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Recent Explorations in Varanasi District to Study Site Catchment Analysis of Rajghat

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Abstract: *Varanasi is known as one of the oldest cities by literary evidences (Atharva Veda* 5.22.14). Hence, the present exploration has tried to trace the archaeological evidences and aceient settlement system around the Rajght (*Singh, 1977). The excavations of* Rajght has proved that during the early historical period, it was a major urban settlement or coresite, which should have some small satellite sites around it. Therefore, the present paper has tried to trace the *satellite settlements of Rajghat*by using village-to-village survey and remote sensing techniques in Varuna basin to reconstruct the archaeological landscape of *Varanasi, Utter Pradesh. Present archaeological exploration has provided the evidence of various cultural phases on the basis of ceramic studies.*

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Introduction

The Varanasi (Lat 25.3176; Long 82.9739), is located on the confluence of river Varuna and Assi to holy river Ganga, in the Uttar Pradesh state. In India traditions, the city of Varanasi is considered as one of the oldest, continually inhabited cities in the world (Jayaswal, 2011). According to the Epic and Puranic tradition, Varanasi the capital city of Kashi was founded by Divodasa, one of the celebrated kings of Kashi. The city is described in several Puranas (*Bhagvat Purana*, X, 66, 41*;Padma Purana*, 35, 87). The township actually grew in Buddha's time. Varanasi continued to be the capital of the kingdom of Kashi during the days of the Buddha. From Buddhist literature, both Pali and Sanskrit

Buddhist texts, it distinctly appears that it was magnificent, extensive, prosperous and populous city at that time (*Digha Nikaya* II, 220,235). The city is frequently referred to the Jataka records where it is said to have over 2000 miles in circuit. According to *Anguttara Nikaya*(a Buddhist scripture, dated about 5-4th century BCE), *Kashi*was included in the list of sixteen *Mahajanapada* (great and powerful states of ancient India) and greatMauryan EmperorAshoka hadbuiltDhamek stupa and erected a stone pillar inscription 3rdcentury BCE atSarnath, Varanasi (Vishvakarma, 1987).In the late Gupta period, Xuanzang (a chines traveller and monk) had visited Kashi or Varanasi and he mentioned his visit in his book (Jayaswal, 2003 and 2011). Various dynasties namely, Sungas, Kanvas, Indo-Greeks, Kushanas and Guptas have ruled this region and structural and artifactual remains of their rule have dotted over the different sites here (Mani, 2012). The antiquities of this region goes back to the time of the Buddha and beyond. The urban sites during the early Gupta period were Vaisali, Bhitari, Bhita, Sultanganj, Aktha and Rajghat (probably the ancient Kashi) (I.A.R. 1959-60:65; Jayaswal 2008). At Aktha, a suburban locality of ancient Varanasi, brick structures between c.300-700 A.D. were exposed. Also, the sealings and gold coins of Gupta kings Chandragupta, Kumargupta and Skandagupta are found at this site along with various terracotta figurines (Jayaswal 2009).

The archaeological investigation in middle Ganga plain has been carried out by several scholars of Banaras Hindu University and Allahabad of University, which has been provided usthe evidence of early historical city of ancient Varanasi known as Rajgat site on the bank of river Ganga. Whereas this paper is an attempt to investigate into theancient settlement pattern and satellite sites along with river Varuna (a tributary of Gana), who had beenprovidedwith the economic backbone to the growth of large city sites like Rajghat and Sarnath in Varanasi.As we can see that various large sites of this region have urban nature with rich cultural materials but the small sites of the surrounding region have largely neglected which has tried to coverup in this present research.

Figure 1: General View of Excavated and Preserve archaeological remains at Rajghat

Early Works

The study on settlement pattern and landscape archaeology is extended back to the late nineteen century and post-world war II era. The early works by Steward (1938), Willey's (1955) Viru Valley archaeological

survey has provided us with the methodology of settlement archaeology for understanding past in a broad geographical region for site catchment the spatial distribution in archaeology. In Proposing the team site catchment analysis, Vinta Finzi and Higgs defind it as " the study of the relationship between technology and those natural resources lying with in the economic range of inviduals sites (Finzi and Higgs, 1970). The term catchment is drown from the geomorphology where it is a synonymous with drainage basin or water shed and indiacates the area from which a river or stream gets its water. Same as the catchment of an archaeological sites is that area from which site gets its resources for its development. In archaeological study , site catchment analysis can be done of a rural or urban settlement. In a way to understand that how it developed as a hug settlement.

The present research has been carried out in a wide geographical area of modern Varanasi district to understand the settlement archaeology and search of small and lesser-known archaeological sites .The first study on the settlement and cultural-historical continuity of this region was done by Sir James Prinsep in the 1820s. After him, the first archaeological exploration/excavation in modern Varanasi district was carried out by Sir Alexander Cunningham in the year of 1862-65, which he published in his four reports of the Archaeological Survey of India (Cunningham, 1875). Howerver The archaeological potential of Rajghat (Fig. 1 and 2) was recognized in the year 1940, during the construction of Kashi railway station and latter it was excavated in 1957-1958, 1960-61 by Awadh Kishor Narain and T.N.Roy from (*IAR*, 1967-68) of Banaras Hindu University with archaeological survey of India, which reviled the 6.12m cultural deposits with six cultural sequences, the period IA was dated back to 800 B.C.E and it hadthe continuation of occupation till period VI which was dated back to 12th century A.D (Fig. 2).

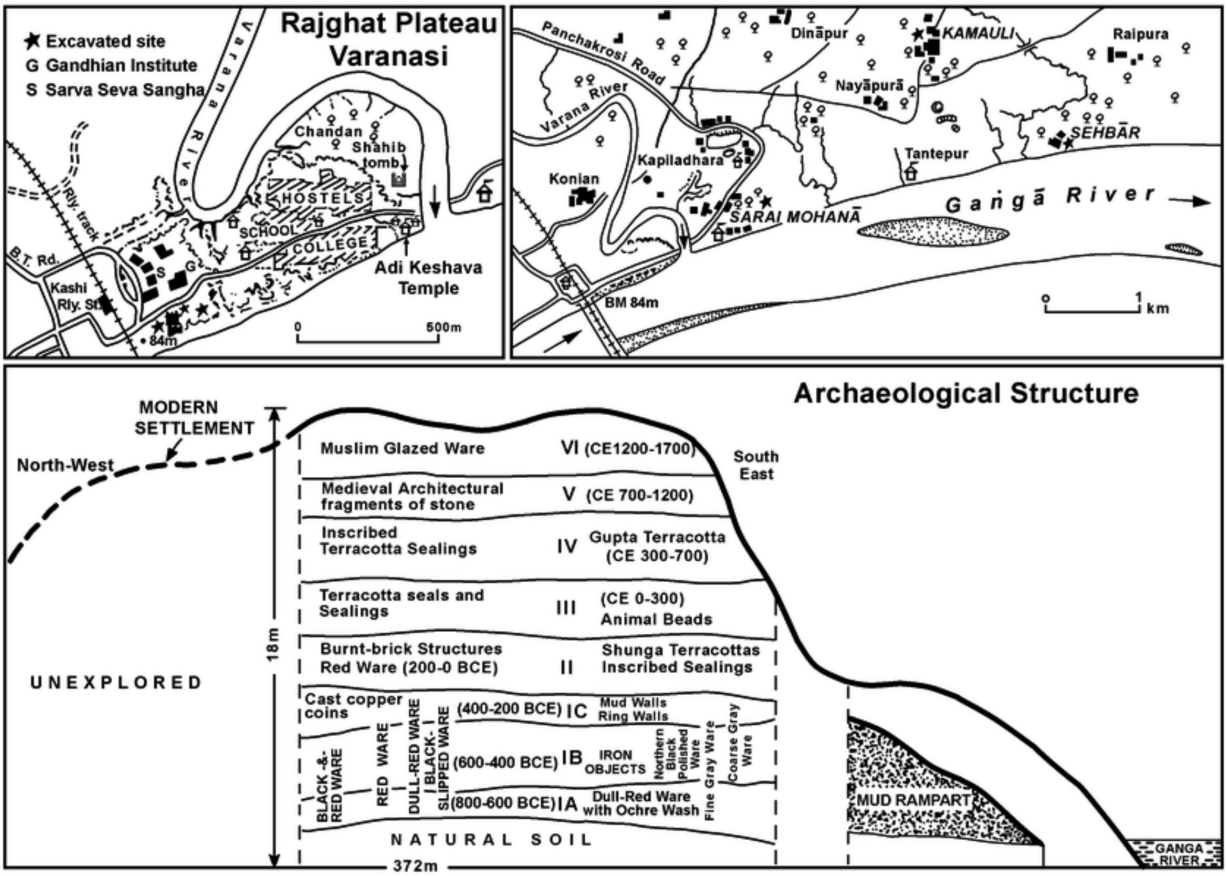

Figure 2: Stratigraphy and location of Excavated site Rajghat, Varanasi (Narain and Singh, 1977)

This site was re-excavated in 1962-63 to 1966-1967, for understanding the extension and architectureal remains of Rajght. The Recent excavation was conducted jointly by the Archaeological Survey of India and Janna Pravaha, and The Centre for Cultural Studies, Varanasi in 2013-14 by Vidula Jayaswal and B.R.Mani (Jayaswal and Mani, 2016).The excavation of Rajght has revealed the existence of a large urban site, with rich cultural materials like large burn brick structures, terracotta figurines, iron nails, coins, ivory. The scholars like A.K.Narain (1968,1976), T.N.Roy (1986) andB. P. Singh (1985) has played vital role in archaeological excavation and excavation of middle Ganga pain.

Table 1 : Comparative chart of cultural-sequence exposed at Rajghat(Jayaswal & Mani, 2016)

Periods identified by Narain and BHU team (1957-58; 1960-65)	*Periods identified by Jayaswal and Mani(2013-14)*
Period III: 0-3rd century CE	Period IV: Kushana Period
Period II: 3rd cent. BCE- 0 CE.	Period III: Post –NBPW
Period IC: Late NBPW Period IB: Mature NBPW	Period IIB :Late NBPW Period IIA: Mature NBPW
Period IA: Pre NBPW	Period I: Pre-NBPW

The six periods of the culture sequences as proposed by the excavations at Rajghat, along with their characteristic features are mentioned above, since the present researchhas also confined to the period from 8th century BCE up to medieval period.The earlier excavation focused on the first two periods of assertion within period I, and had divided this period within three Sub-periods- IA, IB and IC (Narain and Roy 1976:22-25) but, on account of the nature of culture contents of periods IA and IB, It was felt appropriate to separate these into two individuals periods- Period I and Period II. Also for obvious historical reasons, it is logical to separate the Pre-NBPW horizon. Period IB and Period IC of the earlier reporting have been accepted as two phases of NBPW (Jaysawal and Mani, 2013-14). Accordingly, period IIA is mature NBPW, while Period II B is Late NBPW period.

The attempt to investigate the cultural transformation from prehistoric to Medieval period Varanasi has been done by B.P. Singh(1985), VidulaJayaswal (1998, 2006, 2008 and 2011) and Vibha Tripathi (2006and 2007). The investigation on the satellite sites of Rajgat and Sarnath region of Varanasi has been conducted by some excavations at Aktha (Jayaswal, 2003), Ramanagar (Jayaswal, 2006), Anai (Tripathi and Upadhyay, 2006) and Agiabir (Tripathi and Upadhyay, 2007, 2009). Whereas the current paper is focused upon the extensive exploration along with river Varuna for identification of major sites which may used as satellite sites of Rajghat.

Adopted Methods

The extensive village-to-village field exploration has been carried with the help to topographical map (by Survey of India), along with the total length of river Varuna (148 km) and its catchment area of 5 km on both banks. The open-source remote sensing data (Land-sat imagery) from Bhuvan (NRSC, India) has been processed in Q GIS for making GIS maps which helped us to locate sites and interpreting the ground condition of archaeological mounds and Varunariver basin.The soil and geological sequence of Varunariver basin have been studied for understanding the landscape of the sites.For the collection of archaeological material, random sampling has been done in the course of surface exploration. The interpretation of cultural-period was based on the relative dating of ceramics with the comparative study of early excavated sites in this region. The study on ancient settlement pattern has been done by locating archaeological mounds on the map according to its relative cultural-

period on basis of ceramic. The documentation archaeological sites have been done based on pottery and its relative cultural-period, measurement of the mound, preservation context of the site, andman-land relationship. The quantitive analysis has been done on the basis of cultural sequences of the sites.

Archaeological Field Exploration

Varuna River is an interfluves river of the middle Ganga basin and bounded by the Vindhyan rocks in the southern point where it even forms a peripheral bulge. Some hundred fifty kilometres along the course of a river originating from the phoolpur (Lat 25.5510° N; Long 82.0884° E) near Allahabad district to Rajghat (Lat. 25.3313° N; Long. 83.0402° E) in Varanasi. It is counted and graded as one of the most important river confluences because it joins Ganga River in the main city i.e. Varanasi. It covers an area of about 3622 km^2 of the Ganga plain. Such as river Varuna also played a key role in connecting the city of Varanasi with a more interior distant land along its banks. Geologically, theVarunaRiver basin is underlain by Quaternary alluvial sediments of Pleistocene to Recent age (Table 3). In the study area, however, the unconsolidated sediments from a sequence of clays and sands of various grades.Nodular calcareous concretions are at times intercalated with the sands and form potential aquifers at various depths. Shallow aquifers occur principally in clay sizewith meander river deposits.

The area from Rajghat (Lat.25.3313° N; Long.83.0402° E) to Babatpur(Lat 25.4507° N; Long 82.8560°E) has extensively surveyed which has reviled 15multicultural archaeological mounds along with Varuna river (see figure-3). Some sites like Inderwar (Lat. 25.40064° N;Long. 82.92698° E), and War(Lat. 25.40177° N; Long. 82.90743° E) and represented the nature of big regional settlement and feature of extensive mound (from 100-250 m radius), whereas other sites represented nature of small village settlements. The cluster of ancient settlement along with river Varuna represents that it was undoubtedly an important zone whichserved ancient Rajghat as satellite sites.

Selected Sites Descriptions

Ayar: (Lat. $25^0$45'26" N ; Long. $82^0$95'12"E)

Ayar is a village in Harahua block in Varanasi district. It is located 20 km towards North-west from District Headquarters Varanasi and 3 km from Harahua. This is a multicultural site which has cultural sequence from Pre-NBPW Phase to NBPW and Medieval period. The mound is highly disturbed by agricultural activity and the top of the mound is horizontally cut. On the northeastern side of the mound the open temple of "Ladali Bhawani" is present and on the south-western side of mound modern habitation of Saraiya village is settled. The antiquity from Pre-NBPW Phase includes potsherds of thin black ware, grey ware, and rusticated ware. The antiquity of NBPW culture is mainly some potsherds of NBPW and Red Slip ware and the dominating shapes of this period are a vase, spout, basin, shallow bowl, and jar.

Gadhawa : (Lat. $25^0$40'63"N ; Long. $82^0$89'39"E)

The site of Gadhawa I is in a small mound, disturbed by agricultural activity and the remaining mound is covered by grass and bamboo with other bioturbation. This site is located about 3 km south-east of Lal Bahadur Shastri airport, on Bababatpur road and 200m east from bypass Piparpatti-Muradaha road. The height of the mound is 2.38 m. Some Gupta and Early medieval sherds are found at this site, but archaeological remains are very less at the site, it may be because of anthropogenic activities and high vegetation. The nearest landmark from this site is Bhatta (tile kine) of Chauraha-kajisarai, Virapatti.

Plate : Mound of Ayar

Plate : Potteris from Ayar

Plate : A small mound of Gadhawa

Plate : Potteries from Gadhawa

Jakhini:(Lat.25^{0}18'93"N; Long.82^{0}82'43"E)

Jakhhini site the Gram Panchayat of Jakhini village in Arajiline block in Varanasi district. This mound is situated 2 km south-west of Jakhini-trumuhani Rajatalab road and approximately 1 km of Government inter college, Jakhini. There is another bore well on the top of the mound. Now the site is transformed into agricultural land but still its shows elevation and cultural deposit of early historical and medieval periods. The dominating ceramic in the early historic period is Basin, inkpot, vase, terracotta bead, hopscotch, and lead. In a medieval period vase, bowl and carinated handis are dominating shapes.

Madhayipur Rayasipatti: (Lat.25^{0}39'83"N; Long.82^{0}92'41"E)

This is small mound site in Harahua block, Varanasi district. Madhayipur Rayashipatti is situated approximately 800m south of Birapatti Railway crossing. It is located 11 km towards north from district headquarters Varanasi. At present this site is destroyed by making brick and soil mining activity. It is a medieval site which is dominated by a vase, bowl, and basin (Yadav, 2010).

Plate : General view of the site

Plate: Potteries from Ayar

Plate: Madhayipur Rayasipatti

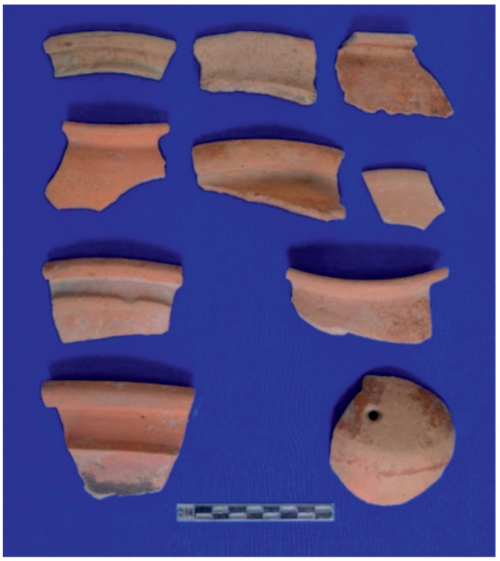

Plate: Portsherds from Madhayipur Rayasipatti

Shaikhanpur: (Lat.25038'01"N; Long.82086'72"E)

The mound of Shaikhanpur is situated in Awashanpur village in Balwariya block of Varanasi district. It is 3 km south Panchkroshi road and about 700m east of Varuna River. A motorable road divided this site into two parts. The northern part of the mound is disturbed by soil mining activity with leveling activity and Southernpart is preserved. On the northern sector of mound, a hearth is found from the exposed section which is disturbed by soil mining activity.

The settlement pattern in archaeological landscape

The settlement is an organized body of human habitation in a particular physical and cultural landscape. In modern time the settlement of Varanasi has a complex structure, where modern buildings and villages are settled on ancient runs and the modern population still worship ancient sculptures, this city is a complex web of old and new, stability and changes.

Plate : View of destroyed site of Shaikhanpur

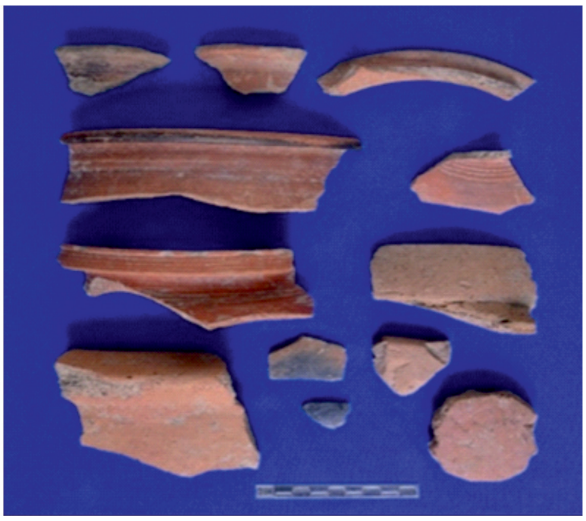

Plate : Portshers from Shaikhanpur

Table 2: Explored Archaeological Sites in Varansi district

S.N	*Name of Site*	*Pre-NBPW*	*NBPW*	*Sunga*	*Kushana*	*Gupta*	*Early Medieval*
1	Ahirauli				¤	ψ	Δ
2	Ayar	♦	∇	Θ	¤	ψ	Δ
3	Bahutra –I				¤		Δ
4	Bahutra-II				¤	ψ	Δ
5	Harsosh-I	♦	∇	Θ	¤	ψ	Δ
6	Harsosh-I				¤	ψ	Δ
7	Nindanpur					ψ	Δ
8	Shaikhanpur				¤	ψ	Δ
9	Gadhawa I			Θ	¤	ψ	Δ
10	Gadhawa II			Θ	¤	ψ	Δ
11	Jakhini		∇	Θ	¤	ψ	Δ
12	War			Θ	¤	ψ	Δ
13	Indrawar			Θ	¤	ψ	Δ
14	Sarsawa	♦	∇	Θ		ψ	Δ
15	Madhayipur Rayasipatti						Δ

The Varanasi region is an integral part of middle Ganga plain which is divided into two portions- western or the left bank (Varanasi city and the neighbourhood) and the eastern or the opposite bank (Ramnagar and its vicinity). The land of the West has an eastward slope while the eastern part is generally lower with a northward slope. The alluvial upland merges with the Vindhyan range at Chakia. The vindhyan deposits gave this alluvial plain a distinctive Vindhyan character. For these factors, the plain had a mixed texture. While the kankar formation helped in building constructions, the fine clay, silt and sand make a perfect material for potteries and bricks. In the present research habitational sites are found. They are small to massive mounds and The archaeological sites are mostly found around present habitational areas, structure or village.

Table 3: The Geological succession of the study area

Age	*Formation*	*Lithology*
Upper Pleistocene to Recent	Newer alluvium	Unconsolidated sand, silt and clay
Middle to upper Pleistocene	Older alluvium	Fairly consolidated clay with kankar, fine to medium sand with some gravel
----------Unconformity ----------		
Upper Vindhyan	Kaimur Sandstone	Sandstone and arkose.

The fertile landscape of middle Ganga plain has been occupied from the mesolithic site of Sarai Nahar Rai (Dutta, 1984) in Pratapgarh District to recent times. The earliest settlement in Varanasi district is found in Sarai Mohana (Jayaswal, 2011,) and Rajghat (Singh, 1977), which are dated back to Pre-NBPW period.

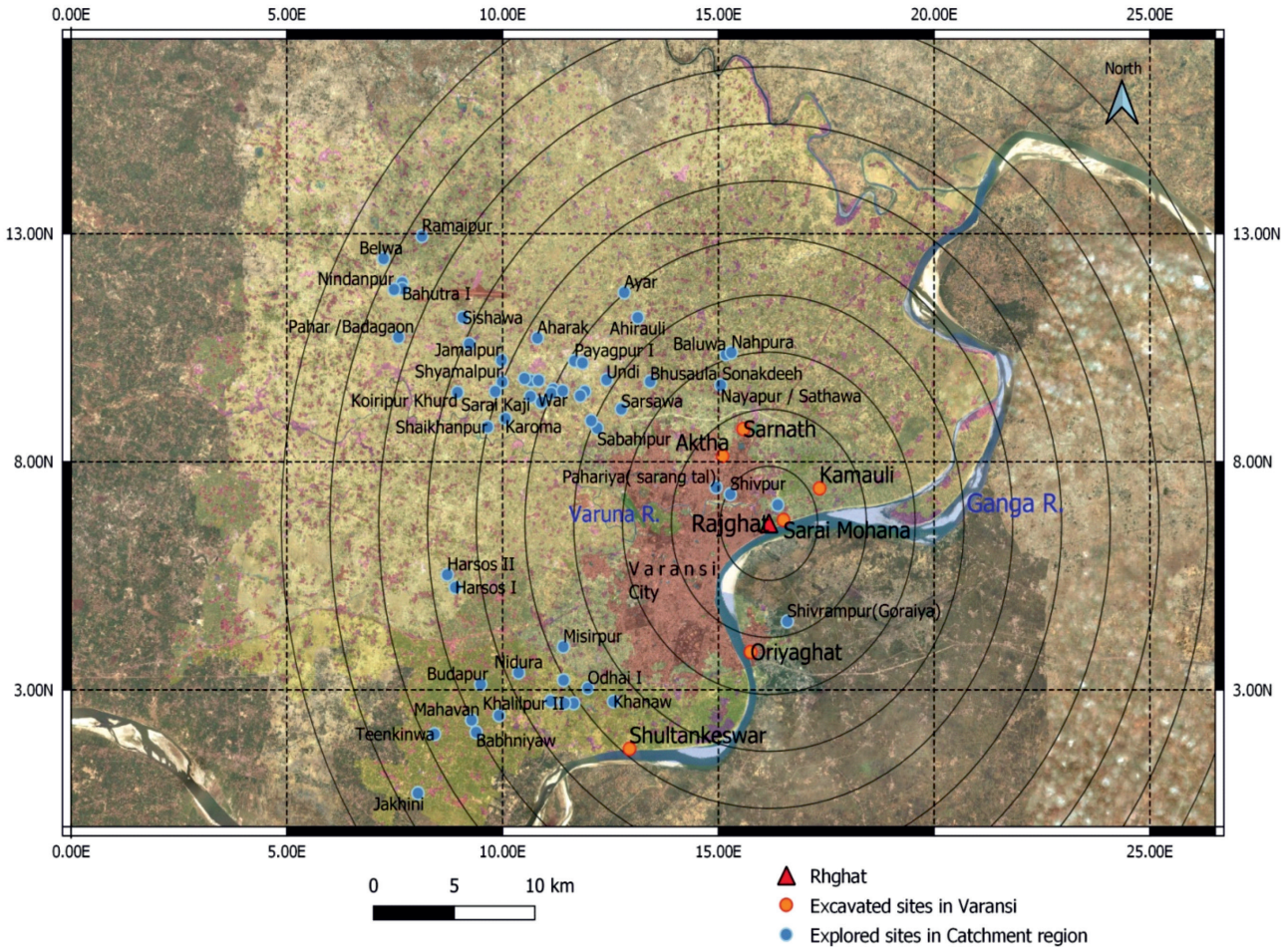

Figure 4: Land-Use-Land-Cover map of Varanasi distrit with representation of Rajghat and other archaeological sites in catchment area, Scale- 1:50,000. (Source- Resourcesat-2 LISS III, NRSC, ISRO, 2007)

In the second half of the 3rd millennium BCE with the coming of copper, agriculture was improved and triggered off a chain reaction. An agricultural surplus accompanied by a population growth resulted in the creation of a bigger and greater number of settlements. A general feature of the early settlements of Varanasi region was their location near river or lake just like its preceding ages. Their sizes varied from small to medium but a definite planning is missing.

The figure 4 show that Varanasi city is densilly populated and the archaeological mounds are only survived at the outskirts of moder city. There are total sixty multicultural archaeological mounds in fifty kilometer radius. The hight dencity of settlement is present from fifteen to thirty five kilometers from Rajght. Northern bank of Varuna river was preferred for settlemet and it early historical deposits. Ayar is located twenty four kilometers north-west from Rajght, which has long habitation continuation from Pre-NBP to medieval deposits, this could be second biggest archaeological site on Varuna river. The concentration of settlement along with Varuna river indicate that this river has been played a majour role for sustaining the habition and economy of Rajght which is located on the confluence of Varuna and Ganga River. War and Sarai Kaji and hights numbers of archaeological mound indicate it as an nucleated settlement. **Probabley Shaikhanpur, who is located on the bank of river Varuna, was also part of this** nucleated settlement**.** The North-western sites from Rajght have linear pattern settlement along with river Varuna. Whereas south-western sites from Rajght are arranged in dispersed pattern which indicate low habitational density, here Jakhini is southernmost archaeological site of this habitational pattern. **Harsos I and Harsos II are two archaeological mounds located on barren or wast land of Harsos village, these two mounds makes isolated settlemet pattern on this archaeological landscape.**

As we can see in table 1 and 2, that the Pre-NBPW culture was the earliest identified habitional phase in Varanasi distict, which is found in both Rajght excavarion and present exploration. The sites of this phase were permanent hamiet or village based settlements, they were quite far (5 to 10 km) from earch other, and located near to small water channels or nalas. It is also noted in exploration that Pre-NBPW sites also has NBPW ceramic as indigionous succeeding culture.

The number of sites and their density increased after the Sunga-Kushana period. This cultural phase has also identified as richest phase in Rajghat excavation (Fig. 2) with various terracotta objects and structures. The other succeeding cultural phse including Gupta and Early Medieval phase show subsequently high habitadion dancity with some **dispersed Settlements. Doble village settlement is notted in several sites like Bahutra I & II and Harsosh I & II, the distrance between two mounds in present modern village is less then 500 to 200 meters.**

Conclusion

The present research suggest that early small iscolated hamiet settlements indigenously develop to village based settlements, which lead to rural cultures. Most of the urban or **Nucleated settlements** like Rajghat and Ramnagar (Oriyaghat) are located on the bank of major rivers like Ganga and Varuna and the small settlement are identified and on the bank of their tributaries. This rural settlement providing the local food facilities for the major settlement sites. During exploration, all collected artifacts do not only give information about contemporary social, political, economical and religious status but it also informs about science and technology and arts temperaments.

The present archaeological and literary evidence has confirmed that the ancient Varanasi was a manufacturing point of the deluxe NBPW pottery, variety of beads and sculptures. Ancient Rajgaht, Aktha and Ramnagar (Oriyaghat) were the main consumer centre or urban cerner which was supported by a lote of satellite sits situated near Varuna river. It was not only a manufacturing centre of luxury items but also a trading point (Jayaswal, 1998). There is also a possibility that Varuna might be used for water transportation and trade activities between small village based satellite sites and urban sites situated near the Ganga river. The exploration has found a long cultural continuity and disappearance of NBPW sites and Gupta sites along with the Varuna river. The spatial point pattern analysis of location, distance and size of these archaeological sites, show that the early inhabitances of Varanasi

region had preferred to live near to another site which constructed an interdependent cluster habitation. It was also noted that, with the time, number and density of human habitation had also increased. The average distance between two habitational during the Kushana period was 5-8 Km whereas during the early mediaeval it decreased to less than 2 Kms. During the early mediaeval period, the numbers of habitational sites increased but the quality of cultural materials decrease.

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