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Riverine Environment and Human Habitation–Ancient Instances

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Abstract

Cities, towns and villages, the 'man made' and 'God made' sites of built and rustic nature favoured the millions all over the Earth from time immemorial. In the very beginning of the civilizations the surficial forms were not at all congenial or 'smooth' enough to be settled there. High mountains, rugged plateaus, dense forests, inhospitable deserts or inundable riverine plains were managed to be affordable for years to come. Again, 'capture' and 'control', the two intending forces of exertion of power had able to conquer the hitherto untouched or even 'safe' or 'inaccessible' habitats might be with at the cost of high pain and strain.

River, the physical factor as linking routes unto the sea along with the resource base and defense mechanism has helped the humans for direct or indirect settlement generation.

Key Words: Agriculture, Civilization, Habitation, Riverine, Settlement.

Aims and Objectives of the Study:

The present study aims at

1. To point out the riverine or marine locations of ancient civilizations
2. To establish the indispensability of river in the past civilizations
3. To make a relationship between economy and the rivers of a region

Introduction: In the Atharvaveda, XII, i. one citation aptly undermines us "The Earth has her hill-sides and her uplands, hers is the wide plain, she is the bearer of plants of many uses: may she stretch her hand and be bountiful to us." River, the natural highway of communication and the sources of drinking and irrigation water and potential sediment fertility have influenced and have been influencing to make up thousands of settlements from the very inception of the human civilization by transforming irregular land to regular plain. Although, Holocene thawing has helped in initiation of agriculture in many areas of the world but in later periods, this practice became gradually solely dependent on river valley locations most of which were exotic in nature. Climatic fluctuations, urge for more and assurance benefit have pressed to be practiced in river valley sites. Archaeological

evidences point out the evolution of tribal economy from the hunting and food gathering stage to the beginning of the agrarian practice.

Development of peasant state, pottery industry, baked bricks, burnt clay bricks, corn field in the past to the evolution of tiles and thereby settling sites are all associated with either direct riverine influence or indirect 'pull effect' of the plain land character. Perennial fresh water supply lines were indispensable for urbanization. Without this, the development of ancient civilization was impossible as depicted by many philosophers, thinkers and historians. Settlements of Memphis on the Nile, Babylon and Ur in the *doabs* or interfluves of the Tigris and the Euphrates, Harappa and Mohenjo-daro on the bank of the Indus and its tributaries and Anyang, Luoyang on the bank of the Hwang He River bear the imprints of riverine civilizations.

Chinese Civilization of 3950 BCE–1000 BCE: China is mostly embedded with inhospitable mountain ranges, rugged plateau terrains and desertic landscapes of adverse character for settlement development. Nevertheless, the Hwang He (Yellow) River and the Chang Jiang (Yangtze) River favour human habitation in these confined valley locations with enormous fertile silt cover (Fig.1). Recurrent disastrous flooding phenomena had not able to discourse the nesting habit due to highly agricultural potential alluvium cover.

Emergence of 'farming settlement' was associated with river valleys, even earlier than the Sumerian cultural onset. A legendary invention of flood control and irrigation measures in 2000 BCE by an engineer and mathematician named Yu have paved the societal development into progress and civilization in China. In Zhou Dynasty by 1000 BCE there was also enough evidences of extensive canal irrigation. Domestication of animals and agricultural discovery became possible after a long passage of pastoral life.

It is often believed that the rice cultivation has lately practiced in China than India and the probable crop variety of Neolithic China was millet (Piggott, S. 1950). Confucius (*c*.551 BCE – 479 BCE) listed 44 cultivated crops and fruits of Northern China and Manchuria. These include peach, plum, chestnut, mulberry, bottle gourds and melons of various types. Fan Sheng Chih's Agricultural Manual undermines first century intensive cultivation of winter wheat, barley, millet and other few crops.

The part of Yangtze River Delta, i.e. the south of the Qinling and Huai River experienced rice cultivation at about 10,000 BCE. Qian-tang River Valley, Dongting Lacustrine Plain and Western Hubei Province along the Yangtze River, Central Plain and Eastern Plain in Henan Province practiced rice cultivation between 7000 BCE–5000 BCE(?) which is evidenced from the pottery fragments with rice and millstones. The Yangtze River, Ganjiang River Delta, Minjiang River, Zhujiang River and the Yellow River Valleys were marked with rice cultivation between 5000 BCE to 3000 BCE. The Yangtze, Yellow and the Huai River Valleys undermine us the abundant relics of rice cultivation in between 3000 BCE to 2000 BCE. The Yellow River Valley, Yangtze River Valley etc. exhibit many cultural sites such as Banshan, Machang, Maojiayao, Yangshao and Dawenkou (4600 BCE–3000 BCE) along the various reaches. Longshan (3000 BCE–2200

BCE), Hemudu (5000 BCE–4000 BCE), Liangzhu (2800 BCE–1800 BCE) show various imprints of prosperous agricultural civilizations even before the onset of known agricultural practices (about 2100 BCE) as is evidenced from many Chinese Writings. Agrobased (silkworm) silk industry was the major impetus along with agricultural varieties to promote prosperity in both rural and urban sectors.

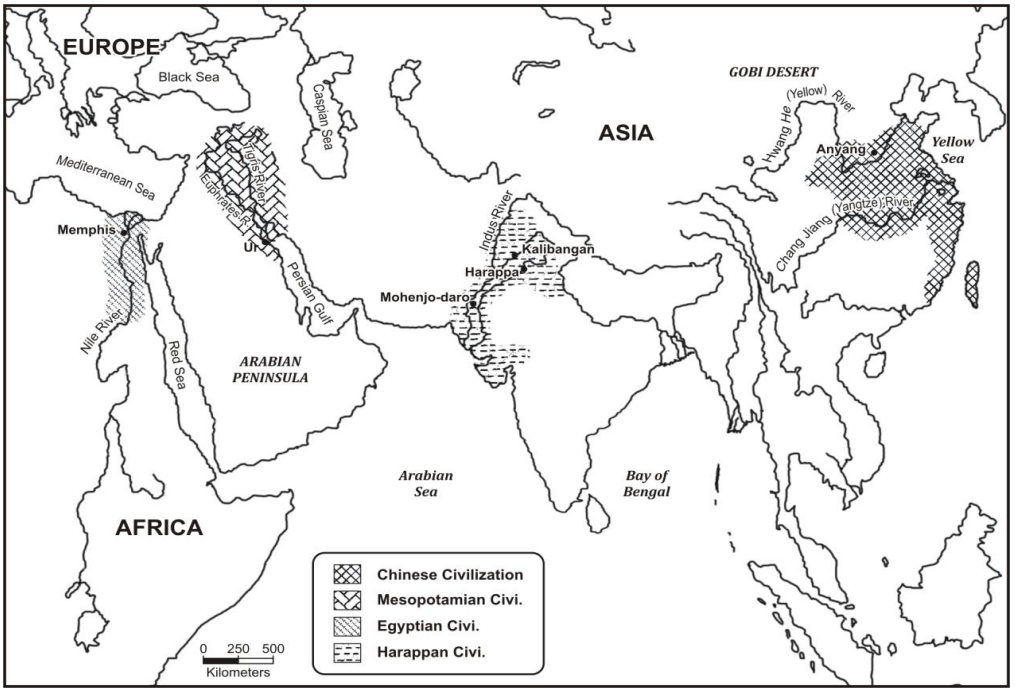

Fig. 1. Four Ancient River Valley Civilizations

Mesopotamian Civilization of 3500 BCE–1600 BCE: 'Mesopotamia' or the 'land between the rivers' facing the Mediterranean Sea and the Syrian Desert known as the best farming areas of South-west Asia is the curve shaped land or 'Fertile Crescent' (Vide Fig.1). Mesopotamia, once endowed with interfluvial fertility was enriched by the Tigris and the Euphrates rivers both of which debouch into the Persian Gulf. Recurrent flooding phenomena helped in sediment accumulation along the banks for nutrient enrichment to bumper production of rice and barley. But these were possible with the initiation of irrigation in agricultural field. Only these management practices help to enable the fertile land to the productive field. Again bumper production has also aided the growth and proliferation of this civilization. Frequent and all the year round irrigation to this dry and hot region was needed to raise the status of land from the uncultivable to the cultivable one.

Mesopotamia nurtured many civilizations from the very origins to the ultimate decline including the Sumerian, Akkadians, Babylonians and the Assyrians. Mesopotamian plain land exerted a 'pull' effect with thick fertile deposits for both agriculture and cattle rearing. The economy of Mesopotamia was based on farming activities. Mesopotamians practice agriculture by taming rivers through aqueducts, canals and reservoirs. Barley was the staple

crop followed by sesame, linseed, flax, wheat and other horticulture products. Few citations from Piggot, S. (1950) may establish the dominance of agricultural activity in Mesopotamia and adjoining areas, such as "…by 2000 B.C. agriculture had been established for at least three thousand years in Persia and Mesopotamia …" and "wild barley is distributed from Asia Minor through Transcaucasia to Persia, Turkestan, and Afghanistan, and probably also in Arabia and Abyssinia. The primitive variety of wheat known as *Emmer* (*Triticum diococcum*) extends from Syria and Palestine through Mesopotamia…" Mesopotamian civilization was divided in Akkad and Sumer in its gradual eastward part upto the Persian Gulf. "By 3000 B.C., the Sumerians had built a number of cities, each surrounded by fields of barley and wheat" (Jixu, Z. 2006).

Nomadic Pastoralism was the means of livelihood followed by the settled agriculture in the later stages. Ancient agricultural practices may or may not be coincided with the domestication of animals, but we came to know that the Mesopotamian economy was based on agriculture and they were perhaps the ancient most agricultural community in the world. Crop cultivation and livestock rearing were the two means of livelihood in that civilization. Mesopotamians were engaged in maintaining the function ability of irrigation system by providing labour force to canals and also to channels. Being the dominant earning system, irrigation took the prime importance even from the royal societies. Flooding phenomena were acute and flashy in nature in Mesopotamia. The 'Twin Rivers' carried more silt than the Nile and two rivers often changed its courses which might prove both blight and blessings for agriculture.

Uses of metal and these smelting processes might have been followed by cooling activities with the supplied water. Again clay tablets or *Cuneiform* and writing pen of reeds were fully associated with either riverine location or near river marshy and low lying lands. Such clay tablets have been found in plenty during excavations.

Egyptian Civilization of 3000 BCE–2000 BCE: In the Paleolithic Ages, Nomadic hunter gatherers have forced to settle along the river due to the scorching sun and neighboring hot arid region and probably with subsequent change over to fishing, hunting and to ultimate agrarian culture. About 90% of engagement was in agricultural sectors and the farmers did live along the Nile. "The land is fertile and there is abundant sunshine. Round the fields are irrigation ditches fed by Nile water. Much time is spent in raising this water to the level of the fields by primitive methods which have changed little since the time of the early Egyptians. The shadouf is widely used. It consists of a wooden lever by which a bucket may be lowered into the water and then raised to the field when full. Richer peasants use donkeys, or oxen, to work a water wheel, or sakeer, which turns round and brings up full buckets from the ditch or canal. Archimedes screws are also used. All these methods were used in Ancient Egypt" (Coysh et al. 1951).

The north flowing Nile River is the architect of both the past Pharaonic and the present Republican Civilizations. Originating from the Ethiopian Highland it carries trillions ton of sediment to enrich its floodplain with many meters depth underneath and helped in building

and re-building of Egyptian economy, culture, politics and society. It not only bears the water for irrigation but also for drinking purposes and make link with the maritime locations.

Historian Watterson (1998) has aptly remarked as "The Nile has played a vital part in the creation of Egypt, a process which started about five million years ago when the river began to flow northwards into Egypt." Another view of flourishing Nile is as follows. "Egyptian agriculture dependent upon the annual flooding of low-lying lands by the surplus waters of the Nile; excess and deficiency of flooding were also ruinous to the crops. The floods were regulated by the building of dams on the Nile and the construction of storage reservoirs, excess water was diverted and stored, and in years of deficiency it was released" (Southgate, G.W. 1952). Again "the fertile flood plain of the Nile gave humans the opportunity to develop a settled agricultural economy and a more sophisticated, centralized society that became a corner stone in the history of human civilization" (Shaw, 2003). Moreover, "Egypt is surrounded by desert, so the ancient kingdom depended entirely on the River Nile. Every year the river flooded, submerging the farmland along its banks. The floods washed rich soil down from the highlands to the south. The Egyptian built ditches and low walls to trap the mud and water in fields along each side of the river, giving them fertile soil in which to grow crops such as wheat, barley, grapes, and vegetables. The whole kingdom depended on floods. In dry year, many people would starve" [Bryan, K. et al. (Ed.) 2017]. This river has also deep rooted history in the mythical story of Isis and Osiris.

Egyptian civilization was flourished along the narrow valleys as it is mostly confined with the eastern and western deserts (Vide Fig.1). Extreme dryness and sandy soils have invited the Nile based irrigation system. Reservoirs, canals and ditches have helped in irrigating fields. Not only the seasonal heaps of sediments favoured the proliferation of the civilization but also the navigation activities for the sake of trade and commerce along this world's longest river, the Nile have facilitated the transport and communication. That is why, the Greek historian Herodotus had aptly said in 5th Century BCE that the Egypt was the "gift of the Nile."

Harappan (Indus Valley) Civilization of 3300 BCE–1300 BCE (peak period 2600 BCE–1600 BCE): Harappan Civilizations were developed in several phases in and around the Sindh, West Punjab, the Ghaggar-Hakra Valley, Eastern Punjab and Haryana, the Ganga-Yamuna Doab and Kutch (Kachchh) and Saurashtra (Vide Fig.1). It is worthwhile to mention that Mesopotamia is often considered as the "Land of the Twin Rivers" i.e. the rivers of the Tigris and the Euphrates. "It is legitimate to affirm that the *idea* of civilization came to the land of the Indus from the land of the Twin Rivers…" (Wheeler, Sir Mortimer, 1960).

Riverine and in some cases maritime sites have helped the location and proliferation of settlements. Harappa on the bank of the River Ravi, Mohenjo-daro on the bank of the Indus etc. exemplify the exigencies of bank location of large rivers for prosperity attainment in all cases.

Apart from the riverine location, Harappan sites were discovered in and around marine location which have helped either to promote transport or trade or to harness marine resources as in the cases of Lothal or Dholavira. Indus Valley Sites in its lower reaches in the vicinity of the Thar Desert took water from the Indus River. Flood plain location and a well organized irrigation network probably have facilitated the livelihood pattern.

Hundreds of settlement have been discovered along both the rivers of the present day active Indus and its tributaries and along the dried up river beds of the Ghaggar-Hakra-Saraswati Rivers. In favour of the essence of searching endeavour, it is not at all impossible to be conclusive that those have lost the normal flow due to tectonic or the effect of climate change phenomena. "The river valleys were fertile and well wooded, though coastal strip to the west of the Indus, now called the Makran, and much of Baluchistan, were already dry and desolate. But in 3000 B.C. the climate was very different. The whole Indus region was well forested, providing fuel to burn bricks and food for the wild elephants and rhinoceros, and Baluchistan, now almost a waterless desert was rich in rivers. This region supported many villages of agriculturists, who had settled in the upland valleys of Baluchistan and in the then fertile plain of the Makran and the lower Indus" (Basham, A.L. 1967).

Indus people have tried to get rid of flood effect by planning various structures such as *great granary*. One of these was raised on a high platform. Menacing flooding phenomena for the silt laden channels in the wake of large scale deforestation practices for burning of bricks and other uses have pushed them into higher grounds.

One may find ample evidences of river going vessels from the artifacts and other emblems. In the lines of Sing, U. (2008), "Boats are depicted on seals and moulded tablets, and clay models have been found at Harappa and Lothal. River boats had cabins, ladders leading to the roof, and a high seated platform on the stern for navigation."

The Kokcha River water in Badakhshan Province near Shortughai was used for irrigation as is evidenced from the presence of irrigation drainage built by Harrapan people. Pictorial representation of a well water lifting device might exemplify the well-irrigation practices in the Harappan Civilization. Irrigated and even double cropped agriculture is evidenced in Pirak in the present day Afghanistan and Kachhi Plain in the present day Baluchistan of Pakistan.

The riverine connection of the Harappan (Indus Valley) Civilization is also well cited by the following, "The millions of baked bricks of which they are built suggest former vast reserves of local fuel other than scrub though they do not firmly prove this inference; we have to remember that sites on or near the great rivers could be supplied in part by timber floated down, then as today from the Himalayan forests, it is noteworthy that burnt bricks are especially characteristic of those sites – Harrapa, Mohenjodaro, Chanhu-daro, Suktagen-dor which are accessible by water…" (Wheeler, Sir Mortimer, 1960).

Conclusion: River, the lifeline of human habitation often nurtured most of the world's ancient civilizations barring a few such as Minoans on the island of Crete which was

flourished in between 2600 BCE and 1100 BCE. Another mystery of having a civilization away from prominent water source location was in Olancho Valley or deep rain-forested Mosquitia Mountains in Honduras in an "absolutely intact, undisturbed and pristine environment…" Although unnamed river source was a near possibility as envisaged. The lands in most cases were not at all congenial enough to be settled as those were mostly of arid, rugged or inhospitable in character. But the monumental heaps of sediments in the event of the recurrent flooding phenomena and the essence of drinking and irrigation potentiality, transport links, trade and other economic returns have fulfilled the requisite criteria to be one of the most favourable sites of human civilization.

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