

Historical Study of Jaipur City in India

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Abstract – Jaipur, after its foundation, acquired the fame as one of the most graceful and planned cities - based on 'Grid-Iron Pattern' of street planning of India, where it emerged as one of the major cities of Northern India during the 18th century. Though, the eighteenth century is generally considered as a period of stagnation and general decline in India, scholars are widely divided on its nature. A group of historians in their monumental works came out with their conclusion that there was a general decline in the 18th Century because of the decline of the Mughal Empire, though they have cited different causes of the decline of the Empire.

Key Words – Architectural, Imported, Predecessors, Utility, Ancestors, Extensive

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I. STUDY OF JAIPUR CITY:

Jai Singh's architectural activity was very prolific. Though Amber, since long before Jai Singh's time, was renowned for elegant palaces built on an eminence overlooking artificially laid out well kept gardens, he imported a new dimension to architecture. His contribution surpassed the architectural activities of his predecessors both in extent and utility, without suffering in dignity either¹. First, he made extensive additions to the palace of his ancestors, but finding that his growing State needed a new Capital, he chose to build an entirely new city. Shortly afterwards, when he decided to build a new Capital, he commissioned a large number of buildings of varied nature in it. Now, he started to build in the successive stages, a large number of shops on both sides of the main roads or the city wall and the gateways, havelis or the mansions and other building structures in the rectangular blocks of the City.

The walled city of Jaipur is composed of buildings of various natures besides the city wall and gateways. It

includes mainly, shops of markets, residential buildings, palaces, temples, official buildings, buildings of sub-imperial paraphernalia, havelis or the mansions, etc. All are set in a well-defined manner and planned way. On the basis of the contemporary sources and survey of the walled city of Jaipur which I have conducted, some common characteristic features of buildings of the City are discussed here.

The land allotment plans available in the Jaipur City-Palace, show that Brahmin Havelis or the mansions of the royal priests are square in most cases, and other plots are rectangular with smaller side facing the streets which were allotted to private citizens and temples, etc. These allotment plans also show that some rectangular plots reserved for the prominent persons were 'sawaya' i.e. one and quarter extra in area². Where the buildings were likely to be constructed soon directions regarding the buildings were given, according to which the buildings line, the height of the ground floor and the height of the buildings were monitored³. Vidyadher was the chief architect and engineer for the buildings both state and private. Apparently, the construction of even private buildings v/as strictly regulated and their plan had to be approved by him⁴. Jaipur Records show that

¹ It is the volume of Sawai Jai Singh's architectural activity and the simplicity and decoration, and grace and strength of his buildings, characterized by a few distinguished structural and artistic features that put his architectural labours apart from those of his predecessors. Though not of the highest quality, his buildings will bear comparison with any other built during the eighteenth century and also with most of the buildings of the same class built in the semi-autonomous states and the provinces during the seventeenth century. Looking to the fact that the times were exceptionally chaotic and Jai Singh's main interest was astronomy his building activity remains a befitting testimony to his unusual caliber.

² Kapad-Dwara Catalogue, Map No. 54, 45, City Palace Museum, Jaipur

³ Ibid.

⁴ Chitthi (Jaipur), 'Invitation Letter from Jai Singh to Ghasiram Murlidhar' dated Miti Bhadva Sudi 9, V.S.1786/1729AD, Jaipur Records, Rajasthan State Archives (R.S.A.), Bikaner.

when the Jaipur City was founded, Jagirdars of the State and Brahmans of Amber⁵ were ordered to build their houses in the City⁶, and many commercial groups from different parts of the country and Rajasthan were invited to settle down and construct their shops and houses in the City⁷. References mention that the buildings should be constructed according to the directions of Vidyadhar⁸.

The City of Jaipur was planned with straight and wide roads besides achieving an effect of beauty⁹. The uniformity of the City was very striking¹⁰, as there achieved the almost uniform height and similarity of architecture of the shops and houses, built on the main roads¹¹. This is especially striking on both sides of the Johri Market¹².

Under the arcades of the palaces, temples and houses built on each side of the main streets which are the principal bazaars or markets, there exist thousands of shops with complete uniformity and symmetry of architecture¹³. The earliest plan map of the Jaipur City i.e. L.S. /14 (V.S.1782/1725 A.D.), preserved in the City Palace Museum (Jaipur), a kind of progress report of the construction work done during the first stage of Jaipur's foundation, clearly shows the construction of altogether 1346 hatya or the shops in the four oldest markets of Jaipur namely, Johri Market, Sireh-Deohri Market, Gangori Market and the Kishanpol Market. On each side of these markets, except one side of the Kishanpol Market which shows 144 shops and 88 shops in the northern side of this market on the main axis road which later developed as the Chandpol Market, 162 shops under construction are shown¹⁴. Kapad-Dwara (Jaipur) document, particularly related to instructions regarding the construction of a market place, provides us invaluable information related with the foundations of the shops on both sides of the main streets. Shops were ordered to be built on a raised plinth ('kursi tai' i.e. up to the plinth). The market place is divided into Katlas or Mandis (special

markets) such as Rui-Mandi or the cotton selling market.

These shops were built for purely commercial purpose and allotted to different groups of professions. The State-sponsored construction of the commercial shops on such a big scale in a medieval city was rare phenomenon, unparallel in the contemporary India¹⁵. Since last three centuries these markets have been flourishing continuously, and presently some of its markets, such as Johri Bazar, have achieved world-recognition; and thus fulfilling the objective of their foundation.

The old city of Jaipur, enclosed by the fortified wall¹⁶ which is 20 to 25 feet in height and its thickness, though varied, is about 9 feet at the base. The wall is surmounted by battlements and gateways. The circumference of the fortified wall is about 9 kilometers, which has circular and semi-circular bastions¹⁷ after a certain interval. The wall was built with the help of undressed stone and lime mortar, and also thickly plastered with lime mortar on both sides¹⁸. Exterior face of the wall is decorated with geometrical designs of rectangle, square, etc. giving the impression of blind doors and windows. At the top the wall is crowned with battlement motifs though these battlements are meant for decorative purpose with no functional use. On some part of the wall geometrical designs are absent, where the surface has been made smooth with lime plaster.

Though, at present there are eleven gateways in the walled city of Jaipur, originally only eight gateways connecting the main streets and roads of the City were built during the period of Sawai Jai Singh. These gateways were Surajpol in the eastern side; Chandpol in the western side; Brahmopol or the Samrat Gate, Dhruvpol or the Zorawar Singh Gate and Gangpol or the Mathura Gate in the northern side; and Rampol or the Ghat-Darwaza, Shivpol or the Sanganeri Gate, and Kishanpol or the Ajmeri Gate in the southern side of the Jaipur City of Sawai Jai Singh. Though, these gates have not uniform dimensions, they

⁵ Chitthi (Jaipur), Bhadra Vadi 3, V.S.1786/1728 AD, Jaipur Records, R.S.A., Bikaner

⁶ Hanuman Sharma mentions that he had seen the copy of an order which was sent to all the Jagirdars in the State, cf H. Sharma, Nathawaton Ka Itihas (Hindi), p. 163.

⁷ Chitthi (Jaipur), Bhadra Sudi 9, V.S.1786/1729 AD, Jaipur Records, R.S.A., Bikaner; 'Invitation Letter from Jai Singh to Ghasiram Murlidhar', op.cit, it reads as: "Apranch tu apni khatir jama rakh Sawai Jaipur men aye- hat (shops) haveli (house) vadhaye vinaj- viyapar kijyo".

⁸ Invitation Letter from 'Jai Singh to Ghasiram Murlidhar', op.cit. It mentions: "tune Vidyadhar kahe tin mafiq kijo" [You act as per the instructions of Vidyadhar]

⁹ See Plate No. 2 (B).

¹⁰ Heber, R., 'Narrative of a Journey Through The Upper Provinces Of India, 1824-25', Vol.11, London, 1828, p.401

¹¹ See Plate No.16, 17, 18, 19 (A), 21, 22 & 23. This uniformity has been spoilt to some extent by building constructed in recent years on the Chaura-Rasta (in front of Tripolia Gate), but otherwise most of the other roads have maintained this regularity.

¹² See Plate No.16 (B), 17(A).

¹³ See Plates of the main markets, such as, Kishanpol Bazar, Johri Bazar, Sireh Deohri Bazar and the Gangori Bazar.

¹⁴ See Map L.S./14, Plate No. 1.

¹⁵ Victor Jacquemont describes the main markets of the Jaipur City [of Jadunath Sarkar, A History of Jaipur, p.208], as:

"The main streets are the principal bazaars, on each side, under the arcades of the palaces, temples and houses are the shops of the artisans, the tailors, shoemakers, gold smith, armourers, pastry-cooks, confectioners, copper-smiths, etc. The grain merchants occupy very spacious huts of thatch, constructed in a sort of course lattice work, ... in the midst of the main street. TTie stalls are removed wherever the Rajah issued from his palace. Delhi (Shahjahanabad) has only one similar road, namely the Chandni Chowk, but at Jaipur all the roads resemble it and bear that name."

¹⁶ See Plate No, 3 (A); This Plate shows south-western part of the city wall.

¹⁷ See Plate No. 3 (B).

¹⁸ See Plate No. 3 (A)

have some common architectural features. All the gates of the City are beautifully decorated with some geometrical designs and human figures. Most of the gates are of 'Tripolia' type- having three arched passage where mid one is bigger and flanked by smaller one. All the three arches of the gates are pointed and the span of all the passage is equal. Central entrance of the gates is a little projected and both the corners of the central entrance are occupied by Chattaries or the pillared domed pavilions at the top or roof level and flanking corners of the screen of the whole gate are again surrounded by pavilions.

These Chattaries or pavilions are composed of four pillars and above having dropping eaves, roofed by dome with finial. Some gates are recessed in the fortified wall and other are little projected towards outside.

The finest buildings are in the royal sector or the Palace Complex which is situated in the north-western side of the Bari-Chaupar i.e. the central square. It is composed of palaces, gateways, temples, royal offices, gardens, water works and carriers, ceremonial buildings and the astronomical observatory. All the major buildings of the Palace Complex are aligned in the east-west direction except Talkatora or the Palace Lake, Badal-Mahal or the Cloud Palace, gardens and its water carriers, and Gobind-Deva Temple, which exist towards the northern side in 90 degree alignment to the main axis. In the course of the passage of time, a number of structures were also built inside the complex. The palace with its gardens, occupies about one-sixth part of the City.

The whole Palace Complex is surrounded by high walls and enclosures called Sarhad. The complex has provided with two entrances, one is in the form of 'Tripolia' i.e. three passage arched gateways which opens in the Tripolia Market- existing on the southern side of the complex, while the second entrance named as 'Sireh-Deorhi' i.e. boundary gate situated on eastern side opens in the Sireh-Deorhi Market. After passing through Sireh-Deorhi Gate, on its western side, there is another entrance gate known as 'Nakkar-Darwaza' and then there is a courtyard or the spacious square namely 'Jaleb-Chowk' which was built to provide accommodation to the security guards posted to defend 'Udaipol', an another entrance gate.

Towards western side of the Jaleb-Chowk, a group of palaces, accessed through 'Udaipol', are existed which are inter connected through the three other entrances and courtyard. It includes 'Sabha-Niwas' or the Diwan-i-Am, 'Sarvatobhadra' or the Diwan-i-Khas, 'Anand-Mahal', 'Chandra- Mahal', 'Zenana' or the female apartment along with courtyard 'Pritam-Niwas Chowk' and 'Rajendrapol' and 'Ganeshpol'. Most of the entrances have arched recesses with semi-domes, decorated by different patterns in colour.

'Sabha-Niwas' or the Diwan-i-Am is a large hall which was at that time open on three sides, surrounded by a verandah having arches on three sides, the fourth side having latticed galleries for the use of the ladies¹⁹. Its high ceiling and stately marble pillars make it an impressive hall. The hall since much altered when Heber saw it. He describes it as:

"A noble open pavilion with marble pillars richly carved rather inferior in size, but in other respect fully equal to the Hall of Audience in the castle of Delhi".

There is another such court that encloses the large Hall of Audience immediately to the south-east of the palace (Chandra-Mahal). Now it is known locally as the Sarvato-Bhadra or Diwan-i-Khas. It is a structure square in plan, built on a raised platform, and is open from all sides²⁰. It too has double rows of marble pillars and arches with semi-circular curves.

Through a portal on the north one can enter the pillared verandah of the Chandra Mahal, the earliest and the most important part of the palace. It has seven- stories- a number presumably chosen for its auspicious associations. This seven storied palace is the most picturesque of all the buildings in the royal sector. On the ground floor, in the north side, is the broad verandah with pillared gallery called the Pritam Niwas, from which a marble channel runs into the formal garden. This arrangement dittos the Sukh Niwas of the palace at Amber, and is one of several features which suggest an intention to re-create the Amber palace²¹. The main portion of the ground floor of the Chandra Mahal is occupied by a hall of audience. This is a small and rather low per style hall with cusped arches. Some variety to the last is provided in the rear portion of the hall by the use of trefoil arch, which may be termed as 'Buddhist' because of their similarity in form to the trefoil niches of Gandhara and Pala Bengal.

The main rectangle is in five storeyes of different height, first three defined by cornices and moldings, their plain facades being relieved by a pleasing arrangement of the arched windows and a variety of detail. A single high hall is expressed on the outside as the first two storeyes, which explain why those who attempt to name the seven stories of the palace can muster only six names. This hall, the Sukh-Niwas, was extremely remodeled in the Victorian period.

The next two (fourth & fifth) storeyes, the Rang-Mahal and the Sabha-Niwas repeat the plan of the

¹⁹ Bhatnagar, V.S., Life and Times of Sawai Jai Singh, op.cit., p.334.

²⁰ See Plate No. 9 (C)

²¹ Likely, the Udaipur Palace sought to re-create Kumbha's Palace at Chittor, cf. Tillotson, The Rajput Palaces: The development of an Architectural Style, p.177.

Sukh-Niwas²². In these two storeys the terraces, protected by graceful handrails, lend an air of openness to the whole structure, but the top two stories, the Chavi-Niwas and the Mukut-Niwas, are smaller in plan. The Chavi-Niwas is a Sheesh-Mahal and consists of three adjoining chambers, all richly decorated with inlaid mirror-work, while the seventh (Mukut-Niwas) is an open arcaded marble pavilion with curvilinear form of roof i.e. Bangaldar, flanked by two cupolas.

All these stories have projecting balconies on the exterior. Because all the stories follow the same rhythm of advance and recess, the balconies come immediately above each other in continuous vertical orientation. Furthermore, the repetitive rhythm of the balconies, their monotonous form, and the multiplicity of their opening, all contribute to make the exterior cluttered and wearisome. The features are too small for facade of such size, the balconies and their chhajjas or the shades litter rather than define the architectural form. The formal entrance to the palace is on the eastern side through a number of imposing portals and squares including the two comprising Diwan-i-Am and Diwan-i-Khas.

The structural and aesthetical features of the palace Chandra-Mahal and its picturesque setting are remarkable²³. An exceptional feature of the Chandra-Mahal lies in its symmetry. The picturesque quality has been achieved by eliminating the irregularity as evident in the majority of the Rajput palaces²⁴. However, the aspect of the Jaipur Palace which most it exceptional within the Rajput School, is of its parts. The more usual Rajput garh or the fort palace is an integrated unit of the palace and fortifications. The various parts of the palace, though of different date, attach to each other, and their fortifications are contiguous: originally the Jaipur Palace, at Jainiwas, consisted only of the Chandra-Mahal a single unit, and for it accorded with Rajput tradition. But its fortifications are separate: the palace compound is surrounded by a high wall, i.e. the Sarhad. And the major structures built in addition to the Chandra-Mahal are not attached to it but stand in separate courtyards. The Jaipur Palace in its complete state therefore conforms much more closely to the Mughal type of palace, with separate buildings distributed over a fortified campus.

²² Ibid

²³ As a structural composition, some may be inclined to regard it even more pleasing and graceful than the famed Datra Palace, and though not giving the same impression of solidity and massive grandeur as the latter, has no feebleness in its conception and ideals either. It is on the other hand, more balanced structurally, and has a quiet grace about it to be found but rarely in the structures of the period.

²⁴ The other Rajput palaces such as the palaces of Bundelkhanda are of course symmetrical, but there the symmetry is essential to the dynamics of the designs. Here it is a reflection of a new order established in the design of the city, but it is otherwise gratuitous; the regular bulk of the Chandra-Mahal lacks both grace and interest, cf Tillotson, *The Rajput Palaces: The development of an Architectural Style*, p. 178.

The palace's formal garden or the royal garden called Jainiwas, to the north of the Chandra-Mahal, marks the site around which the city was founded. The palace gardens are extensive. They have the Chandra-Mahal on one side and the Badal-Mahal at the other and with Govind-Devaji Temple in the middle.

This garden with its terraces and axial waterways, based on charbagh or the square pattern, and building of the pavilions within it, are again Mughal in style. When Heber saw this garden, he beautifully described it as,

"...the gardens which, I was first taken to see, are extensive, and in their way, extremely beautiful, full of fountains, cypresses palm-trees, and flowering shrubs, with a succession of terraces and alcoves, none of them, singly taken, in good taste, but altogether extremely rich and striking. Two very large and handsome tanks ['Talkatora' Lake and 'Rajamal-Ka-Talab'] terminate the grounds towards the north. The garden is surrounded by a high embattled wall having a terrace at the top like that of Chester, and beneath it a common passage (as one of the ministers of State, who accompanied us, told me) for the Zennanah to walk in. the whole establishment of the palace and the garden seemed well kept up, considerably better than that of Lucknow, and everything much exceeded my expectation except the military show, which was absolutely nothing.

Two more structures at Jainiwas are the Badal-Mahal²⁵, overlooking the Talkatora, and the Govind-Deva Temple, existing northward between the Badal-Mahal and the Chandra-Mahal²⁶. Both show signs of extensive remodeling: the exterior facade of Badal-Mahal is clumsy comparing with the internal arrangements and is clearly by a different hand; and from the design of the Govind-Deva Temple it is evident that it was built as a residence and only later converted into a temple. However, the older parts of the structure are built in a late style: the cusps on the arches in the Badal-Mahal, for example, sprout in to leaves like those of Safdar Jang's tomb in Delhi²⁷ (C.1750).

The Govind-Deva Temple built by Sawai Jai Singh, though not conceived on the same scale as the one built by Raja Man Singh, but follows that in architectural character²⁸. The temple of Govind-Deva is named as 'Govind-Mahal' (literary palace) and is located on the upper most terrace of a Mughal style terraced garden with channels and

²⁵ See Plate No. 11 (B)

²⁶ These have been identified by some as the original hunting ground lodges, Davar, Satish, "A filigiri city spun out of nothing," Marg, Vol.XXX, No.4 (Sept. 1977, p.43; cf Tillotson. *The Rajput Palaces: The development of an Architectural Style*, op.cit, p. 181.

²⁷ In view of their late style it is unlikely that the pavilions do more than the sites of the original hunting lodges, Tillotson, *The Rajput Palaces: The development of an Architectural Style*, op.cit, p. 181

²⁸ Bhatnagar, *Life and Times of Sawai Jai Singh*, op.cit., p. 335

fountains. It is axially aligned with the Badal-Mahal or the hunting pavilion at a lower level and the Talkatora or Talab, a large water body at the northern end of the Palatial Complex²⁹. Its setting on the highest terrace of the garden, with the backdrops beyond is quite unusual. The temple itself is very simple and is constructed in the form of a Mughal Baradari with carved marble pillars with arches on the north and south side and closed rooms on the remaining two sides with the 'garbhagmha' in the centre and a passage for circumambulation³⁰. It is also without a porch and 'shikhar'. The idol is installed in a rectangular hall surrounded by arcaded procession-path with a decorated ceiling. Its heavy but finely proportioned pillars supporting the arches were built in the characteristic Amber style. The shafts of the pillars are round and bulging at the base, taper upwards, the base and the abacus having broad petals carved in relief. In this and other temples³¹ of this period, one noticeable feature is an almost total absence of figure carving³². Other decorative motifs and structural features, however, were introduced in these temples which were in harmony with their plain yet graceful facade.

Regarding architectural features of these 'shikhar-less' haveli type temples, scholars have different opinions Shikha Jain³³ is of the opinion that the unique architectural style of the Govind-Deva Temple has also marked it as a dominant precursor of a new temple typology in Rajasthan i.e., the 'shikhara-less haveli temples' of the eighteenth century, that are widespread in the region. This type was initially defined by the "Pushtimarg" of the Vaishnava sect. A prevalent myth states that in order to protect the temple during the Mughal rule of Aurangzeb, the Vaishnava sect started building temples in haveli pattern. However, the adoption to the haveli temple typology goes beyond this and is specifically designed to cater to the Bhakti Movement of that period³⁴. In the words of R. Nath, This simple design

marks the culmination of the evolutionary process from the mandira type of 'Radhekunda' to the Baradari type of the Jayanivas (Jainivas) garden, and reflects the utmost simplification of the Vaishnava temple; almost the entire formalism of the classical Hindu temple as prescribed by the Vastu texts has been dropped, and it has become an incarnation of bhakti, pure and simple³⁵. According to Catherine Ashar, "The architectural vocabulary of the temple is parallel with the Mughal Public Audience Hall with its pillared facade, where either the deity or the ruler is positioned for darshan³⁶". Thus, it seems that the adoption of 'shikhar-less' or the haveli type temple was more due to the influence of the Bhakti Movement of the Vaishnava sect which reflects purity.

In the building activities of Sawai Jai Singh, the structures of the Jaipur Observatory i.e. Jantar-Mantar, have prominent place. Out of the five astronomical observatories built by him at Delhi, Jaipur, Ujjain, Mathura and Benaras, only of Delhi and Jaipur still survived in good condition and popularly known as Jantar-Mantar. The Jaipur observatory, situated in the south-east of the Palace Complex³⁷, and consists of the huge masonry structures. Technical details and a precise appraisal of the scientific value of each instruments of this observatory do not come in the purview of the present work. The structures of only the most important instruments will be briefly described here.

Jai Singh claims to have devised some of the astronomical instruments such as the Samrat-Yantra, the Jai-Prakash and the Ram-Yantra³⁸.

Religious Identities in Islamic South Asia, eds. D.Gilmartin and B. Lawrence, University of Florida Press, Gainesville, 2000, pp. 121-148, *ibid*, f. n. 23.

²⁹ Nath R., "Sri Govinda Deva's itinerary from Vrindavan to Jayapura C.1534-1721" in Govinda Deva: A Dialogue in Stone, edited by Margaret Case, (1996), N. Delhi: IGNCAPub., p.178.

³⁰ Ashar, Catherine, *op.cit*, in D. Gilmartin and B. Lawrence (ed.) (2000) *Beyond Turk and Hindu: Rethinking Religious Identities in Islamic South Asia*, Gainesville University of Florida Press, pp. 121-148, *ibid*, f. n. 25; cf Shikha Jain, *Princely Terrain*, p.115.

³¹ See Sketch Plan of the Palatial Complex.

³² 'Preface' to the Zij-i-Jadid Muhammad Shahi, f; cf W. Hunter, "Some Account of the Astronomical Labour of Jayasinha of Ambher or Jayapur", *Journal of the Asiatic Society of Bengal*, Vol.V, Calcutta, 1799 AD, ff. 177-221, Eng. Tr. of the 'Preface' or the Introduction to the Zij-i-Jadid Muhammad Shahi, ff. 177-189; These three instruments are indeed peculiar to his observatories and to some extent attributed to his personal ingenuity. There is a manuscript of Sawai Jai Singh's time (no.31) in the Collection of Pothikhana, Jaipur which bears the title 'yantra-prakar' or "the modes of (constructing) astronomical instruments". It begins "Atha Shrimaharajadhirajavirachit yantram likhyate" (now the mode of the instrument designed by the Maharadhiraj is described). Then as many as fifteen 'yantras' (instruments) have been described. The words 'Shree maharajadhiraj kritani' may be interpreted as 'Maharaja' or 'Maha-rajadhirajen icritani' designed by the Kritani 'designed for the Maharajadhiraj. It is, therefore, possible that he might have designed some if not all of the instruments described in the manuscript (G.N. Bahura & Chandramani Singh, *Kachhwahas of Amber - The City of Mother Goddess*, Publication Scheme, Jaipur, 2009, pp.20, 22), but it can be inferred from his introduction to ZIJ-i- Jadid Muhammad Shahi that Jayaprakash-

²⁹ See Plan of the Jaipur City.

³⁰ Jain, Shikha (ed.), *Princely Terrain*, Gurgaon, 2005, p. 109.

³¹ Another temple with in the palatial complex is the temple of 'Sitaramji' and it is important to that this temple, as the private prayer space of the Kachhwaha was also located inside the Chandra Mahal and Zenana or the ladies section of the palace. Next to 'Govind-Deva', it was god 'Rama' that was worshiped by the Jaipur rulers. In fact, at the coronation of each Jaipur Ruler, a procession carrying this idol of 'Sita Rama' was taken to the earlier Kachhwaha 'haveli' or Manson in Amber where the Raj Tilak ceremony was performed. An analysis of the royal ritual processions in the City of Jaipur performed annually can possibly reveal more information about the city spaces and their hierarchical significance, Jain, Shikha (ed.). *Princely Terrain*, Gurgaon, p. 118.

³² The reason behind building these 'Shikhar-less' temples may be paucity of time. But the other opinion in this context is that besides involving much time and expenditure, it often became the chief cause of inviting the attention of the iconoclasts, and hence of its destruction, Bhatnagar, *Life and Times of Sawai Jai Singh*, *op.cit*

³³ Jain, Shikha (ed.), *Princely Terrain*, *op.cit*, p.109

³⁴ Jain, Shikha, "Vaishnava Haveli Temples in Rajasthan: Original and Continuity of a Temple Typology", paper presented in EASA Biennial Conference, July 2005, Also refer Asher Catherine (date), "Mapping Hindu Muslim Identities through the Architecture of Shahjahanabad and Jaipur" in *Beyond Turk and Hindu; Rethinking*

The Samrat-Yantra is a huge equinoctial dial³⁹, consisting of a triangular gnomon with the hypotenuse parallel to the earth's axis⁴⁰, and on either side of the gnomon in a quadrant of a circle parallel to the plane of the equator⁴¹. Each edge of the quadrant is graduated in hours and minutes as well as degrees, and each edge of the gnomon has two scales of tangents. It is 90 feet high 47 feet long and radius of each quadrant is nearly 50 feet⁴².

The Jaiprakash is a hemisphere⁴³ on the concave side of which are mapped out certain co-ordinates, cross wires are stretched north to south and east to west, and the shadows of the intersection of the wires falling on the surface of the hemisphere indicates the position of the sun in the Space; other celestial bodies can be observed directly by placing the eye at the proper graduated point and observing the passage of the body across the point of intersection of the wires. For this purpose the instrument is duplicated. It has a diameter of 17 feet and 5 inches⁴⁴. The Ram-Yantra is a cylindrical instrument open at top and with a pillar at its centre⁴⁵. The floor and the inside of the circular wall are graduated for attitude and azimuth observations. To facilitate observation the floor is broken up into 12 sectors⁴⁶. The walls are also broken up and one section of the wall corresponds to one sector. On each side of the wall sections are notches in which sighting bars can be placed horizontally.

The Digamsha-Yantra or azimuth instrument is a small and useful device, consisting of a pillar surrounded by two circular walls⁴⁷. Cross wires are stretched from the cardinal points on the outer wall, and both walls are graduated. The Narivalaya-Yantra is a cylindrical dial⁴⁸, the axis of the cylinder being horizontal and pointing north and south, and the northern and southern faces being parallel to the plane of the equator. There are also two meridian circles of different designs.

Yantra, Rama-Yantra and SamratYantra were designed by him. As far as the nomenclature of these instruments are concerned, G.N. Bahura suggests, "It appears that these were named after him, his great grandfather Ram Singh-I and his guru the Samrat (Jagannat). In case of the 'Jayaprakash-Yantra' it is also possible that it was named to commemorate his illustrious ancestor Mirza Raja Jai Singh, cf. Bahura, Kachhwahas of Amber - The City of Mother Goddess, p.22.

³⁹ See Plate No. 11 (B)

⁴⁰ See Plate No. 12(B)

⁴¹ See Plate No. 11(A)

⁴² At Delhi, it is 68 feet high, 125 feet from east to west and 113.5 feet from north to south, cf. Sarkar, Jadunath, A History of Jaipur, op.cit, p.214.

⁴³ See Plate No. 13(A)

⁴⁴ At Delhi, it is 10 feet more; See plate; cf Sarkar, A History of Jaipur, pp.214-15.

⁴⁵ See Plate No. 13(C)

⁴⁶ At Delhi, it is divided into 30 sectors, ibid, p.15

⁴⁷ See Plate No. 13(C)

⁴⁸ See Plate No. 14(A)

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