The Holy River Saraswati in the North-wester Regions of India: the Historic Past and Present

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Abstract

The holy Saraswati river that flowed from Siwalik hills to the Arabian Sea through Punjab, Haryana, Rajasthan and Gujarat is now no more in the Indian subcontinent because of tectonic movements about three millennium BC. Tectonic activity in Himalayan region elevated the tectonic plate and changed the topography to divert the flow of water came from melting glaciers in new directions, which led to a decline of water supply to Saraswati and its drying up in the desert of Rajasthan. The settlements in the extinct Saraswati valley have the objects and remains of humans settled in pre-Harappan, mature Harappan and post-Harappan periods, and were dated back to 6000BC-1800BC. The pre-Harappan features were investigated from Kalibangan, Sothi, Banawali, Rakhigarhi, Kunal, Bhirrana, Baror, Grawad and Ganeshwar excavation sites, and the human settlements there dated 4500-3000BC, which is the real age of Rig Vedic period. There were 179 human settlements on the bank of Saraswati-Gahaggar system whereas the Indus valley had only 86 human settlements to state that Saraswati civilization was a very popular culture in those days.

Key words

Saraswati river,Rig Veda,Indus Valley Civililzation,Harappan Culture, Hakra System.

Introduction

Ancient Sanskrit literatures – from the Rig Veda to Puranas – have recited the glories of the sacred river Saraswati on whose banks many sages lived and composed Vedic hymns, and mentioned that the holy water of Saraswati was brought to many temples to bath the deities and others, but that great river had lost its existence much before the beginning of the Christian Era. This ancient river was well remembered as the best of rivers and even worshipped as the goddess of learning since the Vedic sages, who lived on the river banks, composed various hymns during the Vedic era. This great river is now no more in the Indian subcontinent because of the reason that some natural calamities and tectonic movements had devastated the geological conditions of the land through which the river flowed and divert it water flow in new directions. There has been a lot of controversy regarding the Vedic period because most authors are in the opinion that the duration of Indus Valley Civilization was the exact Vedic period whereas a few other notable historians concluded that the Indus Civilization might have started many millenniums after the Vedic era. After all, urbanism which was the main feature of Indus Civilization was not at all mentioned in the ancient script of Rig Veda wherein much impetus was given to rural cultures and the importance of terracotta and sculptural representations of human bodies were not described anywhere. Indian Archeologist Ratnagar has reported that many sites at the banks of Saraswati river show isolated local cultures, not the Harappan culture as in archeological sites in the banks of Indus river in Pakistan and hence, even if certain Harappan features were noted here and there along the route of Saraswati, the actual culture is different from the Harappan culture.[1] From this point it is clear that Vedic culture was different from the Harappan culture and the culture would be possibly evolved independently somewhere in India just away from the Indus Valley and the Vedic period would be exactly the pre-Harappan period.[2] This paper attempts to investigate the history of the lost Saraswati river in the north-western region of India and archeological sites along the banks of the dried-up river to support the historical points.

The Holy River Saraswati

The Rig Veda hymn 75 of the book 10 states that Saraswati river was parallel to Sutlej and flowed through the land in between the Yamuna in the east and Sutlej in the west, while hymn 95 of book 7 mentions that it finally met the huge lake, the Ocean, which was actually the Arabian Sea today. According to Rajaguru who investigated the geomorphologic and archeological studies in the Himachal Pradesh in 1975s, the Saraswati river and all other rivers which arose from the Shiwalik hills might have arisen in the late Pleistocene period or early Holocene period because of strong tectonic movements and there were traces of five rivers in the sediments of the mid-Holocene period.[3] Presence of Holocene sediments on rock beds of the mid-Holocene period strongly supports the existence of tectonic movements up to the mid-Holocene period, from which it is clear that Saraswati river might have arisen from the Siwalik Hills in the early Holocene period.[4] Owing to this continued tectonic activity, the ground level was lifted to a height of 3000-4000m and hence the height of peaks also increased further to experience changed wind circulation and climatic changes, as a result of which previous moderate terrain became rugged hilly region while channels of rivers were diverted to new directions. This is what happened when Saraswati emerged as a major river from Siwalik hills about 9000 years ago and that situation continued till the famous river was lost in the desert.[5] During the Vedic era, this river was much bigger than the Sindu (Indus) and the most respected river in India. The Saraswati river joined a tributary called Markanda and then passed through the plains of Rampur, Adibadri and Karnal. Another river Chautang that flowed close to Saraswati up to Kurushetra passed through Hissar, Bhadra and Nohar, and joined with Saraswati at Suratgarh. Yet other rain-fed river called Ghaggar, which arose from the Shiwalik hills just away from Saraswati river, met with it near Rasula in Patiala. Similarly, three tributaries of the Sutlej met the Saraswati near Kurrulwala. Thus, the water of the Ghaggar and Saraswati together flowed through Hanumangarh before reaching the Arabian Sea. It is also accepted that Hakra (Wahind) is a continuation of Saraswati-Ghaggar system found adjoining Pakistan. The post-Vedic text Tandya Brahmana and Mahabharata make a note that Saraswati river dried up in a desert, but do not mention the name of the desert.[6] Later studies confirm that this great river that flowed through Punjab, Haryana, Rajasthan and Gujarat was lost in the desert of Rajasthan.[7] Now, the dry course of Saraswati river can only be identified by unbroken lines of bordering sand ridges that were almost five to six km wide on either side of the watercourse.[8] When Saraswati river that was a drainage system together with tributaries dried up, its contemporary rivers which received water from glaciers have been flowing till today. There are many archeological sites in the sand bridges indicating the human settlements along the sides of Saraswati river, which makes out a clear point that several isolated villages were seen in the bed of Saraswati river and early human culture might have arisen on the beds even before the Harappan culture. Kalibangan (Rajasthan), Sothi (Rajasthan), Siswal (Haryana), Banawali (Haryana), Rakhghari (Haryana), Kunal (Rajasthan), Bhirranna (Rajastan), Baror (Rajasthan), Girawad (Rajastan), Northern Gujarat, Loteeswar, Padri and Mewar (Rajasthan) were very important archeological sites that reveal the human cultural evolution on the bank of Saraswati river in the earlier time.

Through geological studies, Oldham proved that the tributaries of Sutlej occupied the dry bed of Hakra of Ghaggar-Saraswati system in the early 13th century AD and C. N. Wadia stressed that the tributaries of Yamuna had also shifted their direction of flow and hence the bed of Saraswati river which was watered by such tributaries was left neglected as barren land.[9] It is therefore believed that many sites of the Saraswati bed which were watered by Saraswati river were dried and deserted while few sites have been watered by Sutlej and Yamuna in due course.

The exact reason for the drying up of Saraswati river has been yet another mystery for historians as well as geologists. Archeologists are in the opinion that the river Saraswati started to decline when tectonic moments occurred in the Siwalik hills of Sirmur region of the Himalayas in between 9000 and 3000 BC, and it resulted in massive landslides and heavy floods, which could change the direction of watercourses and reservoirs, especially between Potwar in Pakistan and Assam in India.[10] The uplift of the Himalayas and geological disturbances cut off the supply of water into this river through tributaries due to the melting of glaciers, because of which Saraswati became a non-perennial river that entirely depended on monsoon rains for its survival. Thus, Saraswati became small steam due to the blocking of tributaries and the joining of tributaries with adjacent river systems, and hence this famous river had lost all its majesty and splendour of the Vedic period.[11] That holy river remained here and there as detached pools and lakes and eventually became reduced to a dry channel bed. Lunkaransar, Didwana, Sambhar, the Ranns of Jaisalmer and Pachpadra are

prominent lakes found along the watercourse of Saraswati river, of which a few of them were highly saline but have gastropod shells in the beds indicating the existence of their freshwater descents in the past.[12] Tripathi and others (2004) have also concluded that the river became ephemeral due to tectonically induced river piracy.[13] Further, isotopic studies have proved that Ghaggar alluvium and soil of Thar desert pointing to sub-Himalayas have no trace of glaciated water deposits, which is strong support for the supply of monsoonal rain waters through Saraswati river, the reduction of which was the real cause for the decline of the river.[14] It is further said that the ancient civilization gradually faded away as soon as Saraswati disappeared on this wonderful land.

Archaeological Sites in the Bed of Saraswati River

Paleontological studies of lakes in Rajasthan make out a point that before 8000BC the climate was not suitable for human survival, between 8000BC and 7500BC there was high rainfall, between 7500BC and 3000BC there was a slight decline in rainfall, and 3000BC and 1000BC there was high rainfall with a short dry period, from which we can come to the point that the climate in the Saraswati bed would be suitable for human settlement after 7500BC.[15] Excavation at Kalibangan, which is found in Hanumangarh District of Rajasthan on the left band of Ghaggar river, shows pre-Harappan features such as fortified houses built with mud bricks, pre-Harappan type potteries and ploughed fields, and the mature Harappan features like houses with backed bricks, terracotta and citadel on the west side of houses, which were, as per radiological findings, dated between 5600BC and 2700BC, revealing that the culture therein belonged to pre-Harappan period.[16] Excavation at Sothi, which is located in the Hanumangarh District of Rajasthan just 10KM away from Nohar railway station, shows pre-Harappan features like mud or brick houses, potteries and village culture, and Harappan features like terracotta, cart-wheel, round cakes and bangles, whose radiological data reveals that the culture belonged to 5600BC -2192BC.[17]Siswal is an archeological site found in Hissar district of Haryana, from which coloured potteries as seen in Kalibangan and mud-houses revealing pre-Harappan culture and blades and copper objects being used in mature Harappan culture were excavated.[18] Banawali is another excavation site located on the bank of Saraswati in Fatehabad district of Haryana, from which pre-Harappan (sun-dried bricks, mud walls in houses, painted motifs), mature Harappan (fortification towards the north, backed bricks in houses, bone handles, bone spatula, copper- fishhook) and post-Harappan (Citadel to the north of settlement, houses in rows, backed bricks, fortification of settlement, beads, bangles, copper objects and gold pieces) objects comparable to those found in Kalibangan and Sothi were discovered.[19] The excavation site Balu is situated at 2km north of Balu Village of the Kaithal District of Haryana and it shows post-Harappan culture regarding the use of mud and brick structures, brick-platform, kilns, furnaces, beads, shell bangles, copper objects.[20] Rakhigarhi, which is located on the bank of Saraswati- Drisdavathi rivers in Tehsil-Hansi district of Haryana, shows drainage system, the brick floor of courtyards, circular pits, fire chamber, arrowheads made of metals, copper bangles, toy-cart and steatite beads as seen in pre-Harappan objects, citadel, mud-brick fortification, household as well as a public drainage system as in mature Harappan culture, and blades, terracotta, shell bangles, beads of semiprecious stones, copper objects, animal figurines, toy cart frame, bone points and steatite seals as seen in post-Harappan culture; the radiological data states that these objects belonged to 4230BE -2140BC, which was a period earlier to the Harappan civilization.[21] Excavation site Kunal, found in Fatehabad district of Haryana, shows pre-Harappan culture which as per radiological data was dated back to 3016BC -2577BC.[22] In this site, the pre-Harappan settlers dug up large pits over which wattle-and-daub huts were raised and they used agriculture and domestic animals, bone-tools, micro-blades of chalcedony, copper arrow-heads and fish-hooks; the mature Harappan settlers used moulded mud-bricks as in Kalibangan and Banawali, and dwelling pits; and the post-Harappan settlers constructed rectangular and square houses, used six pottery fabrics, terracotta, shell seals, crowns, armlets, bangles and necklace of silver, six gold beads. Bhirrana, which is located in Fatehabad district of Haryana, also has objects that belonged to pre-Harappan period like well-plastered subterranean dwelling pits, mud houses, semiprecious stones, terracotta objects, copper bangles, bone points and chert blades, which had much resemblance with objects found in Cholistan of Pakistan.[23] Other features like city lay-out, fortification, mud walls, backed bricks, steatite beads and pottery assemblages belonged to mature Harappan period. Ganeshwar is an excavation site, which is found in the Sikar District of Rajasthan, having pre-Harappan objects belonging to 3800BC-2000BC.[24] The chert tools used for hunting and gathering, mud houses and sun-dried bricks belonged to the pre-Harappan period, copper metal works, fired clay pottery, city layout, drainage system and copper bangles were left by mature

Harappan men. Urban culture and use of copper goods in large numbers were prominently post-Harappan features seen on this site. Baror, the excavation site in Shri Ganganagar District of Rajasthan, showed pre-Harappan huts made of wattle-and –daub, which denotes the early Harappan civilization there. Excavation at Grawad, which is situated in Rohtak District of Haryana, shows dwelling pits used by primitive men, and mud and brick huts used in the pre-Harappan period. From the excavation sites in North Gujarat, ploughed lands, blades and potteries were dugout, which revealed mature Harappan culture there at once. Excavation at Lotheshwar that is located in Patan district of Gujarat offered pottery, skeletal remains of animals, steatite micro-beads, shell and semi-precious beads, terracotta objects and burnt clay lumps, which were the main objects used by pre-Harappan man. From the excavation of Padri in Bhavnagar District of Gujarat the remains of articles such as hand-made wheels, bowls, mud houses, black painted pots, and copper blades of Early Harappan man were discovered. Mewar region of Rajasthan has some excavation sites from which objects that belonged to period earlier than the pre-Harappan period were discovered and they were mostly used for primitive farming and village life.

Archeologists found that there are many excavation sites in the bed of the extinct Hakra-Saraswati-Ghaggar system and their extinct tributaries, and that Saraswati-Ghaggar rivers were perennial in northern Rajasthan during the pre- Harappan and mature Harappan periods and reduced into a small stream, suggesting that the river was getting less supply of water and gradually drying up. According to Tessitori (1917) and Aurel Stein (1942), many proto-historic sites are found along the path of the extinct Saraswati system, especially between Hanumangarh of India and Bahawalpur of Pakistan.[25] The pre-Harappan features were investigated from Kalibangan, Sothi, Banawali, Rakhigarhi , Kunal, Bhirrana, Baror, Grawad and Ganeshwar excavation sites, which implies that in these areas human settlements might be seen in 4500-3000BC. In all these areas, human settlements were there in the mature Harapan period, which proved the existence of human settlements in the early 3000-1800BC. In Balu, only post-Harappan objects were excavated since the human settlement was started anew after 1800BC-1600BC. Further, it can be assumed that Saraswati river might have existed in the early Harappan and mature Harappan period but it vanished at the beginning of the post-Harappan period. Excavation of Bhirrana shows the pit dwelling in the ground and the radiological data of the pits reveals its age as 6000BC -4500BC, from which we can justify that transition of pit dwelling to ground dowelling had occurred during this period. Bones of Neolithic men were also discovered from this site to prove the survival of early men during 7500BC-6000BC. Martimer Wheeler, based on radiological data states that the date of Harappan culture was 2350BC-1700BC, instead of 3000BC as told by Marshall,[26] but in the Saraswati bed the period of human culture was earlier than the actual Harrapan culture. Therefore, it is assumed that the culture of humans in the Saraswati bed resembled the culture of Vedic people and was strikingly different from the Harappan culture.

Reinvestigation of Saraswati River

The water course of Saraswati river that flowed through the desert of Rajasthan is now no more, but it has remained as a dried-up watercourse and sand deposit on either side of it to depict the remnants of the holy river. Historians, geologists and archeologists tried to trace the path of watercourse of Saraswati river for more than two decades as there was severe water scarcity in Rajasthan and as an attempt to meet the demand for drinking water.[27] With the help of Remote Sensing Satellites, digital images of water sources in an areas that were supposed to be the path of Sarawati river were obtained in 1976, which showed the way of extinct Saraswati river and water beds of the current years.[28] The remote sensing studies conducted in 1996 ensured the watercourse of extinct Saraswati river and its tributaries once again so that Arid Zone Researchers drilled in locations that were marked as water beds along the way of the extinct Saraswati river and the water samples taken from them were sent to Bhaba Atomic Research Station, Trombay, to do carbon dating that could reveal the approximate of the age of the samples, which states that the age of the samples was 4000BC -3000BC.[29] This age was the same age as Rig Veda period and the Rig Veda mentions about Saraswati river in several hymns. The Government of Rajasthan sanctioned about 1.5 crores rupees in the subsequent year to investigate the paleowater sources in western Rajasthan and to develop the Ground Water Resources, by which the type of water available at different locations, hardness and alkalinity of the waters, the bulkiness of water, depth of water bed, dry areas and other details were analysed and the data was stored. With the help of available data, the Central Arid Zone Research Institute (Jodhpur) has investigated the watercourses of extinct rivers and their extinct tributaries throughout Thar desert in Rajasthan, but to investigate the path of Saraswati river they

needed to drill tube-wells at many places along the way of the extinct river. This research further confirms that the Saraswati river had covered about 1000 Sq.km areas between Siwalik hills and theee Arabian Sea, and that Saraswati is not at all an imaginary thing but it is a true thing that was buried under the soil once long before.[30] Further, this research states that this holy river was 0.5-1.5km wide in most areas and was about 12km wide at some regions along its length, which conveniently states that these wide areas were watersheds in the way of Saraswati river. This river was very deep and its sandy bank was 3-5km in width. Considering the number of human settlements in the bank of Saraswati-Gahaggar system, it is stated that it has 179 sites but the Indus valley has only 86 human settlements, which is the main gist to conclude that the ancient civilization of India might be Saraswati civilization rather than the Indus Civilization and the Vedic culture was there in it.[31] When Saraswati river flowed in the long past, the desert of Rajasthan seemed to be a green cultivable land suitable for farming and rearing farm animals and had a lot of privileges for human survival.[32]

Conclusion

From the archeological and remote sensing data, it is clear that Saraswati river was the largest river in north India and it originated in Siwalik hills, flowed through Punjab, Haryana, Rajasthan and Gujarat, and reached the Arabian Sea at last. Tectonic activity in Himalayan regions during the early Holocene period elevated the tectonic plate and hence the hilltop was raised and the topography of the Himalayan region was changed to divert the flow of water came from melting glaciers, which seemed to be the right reason for the decline of water in the Saraswati river and its drying up in the desert of Rajasthan. The extinct Saraswati valley has 179 archeological sites which show the objects and remains of humans settled in pre-Harappan, mature Harappan and post-Harappan periods, from which it is estimated that the humans might have settled on the bank of Saraswati and its tributaries in the early 6000BC-1800BC. The pre-Harappan features were investigated from Kalibangan, Sothi, Banawali, Rakhigarhi, Kunal, Bhirrana, Baror, Grawad and Ganeshwar excavation sites, wherein human settlements might be seen in 4500-3000BC. In all these areas, human settlements were there in the mature Harappan period to prove the existence of human settlements in the early 3000-1800BC. Carbon dating of water samples taken by drilling the dried up Saraswati river reveals that the age of the waters is 4000BC-3000BC, which is the real age of the Rig Vedic period. In the pre-Harappan period, the sages who settled on the bank of Saraswati river had composed the hymns of Rig Veda when the river was flowing in north India and they migrated to other suitable areas when the river dried up in the Holocene period. Now, we know that there were 179 human settlements on the bank of Saraswati-Gahaggar system whereas the Indus valley had only 86 human settlements, and hence it is concluded that the ancient civilization of India might be Saraswati civilization rather than the Indus Civilization. After knowing the importance of the river, the Government has started the Saraswati Heritage Development Board to reconstruct some parts of Saraswati river to attract tourists and pilgrims, which will be a great boon for environmentalists and naturalists in future.

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