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Emergence and Decline of the Indus Valley Civilization in Pakistan

Abstract: *Indus Valley Civilization is one of the oldest civilizations in the world dating back to 7000BCE. The explored sites of the civilization span present day Pakistan and India. The following paper explore the Indus Valley Civilization through the sites in Pakistan. The paper highlights feature of various stages of the Indus Valley, for example, Early Food Producing Era (7000-4000 BCE), Regionalization Era – Early Harappan Era (4000-2600 BCE), Integration Era (Early Harappan Phase) (2600 – 1900), Localization Era (Late Harappan Phase) (1900 – 1300), and Indus Valley from 1300 BCE to Present. In doing so, the paper discusses the geography, environment, material culture, subsistence patterns, political and social organization of each era. Finally, it explores the various theories of decline of Indus Valley Civilization, drawing on various sources. In the conclusion, the paper provides recommendations for future focus on the archaeological sites in Pakistan enhance our understanding of the civilizations.*

Key Words: Indus Valley, Civilization, Pakistan

Introduction

The archaeology of Indus Valley is sparse, especially in Pakistan due to many reasons. Firstly, modern use of land has destroyed many archaeological evidences. Secondly, the lack of use of modern technology to excavate the archaeological sites, as well as dating, and analysis. For example, the Mohenjo Daro which was the most important city of the Indus Valley civilization is only 20% excavated since almost a century when Sir John Marshall first discovered it in 1922. At other archaeological sites, same problems persist in Pakistan. The third problem is the comprehensive understanding of Indus is related to the various sites in India, which was not the part of the current paper, hence limits the understanding of Indus at various points. Fourth, during the post-Harappan era, after 1300 BC archaeological records are scanty. In India the period from 1400 BCE to 600 BCE is termed “Vedic period” but Pakistani archaeology wary of using this term inside nation-state boundary of Pakistan. This silence the archaeology in Pakistan from 1400 BCE to 600 BCE. Most of the archaeologists agree that post-Harappan era is the discontinuity of culture in the Indus, however, experiments with agriculture continued ([Kenoyer 1998](#); [Possehl 2002](#) and [Wright 2010](#)). From 600 BCE the evidence of Buddhism in Northern parts, and Jainism in South of Pakistan provides a historical record of the period that specific period. For later period historical records are the major source, rather than archaeology, illustrating dynasties, and conquest from 600 BCE to present ([Possehl 2003,2002](#), and 1999; [Wright 2013](#), and 2010; [Kenoyer 2011 and 2003](#); [Jansen and Urban 1985](#); and [Flam 1999](#)).

Geography

Indus Valley extends from the Himalayan Mountains in the North to the Arabian Sea in the South and is bordered by the Baluchistan mountains to the West and on the East by the Thar Desert and the Ganges-Yamuna Divide ([Possehl 2002](#) and [Wright 2010](#)). The region is in the heart of Indio-Gangetic plain with three major river systems – Indus, the Ghaggar-Hakra, and the Ganges-Jamuna. Of this various geographical extension of Indus, the current paper is limited to the geographic areas in present-day nation-state boundary of Pakistan, where the elevation of Indus River (Valley) is 80 meters. Indus River is still most important river in Pakistan, which other than itself feed by five other major rivers namely, Jhelum, Chenab, Ravi, Beas, and Sutlej. All these rivers combine at Panjand forming Indus River System that flows into the Arabian Sea in the South. While Hakra river in Pakistan is now only visible as a relict channel in the deserts of Cholistan ([Kenoyer 1991](#); [McIntosh 2008](#) and [Wright 2010](#)).

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In mountainous regions, parts of Himalayas, Hindu Kush, and the Karakorum borders Pakistan. The western border zone includes two major mountains, the Kirthar, and Suleiman mountains that borders between Baluchistan, and the western edge of Indus alluvial plain. The NWFP (today it is called Khyber-Pakhtunkhwa) includes rugged mountainous zones and valleys. The Thar's western boundary encroaches upon the lower Indus Plain, and its northwest margin the Cholistan ([Possehl 2002](#) and [McIntosh 2008](#)).

Climate

Table O1 provide the details of climate patterns chronologically. Archaeologist still contests over the timing of the fluctuations, but they agree that drying phase at around 2600 BCE was the peak period of Indus settlement. [Giosan \(2013\)](#) suggests that Indus civilization relied on the flow of the rivers, and “maybe that drying [season] 4200 years ago somehow tamed the [Indus] river, and the floods were weaker and more amenable to agriculture” ([Giosan 2013: 2](#)). [Giosan et al. \(2012\)](#) suggested that “reliable monsoon rains were able to sustain perennial rivers earlier during the Holocene,” which “explains why Harappan settlements flourished along the entire Ghaggar-Hakra system without access to a glacier-fed river” [3]. These studies suggest the change in the environmental conditions was one of the major sources of urbanism at Indus Valley. In the following pages, I follow the chronological discussion of Indus valley (see Chronology). Much of my emphasis is show how climate change gives rise to mature Indus period when flooding, and rain becomes more predictable and manageable, and later further dry season caused the decline of Indus valley.

Table 1. Tabulate Formation of Description from Marco Madella and Dorian Fuller (2006)

Year	Type of Climate
12500 – 8500 BC	Higher rainfall, but marked by fluctuating arid spells
8500 – 7000 BC	High rainfall, but interspersed with arid periods
7000-5000 BC	High rainfall pattern continued, but more frequent and severe periods of aridity
3950-3700 BC	Drying trend; monsoon rain continued, but high levels of winter rains
2800 BC	Rainfall level declined, bringing modern levels of aridity
2200 – 1300 BC	Significant drying trends occurred
1300 BC – Present	Same dry trend continued with some fluctuations

Source: [Wright 2010](#)

Early Food Producing Era (7000-4000 BCE)

With the discovery of Mehrgarh, the age of Indus valley augmented to 7000 BCE which previously was thought to be 4000 BCE old. Although Mehrgarh is not located on the bank of Indus River where Indus people later settled, but the site (see map – I) provides evidence that either people of Mehrgarh migrated and settled at Harappa in the north showing continuity of the civilization from 7000 BCE or they had certain connections with the people of Harappa as the evidence of tools, subsistence patterns, and skeletal remains show ([Barthelemy et al. 1997](#); [Costantini 1984](#); [Kenoyer 1998](#); [Possehl 2002](#); and [Wright 2010](#)). The People of Mehrgarh were transhumance nomadic; the nomadic people must have migrated to present day Cholistan desert when rain decreased during around 4000 BCE. The decreasing rain caused a decrease in flora and fauna at Mehrgarh people were dependent as the evidence at Mehrgarh, Kuli Gul Muhammad ([Possehl 1986](#)) and Faiz Muhammad in Quetta (Fairservis, Jr. 1959) show.

Map 1: Early Food Producing Era – 7000- 4000 BCE



Map 2: Regionalization Era – 4000 – 2600 BCE



Map 3: Urban Era 2600 – 1900 BCE



Geography and Environment

Mehrgarh is located in the foothills in an alluvial as well as riverine environment dominated by semi-lacustrine or humid environment with riparian vegetation in Baluchistan. It is thought that the Pleistocene Indus River flowed in this area, but major water source for the residence of Mehrgarh was the Bolan River, which also served as a major communication route between Indus Valley and Baluchistan. The site is located at the perfect location, because of high monsoon rain during this period; rain, as well as hill torrents, provide sufficient water sources for the domestication of vegetation ([McIntosh 2008](#); [Kenoyer 1991](#) and [Wright 2010](#)).

Domestication (Early Food Producing Era) – Subsistence

The wheat and barley were the most important plants at Mehrgarh. The location of the Mehrgarh is perfect with the wetter environment to domesticate wheat and barley at about 7000 BCE followed by the domestication of sheep, goat, and cattle at around 4500 BCE. The animal remains shows both domesticated as well as wild animals that provide evidence of both hunting and gathering as well as domestication ([Costantini 1984](#)). But it is difficult to ascertain when complete domestication started due to lack of evidence ([Wright 2010](#)). [Possehl 2002](#) provides a list of all the animals domesticated at Mehrgarh including gazelles, swam deer, nilgai, blackbuck, onager, spotted deer, water buffalo, sheep, goat, cattle, pigs, and elephants [27]. Lack of evidence of fish and birds suggest that Bolan (river) Pass was not very much important for them as a major source of subsistence ([Wright 2010](#)). With domestication, there was also evidence of transhumance population were moving during summer to upland for cooler pastures ([Wright 2010](#)).

During the later period, the domestication becomes institutionalized. Mehrgarh – II (5000-4300 BCE) was the beginning of the local irrigation relying on wheat and barley, especially naked six-row barley increased greatly. The consolidation of agriculture and domestication becomes more important than hunting and gathering showing the change of society from pastoralist to more settled agriculturalists that continued until 4000 BCE ([Costantini 1984](#); [Kenoyer 1998](#) and 2003 and [Wright 2010](#)) showing increase in human population [see table – 2 below].

Table 2. House Structure with Extent of Occupation

Period Chronology	Area Occupied	Extent of Occupation
A First Village I - 7000-4800 B.C. II A – 4800-4300 B.C. II B – 4300-4000 B.C.	MR 3/4/6 MR ¾ MR 3/4	2-3 hectares 12 hectares
Villages at the Crossroads III 4000-3200 B.C.	MR2	75-100 hectares
A Mosaic of Villages and Towns IV-VII 3200-2500 B.C.	MR1/7	60 hectares

Source: [Wright \(2010\)](#)

Political and Social Organization

Although, a lesser amount of evidences are present to understand the political and social organization at Mehrgarh. Much of the data on political and social organization comes from the trade, and burial records. The field reports of Mehrgarh from 1974-85 ([Catherine 1995](#)) and from 1997-2000 ([Jarrige et al. 2013](#)) shows the presence of bangles, pendants, beads, and other ornaments which were made up of seashells. The possible source of seashells was the Arabian Sea almost 500 km away from the Mehrgarh. Either finished products of seashell reached to Mehrgarh, or they after importing raw material were made locally. No significant evidences of the industry at Mehrgarh was found, although possibilities of some small homemade industry cannot be eliminated ([Kenoyer 1998 and 2003](#)). The design of ornaments shows the linkages with other sites especially in Iran, which is located in the northeast of the Mehrgarh.

[Wright \(2010\)](#) is of the view that there was a sexual division of labor as well as a hierarchy based on the artifacts found in the burials. In an exceptional burial include stone and shell necklaces (a male), a flat shell disc pendant, and stone ankle bears, five goats under the age of three months at the individual's feet. There are differences in the artifacts found in the burial of female and male that shows the sex differences during this period. The higher percentage of ornaments in female burials may reflect the importance of reproductive capacities of the female accorded at Mehrgarh ([Wright 2010](#)).

Material Culture and Technology

Material culture provides evidence of the transition from hunting and gathering to farming and herding during this period. During early period (7000-6000 BCE) stone tools were used for hunting and butchering of the animals showing reliance on the hunting. While from 4500 BCE to later period settled subsistence, pattern took over; the cooking and food processing includes mortar and millers for grinding grain into flour were used. From burials, various ornaments, and other tools like bangles, small balls, rattles necklaces, lazuli, and steatite was found, also shows the transition from hunting and gathering to settlement during this period ([McIntosh 2008](#)).

Evidence shows the mass production of pottery, with standardized shapes, a shift in the chipped stone tool industry away from true microliths to larger, bulkier types based on different technological principles. Also, the skeletal remains from Togau site (4300-3800 BC) show close affinities with Harappa than earlier Mehrgarh population. The later phases of Mehrgarh (Kech Beg – 3800-3200 and Hakra Wares Phase – 3800-3200 BC) provide evidence of continuous growth with consolidation, rather than the development of technology ([Possehl 2002](#)). This period also shows the first out of Baluchistan migration of a significant number of herders to eastern piedmonts across the Indus River, and into Punjab towards the Cholistan or what M.R. Mughal called "Hakra Wares" ([Mughal 1997](#)). Hakra river used to flow in the Cholistan that may have attracted the transhumance population ([Mughal 1997](#)).

Regionalization Era – Early Harappan Era (4000-2600 BCE)

The transhumance people of Mehrgarh are supposed to reach Cholistan during 4000 BCE and settled there ([Mughal 1997](#) and Farzand and Amna 2014). The resemblance of skeletal remains of Mehrgarh with that of Harappa proves a close link between Mehrgarh and Harappa phase ([Mughal 1997](#); [Possehl 2002](#); Wright 2010). This pre-urban phase is further divided into the Phases based on ceramics and regional equivalences as follow:

Upper Indus

Ravi	3300-2800 BCE
Early Harappan/Kot Diji	2800-2600 BCE
Lower Indus	
Amri	3300-2600 BCE
Hakra	3500-3000 BCE
Early Harappan/Kot Diji	3200-2600 BCE
Ghggar -Hakra in Cholistan	
Hakra	3500-3000 BCE
Early Harappan/Kot Diji	3000-2600 BCE

Source: [Wright 2010]

The distance among upper, and lower Indus, as well as Hakra in the Cholistan, is in thousands of miles, and there is material evidence suggesting the contact between these sites as well as early experiments of the people of the Indus with pastoralism and agriculture. ([Mughal 1997](#); [Kenoyer and Meadow 1999](#) and [Schuldenrein et al. 2004](#)). There can be two possible reasons for migration of people from Mehrgarh and to settle at the Cholistan. One, the drying of the environment with less rainfall started at Mehrgarh during this period that must have created a difficult situation for the people of Mehrgarh to continue to live in mountainous areas as they were mostly depended on rainfall and hill torrents to produce food. Second, the Hakra river must have influenced Mehrgarh people to settle at the Cholistan. ([Mughal 1997](#); [Kenoyer 1998](#))

Environment

Cholistan received heavy monsoon showers about 5000 years ago providing fertile land and supported by Hakra river until 600 BCE ([Mughal 1997](#) and [Farooq et al. 2005](#)). Gradual changes in climate caused a shift in monsoon winds and decline in rainfall, ultimately converted the area into a desert. In second millennium (2500 BC), the river changed its course when Yamuna River, which lies to the east of the Hakra river captured one of its tributaries, reducing the water in the river. A second change took place around 1500 BCE, when Sutlej River, which originally joined the Hakra was captured by Beas, rendering the Hakra dry ([Mughal 1997](#); [Arshad et al. 2009](#) and [Ahmed 2012: 165](#)).

Subsistence Pattern

Today, Cholistan is desert and excessively arid because of summer temperature and less rainfall leaving the sparse habitans to survive on nomadic pastoralism, and cattle herding. During 3500-3000 BCE large size of settlements suggests that population was engaged in agriculture and pastoralism ([Mughal 1997](#) and [Farooq 2012](#)). Due to lack of excavations in the Cholistan, the archaeobotanical or zooarchaeological records are not available. (Wright 2010). Although, the structure of settlement patterns like living floors, and mud walls as well as some preserved pots provide evidence of nomadic pastoralism at Cholistan ([Mughal 1997](#)). At lower Indus, the pastoralism, and agriculture continued at Kot Diji, and Amri, but more excavation is needed to firmly establish the subsistence pattern during pre-urban period ([Flam 1993](#) and 1999 and [Kenoyer 2011](#)). Similarly, like Cholistan, the lower Indus people must be exploiting both early agriculture, and nomadic pastoralism. The upper Indus was dominated by wheat and barley as traditional winter crops. The presence of millet, a drought-resistance crop suggests farmers were experimenting with year-round agriculture, which later, in urban period dominated. Sheep, cattle, and goats were primary pastoralists animals at all three major regions ([Possehl 2002](#); [Kenoyer 2011](#); and Wright 2010)

Political and Social Organization

No significant data is available on the political and social organizations during this period. But following the logic of [Kenoyer \[1994\]](#) that when societies procure the material from long distance that require knowledge,

and control over the society that from where what materials can be imported, and who will use what. The evidence of material culture show the contact of these lower and upper Indus, and Cholistan with each other and with Baluchistan which [Flam \(1986\)](#) called “vast interaction sphere” must have developed some sort of political organization. Similarly, the presence of large communities especially at Hakra, and upper Indus, and Lower Indus (Kot Diji) suggests, some development of social organizations ([Kenoyer 2011](#) and [Wright 2010](#)). Even though communities were nomadic pastoralist, as settlement show the presence of early agriculture and experiments to control water point towards the political and social organization ([Kenoyer and Dales 1991](#) and [Kenoyer and Meadow 1999 and 2004](#)).

Material Culture and Technology

At Hakra most of the material artifacts were associated with domestic and craft producing contexts like grinding stones, and pestles, shell, terracotta bangles, humped bull figurines, and other utilitarian stone tools. Almost similar kind of artefacts were found at Kot Diji ([Possehl 2010](#); [Kenoyer 2011](#) and [Wright 2010](#)). The house structure shows the domestic use with cooking pots and kitchen areas associated with hearth, and pits for storing the foods ([Wright 2010](#)). The ornaments and use of various nonlocal stones or marine shells in bangles, and other ornaments show the contact of people over long distance for their procurement ([Kenoyer 1997](#) and [Mughal 1997](#)). As all these sites were located near the banks of rivers, people were experimenting with canal system to control water, and shifting towards agricultural economy. At Hakra although, not very clear but evidence show the presence of canal system. Of the most important is the evidence of the construction of gabarbands (dam type structure) on the lower Indus before any permanent or intensive settlement suggests peoples experiments with water and water laid technologies ([Mughal 1997](#); [Wright 2010](#)).

This period provides a glance into the life of pre-urban period. The early experiments with water technology must have provided necessary water infrastructure during later urban period. That also, must have caused permanent settlement, and intensive agriculture. A pre-urban mechanism of contracting far flung areas also provided much needed contact with other areas which increased the trade, and ultimately led towards urbanization and mature Indus period ([Kenoyer 1998](#)).

Integration Era (Early Harappan Phase) (2600 – 1900)

The integration era, also known as urban phase in the Indus valley is marked by the rise of cities, communication, trade, infrastructure, and population ([Kenoyer 1998](#)). Harappa in the upper Indus, Mohenjo Daro in the lower Indus, Dholavira to the South of India in Kutch, Ganweriwala in Cholistan, and Rakhigarhi in India were the major cities during integration era ([Wright 2010](#)). In this section, I will talk about Harappa and Mohenjo Daro as major cities inside the current nation-state boundary of Pakistan as the most important cities during the Indus urban period ([Kenoyer 1998, 2003, 2011](#); [Possehl 2002](#); [Weber 2003](#); [Flam 1999](#)). Mohenjo Daro was the largest city followed by Harappa with significant population sizes (see table-3).

Table 3. Population of Different Urban Center during Integration Era

City	Area in Hectares	Total
Mohenjo Daro	125/200	18,000/40,000
Harappa	150	22,500/30,000
Ganweriwala	81	12,150/16,200
Dholavira	47/100	7,050/20,000

Source: [Wright 2010](#)

Environment

During the integration era, the decrease in summer rains, and increase in winter rains began the dry season (see table – I). The dry climate period coincides with the urbanism or mature Indus period that continued for 600 years until 1900 BCE ([Kenoyer 1998, 2003 and 2011](#); [Possehl 2002](#); [Wright 2010](#)). The recent studies by [Petrie et al. \(2017\)](#) and [Giosan et al. \(2012\)](#) argues that the dry season was important as it reduced the river flow, flooding became less frequent, and predictable providing opportunity to the people of Indus to exploit the favorable conditions. The less flooding allowed Indus people to settle, and to do experiments with subsistence patterns.

City Infrastructure/Social Work

With increase population, agricultural activities, and the permanent settlements brought the influx of socio-economic and cultural activities need city planning ([Kenoyer 19998](#) and [Jansen 1985](#)). Mohenjo Daro and Harappa became the center of socio-cultural and economic activities, connecting with other cities across the region providing opportunities for trade among the people of the region. People abandoned pre-urban settlements forming new settlements along the Beas, and Ravi river at the Upper Indus; Harappa emerging as major city in the region (Wright 2010; [Kenoyer 1998](#) and [Dales and Kenoyer 1992](#)). In the lower Indus, Mohenjo Daro emerged as new and largest city center of Indus valley, with sophisticated urban infrastructure at the bank of Indus river, exploiting the Indus River for (flood) farming, and sea route for the trade (Wright 2010 and Kenoyer 1998).

At Mohenjo Daro most important city infrastructure included toilets, bathing platform, and elaborated sewage system draining outlets of each home into the drains along the edge of street into the sump pits ([Kenoyer 1998](#) and [Jansen and Urban 1985](#)). The vertical shaft wells were another hallmark of the architecture of the Indus people ([Jansen 1993](#); [Kenoyer 1998](#); [McIntosh 2008](#)). [Jansen \(1993\)](#) has done detailed survey of wells, which according to him are no less than 700 in number, and each well served the three households. The hierarchy was present at Mohenjo Daro which can be accentuated by the western part of the city at Mohenjo Daro with inhouse Great Bath, Stupa, and other elaborated buildings which were absent in the eastern part of the city ([Jansen 1993](#); [Kenoyer 1998](#)).

The Great Bath at Mohenjo Daro which is “elaborate, colonnade, pillared corridor, and sunken pool...having no counter-part in the other cities” (Wright 2010: 126) show the excellence of architecture ([Jansen 1993](#)) of the people of Mohejo-Daro. The use of the mudbrick as well as baked brick in Great Bath and other buildings shows the enhanced technologies used to bake the bricks during urban period as compared to pats ([Khan and Lemmen 2014](#)). The streets were big enough to accommodate any large-scale flow of population and goods, provide insight into the economic activities of the city. However, the number of artefacts found in the streets does not show the presence of huge economic activities. ([Kenoyer 1994](#); [Jansen 2002](#) and 1994; Wright 2010). The Harappa city, like Mohenjo Daro has elaborated city planning, with sewerage system, wells to provide water in each household, and boundary wall to the city which is absent at the Mohenjo Daro ([Dales and Kenoyer 1992](#); [McIntosh 2008](#); and Wright 2010).

Subsistence Pattern

The urban period continued to grow the pre-urban agricultural products but the intensity increased many folds with the increase in population and settlements. The experiments of pre-urban period of producing crops throughout the year were formalized providing food yearlong ([Kenoyer 2008](#); [Kenoyer and Meadow 2004](#); [Margart-Louise 1991](#) and [Belcher 1991](#)). The dry farming method based on the use of flood water continued as no advance canals or other forms of structure that could divert the water into the field was found ([Jansen 2002](#)). This does not mean that people of Indus didn’t experiment with water. As discussed in previous section there are evidences of dam like structures called gabarbands. The absence of evidences of canal system may be due to severe land modification in recent times that may have obliterated the signs of canals (Francfort 1986; [Kenoyer 2004](#) and Wright 2010).

The archaeological evidence of agriculture are sporadic due to poor remains of plants and animals ([Weber 2003](#)). However, some cereal cultivation left evidence in the form of carbonized grains and impression of stalks and grains in pottery and bricks. Apart from these issues of archaeological remains the yearlong agricultural mechanism was identified during urban period. The Harappa Excavation during 1986-1990 ([Meadow 1991](#)) provide details of agricultural patterns. The Rabi crop (winter crop) where crops was sowed during October/November and harvested during March/April. While Kharif crop (summer crop) starts in February for sugarcane, March-May for cotton, June-July for rice and July-August for maize. Table – IV shows the various crops produced during urban period.

Table 4. Archaeological Evidences of Agricultures Products

Plant and Fiber Remains	Potential Use/Benefits
Wheat and Barley (W)	Bread, porridge, beer
Lentils, peas, chickpeas (W)	Raw, cooked dried food
Linseed/flax	Oil, Fiber, cloth
Cotton (S)	Oils, fiber, cloths

Mustard (S)	Oils, cooked foods
Sesame (S)	Oils, cooked food
Jujue Fruit (W)	Raw food
Dates (S)	Raw and cooked food, wine
Grapes (S)	Raw and cooked food, wine
Millet (S)	Bread, porridge, fodder
Jute (S)	Fiber, Cloth
Hemp (S)	Fiber, Cloth
Rice (S)	Cooked Food

Source: Wright 2010

The year-long agricultural production was one of the methods to counter the dry climate. The dry season decreased the previous frequent floods, and now water management was easier than the past (Petrie et al. 2017 and Wright et al. 2008). Other than agriculture, pastoralism and animal husbandry provided staple food source during the urban period, which like agriculture intensified (Possehl 2003 and Jansen 1985).

Fishing was another source of subsistence as the evidence of shells shows. Indus and Hakra river must have provided a major source of fish. As discussed in previous sections, where fish was not a very reliable source of subsistence due to pastoralist nature of the people. After settlement during urban period, the marine food became another stable source of the food (Belcher 2003).

Political and Social Organization

The less amount of excavation of burials and absence of any royal burial or palaces, which can provide insight into the social and political organization of society, limits the understanding of political and social organization at Indus Valley. However, two men burials, and few women burials with vessels and the richness of the personal ornaments reflect the status of these people (Kenoyer 1998 and Wright 2010). Moreover, the difference in the housing structure especially at Mohenjo Daro shed light on the presence of elites who controlled the society. Although at Harappa nothing of such difference have been found but at Mohenjo Daro the presence of buildings in the norther part are of interests for archaeologists to understand the social hierarchy. The presence of citadels, and Great Bath although argued were of religious importance, but highlight people who have been living there may have certain social or religious status over other people. The houses around the citadel at Mohenjo Daro associated with both religion and administrative or public buildings (Kenoyer 1995).

Kenoyer (1995) is of the view that Indus social and political hierarchy was not parallel to Egypt or Mesopotamia as no evidences of palace structure, or other elite building were found at Indus. But, the presence of seals, trade networks, various occupations with control over resource like fishing, pastoralists, and agriculturalist, as well as Great Bath and citadels with religious importance shows the presence of control of various groups on the social and political ideology at Indus (Kenoyer 2003)

The production of seals with various motives provide insight into the political system of the Indus. Archaeologists believe that Indus was not controlled by single kingdom or single groups rather various groups or "occupational groups" had powers as the motives on the seals show (Jansen 1985; Kenoyer 1995 and 1998 and Wright 2010). Paul Rissman (1989) examined 601 seals from Harappa, Mohenjo Daro and from other sites and is of the view that these seals show the different "schools" who were dominating the society at that time.

Material Culture and Technology

With the rise of urbanization, the old craft production techniques continued but matured with the emergence of new innovative techniques. The production of seals was a new which was absent in the past (Rissman 1989) and Green 2016). Most of the seals contain depiction single animals like the unicorn, the zebu, the elephant, the humpless bull, the tiger, the water buffalo, the sheep, the goat, and other wide animals. The production of these seals need sophisticated techniques as the motives in the seals differ considerable even in the depiction of same animals. Other than seals, almost 100 different varieties of pots were found showing the sophistication of ceramics production during urban period (Pittman 2001 and Rissman (1989)). Other than these various hunting, and agricultural tools, use of gold and silver in decoration, pottery, ornaments with various stones, seashells, and other material give a significant insight into the advancement in the material culture during urban era (Kenoyer 1998 and Wright 2010).

To conclude urbanism the rise of major cities and trade networks (which is not part of current paper) between various cities of Indus and outside Indus show during this period Indus was flourishing. The advancement of technology and skills in craft production, as well as in city planning, and agriculture show the various experiments of past matured during this time period.

Localization Era (Late Harappan Phase) (1900 – 1300)

Localization era is marked by the continuity of some of the previous tradition, but majorly this era shows the decline of Indus Civilization, especially fall of urban centers, trade, and political organization, writing, occupational specialization, and distributed standardized artifacts [[Kenoyer 2003](#)]. Archaeologists contests over the reasons of decline. Some archaeologists suggest, it was changing course of Indus river that brought floods and caused the decline of civilization; other believe that diseases were the cause, especially malaria; while still few believe that the invasion of Aryans caused the decline of the Indus civilization [[Wheeler 1968](#); [Kenoyer 1998](#); [Possehl 2002](#); and [Wright 2010](#)]. The evidences of poorly constructed houses mark the decline as compared to mature Indus phase. Pottery kilns in what has previously been residential areas; neglect of civic amenities such drain; and corpses thrown into abandoned houses and streets instead of burning with due rites; Great Bath was out of use as well as reduction in density of population provide evidences of decline of Indus [[Kenoyer 1998](#), 2003 and 2011; [Possehl 2002](#); and [Wright 2010](#)].

Environment

The dry season with less rainfall that started during 2200 BCE continued. The instability in climate; the change in precipitation level and disruptions in river or gradual shifting of river courses may be caused flooding, disruptions in settlement, and potential loss of agricultural fields ([Wright et al. 2008](#) and [Wright 2010](#)). [Flam \(1993\)](#) studied the changing course of Indus River during 2000 BCE to eastward. The people of Mohenjo Daro may have lost the source of water from Indus due to this changing course of the river causing them to abandon the place. The Hakara river, which was completely dependent upon the rains, now due to less rainfall, and as Sutlej river captured its water was almost dry reducing the wet environment in Cholistan ([Mughal 1997](#)). At Upper Indus, in Harappa the changing course of Beas and Sutlej rivers must have caused the decline of Harappa city ([Wright et al. 2008](#)). All these changes in different parts of the Indus valley does not occur simultaneously, rather the change was gradual as the archaeological evidence of continuity of urban tradition in some parts show.

Decline at Harappa (Upper Indus)

Harappa during post urban period does not show any rapid exodus or decline. There is continuity of ceramic motives and burial practices with little changes. At Harappa discovery of hearths, intact walls, charred grain deposits, and ceramic vessels; while some of hearths dated 1700 BCE show the continuation of technology during post urban period. Although with continuity, the new style structures in the public streets and buildings give the impression that new population came in during this period ([Meadow et al. 2001](#)). Later, people abandoned the site completely. Of eighteen settlements at Harappa only three remained with inclusion of one new settlement. But they were diminished in size as very few archaeological materials were recovered from surface survey. This show that the sites near Indus, Ravi and Beas were abandoned during this period ([Wright 2010](#)).

Decline at Mohenjo Daro (Lower Indus)

As compared to Harappa, decline at Mohenjo Daro was much rapid this because Mohenjo Daro relied only on Indus River as compared to upper Indus where other than Indus, Ravi and Beas rivers were also flowing. Significant encroachment and carving up of housing began in the city in the latter part of the Urban period. As described above, the structure of houses, neglect of civic amenities, disuse of Great Bath, decline in performing the religious rituals show the decline of society at Mohenjo Daro. The pottery style called Jhukar style by archaeologist show the continuity of Urban period found at Mohenjo Daro, Amri, and Chanhudaro ([Mughal 1992](#); [Wright 2010](#) and [Kenoyer 1998](#))

Decline at Cholistan

The archaeological record of Cholistan is most sparse of all the Indus civilization due to less archaeological excavations. Total fifty sites were documented which were later abandoned. There are no radiocarbon dates for the Cholistan, however, Mughal using calibrating dating techniques with other post-urban sites proposes

the end of Cholistan between 1700 and 1500 BCE. Moreover, the site at Cholistan labeled as PGW (Painted Gray Ware) are densely populated but the problem is to show any relationship between PGW and post-urban Indus sites. However, the archaeological record shows that during post-urban period the population moved toward to India, and excavations in India may possibly can show relationship between PGW sites and Indus that provide much clear evidences of decline of Indus at Cholistan or Hakra river.

Of these environmental causes, Sir Mortimer [Wheeler \(1968\)](#) proposed Aryan Invasion as one of many causes of decline that he termed "massacre" (131). But recent skeletal evidence, as well as lack of any 'war' related archaeological remains like weapons show that this hypothesis is not relevant anymore ([Kenoyer 2003](#)). Rather, according to [Kenoyer \(2003\)](#) the decline of Indus was the result of multiple causes including change in climate resulting change of river course, population growth resulting in tug war for political power, and diseases. Other than these factors, [Wheeler \(1968\)](#) also proposed that overcultivation of land due to population growth and enhanced technology during urban period, overuse of wood for producing baked bricks that defrosted the land, and wearing out of the landscape due to overgrazing may have contributed in the decline of Indus [see also Wright 2010].

Indus Valley from 1300 BCE to Present

Environment

According to Pakistan Meteorological Department, major parts of Pakistan experience dry climate. Humid conditions prevail but over a small area in the north. The whole of Sindh, most of Baluchistan, major parts of the Punjab and central parts of Northern Areas receive less than 250 mm of rainfall in a year. Singh and Sontakle (1996) did mean annual rainfall study of Pakistan from available data from 1856 to 1993 and found that "low frequency variability of all Pakistan mean annual rainfall, in terms of 31 year moving averages and decadal means of both mean rainfall and variability" (Singh and Sontakle 1996 cited in [Salma, Rehman, and Shah 2012: 38](#)). Pakistan as an agricultural country hugely depend upon monsoon rain caused by the lower air pressure in the Bay of Bengal. The overall change in the climate of South Asia made the monsoon rains unpredictable and less frequent. For example, from 1999 to 2003 Pakistan saw dry season due to less rainfall in decades, while 2010 there was mega flood due to heavy monsoon rains ([Naheed and Rasul 2011](#)). These studies suggest that "the increasing trend of precipitation variability over temporal and spatial scales that climate variability will be more serious challenge then climate change" ([Naheed and Rasul 2011](#)) having huge impacts on the biodiversity, land degradation, and flow of the river (Siddique et al. 1999).

The historic period of Indus Valley begins at about 600 BCE. Between 1300 BCE to 600 BCE there is silence in the archaeology. Although in India, and Cholistan (Pakistan) some archaeological records termed as "Painted Grey Ware" (PGW) or as Indian archaeologist call "Vedic period" fills the gap. But as stated above how much these PGW sites were Indus is uncertain. In Pakistan, after the decline of Indus Valley by 1300 BCE, the ceramics style as well as culture does not reflect the Indus period, rather it changed significantly. But, the dependence on agriculture and Indus river continues until today ([Kenoyer 1991](#)). The Agricultural products, and two crops per year (Winter and Summer) continues, so as continues the reliance on wheat and rice, as well as other products as table IV show with the introduction of new crops.

In Punjab, upper Indus, Taxila during 1000 to 522 BCE emerged as one of the major city, which archaeologists believe was part of Indian Vedic culture as its name has been mentioned in Pushkalavati in Gandhara ([Dani 1986](#)). Buddhism flourished in norther areas of Pakistan, where [Dani \(1966\)](#) did extensive research. In the South, at the present border of India and Pakistan Janism culture flourished during 500 BCE to 5th A.D. Later, period was marked by invasion of Arabs during 712 A.D. From 500 BCE to present, archaeological records are sparse, but historical records tell us the various invasions that brought cultural change in Pakistan during various periods. Persian Empire influence (500 BCE), the conquest of Alexander the Great (325 BCE), Rai Dynasty (499 AD), Raja Dahar ruling the Sindh (668 AD), Invasion of Arabs (712 AD), Mughal Rule (1200 AD), British Empire (1858 AD), emergence of Pakistan as separate nation state (1947 AD) (Wynbrandt 2009; Hill 2008; and [Bose and Jalal 2004](#)) are the major dynasties from 500 BCE to present who rules in different parts of Pakistan.

Conclusion

The sparse archaeological records, and scanty archaeological excavations in Pakistan left the history of Indus valley porous. What happened to the people of Indus Valley after 1300 BCE if the later people does not show the continuity of Indus Culture? If in India after 1300 BCE Vedic culture starts what culture prevailed in present

day Pakistan during same period are some of important questions remain unanswered. Use of modern methods in archaeology, and cultural history is also sparse. Much of history after 600 BCE is about the conquests, dynasties and wars. Under the archaeological data constraints highlighted in the introduction, yet the Indus Valley provide substantial evidence of land transformation especially along the Indus River in upper and lower Indus Valley that in fact continues until present. The over exploitation of land that started during urban period when population was not more than 1 million in whole Indus valley, continues until today when the population of Pakistan increase to 200 million (Pakistan Census Report 2017). The anthropogenic activities at land need more attention to understand human land relations in changing environment and demographic conditions.

The change in the environment during 3500 BCE that not only reduced the flow of the river, but decreased the perennial flooding in the Indus Valley. The niche created by the environment was exploited by the people, while forming permanent settlements. With permanent settlements, the increase in agricultural yields, development of new technology, trade relation with other cities of Indus Valley as well as with outside region provided elite to gain political and social control, forming city-states ([Kenoyer 1996](#)). These city-states continued until 1900 BCE to 1300 BCE with decline as [Wheeler \(1968\)](#) remarked due to overuse of land and resources.

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