.

(b) In 1964, borings at Moenjodaro revealed that ancient occupation extends to a depth of thirty-nine feet below the present flood-plain. The mound itself stands 35-40 feet high above the surrounding level.

(c) The flooding of Moenjodaro due to geologic disturbances as visualized by G. F. Dales and R. L. Raikes (2), followed by "rejuvenation of the Indus channel" (3), and emptying of a shallow lake (4).

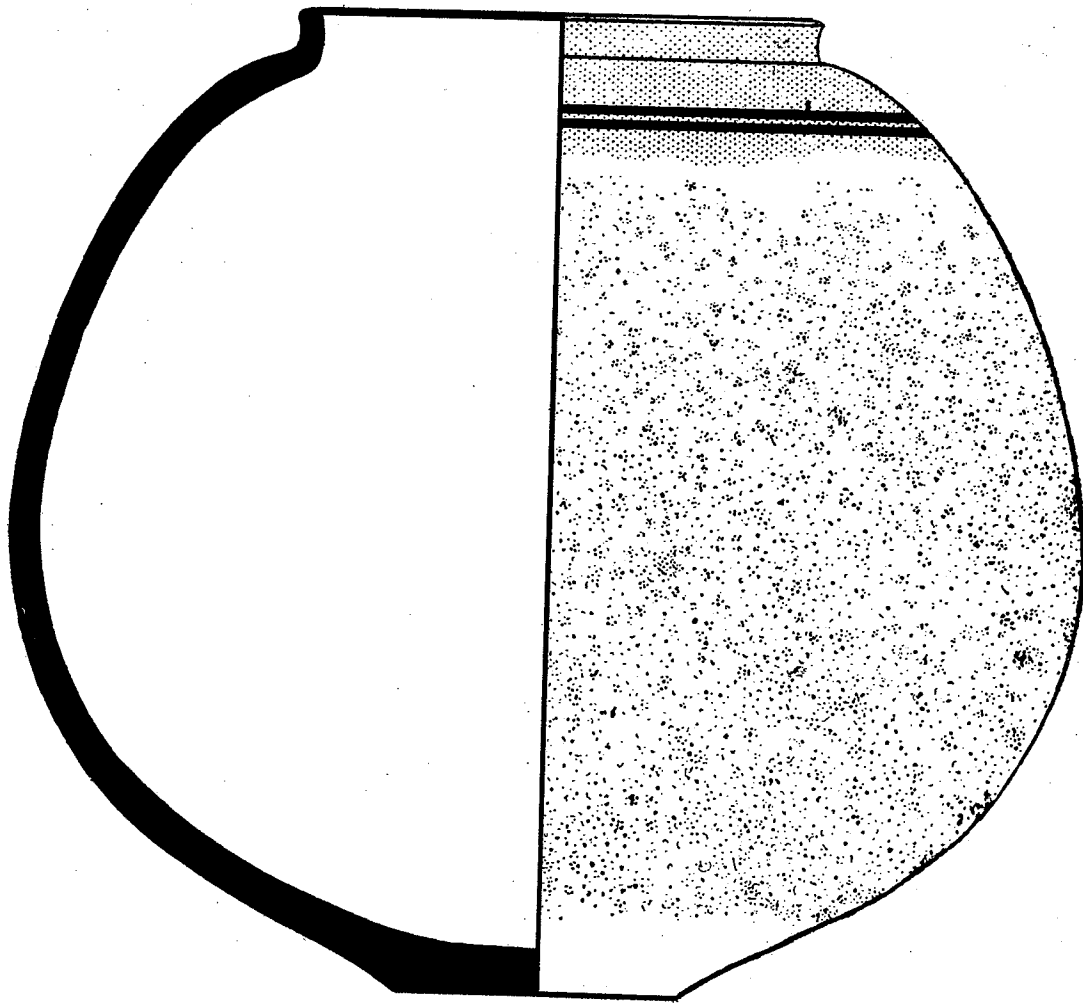


Fig. 4. Large vessel of Kot Dijian type with wide band in red painted on the neck and shoulder and bordered by black lines. From Sarai Khola-II. Also reported from Gumla II & III and the Zhob Valley.

distance trade or exchange is indicated by the presence at Sarai Khola, Jalilpur and Pandi Wahi, of lapis lazuli, originating from sources in Badakhshan in north Afghanistan. Thus, before the rise of large cities of the Indus Civilization, a widespread cultural phenomenon, constituting early, formative phase of the Harappan culture, had already set a permanent and uniform pattern of essential elements. It would seem that the processes leading to urbanization had already begun during the early third millennium B.C.; but it is not possible to reconstruct these fully in

the present stage of our knowledge. Only two elements of the urbanized Harappan society of the mid-third millennium B.C. were lacking: (i) large cities and (ii) increased specialization to engage in full-time crafts like seal engraving, sculpture, metallurgy etc.

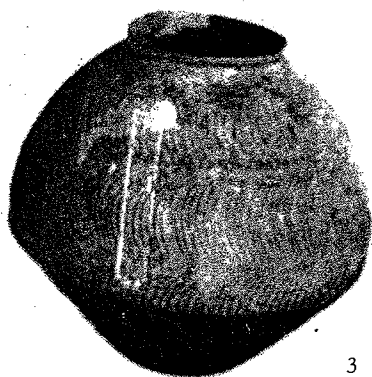
The location of both the early and mature Harappan sites, mostly along the former flood-plain of the rivers or permanent sources of water indicates favourable ecological conditions existing during the third millennium B.C., offering



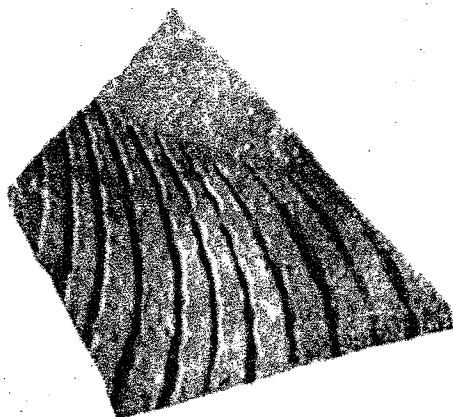
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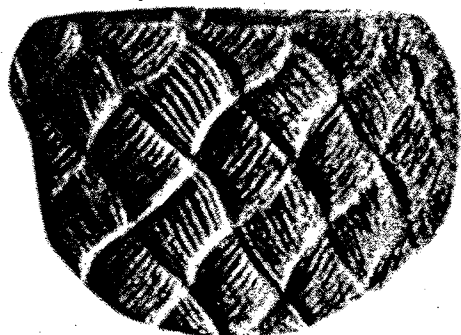
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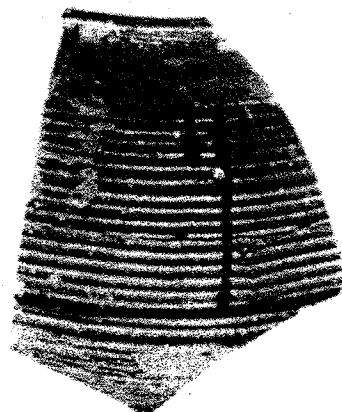
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1. Short-necked vessel of red ware with grooved exterior from Sarai Khola II. 2. Fragment of 'Wet ware' from the 'early' levels of Moenjodaro found in 1932. 3-4. Identical 'Wet' ware from Damb Sadaat. 5. A carved steatite piece. 6. Fragment of red ware with grooved external surface and painted in black-on-red from Jalilpur period II. 7. Similar fragment from pre-defence level of Harappa.

great possibilities of effective exploitation of land resources for sufficient means of subsistence. It is a question, therefore, whether a possible migration of people from the Baluchistan hills, or beyond, generated the rise of urbanization in the Indus Valley. As regards the suggestion that the 'idea' of civilization came from the west, it is argued by C.C. Lamberg-Karlovsky that processes towards urbanization in the Indus Valley and elsewhere could be generated by a series of complex interrelationships among populations maintained through trade or exchange.²² It may be true for the early stages of the Indus Valley, where we notice that long-distance trade in lapis lazuli had already been established and that changes in social organizational structure were underway. However, more evidence is needed through archaeological and environmental studies to enable us to reconstruct evolutionary stages towards full urbanization. On present evidence, the mature Harappan culture at early Indus or Harappan sites arrives with a fully developed material culture. Does this sudden change mark a major shift in the socio-political structure of the Indus people? If so, what were the circumstances in which such a change occurred? At present, we have no evidence to answer these pertinent questions.

Where archaeologists cannot provide satisfactory answers to certain specific questions, natural and physical scientists are helping us with their experience and specialised knowledge. Working independently or with archaeologists,

their contributions have been particularly significant in understanding the ancient climate and physical environment of the Indus Valley in early millennia, to determine possible causative factors leading to the decline of the civilization and in fixing the time range of the Harappan culture. As to the physical environment, it was generally thought that the Indus Valley must have enjoyed abundant rainfall in ancient times, necessitating a universal use of durable baked bricks in buildings and the provision of an elaborate drainage system. It was believed that only 'wetter' conditions could produce vast reserves of forest for firing millions of bricks. The representation of animals such as the tiger, elephant and rhinoceros on seals would also suggest the existence of dense jungles in those times. Such inferences led to the presumption that climatic changes in the Indus Valley might have produced a drastic imbalance between human populations and their subsistence base, which ultimately hastened the disappearance of the Indus Civilization. Contrary to this idea, R.L. Raikes and R.H. Dyson now maintain that there has been no appreciable change in the climate of South Asia and also of the Near East in the past nine thousand years.²³ They argue that the amount of silt deposited annually along the flood-plain of the Indus would be sufficient to produce dense jungle growth and make it a suitable habitat for the animals depicted on the seals. Moreover, the small size of the drains in the streets of Moenjodaro and Harappa, with their limited capacity, would itself indicate their function of carrying

22 C.C. Lamberg-Karlovsky, 'Trade Mechanisms in Indus-Mesopotamian Interrelations' *Journal of the American Oriental Society*, (New Haven, 1972), Vol. 92 (2), pp. 222-229, and 'Tepe Yahya 1971: Mesopotamia and the Indo-Iranian Borderlands', *Iran*, Vol. X, 1972, p. 99. Maurizio Tosi, however, suggests Iranian and Turkmenian influences on the origins of the Indus Civilization, 'Early urban evolution and settlement patterns in the Indo-Iranian borderlands', in C. Renfrew (ed.), *The Exploration of Culture Change: Models in Prehistory* (London 1973), pp. 444-46.

23. Robert L. Raikes and Robert H. Dyson, 'The Prehistoric

Climate of Baluchistan and the Indus Valley, *American Anthropologist* (1961), Vol. 63, pp. 265-281. The palynological studies carried out in the East-Central Indus Valley, however, indicate that the Indus Valley *did* enjoy greater rainfall during the third millennium B.C. than today and that a significant shift towards dry conditions occurred about 1800 B.C., coinciding with the decline of the Indus Civilization. Gurdip Singh, 'The Indus Valley Culture seen in the context of post-glacial climate and ecological studies in North-West India', *Archaeological and Physical Anthropology in Oceania* (University of Sydney, 1971), Vol. 6 (2), pp. 177-189.

water for domestic use only. Their arguments are generally accepted, though it is not certain whether the absence of a modern irrigation system would re-create suitable ecological conditions for supporting a civilization, or whether the whole valley would be a desert waste assuming an annual rainfall, as at present, of not more than 10 inches. The evidence of an ancient irrigation system consisting of canals or other means is lacking.

In recent years, the decline and end of the Indus Civilization has become a subject for considerable debate and sharp controversy. New avenues of enquiry are being opened, but we have still to understand how and why this highly developed and complex Civilization disappeared. The popular theories of adverse climatic changes and invasions from outside are being disputed on the basis of geographical and geomorphological factors combined with archaeological evidence. At the same time, socio-economic models are being presented as the operative cause for the break-up of this Civilization. It would appear that this heated controversy has much to do with the question of emphasis on this or that causative factor, or on a combination of many causes. Among various opinions, the Aryan invasion around the middle of the second millennium B.C. is considered to have hastened the process of disintegration of an already weakened Civilization.²⁴ Alternately, it is asserted that we have to imagine that another civilization with fortifications arose in the Indus

Valley which was encountered by the Rigvedic war-god, Indra, who is depicted as the destroyer of many forts. It is also thought that the people were already over-exploiting the land resources, and when the situation became critical with a possible increase in population numbers, they were forced to migrate to other areas.²⁵ Recently, Dr. G.F. Dales and R.L. Raikes have joined hands to tackle this problem.²⁶ They postulate that the Lower Indus Valley was flooded due to tectonic uplifts across the somewhere between Amri and Sehwan (PL-C). This natural phenomenon necessitated the building of earthen embankments around the city of Moenjodaro and the frequent rebuilding of dwellings in view of advancing floods. This process continued until "a phase of rejuvenation of the Indus channel" developed. The civilization was weakened due to relentless pressure exerted on the population and their economic resources. There have been sharp criticisms of this suggestion from G. Possehl and H.T. Lambrick based on the nature of the evidence used to support this theory.²⁷ Incidentally, Raikes' investigation in the east-central Punjab near Kalibangan has also indicated that, in ancient times, there have been frequent changes in the river course due to tectonic disturbances.²⁸ That the Indus Valley does fall within an active seismic zone was noted by Thomas Oldham a long time ago.²⁹ At present, however, whatever may be the merits or pitfalls of new theoretical frameworks, the happy collaboration of physical scientists with archaeo-

24 R.E.M. Wheeler, *The Indus Civilization*. Third Edition (Cambridge, 1968), pp. 129-134; and all his previous publications on Indus Civilization.

25 W.A. Fairservis, *The Roots of Ancient India* (London, 1971), pp. 296-311.

26 R.L. Raikes, 'The End of the Ancient Cities of the Indus', *American Anthropologist* (1964), Vol. 66(2), pp. 284-299. The idea was originally proposed by M.R. Shani, 'Biological Evidence bearing on the Decline of the Indus Valley Civilization', *Journal of the Palaeontological Society of India* (1956), Vol.1, pp. 101-107. Also, George F. Dales, in *Scientific American* (1966), Vol. 214(5), pp. 93-98; Dales and R.L. Raikes, 'The Moenjodaro Floods: A Rejoinder', *American*

(1968), Vol. 70(5), pp. 957-961.

27 Gregory L. Possehl, 'The Moenjodaro Floods: A Reply', *American Anthropologist* (1967), Vol. 69(1), pp. 32-40; and

H.T. Lambrick, 'The Indus flood-plain and the Indus Civilization', *The Geographical Journal* (1967), vol. 133, pp. 483-495.

28 R.L. Raikes, 'Kalibangan: Death from Natural Causes', *Antiquity* (London, 1968), Vol. 42(168), pp. 286-291.

29 This important reference which supports the theory of tectonic upheavals has not yet been noted by Raikes. See *A Catalogue of Indian Earthquakes from the earliest time to the end of A.D. 1869* (Calcutta, 1883).

logists in the solution of many a complex problem of the Indus Civilization is potentially significant.

On the question of the Indus contacts with contemporary civilizations, the basis of evidence previously rested on some seals of the 'Indus' type, several scattered pieces of metal types, etched carnelian and other segmented beads, some pottery forms and their painted style, stone vessels and other minor objects like dice, figurines etc., mostly found in Mesopotamian contexts.³⁰ In view of extensive excavations already done in Mesopotamia and on Indus sites, the available number of dateable materials was extremely limited. This was all the more surprising in the face of frequent references to the sea-borne trade of southern Mesopotamia with distant lands in hundreds of economic and religious texts, sometime between the Sargon of Akkad and Ur III to the Isin-Larsa periods (c. 2370-1900 B.C.). However, despite difficulties of limited evidence, the subject of Indus-Mesopotamian relations or contacts continued to occupy the attention of many scholars. This aspect is, in fact, of growing concern among South Asian and Near Eastern archaeologists even today. During the last fifteen years, new evidence has been added to the existing list of objects used for exchange. Recent researches are also reflecting a trend towards explaining or understanding the mechanism involved or implied in Indus-Mesopotamian relations.³¹ As the evidence goes at present, scholars seem to

30 This subject has been discussed by many scholars. F.A. Khan, *The Indus Valley and Early Iran* (Karachi, 1964). New evidence with further bibliographical references to various aspects of the subject are in G.F. Dales, 'Of Dice and Men', *Journal of the American Oriental Society* (New Haven, 1968), Vol. 53, pp. 15-23. The most recent researches include, E.C.L. During Caspers, 'New Archaeological Evidence for Maritime Trade in the Persian Gulf during the Later Protoliterate Period, East and West' (Rome, 1971), Vol. 21 (1-2), pp. 21-44; *Idem*, 'Etched Carnelian Beads', *Bulletin of the Institute of Archaeology* (London, 1972), No. 10, pp. 83-98 with exhaustive bibliographical notes; and Edith Porada in *Artibus Asiae* (Ascona, Switzerland, 1971), Vol. 133(4), pp. 323-337.

be in general agreement on the identification of at least two of the three principal territories—Dilmun, Magan and Meluhha—mentioned in the cuneiform documents, and which are known to have participated in trade with Mesopotamia during the third and early second millennia B.C. Meluhha is most likely to be identified with the territory encompassed by the Indus Civilization, including the coastal areas of Pakistan and Western India, on which a number of Harappan settlements are located. The island of Bahrain, located close to southern Mesopotamia and near the Arabian side of the Persian Gulf, fits well with the description of Dilmun and is also consistent with the archaeological evidence found recently. The exact location of Magan is not clear but it is generally thought to have included the south-eastern part of Iran excluding perhaps the then hostile territories of Elam in southern Iran.³²

In 1932, C.J. Gadd pointed out stylistic similarities of a group of seals from Ur, and elsewhere in Mesopotamia, with those of the Indus Civilization.³³ Now, more seals of the same category, which are neither wholly Mesopotamian nor Indus in character, have been discovered at Bahrain, Failaka and elsewhere on the Arabian side of the Gulf. Contrary to the familiar shape of the Indus seals, which are mostly square, the 'Persian Gulf Seals' are circular, like those of the post-Indus (Jhukar) occupation levels at Chanhu-daro, and one reported from the surface of Lothal, a Harappan

31 M. Mallowan, 'The Mechanics of Ancient Trade in Western Asia', *Iran* (London, 1965), III, pp. 1-9; C.C. Lamberg-Karlovsky, 'Trade Mechanisms in Indus-Mesopotamian Interrelations', *Journal of the American Oriental Society* (1972) Vol. 92(2), pp. 222-229; and Jimmie G. Shaffer, *Prehistoric Baluchistan: A Systematic Approach*. Ph. D. Thesis, University of Wisconsin, 1972 (MSS), pp. 169-249.

32 The latest summary of various opinions with further bibliography by Edmond Sollberger, 'The Problem of Magan and Meluhha', *Bulletin of the Institute of Archaeology* (London, 1970), Nos. 8-9, pp. 247-250.

33 In *Proceedings of the British Academy* (London, 1932), Vol. 18, pp. 3-22.

port-city in Saurashtra. It may be recalled that both Lothal and Chanhu-daro have also produced convincing evidence of a local bead-making industry.³⁴

Another denominator of Indus contacts with neighbouring lands is a class of steatite vessels carved on the outer surface with a variety of hut, matt, animal and other designs. Their widespread distribution in the ancient Near East and their parallels with a fragment from an 'early' level of Moenjodaro were summarized by F.A. Durrani some years ago.³⁵ In recent years, however, new field-work, done in the adjoining regions, has produced a wide range of carved vessels of stone, and thus suggests a wider geographical range of Indus contacts than was known previously. Further evidence comes from Shahdad in Dasht-i-Lut and Tepe Yahya in Iran, Tarut and Umm an-Nar respectively, off the coast of Saudi Arabia and Abu Dhabi, while similar designs, copied on grey pottery, are reported from Shahr-i Sokhta in Iranian Sistan, Bampur and related sites in southeastern Iran, Hili and Umm an-Na.³⁶ The carved steatite vases are now securely dated at the newly excavated sites and are mostly assigned to the Mesopotamian Early Dynastic I-III period and even earlier, consistent with the evidence of Indus-Mesopotamian contacts existing during the third millennium B.C. Likewise, the evidence of distinctive 'Persian Gulf Seals' would corroborate the documentary evidence indicating a flourishing sea-borne trade with Mesopotamia

during the Ur III and Isin-Larsa period, ending around 1900 B.C.

Along with new evidence, research is now also oriented towards explaining or understanding the mechanism of East-West trade both by sea and overland routes. From the most recent evidence, it would appear that the early third millennium B.C. was a period of great cultural interaction among the populations of the Greater Indus Valley, Baluchistan, Iran and southern Mesopotamia. Sometime in the early second millennium B.C., contacts through overland routes were mostly disrupted and diverted to the sea-route via Dilmun. It is also being argued that the evidence of direct overland trade or contacts between the Indus Civilization and Mesopotamia is slight. Whatever tangible evidence is available does reflect an indirect exchange of certain specific items. On the other hand, in a recent reanalysis of the archaeological evidence pertaining mostly to the third millennium B.C., there appear to be strong links among the cultures of the Indus Valley, northern Baluchistan and regions beyond including southern Afghanistan and Turkmenia.³⁷ The intermediate region of central and southern Baluchistan is most likely to shed more light on the nature, duration and mechanism of Indus-Mesopotamian relations and contacts with the cultures of Iran. In this context, the decipherment of the enigmatic Indus script engraved on thousands of stamp seals could be substantially helpful. The attempts made so far by many

34 Mackay, *Chanhu-daro Excavations, 1935-36* (New Haven, 1943), pp. 186-210; S.R. Rao, 'Further Excavations at Lothal', *Lalit Kala* (1962), No. 11, p. 87.

35 Farzand A. Durrani, 'Stone Vases as Evidence of Connection between Mesopotamia and the Indus Valley', *Ancient Pakistan* (Peshawar, 1964), No. 1, pp. 51-96.

36 Grace Burkholder, 'Steatite Carvings from Saudi Arabia', *Artibus Asiae* (1971), Vol. 33(4), pp. 306-322; and Edith Porada, 'Comments on Steatite Carvings from Saudi Arabia and Other Parts of the Ancient Near East', *Loc. cit.*, pp. 323-331. Also E.C.L. Durrani, 'A Note on the Carved Stone Vases and Incised Greyware', in B. de Cardi, 'Excavations at Bampur: A Third Millennium Settlement in Persian

Baluchistan, 1966', *Anthropological Papers of the American Museum of Natural History*, Vol. 51 pt. 3. (New York, 1970), pp. 319-325.

37 M.R. Mughal, *op. cit.*, pp. 311-323 and Fig. 16, p. 344; G.F. Dales, 'Archaeological and Radiocarbon Chronologies for Protohistoric South Asia', in *South Asian Archaeology* (London, 1973), pp. 157-169; V.I. Sarianidi, 'North Afghanistan in the Bronze Age Period', *Afghanistan* (Kabul, 1971), Vol. 24 (2-3), pp. 26-38 and *Idem.*, 'Southern Turkmenia and Northern Iran: Ties and Differences in Very Ancient Times', *East and West* (Rome, 1971), Vol. 21(3-4), pp. 291-310; and V.M. Masson and V.I. Sarianidi, *Central Asia: Turkmenia before the Achaemenids* (London, 1972), pp. 94-96.

scholars have not succeeded in breaking the code.³⁸

Regarding the time-range covered by the Indus Civilization, especially the mature period as known at Moenjodaro and Harappa, it remained fashionable for a long time to impose a Mesopotamian chronology on the Indus Valley based on stylistic parallels of material objects found at both places or elsewhere in the Iranian plateau. In recent years, most of the initial problems of doubtful stratified contexts of comparable materials have now been overcome by fresh evidence from new excavations, which are usually carried out carefully under closely observed conditions. But the relative chronology worked out by comparisons with distant lands cannot be regarded as a precise and useful frame of reference. In the absence of dated and documentary evidence from the Indus Valley and on account of the fact that the Indus script is still undeciphered, internal chronologies of the cultures in the Indus Valley, and of other South Asian sites, have not yet been properly reconstructed for understanding the developmental sequence of the material culture.

With the introduction of the C-14 method of dating charcoal, bones and shell since the 1950's, radiocarbon dates are being eagerly sought and used—sometimes without caution and subjectively—for determining the absolute chronology of a given site. Initially, C-14 dates did not fit into the historical dates derived from astronomical information, especially in Mesopotamia and Egypt. It was noted that C-14 dates of the third and second millennia B.C. time-ranges were consistently later than the

calendrical dates. The radiocarbon method itself has since been further developed and refined. The most recent correction proposed by the scientists for the already available radiocarbon dates seem to correspond with the archaeological dates, as the recent reappraisal of the C-14 dates from South Asia by G.F. Dales clearly demonstrates. It must, however, be admitted that the number of dates available from the Indus Valley are few. Kot Diji was the first South Asian site to be dated by the radiocarbon method. Seven dates from Moenjodaro come from the upper levels only. Kalibangan is an exceptional site, from where thirty carbon-14 dates are available. A sufficient number of dates should be available from other Indus Civilization sites to enable us to determine the life span of each city and for the solution of other chronological problems.

These are, in brief, the main features of research done on various aspects of the Indus Civilization during the last fifty years. Our knowledge of this Civilization has substantially increased; but, as pointed out at the beginning, we have yet to learn a great deal more about it. We still are unable to read the Indus script, and we do not have sufficient evidence to reconstruct those circumstances which produced urbanization in the Indus Valley. The total number of Indus settlements is also not known. In fact, many generations of archaeologists, working in close collaboration with anthropologists and specialists in many other disciplines, are needed to unravel those aspects of this highly evolved civilization which have eluded us for half a century.

In conclusion, it should be added that Moenjodaro is the largest of all the known cities

³⁸ Scholars in different parts of the world are still trying to decipher the Indus script. For an appreciation of problems involved and methodology adopted, Ahmad Hasan Dani, *Indian Palaeography* (Oxford, 1963); Shirley Blanche, 'Initial steps in a possible decipherment of the Harappan script', in W.A. Fairservis, *The Roots of Ancient India* (London, 1971), pp. 419-424. The Soviet and Scandinavian teams have been

especially engaged to break the Indus Code with varying degrees of success. The initial attempts have been given in the *Scandinavian Institute of Asian Studies*, Special Publications, Numbers 1 & 2 (1969) and 3 (1970), superseded by *Materials for the Study of the Indus Script* (Helsinki, 1973) with further bibliography.

of the Indus Civilization. It is located in that part of the Indus Valley which may have been the core area of this civilization. Therefore, Moenjodaro possesses great promise of yielding clues to the early or formative phases of the

Indus Civilization, but much depends upon whether the existing ground water-table can be lowered sufficiently to permit us to reach the earliest settlement, now unhappily submerged.

Appendix
RADIOCARBON DATES
 (Calculated on half-life of 5730 years)

| <i>Site</i> | <i>Published dates</i> | <i>Laboratory Number</i> | <i>Readjusted with MASA Corrections</i> | | |
|--|------------------------|--------------------------|---|------------------------|-----------|
| | | | | Hathala, layer (2) | |
| | | | | 2214±62 B.C. (P-1813) | 2714 B.C. |
| QUETTA VALLEY | | | | | |
| Kile Gul Mohammad I | | | | | |
| | | | | 3688±85 B.C. (P-524) | 4388 B.C. |
| II | | | | | |
| | | | | 3468±82 B.C. (UW-61) | 4168 B.C. |
| Damb Sadaat I | | | | | |
| | | | | 2510±70 B.C. (UW-59) | 3060 B.C. |
| II | | | | | |
| | | | | 2559±202 B.C. (P-522) | 3109 B.C. |
| | | | | 2200±76 B.C. (P-523) | 2700 B.C. |
| III | | | | | |
| | | | | 2200±160 B.C. (UW 60) | 2700 B.C. |
| KALIBANGAN-I (Kot Diji-Sothi Culture) | | | | | |
| | | | | 2370±115 B.C. (TF-155) | 2920 B.C. |
| | | | | 2294±110 B.C. (TF-157) | 2844 B.C. |
| | | | | 2263±90 B.C. (TF-241) | 2813 B.C. |
| | | | | 2108±100 B.C. (TF-162) | 2608 B.C. |
| | | | | 2098±100 B.C. (TF-161) | 2598 B.C. |
| | | | | 1964±100 B.C. (TF-165) | 2364 B.C. |
| | | | | 1902±105 B.C. (TF-156) | 2302 B.C. |
| | | | | 1825±110 B.C. (TF-154) | 2125 B.C. |
| MOENJODARO | | | | | |
| | | | | 2083±66 B.C. (P-1179) | 2583 B.C. |
| | | | | 2062±66 B.C. (P-1177) | 2562 B.C. |
| | | | | 1993±63 B.C. (P-1180) | 2393 B.C. |
| | | | | 1967±61 B.C. (P-1178A) | 2367 B.C. |
| | | | | 1966±61 B.C. (P-1176) | 2366 B.C. |
| | | | | 1964±65 B.C. (P-1182A) | 2164 B.C. |
| | | | | 1760±115 B.C. (TF-75) | 2060 B.C. |
| KOT DIJI (Kot Dijian levels) | | | | | |
| Citadel, Lower level (14) | | | | | |
| | | | | 2605±145 B.C. (P-196) | 3155 B.C. |
| Citadel, Upper level (4) | | | | | |
| | | | | 2090±140 B.C. (P-195) | 2590 B.C. |
| Lower City, level (5) | | | | | |
| | | | | 2335±155 B.C. (P-179) | 2885 B.C. |
| Lower City, level (5) | | | | | |
| | | | | 2255±140 B.C. (P-180) | 2805 B.C. |
| AMRI (Amrian levels) | | | | | |
| Mound A, layer (19), Period IC | | | | | |
| | | | | 2670±113 B.C. (TF-863) | 3320 B.C. |
| Mound A, layer (28c), Period IB | | | | | |
| | | | | 2900±113 B.C. (TF-864) | 3600 B.C. |
| GOMAL VALLEY | | | | | |
| Gumla, early level of Period II | | | | | |
| | | | | 2248±74 B.C. (P-1812) | 2798 B.C. |

KALIBANGAN (Harappan Culture)

| | |
|------------------------|-----------|
| 2232±100 B.C. (TF-160) | 2782 B.C. |
| 2227±113 B.C. (TF-942) | 2777 B.C. |
| 2098±124 B.C. (TF-607) | 2598 B.C. |
| 2095±115 B.C. (TF-25) | 2595 B.C. |
| 2077±113 B.C. (TF-608) | 2577 B.C. |
| 2077±110 B.C. (TF-153) | 2577 B.C. |
| 2077±100 B.C. (TF-163) | 2577 B.C. |
| 2062±103 B.C. (TF-145) | 2562 B.C. |
| 2045±75 B.C. (P-481) | 2445 B.C. |
| 2031±103 B.C. (TF-147) | 2431 B.C. |
| 1980±103 B.C. (TF-948) | 2380 B.C. |
| 1974±108 B.C. (TF-605) | 2374 B.C. |
| 1964±103 B.C. (TF-151) | 2364 B.C. |
| 1939±103 B.C. (TF-139) | 2339 B.C. |
| 1920±88 B.C. (TF-947) | 2320 B.C. |
| 1902±103 B.C. (TF-150) | 2302 B.C. |

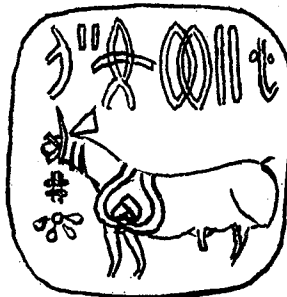
| | |
|------------------------|-----------|
| 1866±110 B.C. (TF-141) | 2166 B.C. |
| 1835±140 B.C. (TF-149) | 2135 B.C. |
| 1794±100 B.C. (TF-142) | 2094 B.C. |
| 1774±85 B.C. (TF-152) | 2074 B.C. |
| 1763±103 B.C. (TF-946) | 2063 B.C. |
| 1665±110 B.C. (TF-143) | 1865 B.C. |

LOTHAL (Harappan culture)

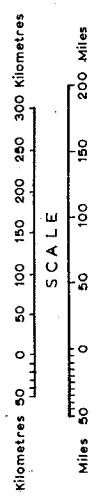
| | |
|------------------------|-----------|
| 2082±130 B.C. (TF-136) | 2582 B.C. |
| 2010±115 B.C. (TF-22) | 2410 B.C. |
| 2005±115 B.C. (TF-27) | 2405 B.C. |
| 1995±125 B.C. (TF-26) | 2395 B.C. |
| 1902±110 B.C. (TF-110) | 2302 B.C. |
| 1900±115 B.C. (TF-29) | 2300 B.C. |

LOTHAL (Late Harappan culture)

| | |
|-----------------------|-----------|
| 1865±110 B.C. (TF-23) | 2165 B.C. |
| 1810±140 B.C. (TF-19) | 2110 B.C. |



DISTRIBUTION OF THE INDUS CIVILIZATION SITES



| | |
|--------------------------------|---|
| INDUS CIVILIZATION SETTLEMENTS | ● |
| EARLY HARAPPAN | ○ |
| EARLY & MATURE HARAPPAN | ⊙ |
| MODERN TOWNS | □ |

Drawn by: Hashim Qurashi, 1973

SETTLEMENTS OF THE INDUS VALLEY CIVILIZATION (1973)

(Refer to Maps on P. 38 and P. 56)

- | | |
|----------------------------|--|
| 1. Mundra | 52. Telod |
| 2. Navinal | 53. Bhagatrav |
| 3. Madeva | 54. Gharo Bhiro |
| 4. Todio | 56. Amilano |
| 5. Naliya | 57. Pir Shah Jurio |
| 6. Anjar | 58. Nel Bazar or Allahdino |
| 7. Kotada | 59. Goth Hassan Ali |
| 8. Buj | 60. Bala Kot |
| 9. Kotada Bhadli, I,II&III | 61. Gujo |
| 10. Nakhtarana | 62. Sotka Koh |
| 11. Desalpur | 63. Dasht-I |
| 12. Narapa | 64. Sutkagen-dor |
| 13. Vada (Vigodi) | 65. Shahjo |
| 14. Lakhapat | 66. Karchat |
| 15. Luna | 67. Dhal |
| 16. Banni | 68. Amri |
| 17. Kotara | 69. Chanhudaro |
| 18. Nenu-ni-Dhar | 70. Damb Buthi |
| 19. Kotadi | 71. Gorandi |
| 20. Moruo | 72. Ghazi Shah |
| 21. Kerasi | 73. Lohri |
| 22. Surkotada | 74. Ali Murad |
| 23. Selari | 75. Pandi Wahi |
| 24. Rapar | 76. Lohumjo-daro |
| 25. Pabunath | 77. Judeirjo-daro |
| 26. Lakhapar | 78. Pathani Damb |
| 27. Kanth Kot | 79. Gand Damb |
| 28. Khari-ka-Dhanda | 80. Kirta |
| 29. Pirwada Khetar | 81. Quetta Miri |
| 30. Jhangar (Kutch) | 82. Kaonri |
| 31. Phala | 83. Dabar Kot |
| 32. Lakhabawal | 84. Periano Ghundai |
| 33. Amra | 85. Rahman Dheri |
| 34. Gop | 86. Gumla |
| 35. Kindnarkhera | 87. Katpalon |
| 36. Somnath | 88. Nagar |
| 37. Kanjetar | 89. Rupar |
| 38. Veniavadar | 90. Bara |
| 39. Rojdi | 91-110. 20 or more sites in Bikaner (India) in the Sutlej, Sarasvati-Drishadvati valleys. |
| 40. Adkot | 111-135. 25 or more sites in Bahawalpur along dried bed of Ghaggar-Hakra. |
| 41. Bhimpatal | 136. Kotasur |
| 42. Babarkot | 137. Vainiwal |
| 43. Rangpur | 138. Alamgirpur |
| 44. Devaliyo | 139. Moenjodaro |
| 45. Chachana | 140. Kot Diji |
| 46. Goni | 141. Harappa |
| 47. Pansina | 142. Chak Purbane Syal |
| 48. Lothal | 143. Jhukar |
| 49. Koth | 144. Naru Waro Daro |
| 50. Nanasutaria | |
| 51. Mehgam | |

(The above list does not include many unpublished sites in Bahawalpur, East Punjab, Gujrat and in Sibi district, Baluchistan.)

Discussion on the Pilot Paper¹

M. R. MUGHAL: Work on the study of the Indus Valley Civilization begins with the excavation of Moenjodaro and Harappa. While these excavations were in progress, efforts were made to locate other sites of the same culture. Accordingly, parts of eastern Sind were surveyed by Mr. N. G. Majumdar between 1928 and 1931. During his survey, a number of sites were explored, including a few representing the Harappan culture. Later on, the central part of the Indus Valley, covering the areas of Bahawalpur and Rajasthan, were explored and over one hundred sites were located. Unfortunately, the full report of those discoveries remained unpublished. The survey, however, indicated that the central Indus Valley possessed numerous settlements of the Indus Valley Civilization, some of which were of an even earlier date. After Independence, the principal sites of the Indus Civilization—Moenjodaro and Harappa—became part of Pakistan. Nothing was left within Indian territory, except a few minor sites near the borders of Pakistan. This situation prompted Indian archaeologists to carry out an intensive survey of various areas in East Punjab, Kutch and Saurashtra.

Recently, Professor A. H. Dani and his colleagues, Mr. Farid Khan and Mr. F. A. Durrani, surveyed some areas of the Dera Ismail Khan District. The occurrence of numerous sites of Harappa culture in the area of the Gomal Valley was surprising. Similarly, in the southern parts of the Indus Valley, some sites were known to exist, but they had not been properly studied and reported. Last year, Mr. Mohammad Sharif of the Department of Archaeology conducted a survey of the southeastern part of Sind and mapped over one hundred sites, some of which were of the Indus Civilization period. Among these was the site of

Gharo Bhiro, discovered for the first time, located on the route leading southwards to Saurashtra and Kutch. Besides, several sites have been located around Karachi and in the southern part of the Lasbela District by Mr. Abdul Rauf Khan of Karachi University. Last year, a team from the Department of Archaeology headed by myself surveyed the northern part of Baluchistan which led to the discovery of three new sites. The total picture which emerges from these researches reveals at least one hundred and forty four sites of the Indus Civilization.

But it must be emphasized that it was only a part of the total picture, since large areas of this Civilization, especially in Pakistan, still remain to be surveyed systematically. There are still gaps, especially in Sind and the Punjab. There is a concentration of sites in the central part of the Indus Valley in Bahawalpur, where at least 42 sites are located, but these have to be verified by actual field work. Similarly, the discoveries made on the Indian side indicate the geographical expansion of this Civilization. It is in this context that the Civilization has also been referred to as the *Greater Indus Valley Civilization*, which embraces the river systems of the Indus and the Ghaggar-Hakra. The few sites located in the Baluchistan hills are confined to the hilly borders or are situated at strategic points on the main overland routes. For example, we have the site of Pathani Damb located on the Mula River in upper Sind. Another site, Gudri, is located in the Bolan Pass itself. The site of Dabar Kot in the Thal plain of Central Baluchistan has now for long been known to us as the most promising site, standing to a height of 113 feet in the Loralai Valley. Dabar Kot and the most recent discovery of Kaonri in Loralai are located on the ancient line of communication leading to southern Afghanistan.

¹ The Editor acknowledges the assistance of Dr. M.R. Mughal in the preparation of the text of these discussions.

Another site, Periano Ghundai, is located in the Zhob Valley of northern Baluchistan, which ultimately joins the Gomal Pass. The Gomal Valley in Dera Ismail Khan district also contains several sites of the Indus Civilization. This distribution of sites indicates that the Indus Civilization covered a larger area than any of the known civilizations of the ancient world.

Here, a few words about the terminology that archaeologists have adopted for the Indus Valley Civilization are necessary. It is a general practice to name a culture after the site where it is first discovered. Accordingly, the Indus Civilization is called the 'Harappa Culture' because this civilization was first found at Harappa. However, this terminology is not fully applicable to this case, because the most important sites are located in the Greater Indus Valley proper, that is in the vast plain of the Indus and Ghaggar-Hakra river system. There are no doubt many sites located in Kutch. But the Rann of Kutch itself is formed by and is located in the Indus deltaic region. Further, the term 'Harappa Culture' focuses our attention on a particular site of this wide-spread civilization. Therefore, besides geographical considerations, there are cultural reasons to call it the Indus Civilization, implying the highly evolved stage of cultural development.

MORTIMER WHEELER: The Indus Valley Civilization covered an area roughly twice the size of ancient Egypt, and, indeed, Mesopotamia or Iraq. It is the largest mature civilization known to us. That is one of the obvious reasons for its importance.

G. F. DALES: But how much do we know about the contemporary Indian sites? In fact, it was a huge area which was occupied at the same time; and it seems that there was a shift of population from one to another site.

M. R. MUGHAL: The distribution of the

Harappan sites, at first, gives an impression of an Indus 'Empire', encompassing Pakistan and the western part of modern India. However, such an impression would be misleading, because we have yet to determine how many Harappan settlements were contemporary with each other at one specific time.

S. A. NAQVI: We have worked out plans to survey the entire archaeological wealth in Pakistan. The work has been started last year by various teams. The provinces of Pakistan have been divided into various convenient components for the purpose of this survey. Last year, we carried out a survey of some of the northern parts of the Punjab, northern Baluchistan and southern parts of Sind. The leaders of these exploratory teams were Mr. Ahmad Nabi Khan, Dr. M. R. Mughal and Mr. M. Sharif. These surveys have collected some very useful data, which, when studied properly, will be of great value in solving various problems not only relating to the Indus Civilization, but also to the periods preceding and succeeding it. In fact, we have to comb the whole area of Pakistan for this purpose; and when this has been done—and I am certain that it will be done in near future—the problems raised by Dr. Dales, will be solved adequately.

M. R. MUGHAL: Concerning the question raised by Dr. Dales, we have already some evidence to believe that the sites located in Saurashtra and Kutch represent a later movement of the people from the Indus Valley, that is, from Moenjodaro. We are still not sure about the circumstances responsible for such a migration and about what happened to the principal cities of the Indus Civilization. To solve these problems, we need further excavation at various sites.

MORTIMER WHEELER: This obviously needs—under happier conditions—close collaboration with the Indian surveyors who are, after all, working on similar problems.

S. A. NAQVI: It is not only on the other or eastern side of Pakistan that we have got potential sites of this culture. Our work in Baluchistan, for instance, has indicated that its roots go deeper into the areas which are now part of Iran; and efforts are to be made to develop collaboration with Iranian archaeologists as well. With this collaboration, I am sure, we will be able to work out more details of cultural influences and contacts.

F. B. BAGHERZADE: May I instantly respond to the very kind remarks coming from Pakistani friends, rather an appeal for collaboration and co-operation with Iranian archaeologists. Certainly, we could not welcome any friends with a more open heart, and we look forward to co-operating and collaborating with Pakistani archaeologists. This is not just a statement for the sake of a statement, but an open-hearted invitation; and I am very happy to announce here that Mr. Naqvi and I have agreed to work together to open a new chapter of future co-operation and collaboration between Irani and Pakistani archaeologists.

M. R. MUGHAL: I have discussed here the problem of the origin or beginning of the Indus Civilization, the chronology of various sites and the nature of the evidence we have got from these sites.

MORTIMER WHEELER: This complicated subject is fundamental to our understanding of the Indus Civilization. The trouble began about ten years ago, when a tree called the bristlecone pine was found to have, in favourable circumstances, an unruly length of life of 4,900 years or more. It was important because, as we know, the tree-rings formed a series of more or less concentric bands which can be counted, and an approximation to a very exact date can be given to that particular tree. When this process is carried back into the fifth millennium, you can off-set the tree-ring dating with the results of the radiocarbon analysis of the same material.

That was where the trouble really began. It was expected before, and it now became clear that radiocarbon was not the infallible answer to all our questions which we had hoped before. Many able scientists, particularly in the University of California, like Dr. Suess, have been working on this problem. The dates in the third millennium B. C. given by radiocarbon are sometimes considerably later than the calendar dates. For example, radiocarbon may give a date of 2500 as against the calendar date of something nearer 3000. That is why the dating of the Indus Civilization is being pushed back at a remarkable speed. In 1946, before radiocarbon came on the scene and when we had simply traditional dynastic dates to go upon, I worked out as nearly as one could in those remote days, the initial date of the Indus Civilization as about 2500 B.C. Then, along came the radiocarbon with its falsifying dates, and all of a sudden, the dates of the Indus Civilization were moved up to near 2000. You find this in quite reputable books by fairly reputable archaeologists, in which it is still stated that the Indus Valley Civilization appears to have begun somewhere around 2000 B.C. Well, I sat firm without being worried unduly, because the dynastic dates were pretty solid and reliable. Now new kinds of scientific tests are just coming to light. And really at the present time I would not be at all surprised to find one morning that the Indus Civilization began 3000 B.C. or a little bit before that. That is like driving backwards to win a race. We were third in the race twenty years ago or so; and now we are nearly level with Egypt and approaching the Mesopotamian Civilization. It is a very interesting stage in our increasing knowledge and increasing consciousness of ignorance.

F. A. KHAN: What effects will the revised dates have on the chronological frameworks of both the Indus Valley and Mesopotamia?

MORTIMER WHEELER: The point is that the two series of dates, which are now apparently

emerging with a certain conformity, are based on entirely different premises. The Mesopotamian dates are not based on radiocarbon at all. They are based upon dynastic and similar considerations. Therefore, we are comparing reliable dynastic dates with unreliable Carbon-14 dates.

G. F. DALES: Concerning the relationship between Mesopotamia and Moenjodaro, there are archaeological specimens which give us absolutely solid parallels. We can compare a dozen or so objects with the known context in Mesopotamia, well-dated by dynastic lists. But that does not give us the full range of the Harappan Civilization. That only gives us a point in time at which the people of Moenjodaro were in direct contact with Mesopotamia. But we know that the Harappan Civilization existed before those contacts. The new radiocarbon dates give us a longer time-span of the Indus Civilization.

ZAKI ISKANDER: Sir Mortimer Wheeler has made us a little suspicious about radiocarbon dating. Actually, radiocarbon dating showed some differences compared with the Egyptian dates. Researches made in this connection have indicated that the difference is in part due to the magnetic changes in the meridian of the years. The corrections have been made by comparing the tree-ring dates with the C-14 dates. If we apply these corrections to the ancient Egyptian samples, the dates agree with the archaeological ones.

G. F. DALES: About the climatic change, we should no longer rely just on archaeological evidence or inference. It is a scientific age, and what we must do now is to get soil samples and profiles, and we should bring to bear all of the techniques of palynology etc. This, to my knowledge, has not been done in Pakistan as yet. It is a high priority thing that we must do. We should get soil samples from the known sites of the Indus Valley. This should be coupled

with traditional archaeological research.

J. F. VAN LOHIZEN: You mentioned that most of the sites were situated on or close to the ancient or present river beds. How about those which are not situated along the river beds? Has any one tried to find out whether they perhaps might indicate ancient trade routes, or whether a pattern of ancient trade routes emerges when we plot those sites which are not on the rivers?

M. R. MUGHAL: There are some sites located on ancient or modern lines of communication, particularly in the hilly region of Baluchistan, or just guarding strategic passes like the site of Pathani Damb on the Mula Pass, which connects the upper Indus Valley with Kalat in central Baluchistan. The sites on the Mekran coast, namely Sutkegan-dor, Sotka Koh and Bala Kot and the site of Lothal in western India are located on sea-routes. There are also some sites situated at the foot of the Kirthar and Sulaiman ranges. The very location of these sites is connected with the maintenance of a sphere of interaction among different populations.

MORTIMER WHEELER: The sites on the Mekran coast are on the old estuaries.

G. F. DALES: Old estuaries or on the major river courses. So they are generally associated with water.

M. R. MUGHAL: There is a concentration of the Harappan sites in the Gomal Valley which connects the upper Indus Valley with northern Baluchistan through the Gomal route. The sites in the Loralai Valley have already been mentioned.

MORTIMER WHEELER: It will be very interesting to find out the situation on the Persian Mekran.

FARID KHAN: The environment of the Gomal Valley is very similar to that of Moenjodaro. The evidence suggests that there was no major shift in the climate.

MORTIMER WHEELER: In connection with the climate, I may mention the site of Judeir-jodaro, which is situated on the high road to Baluchistan, in an arid landscape with an annual rainfall of three to four inches only. I wonder how a city of that considerable size could have lived in that kind of a desert.

ZAKI ISKANDER: Has there been pollen analysis made to ascertain changes in climate?

FARID KHAN: I understand that Dr. Kazmi of the Geological Survey of Pakistan has done some pollen analysis which suggests that there has been no major change in the ecology of the Indus Valley.

F. A. KHAN: Is there any definite archaeological evidence to prove the incoming of the Aryans in the Indus Valley?

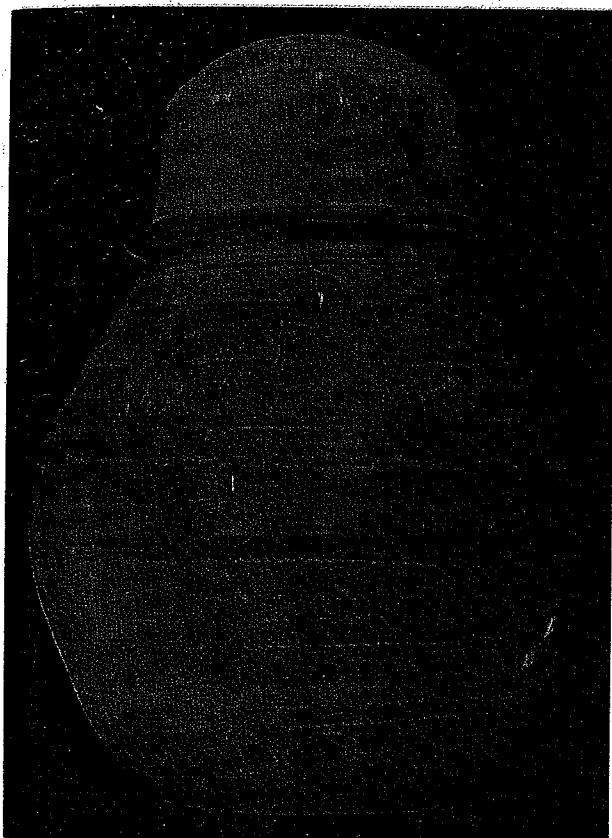
MORTIMER WHEELER: I don't see the Aryan problem. Of course the Aryans came in: they didn't arrive but travelled in. Many years ago, when I was thinking about these things and when I began to collect data from Moenjodaro in that context, I found a whole series of groups of massacred skeletons—skeletons of people who were left lying as they had been struck down, bearing the wounds which had struck them down. After this episode, whatever it was, that part of the city where these bodies were found was deserted for a considerable time. The skeletons were lying in the position they had fallen. A friend of mine (Dr. Dales) was one of those whose own reading of the evidence upset him and he wrote an article saying there was no massacre. The only trouble was that a few days later, as he was digging here, almost on the first day of work, he came upon a pile of three

skeletons lying sprawling in a lane where they were struck down. Yesterday, we were on the site where these skeletons were found, and a very interesting fact was mentioned to me, which I didn't know before: that the adjacent houses had been burnt down. So there is every circumstantial evidence for a really bad day in the life of Moenjodaro, a day which must have been pretty near the end of the city. All these skeletons are at the top level, that is, the latest level.

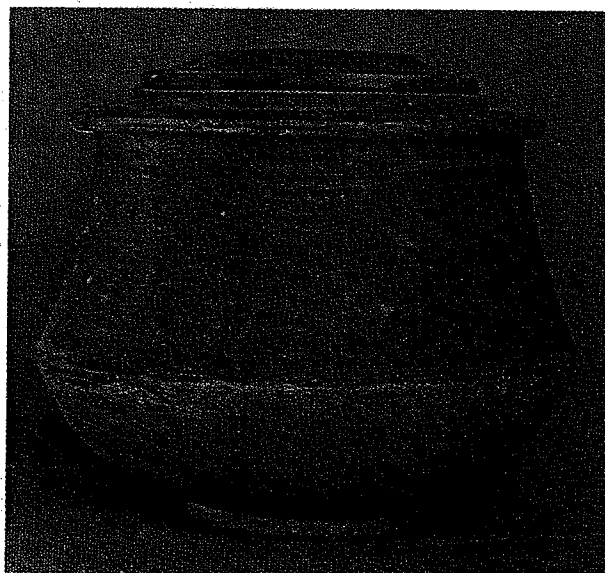
G.F. DALES: Sir Mortimer Wheeler visited the site not long after the excavations. He saw the place where the skeletons were found, and he said: "Yes, these are in a lane between brick walls, but I agree that there is no stratigraphy here. They are not on the floor or street." This was my whole basic argument for the mythical massacre of Moenjodaro. We have skeletons all over the place, but they are not found in the streets where they were slain as Sir Mortimer suggests. They are in debris and are covered by a great deal of silt, broken bricks and junk. Now, I think only two of the thirty or forty skeletons have actually been found in physical contact with the floor or on a brick staircase; the others were in the debris. There is no way of archaeologically proving that those skeletons are related to the actual last occupation of the site. That argument was based on the technique that I learned from Sir Mortimer Wheeler about the value of stratigraphic digging.

F.A. KHAN: The theory of an Aryan invasion is applied to Moenjodaro only. Is there any indication that the destruction was widespread in the Indus Valley?

MORTIMER WHEELER: If it had happened to the Harappans at Moenjodaro, there is no reason why it should also have happened to a site four hundred miles away. But if it did happen to Harappa, the Railway Engineers of 1860 very satisfactorily cleared the whole surface.



Burial jar from Harappa.



Burial jar from Harappa.

FARID KHAN: The evidence at Gumla suggests that there were two waves of invaders represented by cremation and inflexed burials. The Indus Valley phase in the Gomal Valley was destroyed by fire.

M.R. MUGHAL: Regarding the decline of the mature or urban phase of the Indus Civilization, one view is that it was possibly due to an Aryan invasion around the middle of the second millennium B.C. We have talked about the evidence of a massacre at Moenjodaro and the possible destruction of sites in the Gomal Valley. The second suggestion is put forward by Prof. Dales and Robert Raikes, who postulate a geologic uplift in the lower Indus Valley, leading to the creation of a dam across the Indus channel, near Sehwan, and a huge lake which flooded Moenjodaro and the areas around it. I have also referred to the tectonic disturbances in the Indus Valley, pointing out that this part of the valley does fall within an active seismic zone. Such a phenomenon is possible; but has not yet been proven. In this context, I might point out that during a recent survey of south-eastern Sind, Mr. Mohammad Sharif came upon some evidence of the desertion of many settlements of the late 18th and early 19th century A.D. One reason for such a large-scale abandonment of sites may have been the huge Allah Bund, which was created across the Indus River as a result of the violent earthquake of 1819. This natural phenomenon might have caused a flooding of the southeastern part of the Indus Valley, forcing the people to migrate to other areas. In 1950, Mr. M.R. Sahni, a palaeontologist, originally suggested that the decline of the mature phase of the Indus Civilization might have been due to geologic disturbances.

MORTIMER WHEELER: The story has been accepted by some, and discussed by all, that there was a geological uplift across the line of the Indus Valley below Moenjodaro, somewhere near Amri perhaps, and that ponded back the

river and turned it into a great lake, flooding many buildings. You can imagine that perhaps the mounds which had grown up during the centuries, and carried various buildings of Moenjodaro, appeared as a series of little islands. Other buildings were raised on mud-brick platforms to surmount the floods. Then, as sequel to this, the river broke through the tectonic barrier on its original course, thus restoring the landscape to something approaching its previous condition.

N.A. BALOCH: Historically speaking, within this millennium, we have evidence that the cities which were flourishing until 1000 A.D. had been deserted because of the vagaries of the rivers. For example, the Arab city of Mansurah was deserted because of the change in the river course. The same geographical considerations can be applied to prehistoric times. The Indus River was not flowing by the side of Moenjodaro about 1000 years ago. At that time, it was flowing through the middle system, and not through the present western system.

F.A. KHAN: How many sites were affected by the mighty dam which is supposed to have been formed near Sehwan, and where is the evidence of it?

M.R. MUGHAL: There are real objections to this theory. It is argued that if a large area was flooded due to the creation of a huge dam, it would have flooded several large and small sites, including Moenjodaro itself. Furthermore, with the rejuvenation of the Indus channel, most of the submerged sites should have been eroded away. These objections and many others have been raised by H.T. Lambrick, who says that there is no physical evidence of any remnant of a dam anywhere in Sind: there are no butt-ends of it on either side of the river. That the site of Amri was situated near the sea-shore during prehistoric times is also questionable. If the sea had extended up to Amri, then the location of

Gujo, a site of the Harappan and of an earlier period, on the top of a hillock near Thatta cannot be explained. The inference would be that at least up to Gujo, about fifty miles east of Karachi, the lower Indus Valley was inhabited even before the time of Moenjodaro. If we postulate a dam and a ponding back of water, the sites of Kot Diji, Jhukar, Lohri Lohumjodaro, Jhangar and Bandhri etc. would have been affected by the flood. But we do not know much water had accumulated in the supposed lake and to what height. Ironically, no evidence of flooding has, so far, been found at these sites. However, there exists a new hypothesis concerning the decline of the Indus Civilization, which also involves geological disturbances as one of the factors pertinent to this problem, and which may also be considered.

G.F. DALES: Our research of 1964-65 was of a preliminary nature. The evidence we collected really applied only to the site of Moenjodaro and its decline, rather than of the whole Indus Civilization. We know nothing about the significance of Moenjodaro, whether or not the city was an administrative or religious centre. What was the impact of the desertion of the city? I would suggest that a careful survey should be done around Moenjodaro for other sites, and to obtain elevations. Without their elevations, we cannot tell how many sites were flooded. As the theory stands, it is one way to explain some of the peculiar features of Moenjodaro, like the mud-brick platforms and thick layers of silt.

MORTIMER WHEELER: I know that Robert Raikes wants to bring this theory down to earth by actual probing and digging. We do have this phenomenon of massive up-building of houses and their platforms in terraces, generally, of mud-brick. It was a costly operation. It was done to build their houses above the water-level of that period, and there was a problem of water, whatever one says. It is an attempt to solve an

agreed phenomenon. It is hoped that provision will be made in the near future to carry out these selective probings.

M.R. MUGHAL: The next point of our discussion relates to the archaeological evidence of contacts between the Indus and Mesopotamian Civilizations, and the implications of these relations with the cultures of Iran, the Persian Gulf and other regions.

MORTIMER WHEELER: It is a complicated matter, but of considerable importance. A few years ago I was in Bahrain, an island and a centre-piece of this landscape of the Persian Gulf trade. The whole question of the Persian Gulf trade is of outstanding interest. Years ago, two semi-coastal sites were located on the Mekran coast, lying west of Karachi, by Dr. Dales, to which a third was added by Robert Raikes. No doubt, there were several more which functioned like petrol stations on a highway. These sites do make sense in the light of a considerable trade between southern Mesopotamia at one end and the Indus Valley on the other, whatever name may be given to the latter in the collections of the museum at Yale. This reminds me that, while we spend years of our life and bags of our money in digging up sites in difficult places, the most profitable places, I think in my experience as a Trustee of the British Museum, are the cellars of our big museums. We need somebody with knowledge and the academic opportunity to continue what Dr. Dales began so well twelve years ago on the shores of the Persian Gulf, and to continue finding these service stations or ports-of-call to which the ships going up and down the Persian Gulf between the two great civilizations of Mesopotamia and the Indus called for fresh water, fresh vegetables and an interchange of goods. Failaka is a little island of the size of merely a first, located at the top end of the Persian Gulf. The Danes—if only they publish what they found—report the discovery of many seals of the sub-Indus kind.

One of the seals from Bahrain resembles the one stamped on an inscription (at Yale) bearing the name of one Hatim-Ibanum, and has been dated to the tenth year of the reign of Cungunum or 1923 B.C. S.R. Rao also found one seal at the port-city of Lothal, located on the Gulf of Cambay.

FIROUZ BAGHERZADEH: The recent excavation carried out in Shahdad by Engineer Hakimi has revealed dozens of steatite vessels with geometric designs very similar to what you found in Moenjodaro. Another analogy is found in the glyptic art. Secondly, the occurrence of lapis lazuli at Shahr-i Sokhte in Iranian Siestan is a very interesting phenomenon. It obviously came there from Badakhshan. While prospecting westwards on the three different itineraries drawn on the map, it would perhaps be a good idea to prospect in the North-South as well from Central Asia to the shores of the Indus, and then to go westwards to the desert of Lut in Iran.

G.F. DALES: There has been a considerable amount of research and exploration in the northern region dealing with the possibility of Harappan contacts with Afghanistan and Siestan and southern Russia. I have just completed three years of work in Afghanistan on this problem, and I can assure you that there is not a shred of evidence of Indus Valley influence in Afghanistan, in Shahr-i-Sokhta, and in southern Russia. The time when we have contacts, and very close contacts, is in the early Harappan period as defined by Dr. Mughal. From ca. 3000 to 2500 B.C., you have very close contacts in terms of female figurines of the type which are being found in the Gomal Valley, in Jalilpur, and which have been reported in Afghanistan and the new sites in Soviet Central Asia. These are extremely close contacts, but these contacts absolutely stopped at the time when Moenjodaro became a mature, flourishing

city. It seems to me that there is a possibility of those northern contacts having been disrupted somehow. Whether or not this had to do with the early movements of the people, we don't know. But the contacts we get during the mature Harappan period are down to the coast. These are coastal contacts, and that is why we have this series of sea-ports and the evidence of the Persian Gulf seals. We are not going to find any Harappan in Afghanistan. It is up to the historians to try to find out why there was a disruption of trade. The lapis lazuli is found during the early Harappan period, ca. 3000-2500 B.C. It does not come down to this area during the mature Harappan period.

MORTIMER WHEELER: A little bit of it does.

G.F. DALES: A little bit does, but not to the degree that we find at Shahr-i-Sokhta, which is a fantastically rich site. But the lapis lazuli which we find in Siestan was going westward to Iran and Mesopotamia.

MORTIMER WHEELER: Do you reject the alleged Proto-Harappan in Afghanistan?

G.F. DALES: The Proto-Harappan or Early Harappan is there, but not the Mature Harappan.

MORTIMER WHEELER: Things like the Quetta ware, you get there (in Afghanistan) in a pretty big way.

M.R. MUGHAL: Strong contacts are noticeable between the north-eastern regions of Iran and southern Afghanistan and northern Baluchistan and the Greater Indus Valley during the early third millennium B.C., or the early Harappan period in the context of the Indus Civilization. There was considerable interaction among these regions before the mature Harappan period.