

**Knowledge, Technology And Construction: A Case Study Of  
Medieval Monuments in Malwa (12th -18th century)**

A Dissertation submitted to the University of Hyderabad in partial fulfillment of the  
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**DOCTOR OF PHILOSOPHY**

**IN**

**HISTORY**

**BY**

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**DECLARATION**

I hereby declare that the dissertation entitled, “*Knowledge, Technology And Construction: A Case Study Of Medieval Monuments in Malwa (12<sup>th</sup> -18<sup>th</sup> century)*” submitted by me under the supervision of *Prof. Sanjay Subodh* for the award of Doctor of Philosophy in History, in the University of Hyderabad, is my own work. The dissertation has not been submitted for any degree at this university or any other university or institute. A Report on plagiarism statistics from the University Librarian is enclosed.

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## CERTIFICATE

This is to certify that the dissertation entitled “*Knowledge, Technology And Construction: A Case Study Of Medieval Monuments in Malwa (12<sup>th</sup> -18<sup>th</sup> century)*” submitted by Pooja Rhine bearing Registration Number 13SHPH03 in partial fulfillment of requirements for award of Doctor of Philosophy in the School of Social Sciences is a bona fide work carried out by her under my supervision and guidance. This dissertation is free from plagiarism and has not been submitted previously in part or in full to this or any other University for award of any degree or diploma.

Parts of this thesis have been:

A. Published in the following Publications:

1. Acoustics and Building Construction Technology in Medieval India: 14<sup>th</sup> to 17<sup>th</sup> Centuries in *International Conference on Social Sciences and Humanities (ICSSH'15)*, May 5-6, 2015, Bali, ISBN 978-93-84422-17-2.

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Further, the student has passed the following courses towards fulfillment of the coursework requirement for Ph.D/ was exempted from doing the coursework on the basis of the following the courses passed during her M.Phil programme and M.Phil degree was awarded:

Courses Code	Name	Credits	Pass/Fail
1. HS 701	Historiography	4	Passed
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3. HS 703	Seminar Course	4	Passed
4. HS 750	Dissertation Submitted	12	Passed

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## Introduction

History as a discipline takes into account the actions of the past and tries to understand the formation of future courses of actions in the society. In doing so a historian takes the help of various branches of history and other disciplines and one such is Archaeology which co-relates truth with the past society. The structures of the past which generally are seen as forms of art which reflect the taste of time and also carry the knowledge that was used in their construction and are evidences of the past. Medieval archaeology takes into account the structures that are standing on the surface and which are evidences of cultural movements and integration through ages.

Architecture is a general term used to describe buildings and other physical structures which has to do with planning, designing, space, etc. Most important usage of the architecture is to provide shelter. Medieval structures have often been studied in terms of their architectural features and have been seen as a form of art rather than as representatives of contemporary knowledge and technology. The term 'Science' as we understand today is difficult to be used in the sense of medieval context. Technology is word derived from the Greek word 'Technologia' which means the systematic treatment of art. In terms of modern usage the word technology is used widely to all kinds of mechanical devices and forms of practical activity which help obtaining material objectives. In medieval Indian context we are looking into the laws of nature that were known to the people then and their usage and application in the building construction.

Writing about the regulations on house building, Abul Fazl remarks that these regulations were necessary as they were required for armies comfort and were a source of splendor for the government. From Abul Fazl's assertion that Akbar put in all his practical knowledge into stone and clay<sup>1</sup> gives us an idea that what we understand as various

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<sup>1</sup> Abul Fazl, *Ain-i-Akbari*, Eng.Tr. by H.Blochmann in *Ain-i-Akbari Vol I*, Baptist Mission Press, Calcutta, 1873, p 222. Abul Fazl wrote "Regulations for house-building in general are necessary; they are required for the comfort of the army, and are a source of splendour for the government. People that are attached to the world will collect in towns, without which there would be no progress. Hence His Majesty plans splendid edifices, and dresses the work of his mind and heart in the garment of stone and clay. Thus mighty fortresses have been raised, which protect the timid, frighten the rebellious, and please the obedient. Delightful villas, and imposing towers have also been built. They afford excellent protection against cold and rain, provide for the comforts of the princesses of the Harem, and are conducive to that dignity which is

theories of modern society were known to medieval people. Through my Ph.D work I have attempted to look into the architecture of the structures located in the regional empire of Malwa with special reference to the capital city of Mandu and explain various theories of science that have been used in constructing these structures. Placing my central argument around these areas, I have divided my work into four different chapters, which look into the architecture and the science and technology that have been used in constructing the structures of Mandu.

In an attempt to look into the science and technology used in building construction of medieval Mandu from the 12<sup>th</sup> to the 18<sup>th</sup> century, I have made use of sources available at various libraries and archives. However the sources that I could lay my hands upon were silent about the science and technology used in the construction. The contemporary sources refer to the date of construction of these structures but do not refer to the science and technology that went into their construction.

A comprehensive archaeological survey of the ancient sites and monuments was carried out by Alexander Cunningham and later by H.H.Cole. Establishment of the Asiatic Society in 1784 provided an impetus to the systematic study and research in this field. An important role was played Archaeological Survey of India which since 1902 has been producing works on architecture. The earliest writings on the history of architecture in India were the ones written during the colonial period and were located in specific political and cultural context of power. However the writing on Indian architecture during the 19<sup>th</sup> and 20<sup>th</sup> century was ones broadly divided into Hindu and the Indo-Saracenic or the Anglo Indian style. This style was being followed by James Fergusson. Indigenous works also began to appear in this field. The nationalist writings that came up on the history of architecture made use of written sources like inscriptions, architectural treatise,

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so necessary for worldly power. Everywhere also *Sarâis* have been built, which are the comfort of travellers and the asylum of poor strangers. Many tanks and wells are being dug for the benefit of men and the improvement of the soil. Schools and places of worship are being founded, and the triumphal arch of knowledge is newly adorned. His Majesty has enquired into every detail connected with this department, which is so difficult to be managed, and requires such large sums. He has passed new regulations, kindled the lamp of honesty, and put a stock of practical knowledge into the hands of simple and inexperienced men”.

religious texts, etc., and the scholars of Indology, Sanskrit and Persian began to be associated with Archaeological Survey and its research projects. The focus of the historians during the late 1970s shifted towards understanding the forms of architecture, architectural styles within the frameworks of visual traditions and socio-political settings. In the recent times, studies have begun to focus on the provincial styles of architectures which were being practiced in the areas which were self contained after their governors broke allegiance to Delhi.

The trabeate style of architecture which was traditionally being used in India was being challenged by the introduction of the new style of architecture by the Turkish conquest. They brought with them the arcuate style of construction which allowed the enclosed space to be roofed and vaulted with the help of an arch. It was the introduction of cementing agent- lime mortar, which made the displacement of beam by arches possible. The Turks were brought to the doorsteps of Delhi after their victory in the Battle of Tarain and with the structures that they began to build were divided into three phases which came up almost simultaneously. In the first phase raw materials of the structures that were demolished after the conquest were used for construction of new buildings. The next phase was the one where structures were dismantled and its parts were removed to supply ready-made material for the mosques and tombs. After having established themselves the Turks were able to devote their time in planning and construction of new buildings for which they procured raw materials from nearby regions. This is considered as the third phase of architecture, but it does not signify that it had to be preceded by the other two.

A new phase of architecture began with the arrival of the Tughlaqs. The idea of palace forts gets revised during the period of Firoz Shah Tughlaq. They were revised with definitive architectural style which served the purpose of both residential and military requirements. Post Timur's invasion, Khizr khan of Multan came to power, laying the foundations of the Sayyid Dynasty. During this period many tombs came up which were ranging from simple open pillared pavilions in which cenotaph was exposed to view to imposing structures standing within walled enclosures that could be entered through tall gateway and a mosque recalling a mortuary chapel on western side. Tombs built during

this period were of two separate forms, one was octagonal in plan surrounded by an arched colonnade with a projecting eave and one storey in height, while other was square in plan with no verandah and had two exterior and which were sometimes three stories in height. In both styles of tomb, the building was surmounted by a dome which mainly consisted of an inner and outer shell of masonry with space between the two. This was the fore runner of the double domes which were later being constructed in India. Under the Lodis one important feature was the construction of square tombs and mosques.

Political instability which began during the reign of the Tughlaqs was furthered by the invasion of Timur. And it was during this period that governors began to break their allegiance with Delhi Sultans and began to create successor states. Of this regional empire which came up, one was Malwa. After breaking his allegiance with the Delhi Sultans, Dilawar khan established himself in Malwa with Dhar as his capital. For building projects, the Turks had to look outside the province for the skilled and experienced labour. In general circumstance they should have looked for the same towards Gujarat, but because of their strained relations with Gujarat they had to look towards Delhi for such labour. Delhi was the fountain head of the art and architecture. Besides adopting the architectural features of Delhi style of architecture, Malwa artists also developed their own features like the stately flight of steps leading to the entrance of the buildings.

Success in the Battle of Panipat in 1526 brought the Mughals into India. Although Babur's was a short reign, he had spent time in constructing some structures of which a few survive today like the mosques of Panipat and Sambhal. He has also been credited with introduction of gardens which Timurids used traditionally, called the charbagh. Under Humayun, the structures began to see the merger of Timurid elements and local building traditions. Mughal rule in India was interrupted by Sher Shah Sur and the architectural projects that came up during the Sur dynasty's rule, were divided into two phases by Percy Brown. The first phase was the one where mausoleums were erected at Sasaram in Bihar, while the second phase was the one which took place in Delhi. Post his return Humayun used the small fortress of Salimgarh constructed by the Surs, as a sub-

urban retreat and place of recreation. No other major building projects were taken up by Humayun on his return.

Akbar's reign saw the finest structures of the fusion of trabeate and arcuate style being constructed. The structures that were built during this period were mainly made of red sandstone with insertion of white marble. The domes that were constructed were mainly Lodi type. The structure had straight lines with openness and uniformity and symmetry as the specific feature of the style. It also saw the introduction of the double dome in construction. Inlaid patterns, interiors and ceilings were made of painted designs, capitals took the form of brackets etc., were some of the features of the structures that were built during this period. During the reign of Jahangir mainly painting gained an upper hand. The building construction saw many changes like the addition of false doorways for symmetry, ornamentations, use of white marble minarets, decorated surfaces of the building, etc. Jahangir also laid a number of gardens, roads and sarais, bridges, kos minars and wells and baolis. Shah Jahan's reign saw architecture receiving the highest degree of perfection. It was an age of marble. The other features of the structures that came during this period were the curve of the arch was more foliated usually with 9 cusps, bulbous domes, baluster columns and the most important was the pietre dure inlay in the buildings. Aurangzeb's reign saw slow pace of the building projects that were carried out and the period does not seem to have given the same attention as it was done in the earlier reigns.

The region of Malwa which is a tract between two rivers- Narmada and Tapti was during the early medieval period ruled by the Paramara Dynasty with Dhar as their capital. Although it was during Iltumish's reign that the conquest of Malwa began but it was only during Alauddin's reign that the conquest was completed. Dhar remained the headquarters of the governors of Malwa until Dilawar Khan Ghorī declared his independence in 1401 A.D. It was Hoshang Shah, Dilawar Khan's son, who shifted the capital from Dhar to Mandu. It was during the reign of Nasir-ud-Din that Malwa was invaded by Gujarat and it remained dependent on Gujarat until Humayun occupied it. However soon it was taken over by one of the officer of the former Malwa Sultan. Sher Shah took over Malwa from the officer and appointed Shuja Khan as his governor of

Malwa. Shuja Khan's eldest son, who later took the title of Baz Bahadur took over the control of the government until Akbar brought Malwa under his control.

Derived from the Greek word "*Historia*", meaning inquiry and research, the word history is a branch of knowledge which records and analyzes the actions of the past and tries to understand the future course of action of the society<sup>2</sup>. In order to understand these actions of the past, a historian is guided by knowledge of other subjects which help in reconstruction of the truth in totality. Archaeology, being one of the important areas which help in establishing a co-relation between the truth and human past, is the study of human past through the material remains such as artefacts, bones, seeds, pollen etc<sup>3</sup>. Medieval archaeology takes into account the structures that are standing on the surface and are the physical representatives of the past. A modern memory, as understood by Pierre Nora, relies entirely on materiality of trace, the immediacy of the recording, the visibility of images<sup>4</sup>. Architecture is one such referent which is a part of the collective memory which is linked with the notion of heritage and identity.

From hunting- gathering to food producing economies to settling in permanent villages, humanity passed through several stages during the long struggle into civilization and with the coming up of permanent villages that man learnt to construct real houses. Protection from the severe and harsh weather was the mother of architecture<sup>5</sup>, which is a general term used to describe buildings and other physical structures that are raised by human hands, that have to do with planning, designing space etc. The first habitations of man were those that the nature provided, but as the man rose, he began to build more commodious structures for himself. With the rise of communities different methods of building constructions came up. These architectural spaces form a space of encounter, of imagining and of belonging<sup>6</sup>. Siegfried Kracauer, a German architect saw the

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<sup>2</sup> Brain Joseph and Richard D.Janda, *Handbook of Historical Linguistics*, Blackwell Publishing, Oxford, 2004, p 163.

<sup>3</sup> Upinder Singh, *History of Ancient and Early Medieval India: From the Stone Age to the 12<sup>th</sup> Century*, Pearson Education, Delhi, 2009, p 34.

<sup>4</sup> Pierre Nora, Between Memory and History: Les Lieux de Memoire, in *Representations, No 26, Special Issue: Memory and counter Memory*, University of California Press, 1989, p 13.

<sup>5</sup> Banister. F. Fletcher, *A History of Architecture on the Comparative Method*, London, 1905, p 1.

<sup>6</sup> Monica Juneja, *Architecture in Medieval India: Forms, Contexts, Histories*, Permanent black, Ranikhet, 2008, p 2.

architectural space as a medium to understand society and also a space of transcendental homelessness<sup>7</sup> which was a material phenomenology of the vacuum of faithlessness that characterized the modern world<sup>8</sup>.

It was during the colonial period in India that the study of history of architecture came into being, though the earliest writings were located in specific political and cultural context of power. The study began with a comprehensive archaeological survey of ancient sites and monuments which were carried out by Alexander Cunningham and continued by H.H.Cole who played a vital role in studying various historical sites in India. It was however with the establishment of the *Asiatic Society*<sup>9</sup> in 1784, that an institutional platform was provided for the research in this field. The impetus for a systematic country wide survey of archaeological sites led to the establishment of *Archaeological Survey of India*<sup>10</sup> in 1861 with Alexander Cunningham as the Archaeological Surveyor. Cunningham's Surveys entitled "*Archaeological Survey Reports*" provide topographical details of many Indian sites and also provide basic information regarding many of the coins, architectures, inscriptions etc.. Since 1902, the Archaeological Survey of India has been publishing works like *Annual Reports*, *Memoirs of the Archaeological Survey of India* and *New Imperial Series: Exhaustive research on Antiquarian Remains*, etc, in which works on architecture have been published. It was James Fergusson, a Scottish indigo planter, who undertook the first systematic and comprehensive historical study of Indian architecture. He came up with several publications like *On the Rock cut temples of India* which was presented as a lecture in

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<sup>7</sup> George Lukacs, *The Theory of the Novel: A historic-Philosophical essay on the forms of great epic literature*, Eng.Tr by Anna Bostock, The Merlin Press, 1971, pp 40-41. Transcendental homelessness was a term coined by Lukacs.

<sup>8</sup> Seigfried Kracauer, *The Mass Ornament*, Eng. Tr by Thomas Y.Levin, Harvard University Press, London, pp 13-14.

<sup>9</sup> <http://www.asiaticsocietycal.com/history/index.htm>. The Asiatic Society was established on 15<sup>th</sup> January 1784 by Sir William Jones with an idea to carry out Oriental studies and research in India. It was at a meeting with Chief Justice Sir Robert Chambers that Jones put forward his discourse for the society. The society was renamed several times before it was finally called *The Asiatic Society* in July 1951.

<sup>10</sup> [http://asi.nic.in/asi\\_aboutus\\_history.asp](http://asi.nic.in/asi_aboutus_history.asp). In 1848 Alexander Cunningham, a second Lieutenant of Bengal Engineers formulated a plan for an Indian archaeological Survey and placed it before the British Government which was not approved. However he placed fresh plans for the same which got due attention from Lord Canning, who sanctioned a scheme of survey in Northern India and Cunningham was appointed as the first Archaeological Surveyor in 1861.

1843<sup>11</sup>. It was his work entitled “*History of India and Eastern Architecture*” that provided a detailed and representative study of Indian architecture.

During the 19<sup>th</sup> and the early 20<sup>th</sup> century, the Indian architecture was broadly divided into Hindu and the Indo Saracenic or the Anglo Indian style, which was also followed by James Fergusson. E.B.Havell, a superintendent of Government School of Art, Calcutta, believed that looking outside for the origin of Indian art led to a false conclusion and that its sources were planted in traditional Indian culture<sup>12</sup>. Works of both Fergusson and Havell provided an impulse to further work in the study of Indian architecture. Ram Raz, a judge in the service of the company at Thanjavur, on the suggestions made by of the members of the then Royal Asiatic Society, Richard Clarke, took up the task of translating the ‘*Silpa Sastra*’ which is a collection of numerous treatise on architecture, sculpture etc., like Manasara, Mayamata, Casyapa, Vayghanasa, Sacaladhicara, etc.,. Ram Raz understood that these fragments were full of memorial verses and technical terms, only ones who had been regularly initiated in the study of the art could comprehend them and hence he consulted a sculptor of the Cammata tribe, a native of Tanjore, who was well acquainted with the practical part of the ‘Hindu’ architecture and the terms that were being used<sup>13</sup>. In the essay he translated the fragments of the Manasara, Mayamata, Casyapa and Vayghanasa which were available to him and provides information like the measures used in architecture, sculpture, etc., different sites to be selected for building temples and houses, mode of determining the different points of compass, the rules for examination of soil, preparation of soil for buildings, etc., and also provides forty six illustrations of various structures, which was published in 1834.

In 1870, H.H. Cole was deputed to carry out a study of the features of Qutub Minar in Delhi and Fathehpur Sikri near Agra. While investigating the buildings he derived much help from Sayyid Ahmad Khan’s monumental work “*Asar as-Sanadid*” (vestiges of the Past) which provides extensive description of the monuments of Delhi and from Alexander Cunningham’s report of the Archaeological survey 1862-63. In his work

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<sup>11</sup> Juneja, *op.cit*, p13.

<sup>12</sup> E.B.Havell, *Indian Architecture: Its Psychology, Structure And History From the First Muhammadan Invasion to the Present Day*, London, 1913, p2.

<sup>13</sup> Ram Raz, *Essay on the Architecture of the Hindus*, J.L. Cox and Son, London, 1834, pp preface X- 3

entitled “*Architecture of Ancient Delhi*”<sup>14</sup> which was published in 1872, Cole gives a general description of structures that are around Qutub Minar like Jantar Mantar, the mausoleum of Safdar Jung, Adam Khan’s tomb etc., and also provides details of the iron pillar at the Qawwat ul Islam Mosque and the Qutub Minar with illustrations.

Indigenous works also began to appear in the field of architectural history and one of them was the work of Shamsul Ulama, Syed Ali Bilgrami, entitled “*A Short Guide to The Cave Temples of Elora*”<sup>15</sup> which gives a detailed description of twenty nine caves in Ellora. Making a reference from Cunningham’s Archaeological Survey reports, J.A.Page in 1927 brought out a work entitled “*Guide to the Qutb, Delhi*” which was published by the Archaeological Survey of India. He provides a descriptive account of the monuments around the Quwwat ul Islam Mosque like the tomb of Iltumish, Madrassa and the tomb of Alauddin Khalji have been provided. Page also provides a chemical analysis made by Sir Robert Hadfield, of the iron used in the Iron pillar<sup>16</sup>. A subsequent work by Percy Brown on the history of medieval Indian architecture provides survey of many of the structures, which initially was intended to be brought out in a single volume but was later brought out in two separate books entitled - “*Indian Architecture, Buddhist and Hindu*” and “*Indian Architecture, the Islamic Period*”. Percy Brown was of the opinion that with the arrival of the Turks, though there was no decisive break in the art of the building construction, there emerged a gradual change in this sphere. They brought with them the new innovations and knowledge which they had gathered from others<sup>17</sup>. The sphere of architecture, described by Percy Brown as age of marble, reached its zenith during the reign of Emperor Shah Jahan<sup>18</sup>.

As a reaction to the colonial writings on the architectural history of India, the nationalist writings attempted to make use of written sources like the inscriptions, architectural treatises, religious texts, etc. It was during this period that many scholars of Indology,

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<sup>14</sup> Henry Hardy Cole, *The Architecture of Ancient Delhi, Especially the Buildings around the Kutb Minar*, Arundel Society, London, 1872, pp4-6.

<sup>15</sup> Shamsul Ulama, Syed Ali Bilgrami, *A Short Guide to The Cave Temples of Ellora*”, Reprinted Lawrence Asylum Press, Madras, 1898.

<sup>16</sup> J.A.Page, *Guide to the Qutb, Delhi*, Archaeological Survey of India, Calcutta, 1927, p 7.

<sup>17</sup> Percy Brown, *Indian Architecture Islamic Period*, D.B.Taraporevala sons & Co.Pvt.Ltd, Bombay, 1981, p 2.

<sup>18</sup> *Ibid*, p102.

Sanskrit and Persian were associated with the Archaeological survey and its research project and one such scholar was Maulvi Zafar Hasan. His work entitled “*Guide to Nizamuddin*” gives a descriptive and historical account of the monuments within the enclosure of the village of Nizamuddin and also gives chronological information about the structures. While providing this information, Hasan made use of the Persian and Arabic sources that are inscribed on the structures, for example, the southern arch of the entrance to the baoli, the first monument that one comes across when they enter the shrine of Shaikh Nizamuddin<sup>19</sup>. The eastern wall of the enclosure of Shaikh Nizamuddin, is pierced by two small arched doorways which give an access to open court containing several graves. One of these doorways has a marble slab engraved on either face with an inscription, which Hasan used in his work<sup>20</sup>. In reconstructing the chronology of the construction, the author makes use of various contemporary sources<sup>21</sup>.

Another such work was that of Ananda.K.Coomaraswamy, who in his writings explored the realm of iconography and iconological analysis. In the work entitled “*Indian architectural terms*”<sup>22</sup>, Coomaraswamy looked into and explained the architectural terms not only in terms of their technical meaning but also their significance at the symbolic level. “*Ornament*”, another of his works, is designated so by the Sanskrit word “*Alamkara*”<sup>23</sup>, where *alam* means *sufficient* and *Kr* meaning *to make*. In this work he analyzed many layers that went into the making of the meaning of the word Ornament.

From the late 1970s the focus of historians of the medieval Indian architecture shifted towards a need to understand the forms of the architecture, architectural styles within the framework of visual traditions & socio-political settings within which they were produced. Erwin Panofsky was the earliest of the art historians to analyze the notion of cultural meaning, which was beyond the architectural style<sup>24</sup>. According to him there were three levels of understanding art – first being the pure form of a work or the primary

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<sup>19</sup> *Memoirs of the Archaeological Survey of India, No. 10, A Guide to Nizamu-d Din*, Archaeological Survey of India, Calcutta, 1922, p 7.

<sup>20</sup> *Ibid*, p 20.

<sup>21</sup> *Ibid*, p introduction.

<sup>22</sup> Ananda K.Coomaraswamy, *Indian Architectural Terms*, in *Journal of the American Oriental Society*, Vol 48, no.3, Sept, 1928, The American Oriental Society, pp 250-275.

<sup>23</sup> Ananda.K.Coomaraswamy, *Ornament*, in *The Art Bulletin* 21, 1939, pp 375-382.

<sup>24</sup> Juneja, *op.cit*, p 39.

or the natural subject matter, second being the conventional subject matter which is the *iconography* and the intrinsic meaning of the work which is better known as *iconology* is the third one. The first level comprises of configuration of line and color, representation of natural objects like human beings, animals etc., identifying their mutual relations etc.,. He defines iconography as that branch of history of art which concerns itself with the subject matter or the meaning of the works of art, rather than their form. While the third level which is the iconology includes those underlying principles which reveal the basic attitude of a nation, a period, a class, etc<sup>25</sup>.

Many historians began looking into systematic iconographic reading of the building and studied their visual programme by looking into the traditions of representation and evolution, various forms, motifs & symbols being used by them. Wayne Begley, one of those historians who with the use of iconography studied the Taj Mahal, has pointed out that the plan of the entire Taj Mahal complex and the inscriptional program of Quranic passages inscribed on the mausoleum and the gateway suggest that Taj Mahal had an underlying meaning which was beyond its literal funerary functions<sup>26</sup>. After having made a study of various other works like the Sufi treatise, cosmological drawings, paintings etc., Begley wrote, “the layout of the Taj complex and the apocalyptic imagery running through the Quranic inscriptions suggested that the monument was conceived as a vast allegory of the *Day of Resurrection*<sup>27</sup>, when the dead shall arise and proceed to the place of Judgment beneath the Divine Throne”<sup>28</sup>. He through his works draws that the notion of rulership is shaped by the process by which cosmological and allegorical concepts are translated into architectural forms<sup>29</sup>. Ebba Koch instead of looking into the connection between the architecture and monarchical ideologies, tries to look into the question of sources and borrowings of motifs and symbols from one tradition and relocates them within another.

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<sup>25</sup> Erwin Panofsky, *Meaning in the Visual Arts: Papers in and on Art History*, Doubleday & Company, Inc, Garden City, New York, 1955, pp 26-30.

<sup>26</sup> Wayne E. Begley, The Myth of the Taj Mahal and a New Theory of its Symbolic Meaning, in *The Art Bulletin*, Vol 61, Issue 1, 1979, p 11.

<sup>27</sup> John Macdonald, The Day of Resurrection, *Islamic studies*, 1966, pp 129-197.

<sup>28</sup> Begley, *op.cit*, p25.

<sup>29</sup> Juneja, *op.cit*, p 42.

Ebba Koch has investigated in her study the use of baluster column in Mughal architecture, the changing fortune of a particular motif of European art which was accessible to the Mughals through engravings by Flemish artists brought by Jesuits. Referring to one such example from the painting of Jahangir shooting Malik Ambar, Koch points out a stand which has an elongated baluster and bears medallions with seals of his ancestors back to Timur. This indicates that Mughals associated the baluster form with the Timurid. Further referring to an identical baluster forming a part of a scepter, she writes, that it represents the piety of Philip II of Spain as a protector of Catholic faith, which is the second title page of the great Antwerp Polyglot Bible sponsored by Philip II. A set of this was presented to Akbar in 1580 by the first Jesuit mission, showing a European connection to the Mughal art<sup>30</sup>.

Ram Nath considered architecture as a reliable chronicle in stone which cannot be forged. It is a stamp of an age and people of their tastes, belief, values, achievements, ideas and skill, everything that makes up a civilization is most truthfully imprinted upon its monuments<sup>31</sup>. He made an elaborate study of architectures and tried to look into their inspirational aspects like in the case of Alai Darwaza which was constructed by Alauddin Khalji in the Qutb complex in Delhi<sup>32</sup>. His work on the Sultanate architecture gives architectural information regarding various monuments constructed during the Turkish period like the Firoz Shah's college at Hauz Khas in Delhi, Lal Darwaza Masjid at Jaunpur, Khirki Masjid Delhi, etc.,. His work on history of Mughal architecture is divided into five volumes where he tries to look into various aspects and phases of Mughal architecture. He through these five volumes tried to look into the evolution of architecture under the Mughals from its formative period under Babur and Humayun to the architectural development under Akbar, to the phase of transition of color and design under Jahangir, and then the phase under Shah Jahan which saw growth of architecture in terms of aesthetics to gardens that were constructed from Akbar to Shah Jahan's reign

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<sup>30</sup> Ebba Koch, The Baluster Column: A European Motif in Mughal Architecture and Its Meaning, *Journal of the Warburg and Courtauld Institutes*, Vol 45, 1982, pp 255. Henceforth cited as Koch, *The Baluster Column*.

<sup>31</sup> R.Nath, *Historiographical study of Indo-Muslim Architecture: Medieval Architecture of India and Pakistan*, South Asian Books, Jaipur, 1991, p 21.

<sup>32</sup> R.Nath, *History of Sultanate Architecture*, Delhi, Abhinav Publications, 1978, p 74. Henceforth cited as Nath, *History of Sultanate*.

and the post Shah Jahan period architecture. Many of his other works like the *Glories of Medieval Indian Architecture*<sup>33</sup>, *Art and Architecture of Rajasthan* and various other such works give detailed description about various monuments that were studied by him. He through his work made a study of the contribution of indigenous norms of art and architecture which went into the formation of body fabric of Mughal tombs and one such example is his work on Taj Mahal<sup>34</sup>.

Catherine Asher, a Professor at the Department of Art History at the University of Minnesota, has looked into the evolution of the Mughal architecture as directly related to political and cultural ideology which is evident in the construction of gardens as a symbol of paradise, construction of mosques and also in terms of building up an entire planned city. In her work entitled "*Architecture of Mughal India*" which is a part of *The New Cambridge History of India* published by the Cambridge University Press, Asher tried to look into the architectural development during the Mughal period under each ruler. She saw the construction of gardens for Babur as one with significance more than mere territorial conquest and aesthetics. Babur's involvement, with special reference to the *Char Bagh of Andijan*<sup>35</sup>, in the cultivation of plants and flowers that were grown in his gardens demonstrated him as master and the creator of each of the gardens<sup>36</sup>.

Another important study in the field of medieval Indian architecture specially in the Mughal monuments, was made by Dr.Syed Ali Nadeem Rezavi, who tried to look into the marks and symbols carved on medieval structures which appeared to be a practice followed by individuals who drew their sign or mark along with their signature. He broadly classifies these marks in terms of Zodiacal, Geometrical, Cross-shaped, Linear, Animate, Floral and Weapons and has made an elaborate study of these signs in his study. He also brings out a distinction between the same mark made by two different individuals like in the case of a fish mark which is found in large number at Fatehpur

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<sup>33</sup> R.Nath, *Glories of Medieval Indian Architecture*, B.R.Publishing Corporation, Delhi, 2010. Henceforth cited as *Nath, Glories*.

<sup>34</sup> R.Nath, *Taj Mahal: The Evolution of the Tomb in the Mughal Architecture*, D.B.Taraporevala Sons & Co. Pvt.Ltd, Bombay, 1972. Henceforth cited as *Nath, Taj Mahal*.

<sup>35</sup> Catherine B.Asher, Babur and The Timurid Char Bagh: Uses and Meaning, *Mughal Architecture: Pomp and Ceremonies*, 1991, p50.

<sup>36</sup> *Ibid*, p 53.

Sikri, I'timad ud Daulah, Sikandara and the Taj. There were difference in the strokes marking the fins or the shape of tails, head etc<sup>37</sup>,.

From the Mamluk period until the end of the 19<sup>th</sup> century, Bianca Maria's illustrated work "*Islamic Architecture of the Indian Subcontinent*"<sup>38</sup>, gives account of lesser known sites like the Mosque at Debal, which is a low hill known as Bhambur situated on a rocky plateau east of Karachi, built by Khwarezmshah Jala al-Din, who had temporarily occupied Sind in the 13<sup>th</sup> Century. A detailed account of the structures that came up under each of the Delhi Sultans has also been discussed in this work. The various provincial styles of architecture that came up after the disintegration of the Delhi Sultanate, one such being the Punjab and the Sind style have been discussed in great detail. The work also looks into various aspects of architecture like the civil buildings that came about in Chanderi, part of Malwa kingdom, the influences on the Gujarat style of architecture, garden's that were built by Babur, the structures that during the reign of Sher Shah Suri, the Mughal influence in Rajpur buildings during Akbar's reign, civil buildings and caravan sarais constructed during Jahangir's reign, characteristics of the architecture during the Mughal period, the minor buildings that were built during Shah Jahan's reign like the Lal Mahall at Bari, the public works taken up by Aurangzeb, and the structures that came up during the reign of Aurangzeb's successors.

In the context of regional history, studies began to focus on the region's evolution and experience of the politico-cultural encounter with new, expansive and sometimes opposing traditions. Provincial styles of architectures are those practiced in areas which were self contained after their governors had thrown off the allegiance to Delhi. One such style was the Sharqi architecture of Jaunpur that carried a distinct impact of the Tughlaq style of architecture. Of the elaborate studies that have been made on this style one is by A.Fuhrer. One such study is that of the Sharqi architecture of Jaunpur which carried a distinct impact of the Tughlaq style in their architecture. Of the elaborate studies that have been made on this style is by A.Fuhrer. His work entitled "*The Sharqi Architecture*

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<sup>37</sup> Syed Ali Nadeem Rezavi, Marks and Symbols of Professionals on Mughal Monuments, *Sacred Landscapes in Asia: Shared Traditions, Multiple Histories*, Ed. by Himanshu Prabha Ray, Manohar Publishers, Delhi, 2007, pp 107-167. Henceforth cited as Rezavi, *Marks and Symbols*.

<sup>38</sup> Bianca Maria, *Islamic Architecture of the Indian Subcontinent*, Laurence King Publishing, London, 2000.

of Jaunpur<sup>39</sup> provides detailed information regarding various structures present in Jaunpur of the Sharqi period. Another such work that looks into the impact of the Tughlaq style on the Sharqi style is one by Abha Narain Lambah. She gives one such example of the Congregational mosque's arch bearing lintels that can be traced to Ghiyasuddin's tomb at Tughlaqabad<sup>40</sup>. Tapering minarets, battered walls of stone masonry, stucco decoration, arch and beam openings and low four centered arches with decorative fringes were architectural features which were mainly derived from the Tughlaq style in the Sharqi mosques<sup>41</sup>.

In ancient capital of Bengal, Gaur and later in Pandua, when the capital was shifted there, another style of regional architecture developed. Architectural style followed in Sindh and Multan found its reflection in the architecture of Gaur and Pandua. A work which was compiled and published posthumously in 1817 on the basis of Creighton's manuscripts and drawings is a work which throws light on the ruins of the city of Gaur. It is the earliest work with cartographic map of Gaur<sup>42</sup>. J.H.Ravenshaw, who for several years served as the Collector of Maldah, surveyed the ruins of the city of Gaur and published his work entitled "*Gaur; Its Ruins and Inscriptions*". Vandalism and time, both, wrote Ravenshaw, contributed to the decay of this ancient capital. Every village or house in the district of Maldah and in its surroundings bear evidences of partially been constructed from the remains of the decayed capital. Cities of Murshidabad, Maldah, Rajmahal and Rangpur were entirely built with the materials from the ruins of Gaur<sup>43</sup>. Another important study on this form of architecture was made by M.Abid Ali Khan<sup>44</sup>. Its

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<sup>39</sup> A.Fuhrer, *The Sharqi Architecture of Jaunpur*, Archaeological Survey of India, Calcutta, 1889, pp23-63.

<sup>40</sup> Abha Narain Lambah, *The Sharqis of Jaunpur: Inheritors of the Tughluq Legacy*, in *The Architecture of The Indian Sultanates*, Ed. by Abha Narain Lambah and Alka Patel, Marg Publication, Mumbai, 2006, pp 42-55.

<sup>41</sup> S.Ali Nadeem Rezavi, *Medieval Indian Architecture: Its History And Evolution*, *Symposium: History of Visual Arts: Architecture, Sculpture and Paintings, Indian History Congress , 73<sup>rd</sup> session*, Mumbai, 29<sup>th</sup> December 2012, p15. Henceforth cited as Rezavi, *Medieval Indian Architecture*.

<sup>42</sup> H.Creighton, *The Ruins of Gaur Described And Represented in Eighteen Views with A Topographical Map*, Black, Parbury & Allen, London, 1817. Creighton, a native of Scotland, joined as a mercantile assistant into the services of Charles Grant in 1783 who at that time was in Bengal. Grant had established a manufactory of indigo at a place called Gowmalty, situated among the ruins of that famed city. He employed Creighton to superintend it and it was here that he remained until his death in 1807.

<sup>43</sup> J.H.Ravenshaw, *Gaur: Its Ruins and Inscriptions*, *Calcutta Review No.CXXXVII*, p70.

<sup>44</sup> M. Abid Ali Khan, *Memoirs of Gaur and Pandua*, Calcutta, 1933.

characteristic features were use of heavy short pillars of stone supporting pointed arches and vaults in bricks etc<sup>45</sup>.

Gujarat saw its own regional style of architecture flourishing from the fourteenth century when the governors were appointed by the Khalji Sultans of Delhi until the decline of the independent rule of Ahmad Shahi dynasty till the sixteenth century when it was absorbed into the Mughal empire. James Forbes in his work “*Oriental Memoirs*” provides earliest study of architecture in Gujarat. According to him the nodding minarets, decaying palaces and aqueducts indicate the former magnificence of Ahmedabad city. The remains of the structures in this city were the ones that were erected by the Mughal nobles and were not necessarily in the towns. In his work, Forbes provides different aspects of some of the structures like the Sarais which were generally oblong square shaped with high wall and towers, gates to the city generally consisted of guard rooms on each side, etc<sup>46</sup>. Another comprehensive work on the architecture of Gujarat was by Jas Burgess, published by Archaeological Survey of Western India. He gives an account of the various structures that were in the cities of Ahmedabad, Broach, Cambay, Dholka, Champanir and Mahmudabad<sup>47</sup>.

Alka Patel who has worked on the Architecture of Gujarat from the 12<sup>th</sup> Century to the 16<sup>th</sup> century says that architectural traditions which developed in Gujarat saw a change when it met the localized, regionally generated political, religious and other circumstances<sup>48</sup>. Sara Keller, whose Ph.D thesis is entitled “*The Islamic Monuments of the walled City of Ahmedabad India (15-18<sup>th</sup> Century): An Archaeological Study*”<sup>49</sup>, explores the forms and functions in the indo-islamic architecture of Ahmedabad mainly with reference to mosques, tombs and mausoleums. In her work she looked into the

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<sup>45</sup> Rezavi, *Medieval Indian Architecture*, p16.,

<sup>46</sup> James Forbes, *Oriental Memoirs: A Narrative of Seventeen Years Residence in India Vol II*, J.B.Nichols and Son, London, 1834, pp 192-195.

<sup>47</sup> Jas Burgess, On the Muhammadan Architecture of Bharoch, Cambay, Dholka, Champanir and Mahmudabad in Gujarat, *Archaeological Survey of Western India Vol VI*, WM.Griggs & Sons Limited, London, 1896.

<sup>48</sup> Alka Patel, From Province to Sultanate: The Architecture of Gujarat during the 12<sup>th</sup> through 16<sup>th</sup> Centuries, *The Architecture of The Indian Sultanates*, Ed. by Abha Narain Lambah and Alka Patel, Marg Publication, Mumbai, 2006, pp 68-79.

<sup>49</sup> Sara Keller, *The Islamic Monuments of the walled city of Ahmedabad, India (15<sup>th</sup> -18<sup>th</sup> Century): an archeological study*, Ph.D thesis in Building Archaeology, University of Paris IV Sorbonne, France, 2009.

characteristics of these monuments. Some of the notable features of this style of architecture are the post and beam constructions, reuse of the materials from the earlier buildings, stone jalis as in case of mosques of Sayyid Usman, Rani Separi and Sidi Sayyid mosques.

The earliest work which throws light on the architecture of the Rajasthan style was by James Burgess in his work entitled “*Photographs of Architecture and Scenery in Gujarat and Rajputana*”<sup>50</sup>. He made use of James Fergusson’s works entitled “*Picturesque Illustrations of Ancient Architecture in Hindostan*” and “*History of Architecture*”. Temples and talaos of Mount Abu, water palace of Udaipur, Palace of Bhim and Padmini & Komal’s Kirti Sthambha at Chittor, etc., are the structures whose architectures have been discussed by James Burgess. Another comprehensive work which deals with the Art and Architecture of Rajasthan<sup>51</sup> is by R.Nath who extensively made a study of sites like Chittorgadh where one can find temple structures as well as structures that were built in Turkish style with features like arch, vault and dome, plastered work and glazed tile decoration. One of the most important features of the structures at Chittorgadh fort of the 14<sup>th</sup> century is that they are built of rubble and predominance of jharokha-windows. *Dig*, situated in Bharatpur, Rajasthan, is the focus of the study of Munish Chandra Joshi, who discusses in brief various monuments within Dig like Gopal Bhavan, Nand Bhavan and Kishan Bhavan<sup>52</sup>.

Bayana, located in Bharatpur district of Rajasthan, situated near the left banks of Ghambir, is the focus of the study of Iqtidar Alam Khan, who looked into two early Mughal monuments that were built by one of Humayun’s noble in the fort of Vijayamandirgarh. This building is built with red sandstone in a post and lintel system. Iqtidar Alam Khan regards this structure as the precursor of the Akbar’s Panch Mahal at Fathpur Sikri<sup>53</sup>. A detailed study of Baha al-Din Tughrul’s architecture in Bayana has

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<sup>50</sup> James Burgess, *Photographs of Architecture and Scenery in Gujarat and Rajputana*, Bourne and Shephard, Calcutta, 1874.

<sup>51</sup> R.Nath, *Art And Architecture of Rajasthan Vol I: Antiquities of Chittorgadh*, The Historical Research Documentation Programme, Jaipur, 1984, p 65.

<sup>52</sup> Munish Chandra Joshi, *Dig*, Archaeological Survey of India, Janapath, New Delhi, 2006.

<sup>53</sup> Iqtidar Alam Khan, *New Light on the History of Two Early Mughal Monuments of Bayana*, in *Architecture in Medieval India: Forms, Contexts, Histories*, Ed. by Monica Juneja, Permanent black, Ranikhet, 2008, p365.

been made by Mehrdad Shokoohy and Natalie H.Shokoohy. One of the structures that they have studied is the mosque of Kaman which is locally known as Chaurasi Khamba Mosque (eighty four columned Mosque). It is a mosque built of reused materials of ancient temples. Twice having being restored, parts of walls and parapets were repaired with stone rubble set in mortar and upper part of the walls and parts of parapet were reinforced with brick faced with sandstone<sup>54</sup>.

A form of architecture that developed in the Deccan began with this part of the peninsular being occupied in the last part of the 13<sup>th</sup> century by the Turks until it was incorporated into the Mughal Empire in the 17<sup>th</sup> Century. According to Percy Brown the architectural style that developed in this region was derived from two main sources – one which had been forming under the Sultans of Delhi which was owing to forceful nature was influencing the provincial manifestation and the other style being the one which was drawn from Persia<sup>55</sup>. Henry Cousens's work entitled "*Bijapur: The Old Capital of the Adil Shahi Kings*"<sup>56</sup> is the earliest work which gives general description of the city of Bijapur and tries to look into the Bijapur style of architecture in the chronological order of the structures under each of its rulers. A descriptive work on some of the structures of Deccan has also been covered by T.W.Haig in his work entitled "*Historical Landmarks of Deccan*". In this work historicity of the structures like the tombs of *Muntajab-ud-din* (also known as Zar Bakhsh or bestower of gold) and that of his disciple *Zain-ud-din*<sup>57</sup> at Rauza, the thousand pillar temple at Hanamkonda which was built by Prataparudradeva I. The two hill forts of *Gawilgarh*, situated on the mountain range between rivers Purna and Tapti and the *Narnala fort* which stands on the southernmost hills of the offshoot of the Satpura range overlooking Berar valley have also been described in this work.

The Architecture of the Deccan Sultanate has been the focus of the study of George Michell who surveyed these architectural traditions in the historical and cultural context.

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<sup>54</sup> Mehrdad Shokoohy and Natalie H.Shokoohy, The Architecture of Baha al-Din Tughrul, *Architecture in Medieval India: Forms, Contexts, Histories*, Ed. by Monica Juneja, Permanent black, Ranikhet, 2008, pp413-438.

<sup>55</sup> Percy Brown, *Indian Architecture (Islamic Period)*, Taraporevala's Treasure House of Books, Bombay, 1964, p66.

<sup>56</sup> Henry Cousens, *Bijapur: The Old Capital of the Adil Shahi Kings*, Orphanage Press, Poona, 1889, p 11. Henceforth cited as *Cousens, Bijapur: The Old Capital*.

<sup>57</sup> T.W.Haig, *Historical Landmarks of the Deccan*, Pioneer Press, Allahabad, 1907, p57.

Through his work Michell tried to show that there has been constant relationship between the Deccani style of architecture and the North Indian style and the Middle Eastern style. From the Bahmanis to the Asaf Jahis to the Marathas, each dynasty in Deccan promoted individual style of architecture showing a lack of unity which was due to the political instability. However it was only under the Bahmanis that a distinctive style of architecture developed which according to Michell affirmed cultural and religious ties with Middle East and at the same time showed local flavor as well<sup>58</sup>.

Another important area of study that was covered by George Michell is the Vijayanagar style of architecture which according to him was the product of royal patronage. Vijayanagar, founded in the middle of the 14<sup>th</sup> century was the seat of government of three lineages. After their defeat in the Battle of Talikota, Vijayanagar was abandoned and the Vijayanagar rulers established themselves in Penukonda and Chandragiri. The site chosen as the Vijayanagar dynastic centre was Hampi, on the southern banks of Tungabhadra river, where the rulers promoted the cult of Pampa, an indigenous goddess and her consort Virupaksa whose temples were located there. These temples formed the nucleus of the royal centre of the capital. Apart from the temple structures there are many other structures which were made of masonry. Arches with angled profiles, domes and vaults, rising on the square, rectangular or octagonal planes are some of the features of these monuments. Structures that are found in Gulbarga, the first capital of Deccan Sultans, shows masonry construction technique, stone blocks were laid in thick mortar to create solid walls and roofs which were then concealed by finely finished plasterwork. Other features that are to be found in Gulbarga which are also to be found in Vijaynagar are the angled arches of openings and wall recesses, multi-lobbed arches, tapering walls and flattish domes<sup>59</sup>.

Most of the works that focus on Deccan architecture mainly look into Bidar, Vjainagar, Ahmadnagar, Golconda, Berar, etc., which were primary urban centres. Moving away from these centres, Richard M.Eaton and Philip B.Wagoner in their work entitled

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<sup>58</sup> George Michell and Mark Zebrowski, Architecture and Art of the Deccan Sultanates, *The New Cambridge History of India I:7*, Cambridge University Press, 2008, p 268.

<sup>59</sup> George Michell, Royal Architecture and Imperial Style at Vijayanagara, *Architecture in Medieval India: Forms, Contexts, Histories*, Ed. by Monica Juneja, Permanent black, Ranikhet, 2008, pp 398-412.

“*Power, Memory, Architecture*”, have tried to look into *Kalyana*, the one-time capital of Chalukya Empire, *Raichur*, the contested land between Vijaynagar Empire and the Bahmani Sultans and *Warangal*, the centre of the Kakatiya dynasty from 1300 to 1600<sup>60</sup>. These centres mainly played a key role as a link between agricultural villages and the urban centres. These secondary centres played an important role as controlled the agrarian resources of the hinterlands and they converted the productive surplus of the land into political and military power. The capture of these centres meant the control over the resources of the surrounding regions hence these centres were well fortified. Apart from studying the traditionally studied structures, this text also looked into the lesser studied ones like moats, fortification, armories, city gates etc. This work has looked at the intent of the use of the structures, influence on its design and style and the conditions of its production. Amongst the regional style of architecture that developed, one was in the Malwa region with Dhar and Mandu as the centres, which is the focus of the study of my dissertation. The dissertation is divided into four chapters, with the first chapter looking into the history of region and the development of the architecture in general and Malwa in particular.

The second chapter deals with the structures located within the Jahaz Mahal Complex of Mandu. These structures were built and repaired during various time periods. In this chapter I have made a discussion of the location of these structures, their historicity, the raw materials that have been used in their construction, etc. I have also provided plans of the structures wherever necessary and have tried to explain them. The discussion of the repair works that were carried out by the Archaeological Survey of India and the discoveries that were made by them have been noted in the chapter. In the Jahaz Mahal complex various technologies and laws of nature had been used in constructing the monuments. I have made a study of such technologies with evidences gathered from my field works.

The third chapter deals with Baz Bahadur palace and the Rupmati Pavilion. Besides discussing the historical references found in the contemporary sources, I have also tried

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<sup>60</sup> Richard M.Eaton and Phillip B.Wagoner, *Power, Memory, Architecture: Contested Sites on India's Deccan Plateau, 1300-1600*, Oxford University Press, New Delhi, 2004, pp xxii-xxiii.

to look into these structures and tried to reconstruct their plan and purpose using the evidence from the Archaeological Survey of India's repair and excavation works and through my field works. I have also tried to look into the various systems of science and technology that are working in these structures and which were used in their construction, for example the system of hydraulics which functions in both Baz Bahadur palace and Rupmati Pavilion.

Besides the above mentioned structures, Mandu also comprises of several other structures like the Ashrafi Mahal, Jami Masjid, Hoshang Shah's tomb, etc. I have taken up the study of these other structures in the fourth chapter. In this chapter I have dealt with three kinds of structures- set one which have been mentioned by the previous authors and which are still standing, set two are ones mentioned by the previous authors but are no longer standing and the third are the ones which are still standing but have not been mentioned by any of the previous authors. I have also tried to look into various technologies associated with some of these structures. A plan of the structures has also been provided wherever necessary in this chapter.

In the conclusion I have dealt with the other cities of medieval Malwa during the reign of Akbar, Jahangir and Aurangzeb. Here I have mentioned the structures which are existing today that were built during the medieval period and which need a further study in detail in terms of science and technology that went into their construction.

## Mandu, History and Architecture: Continuity and Change

During the early medieval period, the region of Malwa, a tract between two rivers-Narmada and Tapti, with Vindhya as its base, was ruled by the Paramara Dynasty with Dhar<sup>1</sup> as their capital. According to the popular bardic traditions and the account of Padmagupta, the court poet of Vakpatirajadeva and Sindhuraja, two rulers of Malwa who belonged to the Paramara dynasty, the founder of Paramara family is said to have taken birth from the fire pit on Mount Abu<sup>2</sup>. However the two Harsola copper plate grants of Siyaka, do not record the sacrificial birth of the Paramaras but records a relation between the Paramaras and the Rashtrakutas<sup>3</sup>. Udepur Prasasti of Udayaditya is the earliest known inscription which provides the unbroken genealogy of the Paramara family of Dhar<sup>4</sup>. Although Padmagupta's Navasahasankacharita also provides the genealogy, it omits two successors of Upendra<sup>5</sup>.

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<sup>1</sup> *Corpus Inscription Indicaum Vol VII Part II*, Ed., Archaeological Survey of India, New Delhi, 1991, p 43.

<sup>2</sup> G. Bühler, On the Navasahasankacharita of Padmagupta or Parimala, Eng.Tr in *The Indian Antiquary Vol XXXVI* (1907), Swati Publications, Delhi, 1985, pp 162-163 verses 64-76. Henceforth cited as Bühler, *On the Navasahasankacharita*. Padmagupta or as called Parimala in the sarga signatures of the manuscript, was the court-poet of Vakpatirajadeva and after his death a court-poet to Sindhuraja, the younger brother of Vakpatiraja. According to traditions when Vishvamitra forcibly abdicated Brahman Vasishtha's cow (Vasishtha was living on Mount Abu), Vasishtha created out of the fire pit a hero who fought the enemies and brought the cow back and in reward was given the name of *Paramara*, the slayer of the foes. Also see G. Bühler, The Udepur Prasasti of the Kings of Malva, Eng.Tr in *Epigraphia Indica: The Corpus Inscriptionum Indicarum Vol I*, Superintendent of Government Printing, Calcutta, 1802, p 224. Henceforth cited as Bühler, *The Udepur Prasasti*. Also see R.Kielhorn, Nagpur Stone Inscription of the Rulers of Malava, Eng.Tr in *Epigraphia Indica Vol II*, Ed by Jas Burgess, Superintendent of Government Printing, Calcutta, 1892, p 190 (Verse 13). Also see Lionel D.Barnett, Arthuna Inscription of the Paramara Chamundaraja, Eng. Tr in *Epigraphia Indica Vol XIV (1917-18)*, Ed. by F.W. Thomas, Superintendent Government Printing, Calcutta, p 304 (Verse 6-11)

<sup>3</sup> K.N. Dikshit and D.B. Diskalkar, Two Harsola Copper Plate Grants of Paramara Siyaka of V.S. 1005, Eng.Tr in *Epigraphia Indica Vol XIX 1927-28*, Director General, Archaeological Survey of India, Janpath, New Delhi, p 239. We find no mention in the present records of the mythical ancestor Paramara, born of the sacrificial fire on Mount Abu. The Presence of the *birudas Amoghavarsha Prithiviallabha* and *Srivallabha* among the titles of Vakpati-Munja have never been explained before, but on the basis of the relationship of the Paramaras with the Rashtrakutas revealed by the present grants, it is now possible to do so. From the fact that only Amoghavarsha I and Akalavarsha (Krishna II) are mentioned in the plates, it seems that these two princes were held in special esteem by the early Paramaras. What exactly the relation between the two families was it is difficult to say, but possibly the Paramaras were descended from a Rashtrakuta princess.

<sup>4</sup> Bühler, *Udepur Prasasti*, p 223. The Udepur Prasasti mainly records the erection or restoration of temples, however it is also important for it provides an unbroken lineage of the Paramara Kings

<sup>5</sup> Bühler, *On the Navasahasankacharita*, p 165.

Paramaras rose to power considerably under Bhoja Paramara. Someshvara I, the Chalukyan ruler of Kalyana and the successor of Jayasimha II, attacked the Paramara Kingdom, plundered Dhar, Ujjain and Mandu and forced its ruler Bhoja to flee<sup>6</sup>. By the time of Bhoja's death, Kalachuri Karna and Chalukyan King Bhima attacked Malwa and took the possession of the kingdom<sup>7</sup>. The genealogy of the Paramara dynasty beginning with Bhoja is provided by the *Sehore Copper Plate Inscription of Arjunavarman* issued by Arjunavarman in 1215 A.D who also belonged to this dynasty<sup>8</sup>. A thirteenth century stone slab inscription from Harsauda is the earliest known inscription connecting Devapala, the successor of Arjunavarman to the Paramara family of the Dhar<sup>9</sup>. It was during Devapala's reign that the invasions from the Delhi sultan began.

In 1234-35 A.D Iltumish attacked Malwa and after taking the fort and the town of Bhilsa, he advanced to Ujjain- Nagari and destroyed the idol temple of Maha-kal Dev<sup>10</sup>. Ultimately it was left to Alauddin Khilji to complete the conquest of Malwa which was under Rai Malik Deo and Koka Pardhan. Having conquered Malwa, it was necessary for Alauddin Khilji to entrust it under a reliable governor and he chose Ain ul Mulk Multani as the governor of Malwa and entrusted in him the mission to reduce the fort of Mandu. He soon attacked and plundered city of Mandu which later was assigned to him<sup>11</sup>. With Malwa coming under the rule of the Turks, Dhar remained the headquarters of the governors of Malwa until Dilawar Khan Ghori declared independence in 1401 A.D.

Dilawar Khan Ghori, whose real name was Hasan, according to Ferishta, was a descendent of Sultan Shahabudin Ghory of Damascus. He was appointed as the governor

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<sup>6</sup> Trivedi, *op.cit* , p 24.

<sup>7</sup> Vajeshankar G.Ojha and G. Bühler, *The Vadnagar Prasasti of the Reign of Kumarapala*, Eng. Tr in *Epigraphia Indica: The Corpus Inscriptionum Indicarum Vol I*, Superintendent of Government Printing, Calcutta, 1802,p 302 Verse 9.

<sup>8</sup> *Ibid*, p 168.

<sup>9</sup> *Ibid*, p 173.

<sup>10</sup> Minhaj us Siraj, *Tabaqat-i Nasiri*, Eng.Tr by H.G.Raverty in *Tabaqat-i Nasiri Vol I*, Asiatic Society of Bengal, 1970, pp 621-622. Henceforth cited as *Minhaj us Siraj, Vol I*. Also see Al-Badaoni, *The Muntakhab-ut-rukhs Vol I*, Eng.Tr and Ed.by George S.A. Ranking, Sir Wolseley Haig and W.H.Lowe, Baptist Mission Press, Calcutta, 1986, p 95.

<sup>11</sup> Amir Khusrau, *Khaza'inul Futuh*, Eng.Tr by Muhammad Habib, in *The Campaign of Alau'd-Din Khilji*, Diocesan Press, Madras, 1931, p 46.Henceforth cited as *Amir Khusrau, Khaza'inul Futuh*. Describing this conquest, Amir Khusrau writes after having conquered Ujjain, Mandu, Dharagiri & Chanderi, when Ain ul Mulk Multany sent a message of victory to Alauddin Khilji, in Delhi for seven days & nights celebrations took place with drums being beaten & sugar being distributed to all.

of Malwa before the accession of Mahmud Shah Tughlaq but later broke his allegiance with the Sultan of Delhi and assumed independence. Having declared his independence, Dilawar Khan took up his residence at Dhar making it the seat of the government. We are also informed by Ferishta that Dilawar Khan visited Mandu frequently and sometimes also spent months at Mandu<sup>12</sup>. According to H.N. Wright, Dilawar Khan issued coins in gold, silver and copper<sup>13</sup>. Having been driven out of Delhi by Timur, Mahmud Tughlaq fled to Gujarat where he was offended with the behavior of Muzaffar Shah and hence went to Malwa<sup>14</sup>. As mentioned by Ferishta, when Mahmud was three marches of Dhar, Dilawar Khan went himself and accompanied him to his capital and declared that they were at his (Sultan Mahmud) service. Alp Khan, Dilawar Khan's son, disapproved of the homage paid to Sultan Mahmud and retired to Mandu and remained there until Mahmud stayed in Malwa and laid the foundations of the fortress there, which was later completed during his reign. Three years later, when Mahmud went back to Delhi, Alp Khan returned and joined Dilawar Khan at Dhar<sup>15</sup>.

Alp Khan, after the death of Dilawar Khan in 1405 succeeded to the throne and assumed the title of Hoshang Shah Ghori<sup>16</sup>. Ferishta's account and Tabaqat-i Akbari of Khwaja Nizamuddin Ahmad, both make references to Hoshang Shah being suspected of poisoning his father. The relations between Malwa and Gujarat were friendly until Hoshang Shah's period when Muzaffar Shah of Gujarat marched and conquered Dhar and took Hoshang Shah as a prisoner. Having placed his brother, Nusrat Khan as the governor of Malwa, Muzaffar Shah went back to Gujarat. But soon Nusrat Khan had to face the dissatisfaction of the people of Malwa and eventually the Malwa army attacked and destroyed a part of Nusrat's army but having feared revenge from Muzaffar Shah, they abandoned Dhar and took refuge in Mandu and elected Musa Khan, Dilawar Khan's

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<sup>12</sup> Mahmood Kasim Ferishta, Tarikh-i Ferishta, Eng.Tr by John Briggs in *History of Rise of The Mahomedan Power in India Vol IV*, Oriental Books Reprint Corporation, New Delhi, 1829, pp 101-102. Henceforth cited as *Ferishta, Vol IV*.

<sup>13</sup> H. Nelson Wright, *Catalogue of the Coins in the Indian Museum Calcutta*, Clarendon Press, Oxford, 1907, p 244.

<sup>14</sup> Mahmood Kasim Ferishta, Tarikh-i-Ferishta, Eng.Tr by John Briggs in *History of the Rise of the Mahomedan Power in India Vol I*, Cambray & Co, Calcutta, 1908, p 499. Henceforth cited as *Ferishta, Tarikh-i-Ferishta Vol I*.

<sup>15</sup> Ferishta, *Vol IV*, p 102

<sup>16</sup> H.Nelson Wright, *Catalogue of the Coins in the Indian Museum Vol II*, Clarendon Press, London, 1907, p 242.

nephew, as their leader. After this having received a letter from Hoshang Shah, Muzaffar Shah released Hoshang Shah who was reinstated at Dhar<sup>17</sup>.

Few days after staying at Dhar, Hoshang Shah marched to Mandu but did not reduce the fort. After some combat he sent his troops to occupy principal towns of the Kingdom. In the meanwhile Musa Khan having realized that he could not maintain the army without the revenue, he vacated Mandu and Hoshang Shah eventually occupied it and made it his capital<sup>18</sup>. In twenty seven years of his reign while attempting to expand his empire towards west he was constantly at war with the King of Gujarat. He also came in conflict with Sayyid Mubarak Shah of Delhi, Ibrahim Shah Sharqi of Jaunpur and Sultan Ahmad Shah Bahmani. His most important expedition was against the Raja of Jajnapur, which has been explained in detail by Ferishta<sup>19</sup>. He was an ambitious ruler and from an inscription at Deogarh in Lalitpura in Jhansi we are informed that he was a sympathetic ruler<sup>20</sup>. After having reduced the fortress of Kalpi in 1431 A.D. he returned to Mandu and then proceeded to Hoshangabad where he spent the rainy season. After a reign of thirty years, he died in September 1432 and was initially buried at Hoshangabad but was later shifted to a mausoleum in Mandu<sup>21</sup>. It was Hoshang Shah who made Mandu a magnificent city and constructed a fort which Ferishta refers to it as an extraordinary one in the world<sup>22</sup>.

Two days after Hoshang Shah's death, his son Ghazni Khan ascended the throne at Mandu and assumed the title of Sultan Mahammad Shah Ghuri. Khutba was read and coins were struck in his name. He ordered that his capital was to be called *Shadiabad Mandu* or the *city of Joy*<sup>23</sup>. However, he left the administration in the hands of Mahmud Khan and Malik Mughith and took to drinking. While Malik Mughith was away from the

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<sup>17</sup> Ferishta, *Vol IV*, pp 103-105. Also see Khwaja Nizammuddin Ahmad, *Tabaqat-i Akbari Vol III*, Eng.Tr by Brajendranath De, Royal Asiatic Society of Bengal, Calcutta, 1939, pp 468-471. Henceforth cited as Nizammuddin Ahmad, *Vol III*.

<sup>18</sup> Khwaja Nizammuddin Ahmad, *Vol III*, p 472.

<sup>19</sup> Ferishta, *Vol IV*, pp 106-111

<sup>20</sup> J.M. Campbell, *Mandu*, The Journal of the Bombay Branch of Royal Asiatic Society Vol XIX, Bombay, 1897, p 163 Footnote 17.

<sup>21</sup> Ferishta, *Vol IV*, p 114, verse 7. Also see Bombay Subaltern, *History of Mandu :The Ancient Capital of Malwa*, Education Society's Press, Byculla, 1879 (reprint), p 45

<sup>22</sup> *Ibid*, p 102

<sup>23</sup> *Ibid*, p 115

capital, his son Mahmud Khan, began building his party but other nobles suspecting of Mahmud, began to warn the Sultan. Mahmud Khan became aware of the Sultan's suspicion, took him into confidence, shortly after which he got the Sultan poisoned. This plot has been explained in detail by Shaikh Rizku-Ila Mushtaki<sup>24</sup>. Knowing that some of the amirs were going to raise Mas'ud Khan, the eldest son of Mahammad Shah Ghuri, who was minor, to the throne, Mahmud Khan attacked and eventually took the possession of the royal palace thus putting an end to the Ghori dynasty. When Mahmud Khan asked his father, Malik Mughith to assume the reins of the government, he refused and urged Mahmud Khan to ascend to the throne. In 1435, Mahmud Khan ascended the throne and assumed the title of Sultan Mahmud Khalji<sup>25</sup>.

Initial years of Mahmud Khalji's reign were spent in disposing the rivals and in continuous wars against Gujarat. He also led campaigns against Rana of Chitor and Bahmani Sultans of Deccan and also led an unsuccessful siege over Delhi. It was during his long reign of thirty three years that the Kingdom of Malwa reached its widest limits. Famed as a patron of learning, he founded several colleges in different parts of his kingdom<sup>26</sup>. Many of the accomplished scholars were welcomed by him in Mandu<sup>27</sup>. About Mahmud's character Ferishta wrote that he was polite, brave and a learned man. During his reign his subjects lived in happiness and friendly relations with each other. A year had passed by since his last battle and he had spent his time now in listening to the

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<sup>24</sup> Shaikh Rizku-Ila Mushtaki, Waki'a't-I Mushta'ki, Eng. Tr. by H.M.Elliot and J.F. Dowson in *History of India as Told by its Own Historians Vol IV*, London, 1872, pp 552-554. Henceforth cited as *Shaikh Rizku-Ila Mushtaki, Waki'a't-I Mushta'ki*.

<sup>25</sup> Khwaja Nizammuddin Ahmad, *Vol III*, p 496. Also see Ferishta, *Vol IV*, pp 115-117. Also see Upendra Nath Day, *Medieval Malwa: A Political and Cultural History (1401-1562)*, Munshi Ram Manohar Lal, Delhi, 1965, pp 77-85. Also see Sir Wolseley Haig, *The Cambridge History of India Vol III*, Cambridge University Press, 1928, pp 352-353.

<sup>26</sup> Ferishta, *Tarikh-i-Ferishta, Vol IV*, p 118. Sooltan Mahmood during his whole reign gave great encouragement to learned men, and founded several colleges in different parts of the Kingdom for the promotion of literature, so that the philosophers and mowlanas in Malwa bore a fair comparison with those of Shiraz and Samarkand. Also see E.B. Havell, *The History of Aryan Rule in India: From the Earliest times to the Death of Akbar*, Frederick A. Stokes Company, New York, p 350. Also see G. Yazdani, *Mandu: The City of Joy*, University Press, Oxford, 1929, pp 16-17. Henceforth cited as *Yazdani, Mandu*.

<sup>27</sup> Khwaja Nizammuddin Ahmad, *Vol III*, p 539. Khwaja Nizammuddin Ahmad writes that when Shaikh Nurrudin, one of the most learned man of the age arrived in the neighborhood of Mandu, it was Sultan Mahmud who went till Haud-i-rani, the rani's tank to meet him and showed great respect and honour. Also see Robert Skelton, The Ni'mat nama: A landmark in Malwa Painting, in *Marg: A magazine of the arts, Vol XII*, June 1959, No-3, p 44.

historians and memoirs of the courts of different kings on the earth. He took pride in his knowledge of human nature for which he devoted much attention<sup>28</sup>.

Jami Masjid and the tomb of Sultan Hoshang Shah, both although started by Hoshang Shah, were completed by Mahmud Khilji, and many other structures that were erected in Mandu, are examples of Mahmud Khilji's inclination towards architecture<sup>29</sup>. Another structure to the credit of Mahmud Khalji in Mandu is a madarsa, which now is styled as Ashrafi Mahall, which he founded opposite to the Mosque of Sultan Hoshang Shah. Ferishta attributes it to the Sultan for the construction of large hospital at Mandu<sup>30</sup>. It has also been mentioned that he built beautiful palaces and masjids at Nalcha<sup>31</sup>. We are also informed that he constructed a *Hauz* (water reservoir) and a pavilion with a dome in the centre of the reservoir at Dipalpur<sup>32</sup>. Only few of his buildings have survived, most of them were altered to meet the taste of the new rulers. On the advice of Ghazi Khan, in 1468 Sultan Mahmud led an expedition to Khichiwara against the zamindars of the region, which turned out to be his last expedition. Due to the heat of Khichiwara, after the campaign while returning to Mandu, he fell seriously ill and died<sup>33</sup>. His reign of forty four years has rightly been explained in a couplet from *Tabaqat-i Akbari*<sup>34</sup> –

*“Although with grandeur to the sky he lift the throne,*

*To the grandeur of the burial, at last, he carries his all.”*

Ghiyath ud Din, Sultan Mahmud's eldest son, ascended the throne after his father's death. After coming to the throne he gave the government of Ranthambhor to his younger brother, Fidwai Khan and nominated his son, Abdul Kadar as the prime minister and

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<sup>28</sup> Ferishta, *Tarikh-i-Ferishta*, Vol IV, p 141.

<sup>29</sup> Khwaja Nizammuddin Ahmad, *Vol III*, p 508. Khwaja Nizammuddin Ahmad writes “ in the year 843 A.H., (1439 A.D), he commenced the erection of the tomb of Sultan Hoshang, and the completion of the Jama Masjid of Hoshang Shah, which is situated near the Ram Sarai gate, and had two hundred and thirty cupolas, and three hundred and eighty pillars (minarets?); and these were completed in a short time”.

<sup>30</sup> Ferishta, *Tarikh-i-Ferishta*, Vol IV, p 129. Ferishta writes that in the year 1445 A.D. Sultan Mahmud founded a large hospital, gave donations for its support and appointed his own physician, Maulana Fadl Ullah, to superintend the establishment. The hospital included wards and attendants for classes of patients, and apartments for maniacs separate from the rest. Also see Khwaja Nizammuddin Ahmad, *Vol III*, p 519.

<sup>31</sup> *Ibid*, p 125.

<sup>32</sup> Day, *op.cit*, p 216.

<sup>33</sup> Ferishta, *Tarikh-i-Ferishta*, Vol IV, p 141.

<sup>34</sup> Khwaja Nizammuddin Ahmad, *Vol III*, p 542.

proclaimed him the heir apparent, with the title of Sultan Nasir-ud-din and the distinction of using the *chatr* and *palki* (royal canopy and palanquin). Shortly after his accession, he gave a grand entertainment and here addressing his officers said that having spent thirty four years fighting in the field during his father's reign, he wished to yield the sword to his son and enjoy the rest of his days<sup>35</sup>. Writing about this Ferishta states that at one time there were fifteen thousand women within his palace among whom were mistresses, musicians, dancers, embroiderers, women to read prayers and persons of all professions and trades<sup>36</sup>. References to this have also been made by Khwaja Nizammuddin Ahmad in *Tabaqat-i Akbari*. Neither was there any rebellion amongst his subjects, nor was there any invasion on Malwa during his reign except one, when Bhalol Lodi of Delhi attacked Ranthambhor, which was checked by Shir Khan, the governor of Chanderi. After a reign of thirty three years, Ghiyath ud Din died in 1500 A.D<sup>37</sup>.

Towards the end of Ghiyath ud Din's reign a rivalry sprang up between his younger son, Shujat Khan and Nasir-ud- Din, the heir apparent. Fearing the rise of his brother, Nasir-ud- Din administered poison to his father, which has been narrated by Jahangir in his memoirs<sup>38</sup>. But on the contrary Ferishta refutes the charges by asserting that it was not

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<sup>35</sup> Anonymous, *The Ni 'matnama Manuscript of the Sultans of Mandu: The Sultan's book of Delights*, Eng. Tr. by Norah M. Titley, Routledge Curzon, London, 2005, p ix. Henceforth cited as *Anonymous, Ni 'matnama*. The reign of Ghiyath ud Din saw his palace filled with musicians, beautiful female slaves and daughters of rajas & high officials. Each girl was taught an art or profession, according to ability. He also set up a female army of five hundred Abyssinian slaves who were clad in armour & armed with swords & shields. In the miniature paintings of this book, Ghiyath ud Din is shown in the company of slaves, attendants and cooks. He is shown taking keen interest in activities like cooking, perfumes etc. Also see Khwaja Nizammuddin Ahmad, *Vol III*, p 544.

<sup>36</sup> Ferishta, *Tarikh-i-Ferishta, Vol IV*, pp 142-143. Also see Khwaja Nizammuddin Ahmad, *Vol III*, pp 544-545. Khwaja Nizammuddin Ahmad writes "he filled his seraglio with beautiful slave girls and daughters of Rajas and zamindars; and in this matter made very great exertions. He taught an art and a profession to the beautiful girls; and taking their fitness into consideration, taught some of arts of dancing and singing; and others those of reading and recitation and playing on the flute; and a small number of wrestling. He had five hundred Abyssinian slave girls dressed in male attire, and arming them with swords and shields gave them the name Habiwash band".

<sup>37</sup> *Ni 'matānma, op.cit*, p ix .

<sup>38</sup> Jahangir, *Tuzuk-i Jahangiri*, Eng.Tr by A.Roger and H.Beveridge, London, Royal Asiatic Society, 1909, pp 365-366. Henceforth cited as Jahangir, *Tuzuk-i-Jahangiri*. Narrating the event where Nasir-ud-Din administered poison to his father, Jahangir writes "It is well known that that wretch advanced himself by the murder of his own father, Ghiyath ud Din, who was in his 80<sup>th</sup> year. Twice he gave him poison, and he twice expelled it by means of a zahr-muhra (poison antidote, bezoar) he had on his arm. The third time he mixed poison in a cup of sherbet and gave it to his father with his own hand, saying he must drink it. As his father understood what efforts he was making in this matter, he loosened the zahr-muhra from his arm and threw it before him, and then turning his face in humility and supplication towards the throne of the creator, who requires no supplication said: "o Lord, my age has arrived at 80 years, and I have passed this time in

just to accuse him of the crime as there were no circumstantial evidences to prove this nor did he have any motive to commit such an act as he had been already crowned by his father as the heir apparent and for long had conducted the affairs of the government<sup>39</sup>. Jahangir mentions about the treatment offered to the last remains of Nasir-ud-Din by Sher Shah and Jahangir himself which go on to prove the crime that Nasir had committed<sup>40</sup>.

In 1500 A.D. Nasir-ud-Din ascended the throne<sup>41</sup> and upon his accession, as mentioned by Ferishta, he had to face series of domestic feuds which included many nobles, leading to disorder in the affairs of the state. Taking an advantage of this Sher Khan, governor of Chanderi, Sikandar Khan of Erich and Mahabat Khan of Mandisor, marched against Nasir but were defeated and Sher Khan and Sikandar Khan were killed eventually<sup>42</sup>. Following the disorder within the state, Khichi Chauhans found an opportunity to assert their independence, but they were crushed and Khichiwara was plundered. He also led an expedition against Chitor. He received large amount of money from Rana and married a Rajput princess whom he gave the title of Chitor Queen. On the way back to Mandu, Nasir-ud-Din received the news that Ahmad Nizam Shah of Deccan had declared a war against Khandesh chief who owed allegiance to the King of Malwa. Thinking it to be necessary, Nasir dispatched an army under Yekbal Khan and Khwaja Jehan to subdue Ahmad Shah. But before they could reach Khandesh, Ahmad Nizam Shah retreated to Ahmadnagar and public prayers were read in the name of Nasir-ud –Din at Burhanpur. Nobles who were wearied and disgusted by the cruelty of Nasir persuaded his son, Shahab-ud-Din, to assume the charge of the government. Collecting a large force, Shahab

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prosperity and happiness such as has been attained to by no king. Now as this is my last time, I hope that Thou will not seize Nasir for my murder, and that reckoning my death as a thing decreed Thou will not avenge it”. After he had spoken these words, he drank off that poisoned cup of sherbet at a gulp and delivered his soul to the creator.”

<sup>39</sup>Ferishta, *Tarikh-i-Ferishta, Vol IV*, p 144.

<sup>40</sup> Jahangir, *Tuzuk-i-Jahangiri*, p 367. Jahangir writes “It is reported that when Sher Khan, the Afghan, in the time of his rule, came to the tomb of Nasir ud din, he, in spite of his brutish nature, on account of Nasir-ud-din’s shameful conduct, ordered the head of the tomb to be beaten with sticks. Also when I went to his tomb I gave it several kicks, and ordered the servants in attendance on me to kick the tomb. Not satisfied with this, I ordered the tomb to be broken open and his impure remains to be thrown into the fire. Then it occurred to me that since fire is light, it was a pity for light of Allah to be polluted with burning his filthy body; also, lest there should be any diminution of torture for him in another state from being thus bunt, I ordered them to throw his crumbled bones, together with his decayed limbs, into the Narbada.”

<sup>41</sup> Wright, *op.cit*, p 253.

<sup>42</sup> Ferishta, *Tarikh-i-Ferishta, Vol IV*, p 145. Also see Yazdani, *Mandu*, p 23.

left for Mandu but was opposed and defeated by Nasir and was forced to flee to Delhi. While returning to Mandu, Sultan Nasir died at Burtpur, due to high fever<sup>43</sup>.

Fond of buildings, Nasir-ud-Din built a palace at Akbarpur, which was admired by everyone. Emperor Jahangir in his memoirs refers to Kaliyadaha, which was a halting place while he was travelling, was made by Nasir-ud-Din who was the ruler of Malwa. Writing about this building Jahangir remarks that it was constructed by Nasir in the middle of the river whose waters he canalized into the water and made large and small reservoirs<sup>44</sup>. Another building at Mandu whose inscription, writes Campbell, shows that the palace now known by the name of Baz Bahadur, was built by Nasir-ud-Din<sup>45</sup>.

With a great pomp and glory, Mahmud, Nasir-ud Din's younger son, ascended the throne with the title of Mahmud II. Shortly after he ascended the throne, conspiracies were planned against him and because Mahmud lacked the qualities of a strong monarch, he had to depend upon the nobles. While most of the nobles espoused the cause of his elder brother, Sahib Khan, it was Medini Rai<sup>46</sup>, a Rajput Chief, who rendered his service to Mahmud II to secure his succession to the throne. The dependency of Sultan Mahmud on Medini Rai grew, making him very powerful. Medini Rai started to replace the old amirs by his own men<sup>47</sup>. These conditions led the nobles to send a petition to Sikandar Lodi, the Delhi Sultan, stating that Sultan Mahmud had become a puppet in the hands of Medini Rai and that he would soon depose the Sultan and place himself on the throne<sup>48</sup>. Sikandar Lodi sent an army to support the rebels and around the same time Muzaffar Shah of Gujarat invaded Malwa. Medini Rai accompanied by Rana Sanga, Raja of Chitor marched and defeated Muzaffar Shah. Medini Rai also succeeded in creating dissensions

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<sup>43</sup> *Ibid*, pp 146-147.

<sup>44</sup> Jahangir, *Tuzuk-i-Jahangiri*, p 354.

<sup>45</sup> Campbell, *op.cit*, p 174.

<sup>46</sup> Babur, *Baburnama*, Eng.Tr by A.S. Beveridge, *Baburnama in English Vol II*, London, 1969, p 539 footnote 5.

<sup>47</sup> Khwaja Nizammuddin Ahmad, *Vol III*, p 587. Khwaja Nizammuddin Ahmad writes that Medini Rai wanted become all powerful, and to remove the amirs of Ghiyath Shah and Nasir Shah out of the way; and in pursuance of this wicked purpose he began to speak ill of the amirs; and in private he slandered everyone".

<sup>48</sup> Al-Badaoni, *The Muntakhabu-'rukh Vol II*, Eng.Tr and Ed.by George S.A. Ranking, Sir Wolseley Haig and W.H. Lowe, Baptist Mission Press, Calcutta, 1986, p 422. With specific reference to Bahjat Khan of Malwa, Badaoni writes, that he transferred Chanderi to Sultan Sikander on account of the weakness of Sultan Mahmud of Malwa and read the Khutba in his name in those districts.

between the Malwa rebels and Delhi army due to which Sikandar Lodi recalled his army<sup>49</sup>.

Soon Sultan Mahmud began to feel the presence of the Rajputs in the capital and the power of Medini Rai had become a menace to him and so decided to get rid of him. It was Muzaffar Shah II of Gujarat, who led an expedition to oust Medini Rai and reinstated Mahmud II on the throne of Malwa. However during the reign of Muzaffar Shah II's successor, Bahadur Shah, Mahmud along with Prince Chand Khan caused displeasure, forcing Bahadur Shah to march towards Mandu and lay siege on the fort and finally capturing it in May 1526<sup>50</sup>. Chand Khan, Bahadur Shah's brother fled to Deccan and Sultan Mahmud retired to his palace but was soon taken into confinement and sent to the fort of Champaner along with a troop under Asaf Khan. On their way to Champaner, the detachment carrying Mahmud was attacked by Bhils. Asaf Khan supposing that this attack was to free Mahmud and his sons, ordered that they were to be put to death and eventually the Kingdom of Malwa was incorporated with Gujarat. Among the monuments at Mandu, the tomb of Darya Khan was probably a structure built during Mahmud's reign, because Darya Khan<sup>51</sup> was an officer employed at his court, as mentioned by Ferishta<sup>52</sup>.

Malwa remained dependent on Gujarat until Humayun, the Mughal ruler of Delhi occupied it, forcing Bahadur Shah to flee, and ordered public prayers to be read in his name, leaving his officer as in charge of the Malwa Government. But shortly Mallu Khan, an officer of the former Malwa Sultan, took control over Malwa and crowned himself as Sultan Qadir Shah<sup>53</sup>. After Sher Shah had established himself on the throne of Delhi, in consequence of the disrespect shown by Qadir Shah towards him when he was the king of Bengal, in 1542 A.D. Sher Shah marched into Malwa. Knowing that his military resources were incapable of resisting those of Sher Shah, Qadir Shah gave

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<sup>49</sup> Ali Mohammed Khan, *The Mir'at-i Ahmadi*, Eng. Tr to which are added Copious Annotations and an Historical introduction by James Bird in *The Political and Statistical History of Gujarat*, London, 1835, pp 221-223.

<sup>50</sup> Sikandar Ibn Muhammad Manjhu, *Mirat-i-Sikandari*, Eng. Tr by Sir Edward Clive Bayley in *The Local Muhammadan Dynasties: Gujarat*, London, 1886, pp 349-353. Also see Ali Mohammed Khan, *op.cit*, pp 238-239.

<sup>51</sup> Manjhu, *Mirat-i-Sikandari*, p 349.

<sup>52</sup> Ferishta, *Tarikh-i-Ferishta, Vol IV*, pp 160-162. Also see Yazdani, *Mandu*, pp 26-27.

<sup>53</sup> *Ibid*, pp 162-163. Also see Bombay Subaltern, *op.cit*, p 66.

himself up. Sher Shah appointed Shuja Khan as the governor of Malwa and gave him the country around Ujjain and Sarangpur<sup>54</sup>.

During his lifetime, Shuja Khan divided the country amongst his sons, Daulat Khan, Mustafa Khan and Malik Bayazid. When Humayun returned to Delhi, many of the chiefs began declaring their independence and so was Shuja Khan but he soon died in 1554 A.D. After his death, his eldest son assumed the title of Baz Bahadur<sup>55</sup> and took the control of the government<sup>56</sup>. Baz Bahadur took possession of many towns in Malwa but his military activities came to an end when he was defeated by the troops of Rani Durgawati, widow of Rai Krishn Singh and disgraced by this defeat he took to pleasure<sup>57</sup>. The period under Baz Bahadur, after the discontinuation of military activities was peaceful. Baz Bahadur was known for his romantic association with Rupmati, a celebrated courtesan of the age and their love story has been handed over to generations in songs<sup>58</sup> in Ahmad ul-Umari. James Abbott in 1841 wrote "*The T'Hakoorine: A Tale of Maandoo*" and Major William Stirling's work published in 1855, entitled "*The Rivers of Paradise And Children of Shem*", all of these have references to the love story of Baz Bahadur and Rupmati. Ahmad ul-Umari who wrote the earliest works on this love story was a Turkoman, who was in the service of Sharaf-ud-din Hussain Mirza, who was a commander at Akbar's court. As recorded in the manuscript, this work was written by him in the 43<sup>rd</sup> year of Akbar's reign, i.e., in 1599<sup>59</sup>.

Taking an advantage of the situation of Malwa under Baz Bahadur, Akbar sent an army under Adham Khan to occupy Malwa. Soon Baz Bahadur was defeated at Sarangpur and

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<sup>54</sup> Ahmad ul-Umari, *The Lady of the Lotus Rup Mati Queen of Mandu A strange Tale of Faithfulness*, Eng. Tr by L.M.Crump, Oxford University Press, London, 1928, p 37. Also see Khwaja Nizammuddin Ahmad, *Vol III*, p 621.

<sup>55</sup> Abul Fazl, *Ain-i-Akbari Vol I*, p 428 No.120. Abul Fazl mentions Bayazid as his real name and that his father Shujat Khan Sur's real name being Shajawal or Sajawal Khan. The town of Shajawalpur or Sajawalpur in Malwa bears his name.

<sup>56</sup> Yazdani, *Mandu*, p 30.

<sup>57</sup> Abul Fazl, *Ain-i-Akbari, Vol I*, p 428.

<sup>58</sup> Ferishta, *Tarikh-i-Ferishta, Vol IV*, pp 166-167.

<sup>59</sup> Ahmad ul-Umari, *op.cit*, p 24. Umari wrote that this tale was told to him by one Sulaiman Khan, who was follower of Shujat Khan, governor of Malwa during Sher Shah's reign. Sulaiman Khan had witnessed all this happenings.

Malwa was made a part of the Mughal Empire<sup>60</sup>. When this was communicated to Rupmati, that Adham Khan had sent people to capture her, having recited a couplet, Rupmati committed suicide. The couplet was as follows –

“*Tan men jeora rahat hai, mangat hai suk raj;*

*Rup Mati dukhya bahi bina BahdaurBaj*”<sup>61</sup>.

Shortly after this victory Adham Khan was called back to Delhi and Pir Muhammad Khan was appointed as the Governor of Malwa. In 1571, Baz Bahadur along with a combined force of Tufal Khan of Berar and Miran Mubarak Khan of Khandesh, defeated Pir Muhammad Khan and drove the Mughal troops out of Malwa and Baz Bahadur was placed on the throne. Akbar on receiving this news, appointed Abdullah Khan Uzbek<sup>62</sup>, who was well acquainted with Malwa, to punish Baz Bahadur. Learning about Abdullah’s expedition and knowing that it wasn’t in his capacity to resist the Mughal forces, Baz Bahadur left Malwa and for some time took shelter with Rana Udai Singh of Mewar, but soon gave himself to the mercy of Akbar<sup>63</sup>. Abdullah Khan occupied Malwa and set up the headquarters at Mandu. Soon peace was restored and Malwa was incorporated as a Mughal Subha. Architectural buildings like a reservoir, *Rewa Kund*, a palace close by to the east of Rewa Kund called the *Baz Bahadur Palace* and a pavilion located on a hill beyond the Baz Bahadur Palace, which is associated with the name of *Rupmati* are the structures ascribed to Baz Bahadur. From the inscriptions that are carved on the palace and the Rupmati pavilion, they seem to have been built by earlier kings and Baz Bahadur only extended them<sup>64</sup>.

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<sup>60</sup> Abul Fazl, *Akbarnama Vol II*, Eng.Tr by Henry Beveridge, Asiatic Society of Bengal, Calcutta, 1902, p 222. Henceforth cited as Abul Fazl, *Akbarnama, Vol II*. Also see Nizammuddin Ahmad, *Vol III*, p 631. Also see Abul Fazl, *Ain-i-Akbari, Vol I*, p 429.

<sup>61</sup> Bombay Subaltern, *op.cit*, p 109.

<sup>62</sup> Abul Fazl, *Ain-i-Akbari, Vol I*, p320 (no.14). Abul Fazl wrote that he was a noble at Humayun’s court. After Hemu’s defeat, he received the title of Shujat’at Khan. When Baz Bahadur, after the death of Pir Muhammad, had taken possession of Malwah, Abdullah was made Panjhazari, and was sent to Malwa with unlimited authority. He re-conquered the province and reigned in Mandu like a king.

<sup>63</sup> Abul Fazl, *Akbarnama Vol II*, pp 260-261.

<sup>64</sup> Yazdani, *Mandu*, pp 32-33. Also see Ahmad ul-Umari, *op.cit*, pp 9-16. L.M.Crump in his above mentioned work has translated a Persian work of Ahmad-ul Umari, a Turkoman, who had visited parts of Malwa and wrote the tale of Baz Bahadur and Rupmati. Crump gives details of Rewa Kund, a palace today

Glory of Mandu to a large extent reduced after the decline of Khilji dynasty, although the reign of Baz Bahadur was a peaceful one. The structures of Mandu were repaired mainly during the reign of Jahangir who appointed Abdul Karim, an architect to supervise renovations. Jahangir wrote in his memoirs that he got the buildings of the old rulers in Mandu repaired and rebuilt some place and that he spent nearly three lakhs on all these<sup>65</sup>. He further gives details about Mandu and its buildings. On number of occasions Jahangir had taken up shooting expeditions in Mandu and one such that has been referred to in his memoirs is Nur Jahan Begam killing a tiger herself<sup>66</sup>. Thomas Roe, who visited Jahangir's court and had gone with Jahangir to Mandu, also gives details about Mandu where he was present to celebrate the Emperor's forty fifth birthday<sup>67</sup>. Corryat who was a guest of Sir Thomas Roe also provides a great deal of information regarding his stay at Mandu during Jahangir's reign<sup>68</sup>.

The independent Kingdom of Malwa established by Dilawar Khan Ghori ceded to Mughal Empire during Akbar's reign and remained dependent on the Mughals until 1724 A.D. In that year Marathas ravaged the province of Gujarat and Malwa and by 1731, Peshwa Baji Rao made himself the master of Malwa. Although he was opposed by Diya Bahadur, the Mughal Governor of Malwa, he in 1732 defeated Diya Bahadur. Neither Muhammad Khan Bangash, the next governor, nor his successor Sawai Jai Singh, the Raja of Jaipur were able to stop the advancing Marathas and eventually Maratha success prevailed and Baji Rao was appointed as the Subadar of Malwa. Anand Rao Puar was chosen by the Peshwa as his deputy who is considered to be the founder of the principality of Dhar, of which Mandu remained a part<sup>69</sup>.

Architecture is a general term used to describe buildings and other physical structures, has to do with planning, designing, space, etc. The art of building construction, according to Vitruvius, a Roman architect and a contemporary of Augustus, consists of two parts,

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called Baz Bahadur Palace and Rupmati Pavilion. These structures have been explained in detail in the later part.

<sup>65</sup>Jahangir, *Tuzuk-i-Jahangiri*, p 364.

<sup>66</sup> *Ibid*, p 375.

<sup>67</sup> Thomas Roe, *The Embassy of Sir Thomas Roe to the Court of the Great Mogul 1615-1619 Vol II*, Ed.by William Foster, Hakluyt Society, London, 1899, pp 411-412. Also see John Pinkerton, *Voyages and Travels in All Parts of the World Vol VIII*, London, 1811, p 35. Henceforth cited as *Pinkerton, Voyages*.

<sup>68</sup> Coryat, *Coryat's Crudities: His Letters from India Vol III*, London, 1766, p L2.

<sup>69</sup> Sir John Malcolm, *A Memoir of Central India Vol I*, London, 1824, pp 79-98.

one being the construction of fortified towns and of works for general use in public places and second being the construction of the structures for the private individuals. Vitruvius further divided the structures for public use into three – one being for defense which consisted of walls, towers and gates and permanent devices for resistance against hostile attacks. Religious structures were the second category and the third category being the provisions of meeting places for public use like markets, colonnades, etc., and all other similar arrangements in public places<sup>70</sup>.

Banister Fletcher refers to six elements- geography, geology, climate, religion, society and history, which have influenced the evolution of architecture from the earliest times. Ahsan Jan Qaisar remarked that every architect from the past recognized that the forms of dwelling houses were influenced by climatic conditions<sup>71</sup>. Use of shutters in the western European buildings houses are such example where the advantage of unglazed openings in the wall that allowed light inside, had to be weighed against the disadvantage of cold, wind, and rain from entering. Another example is use of unglazed windows with decorated and perforated screens in building construction over ages for the air circulation and cross ventilation. Wind scoops installed on the roofs of homes in Hyderabad and Sind in western Pakistan, to channelize the cool breeze into the rooms during the hot season where temperature could exceed 50<sup>0</sup>C, are another example where climate is taken into consideration while constructing<sup>72</sup>.

In the Indian context climatic, conditions played a vital role in the way structures were being constructed. The size and the forms of architectural openings within a structure were mainly influenced by the heat that prevailed in the region. The use of pierced screen or lattice window, apart from a decorative feature also acted against the excessive light and heat. Regions like the Malwa and the Deccan Plateau fall mainly under the water deficient regions of India and hence a necessity to develop a planned water control was required. It was only when man learnt the utility of reproductive processes of plant life

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<sup>70</sup> Marcus Vitruvius Pollio, De architectura, Eng.Tr by Morris Hicky Morgan in *The Ten Books On Architecture*, Harvard University Press, London, 1914, pp 16-17.

<sup>71</sup> Ahsan Jan Qaisar, *Building Construction in Mughal India: The Evidence from Painting*, Oxford University Press, Delhi, 1988, p 1.

<sup>72</sup> Bernard Rudofsky, *Architecture without Architects: A Short Introduction to Non-Pedigreed Architecture*, Doubleday & Company, New York, 1964, fig 114.

that he began to manipulate the old setting through small scale irrigation farming and giving an opportunity for the rise of despotic patterns of government and society. This process in turn gave rise to what Karl Wittfogel calls “*hydraulic agriculture*”, a system of farming which depended on large scale and government-directed water control. He further coined a term “*hydraulic Society*” which was to be applied to the agrarian societies in which agro-hydraulic works and other large hydraulic and non-hydraulic construction that developed with them were managed by a strong government<sup>73</sup>. The makers of the hydraulic society kept in mind the aesthetic and technical aspects in mind while constructing the structures where they infused both hydraulic and non-hydraulic works. These hydraulic like Canals, aqueducts, reservoirs etc., and non hydraulic like palaces, capital cities, tombs etc., works could be used in building palaces and pleasure grounds for the rulers and his subject which was invoked for both aesthetic and technical aspect of the matter which is evident in the Indian context<sup>74</sup>.

The traditional system of construction which was followed in India was in the trabeate form<sup>75</sup>. All spaces, in this technique, were spanned by means of beams laid horizontally and these structures were made using heavy material, mainly stones. These stones were held together by the *cyclopean technique*<sup>76</sup> and did not need any mortar or cementing agent to hold them together. These structures were not very durable as the weight of the beams and lintels which formed the ceiling rested directly on the walls, which resulted in a vertical downwards push<sup>77</sup>. The impact of the advent of the Turks and the establishment of the Delhi Sultanate was felt in almost every sphere of life in India, including that of architecture. The use of beams and pillars was replaced by the use of arch and dome

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<sup>73</sup> Karl A. Wittfogel, Developmental Aspects of Hydraulic Societies, in *Irrigation Civilizations: A Comparative study, Social Science Monograph*, by Julian H. Steward, Washington, 1955, pp 43-52. Henceforth cited as Wittfogel, *Development Aspects*.

<sup>74</sup> Karl A. Wittfogel, *Oriental Despotism: A Comparative Study of Total Power*, Yale University Press, 1967, pp 39-42. Henceforth cited as Wittfogel, *Oriental Despotism*.

<sup>75</sup> Irfan Habib, *Technology in Medieval India*, Tulika Books, Delhi, 2008, p 55. Henceforth cited as Habib, *Technology*.

<sup>76</sup> Nancy Claire Loader, *The Definition of Cyclopean: An Investigation into the Origins of the LH III Fortifications on Mainland Greece*, Ph.D submitted to the Department of Classics, University of Durham, 1995, p 18. Cyclopean technique is a stonework of large, irregular shaped blocks, unworked or roughly dressed and assembled with the aid of interstice stones. This style was labeled so by Pausanias, as early as 2<sup>nd</sup> century AD, when recalling the legend of the building the fortifications of Mycenae and Tiryns by Cyclopes II.

<sup>77</sup> Rezavi, *Medieval Indian Architecture*, p 8. Also see Habib, *Technology*, p 55.

making their style *arcuate*<sup>78</sup>. This displacement of beam by the arches was made possible only by the introduction of cementing agent in the form of lime mortar, which was not exactly known to the Indian masons earlier<sup>79</sup>.

Stones were gradually being replaced by bricks and brick tiles and in order to bond them together lime mortar began to be used for the first time during this period in India. The use of lime along with *surkhi*, which was the mixture of pulverized brick and lime, became common<sup>80</sup>. According to Irfan Habib, lime both as mortar and as plaster were in use in Roman empire and in Byzantium, while Sasanid Iran used gypsum and Arabs after their conquest of Byzantium and Iran in 7<sup>th</sup> Century began to use both lime mortar and gypsum in their buildings<sup>81</sup>. The use of these building materials led to construction of buildings which could be used for various kinds of purposes like mosques, tombs, khanqahs, palaces, sarais, bazaars, etc.,

The arcuate styles were of two kinds, the Roman and the Parthian, which influenced the architectural form largely. One of the sub forms of the Parthian arcuate style was the Iranian style which included the Ilkhanid (Mongol), Timurid and the Indian regional styles. The elements of the architecture which Timur and his successors imbibed from Persia were the Timurid style, which was applied in Samarqand, Bukhara and Herat. The post Timurid variant of the Iranian style developed under the patronage of the Shaibanids

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<sup>78</sup>Rezavi, *Medieval Indian Architecture*, p 10. Arcuate is a system in which the enclosed space is roofed and vaulted with the help of an arch, where the arch itself is a structure which formed the curved, pointed or flat upper edge of an open space and supporting the weight above it. This arch when in its true form is constructed with the help of wedge shaped stones known as voussoirs & a key stone. Two spans are constructed, each springing from the imposts on the wall, pier or pillar. At their contact a triangular key stone is added to hold them together. In this technique the durability of the enclosed space was guaranteed till the keynote was in the place. Secondly, the voussoirs ensured that the weight of the stones radiated in different directions, leaving the ceiling almost weightless. Thus the structure roofed by such a ceiling could be larger and higher. Thirdly the angle or slant of the voussoir could help in getting the desired breadth of the building. In this system, small medium of construction provided flexibility of attaining the myriad shapes and sizes. Thus brick was more suited which in turn needs a good binding material like lime mortar and gypsum.

<sup>79</sup> Brown, *op.cit*, p 2.

<sup>80</sup> Rezavi, *Medieval Indian Architecture*, p 9.

<sup>81</sup> Habib, *Technology*, p 56.

and Astrakhanids. The Safavid variant was the culmination of the Iranian style of architecture<sup>82</sup>.

Success in the Battle of Tarain brought the Turks to the doorsteps of Delhi and with them began the coming up of structures that can be mainly divided into the three phases which came up almost simultaneously. The first phase, although did not last for long, was one where raw materials of the structures that were demolished after the conquest were used for the construction of the new buildings. This phase was followed by the one where structures were not shattered but were dismantled and its parts were removed to supply ready-made material for the mosques and tombs. Having established them firmly the Turks, they found themselves in a position to plan and build masonry structures rather than reconditioning and also for this reason raw material were prepared specifically<sup>83</sup>.

The architecture under the Turk were of various forms. The mosques were basically open courtyard surrounded by verandah consisting of pillars. Mosques began to be built with rectangular open space or *sahn* and its four sides were enclosed by pillared cloisters or *liwans* with fountain or tanks in the centre for ablutions. The western side in Indian mosques (cloisters on the Mecca side) of the courtyard was expanded into a pillared hall with a wall at the back containing a recess or *mihrab* which indicated the direction for prayer or *qibla*. *Mimbar* or pulpit was on the right side of the mihrab and there was a portion which was screened off into a compartment for women. The muzzein, who gave the call for prayer, also needed an elevated platform which generally took the form of a high tower or minaret<sup>84</sup>.

Building construction during the Sultanate period commenced with the rule of the Mamluk dynasty and it was during this time that the *Quwwat-ul-Islam mosque*<sup>85</sup> at Delhi

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<sup>82</sup> Syed Ali Nadeem Rezavi, Iranian Influence on Medieval Indian Architecture, in *A Shared Heritage: The Growth of Civilizations in India and Iran*, Tulika Publications, 2002, p 127. Henceforth cited as Rezavi, *Iranian Influence*.

<sup>83</sup> Brown, *op.cit*, p 4.

<sup>84</sup> *Ibid*, p 3. Also see P.K.Hitti, *History of The Arabs From the Earliest Times to the Present*, Macmillan, 1970, pp 260-261.

<sup>85</sup> Shashank Shekhar Sinha, The Qutb Minar is celebrated as an Architectural Icon, but visitors to the World Heritage Site are hardly aware of its complex political and religious past, in *Frontline*, January 20, 2017, pp 77-78. One of the recent studies suggests that this may possibly be called Qubbat-al-Islam. Shashank Shekhar Sinha suggests that the contemporary sources refer to two common names by which the minar is

and *Arhai din Ka Jhompra* at Ajmer were built. This was built using the material of the temples that were demolished, an event that Hasan Nizami, a contemporary historian refers to<sup>86</sup> and so does the inscription on the inner lintel of the eastern entrance to Qutb ud Din's original mosque, in *Naskh* letters<sup>87</sup>. Aibak commissioned the builders to construct an arcade, a screen of arches on the western side, facing the courtyard, as a façade to the sanctuary. These arches were constructed on the same principles on which the *mandapa* of the temple was spanned, i.e., corbelling in which every upper course projects inwardly, gradually reducing the space to a manageable limit<sup>88</sup>. The ogee shaped arches, as R.Nath says, came through the 'Hindu builders'. It is characteristically the curve of the *Chaitya* window and the *gavaksa*-motif from which the builder derived ogee. When one looks at the construction of the Quwwat'ul Islam Mosque one finds that it is largely a re-arrangement of the temple pillars, lintels and corbelled ceilings in a new order suitable to the changed requirement. Iltumish, the first independent sovereign of Delhi made additions and extensions to the original mosque according to the inscription on the south side of his arcade<sup>89</sup>.

One can see three engrailed ogee shaped corbelled arches instead of aiwans in the *Arhai din Ka Jhompra Mosques* at Ajmer which was built in 1199 A.D., two years after the Quwaat'ul-Islam mosque at Delhi. The discovery of stone tablets containing Sanskrit play in the honour of Chahamma King Vigharaja indicates that it was a Vaishnava

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called - - *Qutub Sahab ki Laat* or *Mazinah of the Juma Masjid*. The name Qutub Sahab ki Laat came from the staff of Bakhtiyar kaki, who was believed to pierce the sky and like the pir, he connected the heaven with the earth and provided stability and shelter to human beings. Popularly he was regarded as Qutb, The axis around whom the world revolved or Qubbat al-Islam, the sanctuary of Islam. However no inscription on the minar refers to the saint's name, although Iltumish had great respect for him.

<sup>86</sup> Hasan Nizami, *Taju-l Ma-asir*, Eng.Tr by H.M.Elliot and J.F.Dowson in *History of India As Told by its Own Historians Vol II*, Trubner and Co, London, 1869, p 222.

<sup>87</sup> *Memoirs of the Archaeological Survey of India No.47*, Archaeological Survey of India, New Delhi, 1999, p 113. Above the inner lintel of the eastern entrance to Qutbu-d-Din's original mosque, in Naskh letters in relief there are verses which appear as an historical epigraph in Persian prose, executed in embossed Naskh characters, assigning the erection of the Jami Masjid in 587 A.H. (1191 A.D) to Amir Qutbu-d Din Aibak, who having conquered the fort got it built out of the materials of twenty seven demolished Hindu temples on each of which twenty lakhs of Dehliwals had been spent. Also see *Memoirs of the Archaeological Survey of India No. 22 An Historical Memoir on The Qutb: Delhi*, Central Publication, Calcutta, 1926, p 29.

<sup>88</sup> Nath, *History of Sultanate Architecture*, p 10.

<sup>89</sup> Page, *op.cit*, p 30.

temple<sup>90</sup>. This mosque was however on a larger scale than the Delhi mosque. The height was obtained by superimposing three shafts to form each pillar making the ceiling 20 feet from the pavement. Maqsura<sup>91</sup>, a distinct feature of this mosque, was used to separate the sanctuary from the courtyard. Initially this mosque consisted of only an open colonnade surrounding its courtyard but later an arched screen was built to form a façade in front of the sanctuary. The involvement of the indigenous workmanship can be clearly understood in the manner in which arches were formed and the method of construction. Both these mosques- the Quwwat'ul-Islam mosque in Delhi and the Arhai din Ka Jhompra at Ajmer were made using the spoils of the temples in the construction of their pillared halls<sup>92</sup>.

The tomb of Iltumish and Balban marked the next phase of architectural development in India. The tomb of Iltumish built in 1235 A.D. is situated just outside the North West corner of the Quwwat'ul Islam mosque, which is a square building entirely made of red and grey stone. There is no roof to the building but as Cunningham writes it must have been originally covered by an overlapping dome. Most important feature of this tomb is the *squinch* arches<sup>93</sup>. This was the earliest attempt in India to solve the inherent problem of the domed buildings, of devising a consistent and organic union between rectangular shape of the compartment below and the circular base of the dome above. Here the squinch arch used supports the circular dome at the angle of square hall by the projection of a small arch at the corners and this small arch formed an octagonal shape above, which if needed could be converted into a 16 sided figure of a similar fashion. A convenient base was provided for the dome to rest. A square box using the squinch arch was thus converted to support a circular dome. This was an Indianized version which neither had a true vault nor a true arch, but was planned on procedure of overlapping courses, which

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<sup>90</sup> F.Kielhorn, Sanskrit Plays, Partly Preserved As Inscriptions At Ajmer, Ed.by J.F.Fleet and R.C.Temple in *The Indian Antiquary Vol XX*, Swati Publications, Delhi, 1985, p 201. Kielhorn writes that the two inscriptions contain portions of two unknown plays one of which, entitled "Lalita-Vigraharaja-nataka, was composed in the honour of the King Vigraharajadeva of Sakambhari, by Mahakavi Somadeva, while the other called Harakeli-nataka has for its author no less a personage than the king Vigraharajadeva himself. The two inscriptions are at the Arhai-din-ka Jhonpra, a mosque situated on the lower slope of the Taragadh hill.

<sup>91</sup> Brown, *op.cit*, p 129. Maqsura is a screen or arched façade of a mosque.

<sup>92</sup> Michael W.Meister, The 'Two-and-a-Half-Day' Mosque, in *Architecture in Medieval India: Forms, Contexts, Histories*, Ed.by Monica Juneja, Permanent Black, Ranikhet, 2008, p 303.

<sup>93</sup> Brown, *op.cit*, p 130. Squinch arch, arches placed diagonally at the angles in the interiors of domes to connect from square to round.

Percy Brown refers to it as an singularly effective and artistic solution<sup>94</sup>. This shows the transition towards the beginning of the arcuate style.

By the time of construction of the tomb of Balban in 1287 A.D. the artisans were skilled in the arcuate style. Keystone of the arch that was introduced in India during the reign of Balban, became the common feature of the structures built in the later period. The most important building constructed by Balban was the *Dar'ul-Aman* (House of safety) which served two purposes – reserved for the burial of influential men and Balban himself and was a sacred place as understood from Ibn Battuta's words when said whoever sought refuge in it for fear was safe and that Balban was buried in this house<sup>95</sup>. The same has also been attested by Firoz Shah Tughlaq<sup>96</sup> and Abul Fazl<sup>97</sup>.

Balban was succeeded by Kaiqubad who founded the city of Kilugarhi on the banks of river Yamuna. However no monuments of Kilugarhi have survived. It was the arrival of the Khalji dynasty specifically Alauddin Khalji's reign that architectural patterns saw a change. Unlike the earlier rulers, Alauddin did not rely on the materials that were obtained from the temples, although Amir Khusrau writes that temple stones were used<sup>98</sup>. But evidences from the structure show that he prepared his own building material and had his own style of architecture. R.Nath classified the building activities of Alauddin Khalji into three groups – extension of Quwwat'ul Islam mosque and building of a new minar, repair of the old fort of Delhi, other masjids and buildings and construction of new building<sup>99</sup>.

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<sup>94</sup> Brown, *op.cit*, pp 14-15.

<sup>95</sup> Ibn Battuta, *Rehla*, Eng.Tr by Mahid Husain in *The Rehla of Ibn Battuta*, Baroda, 1976, p 36.

<sup>96</sup> Firoz Shah Tughlaq, *Futuh-i-Firoz Shahi*, Eng.Tr. by Elliot and J.Dowson in *History of India as told by its own Historians Vol III*, London, 1871, p 384.Henceforth cited as *Firoz Shah Tughlaq, Futuh-i-Firoz Shahi*. Firoz Shah writes the *Daru-L aman* or House of Rest. This is the bed and resting place of great men. I had new sandalwood doors made for it, and over the tombs of these distinguished men I had curtains and hangings suspended.

<sup>97</sup> Abul Fazl, *Ain I Akbari Vol II*, Eng.Tr. by H.S.Jarrett, Baptist Mission Press, 1891, p 279. Abul Fazl writes that Balban built a handsome edifice in which if any criminal took sanctuary, he was absolved from retribution.

<sup>98</sup> Amir Khusrau, *Khaza'inul Futuh*, p 17. Henceforth cited as Amir Khusrau, *Khaza'inul Futuh*. Amir Khusrau writes "The iron of the shovles, having turned into a magnet in contrariety to its nature, drew stones to itself and labourers with bodies of steel brought these stones from temples a hundred farsangs away. Also see Amir Khusrau, *Tarikh-i-Alai or Khazainu-l Futuh*, Eng.Tr. by Elliot and J.Dowson in *History of India as told by its own Historians Vol III*, London, 1871, p70.

<sup>99</sup> Nath, *History of Sultanate*, pp 45-47.

Alauddin Khilji ordered the extension of Quwwat'ul Islam mosque and building of a new minar. Amir Khusrau records this event in his *Khaza'inul Futuh* and wrote that after the mosques were repaired such that they were safe from destruction, the Emperor ordered to build a high and a strong minar called *Minar-i-Jami* whose circumference was twice that of the old one and that was unmatched in the world. He also ordered the extension of the courtyard of the mosque. He wrote that Emperor ordered the repair of the old fort and old mosque which were in ruins. He also ordered for the Royal tank, Hauz-i-Sultani, also called Shamsi Tank, to be cleaned and a dome to be constructed over it to protect the water from drying up<sup>100</sup>.

Alauddin Khalji not only took up the repair work of the old structures but also constructed new ones like the fort of Siri which was called *Alai fort* or *Koshak-I Siri*<sup>101</sup>. He also built a reservoir which was called *Hauz-i- Allai*, which was later called *Hauz, Khas*. Both Ibn Battuta<sup>102</sup> and Firoz Shah Tughlaq make a reference to this. Two most important structures erected by Alauddin Khalji were the *Alai Darwaza* on the southern gateway of Quwwat'ul Islam mosque and *Jamatkhana Masjid* at Nizammuddin. It was with the Alai Darwaza that the concept of gateway was first introduced in the Khilji period. Features like pillars, beams and brackets were used in this independent structure. Another feature which was common under the khiljis was the height of the plinth that was raised, can also be seen in this structure. Headers and stretchers were employed in its construction where the headers were embedded deep into the wall for the greater stability of structures<sup>103</sup>. The Alai Darwaza built entirely of red sandstone interspersed with white

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<sup>100</sup> Amir Khusrau, *Khaza'inul Futuh*, pp 15-19.

<sup>101</sup> *Ibid*, p 18 footnote. The *Alai Delhi* or *Alai Fort* or *Koshak-I Siri* was built by Sultan Alauddin Khalji. When in A.H.703 (A.D. 1303) the Emperor marched against Chitor in person and at the same time sent a large force against Warangal in Telingana, Targhi and the Mughals came and laid siege to Delhi, expecting to find it empty. But after many battles the emperor was victorious. Afterwards he built this fort. A village called Siri existed here at that time, consequently the fort was also known as the fort of Siri. In Sher Shah's time it was called the "Koshak-I Siri" The fort as built by Alauddin, was circular, with strongly built walls of stone, brick and lime, and seven gates. Before the fort was completed, another battle with the Mughals took place, and eight thousand Mughal heads were used in place of stones in building the walls of the fort. Though the fort has quite crumbled down, yet some traces of it are found on the left hand side when going to Qutub Minar. In A.H. 96 Sher Shah pulled down the fort of Siri and built a new city near old Delhi (i.e. Indrapat). A Village, named Shahabad, exists at the place now.

<sup>102</sup> Husain, *op.cit*, p 28. Also see Firoz Shah Tughlaq, *Futuh-i-Firoz Shahi*, Eng.Tr. by Elliot and J.Dowson in *History of India as told by its own Historians Vol III*, London, 1871,p 383.Henceforth cited as *Firoz Shah Tughlaq, Futuh-i-Firoz Shah*.

<sup>103</sup> Brown, *op.cit*, pp 16-17.

marble is a structure which is square in plan. The dome rested on square hall that had thick raising and flat end and in order to transfer the weight of the dome, squinch arches were built. Radiating voussoirs were employed in all parts of the building. In each angle of the hall is an alcove or semi vault of pointed arches like that of the exterior and a support was formed by recessing these one within other, so that the circle is changed to octagon and octagon to square and thus the load of the dome was transferred to ground<sup>104</sup>. The mosque has been designated as second *Baitu-l-mamur* (Qaba)<sup>105</sup>.

With the coming of the Tughlaqs to the power, a new phase of architecture began in India. During the period of Firuz Shah Tughlaq the idea of palace forts gets revived with definitive architectural style which served the purpose of both residential and military requirements. After having overthrown the Khaljis, Ghiyasuddin Tughlaq had very little time at his disposal during which he founded the city of *Tughlaqabad* with a fortress and an edifice for his burial. Most of the buildings of his reign have been destroyed except for a few bastions and ramparts. The transfer of the seat of the government to *Daulatabad* in Deccan<sup>106</sup> and then the permanent transfer to *Jahanpanah*, left Tughlaqabad depopulated ultimately leading to its ruin. Although Ibn Battuta refers to Tughlaqabad as one of the four cities of Delhi<sup>107</sup>, by the time Timur writes his memoirs he does not make any reference to it<sup>108</sup>, showing that Tughlaqabad had seen a downfall. The entrance of the citadel has an arch which has nook shafts and extreme batter along its side. In the construction white marble has been used along with red sandstone. Lintel and bracket

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<sup>104</sup> Brown, *op.cit*, p 18.

<sup>105</sup> Page, *op.cit*, pp 34-38.

<sup>106</sup> Ziyauddin Barani, *Tarikh-i-Firoz Shahi*, Eng.Tr. by Elliot and J.Dowson in *History of India as told by its own Historians Vol III*, London, 1871, p235. Barani writes that Muhammad Bin Tughlaq on the fourth day after, he proceeded from Tughlaqabad to Delhi, and there in the ancient palace took his seat upon the throne of an old sultan.

<sup>107</sup> Husain, *op.cit*, p 25. Ibn Battuta writes that the city of Delhi covers a wide area and is a combination four adjacent and contiguous cities. The first of them goes by the name of Delhi. It is the ancient city founded by the Hindus. The second city is known as Siri, which is also known as dar-ul-khilafa. It was given by the Sultan to Ghiyassudin, the grandsons of al-Mustansir, the Abbasid Caliph when he visited his court. The third is named Tughlaqabad after its founder Sultan Tughlaq, the father of the Sultan of India whose court we visited. The fourth is known as Jahanpanah, a city particularly distinguished as the residence of Sultan Muhammad Shah, emperor of India. It was he who built it. He wished to combine the four cities in one rampart.

<sup>108</sup> Timur, *Malfuzat-i-Timuri*, Eng.Tr. by Elliot and J.Dowson in *History of India as told by its own Historians Vol III*, London, 1871, p 447. Henceforth cited as Timur, *Malfuzat-i-Timuri*. Timur writes in his autobiography that all the three cities of Delhi, by name Siri, Jahan-panah and old Delhi, had been plundered.

system has been used in the actual entrance. Structurally the citadel is a fusion of arcuate and trabeate style.

This tomb is made of red sandstone with a hemispherical white marble dome resting on an octagonal drum, crowned by an *amalaka* and *kalasa*. There are tall pointed archways on each side of which three contain doorways while the fourth is closed and has mihrab in its interior. For the first time lintel across the base of the arch has been used here, thus combining the arch and the beam in this construction. Dark red sandstone has been used upto the base of the squinches from within and white marble above it till the apex of soffit. No plaster work is to be found, except on the mihrab on the western wall in the form of moulded nook shafts and a fringe of spear-heads along the intrados of the ornamental arches<sup>109</sup>. This tomb seems to have been built by Ghiyassudin Tughlaq himself<sup>110</sup>.

Muhammad bin Tughlaq founded the city of Jahanpanah<sup>111</sup>, where he built the palace of *Hazar-Sutun* (thousand columns)<sup>112</sup>. Ibn Battuta wrote that the Sultan's palace at Delhi was called *Dar-Sara* which had large number of gates with elaborate arrangements to reach the council hall (*mashwar*) called *hazar ustun*<sup>113</sup>. Badruddin of Chach, known as *Badr Chach*, who had come to India and resided at the court of Muhammad bin Tughlaq wrote that *Hazar Sutun* palace was built by Muhammad bin Tughlaq in his new Delhi<sup>114</sup>. He also describes another fort, a cathedral mosque and a school being raised in the year 1334<sup>115</sup>. And as Agha Mahdi Husain and R.Nath wrote this mosque which later came to called as the Begumpuri mosque is situated in the centre of the area which was once occupied by Jahanpanah and is in the neighborhood of Muhammad bin Tughlaq's *Hazar*

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<sup>109</sup> Nath, *History of Sultanate*, pp 53-55.

<sup>110</sup> Husain, *op.cit*, p 55. Ibn Battuta writes that Ghiyassudin Tughlaq was carried in the course of the night to the tomb which he had built outside the city named after himself Tughlaqabad and there he was buried.

<sup>111</sup> Firoz Shah Tughlaq, *Futuh-i-Firoz Shahi*, p 385.

<sup>112</sup> Timur, *Malfuzat-i-Timuri*, p 445. Timur writes that the ladies of his harem expressed wish to see the palace of *Hazar-sutun* (thousand columns) which Malik Jauna built in the fort called Jahanpanah.

<sup>113</sup> Husain, *op.cit*, pp 57-58. Ibn Battuta describes the council hall as one with one thousand pillars which are of polished wood; and on these rests a wooden roof, covered with strikingly beautiful paintings and mosaic. Under this roof sit the people and in this council hall the Sultan sits for public audience (*julus-ul-'am*)

<sup>114</sup> Agha Mahdi Husain, *The Rise And Fall of Muhammad Bin Tughluq*, Luzac & co, London, 1938, p 119 footnote 2.

<sup>115</sup> *Ibid*, p 119.

Sutun palace<sup>116</sup>. This mosque is a quadruple one with three sides having cloisters with a gateway in the middle of each, the eastern gateway being larger than the side ones. The sanctuary on the west side is divided into a nave in the centre and wings on its sides which resembles the cloisters with chhajja and cupolas over them. The nave, an important part of the mosque contains a broad pylon with an iwan on the façade. The plaster used on the pylon surface, turrets, cupolas and the dome which covers the nave are originally glazed tiles.

After Muhammad bin Tughlaq's death, Firuz Shah was elevated to the throne. During his reign there was absence of military activities which allowed him to pay attention towards the civil aspects. Describing himself as the servant of God, Firuz Shah talks of his building activities in his *Futuh* and wrote that he built many mosques and colleges and monasteries, where people could worship the god and aid its builder with their prayers<sup>117</sup>. In praise of Firuz Shah, Afif wrote that he excelled his predecessors in the erections of buildings. He built cities, forts, palaces, bands, mosques and tombs. Afif also refers to one Malik Ghazi Shahna, chief architect. Firuz Shah, writes Afif, repaired all the tombs and restored the lands and villages after bringing them under cultivation. He also mentions that the financial officer, *diwan-i-wizarat*, examined the plan of every proposed building and made provisions<sup>118</sup>. Architectural styles like regular lines of walls, lintels, doorposts and pillars, were introduced during Firuz Shah's reign. For the first time, it was during his reign that rubble began to be used as a construction material. The decorations during this period were moulded in plaster rather than being carved on the stone. Of the many mosques that were built during this period, two mosques- Khirki Masjid at Jahanpanah and the Kalan Masjid at Shahjahanabad, are raised on a tahkhana or substructure of arches. Both these mosques have resemblance to the enclosure of the tomb of Sultan Ghori, and their road projected entrances can be approached by flight of steps and they have bastions on each corner. In case of the Khirki mosque the entire area of the mosque is covered except for the four open quadrangles, one in the centre of each of the four quarters, making it different from the other mosques. The western side was

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<sup>116</sup> Nath, *op.cit*, p56.

<sup>117</sup> Firuz Shah Tughlaq, *Futuh-i-Firoz Shahi*, p382.

<sup>118</sup> Shams-I Siraj Afif, *Tarikh-i-Firoz Shahi*, Eng.Tr. by Elliot and J.Dowson in *History of India as told by its own Historians Vol III*, London, 1871, pp354-355.

made of a tall arched pylon in the centre of its façade with triple entrance leading to the sanctuary. The pylon façade which is a descendant of maqsura, or screen of arches, covered the dome. Decorated ceilings of the mosque were a rare phenomenon that were used during Firuz Shah's reign<sup>119</sup>.

The construction of the *Hauz-i-Khas* is attributed to Firuz Shah, which Yazdi describes in his work *Zafarnama*. When the reservoir is filled with waters during the rainy seasons, people of Delhi were able to obtain the waters from it all round the year and close to it is Firuz Shah's tomb<sup>120</sup>, which is a square one with entrance made of lintel and brackets to its southern side. Its external walls have batter. This tomb is a square one with the entrance given by lintel and brackets to its south side. The external walls have batter. The dome is cupola shaped and exceeds in breadth than in height. The squinches have stone rims. It was faced with thick layer of stucco and glazed tile and its interiors was painted in several colors and inscribed with religious verses. To the north east of this tomb is an enclosure with five chhatris which were graves of learned men from the collage which was built along with the hostels on east and the south side of Hauz Khas. These chhatris had twelve or eight pillars made of grey sandstone, chajjas on the exterior and the whole structure was covered by dome. To the north is situated the Jami-Masjid which was built inside the citadel Kotla by Firuz Shah. Constructed on a raised plinth, the structure is one storey and has rubble and mortar used in its construction.

Post Timur's invasion in 1398, Khizr Khan of Multan in 1414, besieged Daulat Khan in Delhi and he himself became the ruler of Delhi, laying the foundations of the Sayyid dynasty. The architecture during this period mainly was of the macabre, derived from maqbarah, the Arabic word for cemetery. There were many tombs that came up during this period which were ranging from simple open pillared pavilions in which cenotaph was exposed to view to imposing structures standing within walled enclosures that could be entered through a tall gateway and a mosque recalling a mortuary chapel on western side. During this period the tombs built were of two separate forms, one which was octagonal in plan surrounded by an arched colonnade with a projecting eave and one

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<sup>119</sup> Brown, *op.cit*, p 24.

<sup>120</sup> Sharafu-d din Yazdi, *Zafarnama*, Eng.Tr. by Elliot and J.Dowson in *History of India as told by its own Historians Vol III*, London, 1871, p 501.

storey in height, while the other was square in plan with no verandah and had two exterior and which were sometimes three stories in height. In both styles of tomb the building was surmounted by a dome, with a range of pillared kiosks rising above the parapet, one over each side of the octagonal kind and one at each corner of square. During this period dome and the kiosk were raised to height and minarets were slanting and then finally rose. The dome mainly consisted of an inner and outer shell of masonry with space between the two. This feature although in its premature form, was the first application of double dome in India. In other words this was the fore runner of the double domes that were later constructed in India<sup>121</sup>.

During the period of Sayyids and Lodis the representative architecture available to us in the present is in the form of tombs. Following the pattern of Sultan gharhi, the tomb during this period was built along with bastions and a double arch was created. These were built in red sandstone with marble being place in between to divide the façade. The tomb gets a pyramidal shape due to the slanting walls. Here the squinch arches were continued to be used. Parapet merlons were introduced in them. Headers and stretchers of marble were attached to a brick and cement core, which doubled in metal cramps and the header were inserted into a core which is one foot deep. Sirhindi in his work *Tarikh-i-Mubarakshahi* refers to Mubarak Sayyid, the second ruler of the Sayyid dynasty, planning to build a city on the banks of river Yamuna for which he laid foundations in 1443. He named it Mubarakabad, where he was eventually assassinated in 1434. He however had the construction of a mausoleum for himself begun which was later completed by his son Muhammad Shah Sayyid. Both, the tomb of Mubarak Shah and his son Muhammad Shah Sayyid located in Lodi Gardens, are octagonal in shape with three arches on each side of the octagon which is protected by chhajja that is supported on massive bracket-stones. The interior consists of a mortuary hall with lintel and bracket entrances. Stone buttress at each angle of the octagonal tomb is an important feature of these tombs.

Square and octagonal tombs and mosques were features of the Lodi period, although the Sikandar Lodi's tomb at the Lodi Gardens is an octagonal one. Sikandar Lodi's tomb is

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<sup>121</sup> Brown, *op.cit*, p 27.

located in the centre of a raised and enclosed compound with an ornamental gateway on the southern side, a mosque on the western side and octagonal turrets on each corner with angle buttresses and a chhajja. This tomb does not have kiosks. The dome, which is the initial phase of the double dome, is composed of an inner and outer shell of masonry with a space between the two. Although the Sikandar Lodi's tomb was built after three quarters of a century after the tomb of Muhammad Sayyid, it hardly marked important change in the architectural pattern<sup>122</sup>.

Political instability during the Tughlaq's reign began the process of disintegration which was completed by Timur's invasion in 1398 A.D. It was during this time that the governors began to assert their independence and began creating successor states. The prominent amongst them were the Sharqi Kingdom of Jaunpur established by Malik Sarwar who served Firoz Shah Tughlaq, Bengal, Gujarat and Malwa, which developed their own styles of architecture. One such regional style dealt in this work is the Malwa style of architecture which was developed in Dhar and Mandu, the two capital cities of Malwa.

After breaking his allegiance with the Sultan of Delhi, Dilawar Khan, the governor of Malwa, under the Delhi Sultan, established himself in Malwa with Dhar as his capital. Dhar was the ancient capital of Paramara dynasty, who majorly focused on development of literature. Like elsewhere, under the Paramaras, there was no pronounced artistic impulse. When the Turks established themselves in Malwa, they had to look outside the province for the skilled and experienced labor. In general circumstances it was but natural to look for the same, towards Gujarat, but due its strained relations with Gujarat, Malwa looked towards Delhi for such labor, as it was the fountain head of art and architecture. The monuments in the two cities of Malwa- Dhar and Mandu, show some architectural elements that have been derived from the various styles of buildings that were constructed in Delhi. Features of early Tughlaqs like battering walls, pointed arch with spear head fringe, the arch-lintel-bracket combination of Firuz Shah Tughlaq and domical turrets feature that is found in mosques of Firuz Shah Tughlaq (feature found in Malik Mughis's mosque in Mandu) , and of the Lodis, the boat keel dome and pyramidal roof,

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<sup>122</sup> Nath, *op.cit*, pp 86-87.

can be found in the monuments of Dhar and Mandu. However besides adopting these features from the parent city, the artists also brought in new innovations like the method of combining the arch with the pillar and beam, which were built using the ruins of the temple material. Long and stately flight of steps leading to the entrances of the buildings, is another important feature of the Malwa buildings. These steps were a necessity as the principal building were mainly built on high plinth. Another important feature that was implemented in the Malwa buildings was its decorative elements of various colors. Although today most of these decorative parts have worn out, but whatever remains prove that artisans here were well conscious of the colors. They obtained these color effects by two methods, one by use of various coloured stones and marble and the other by means of encaustic tiles.

The Malwa style of architecture passed through various phases, which have been divided into three by Percy Brown. The first phase was one which comprised of the monuments that came up in Dhar and early monuments of Mandu. This was the phase when existing structures mainly temples were dismantled and converted into mosques. In other words this was the phase when old indigenous system was broken down and new system was raised over the ruins of the old ones. Examples of such structures are the Kamal Maula Masjid and the Lat Masjid in Dhar and Dilawar Khan's mosque and the mosque of Malik Mughis in Mandu. This phase was followed by another where the rulers had established themselves firmly and were well accustomed to the constitution of the region. They made use of the raw materials that were available in and around the region and built monuments that were original in characters. This phase has been called as the classical phase by Percy Brown. Third phase was the one when the rulers had firmly established themselves and had enough time to devote their attention towards architecture. It was during this time pavilions, kiosks, pillared courts, balconied turrets and colonnaded terraces were built, which expressed a life of ease. This was the sensuous and the romantic phase of Malwa style of architecture. The structures that were built during these three phase in Dhar and Mandu have been discussed in detail in the later chapters<sup>123</sup>. The independent province of Malwa established by Dilawar Khan, remained independent

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<sup>123</sup> Brown, *op.cit*, pp 59-60.

until Akbar brought it under his control. Like other regional centres Malwa too was influenced by the Mughal style of architecture and its incorporation into the Mughal state further led to construction which borrowed heavily from the Mughal state. The renovation of the old structures during the Mughal period also saw addition of features and style and gave a new look and meaning to the regional style of architecture.

Babur in his short reign of five years, after the battle of Panipat in 1526, spent in consolidating the Mughal state, but he was able to spend time on construction, which have not survived today. Of the few buildings constructed during his reign that have survived today are the Kabuli Bagh, Panipat and the Jami Masjid in Sambhal. An important feature of the Panipat mosque was the implementation of the Timurid vaulting<sup>124</sup>, where transverse vaults have been used to provide domes over rectangular spaces and which were gradually transformed into the intersecting arches of the buildings<sup>125</sup>. Babur has also been credited with introducing the *paradise garden*<sup>126</sup> which the Timurids used traditionally<sup>127</sup>. This form of garden is called the *charbagh*, which ideally speaking is taken to be the Persianate walled in garden divided by intersecting walkways, which not necessarily divide it into four compartments. Babur's first garden at Agra called *Bagh-i-Hasht Bihist* (Garden of the Eight Paradises) was the first garden to see this feature being introduced in India for the first time. Referring to this garden, Ahmad Yadgar remarks, in Babur's second year of reign, a garden was laid on the borders of the Yamuna with pathways, which was introduced for the first time in India<sup>128</sup>. Babur in his memoirs wrote that here there was lack of running waters and plots were charmless and disorderly. After seeing this view he wanted to make waters flow by the means of wheels at a place wherever he settled. After having searched for a suitable site

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<sup>124</sup> Ebba Koch, *Mughal Architecture: An Outline of Its History and Development (1526-1858)*, Prestel, Munich, 1991, p 32. Henceforth cited as *Koch, Mughal Architecture*.

<sup>125</sup> Bernard O'Kane, Taybad, Turbat-I Jam and Timurid Vaulting, in *Iran, Vol. 17*, 1979, pp 101-102.

<sup>126</sup> Elizabeth B. Moynihan, *Paradise As A Garden in Persia and Mughal India*, George Braziller, New York, 1979, p 1. Henceforth cited as *Moynihan, Paradise*. The English word "Paradise" is simply a transliteration of the old Persian word pairidaeze referring to a walled garden. Also see Catherine Asher, Babur and the Timurid Char Bagh: Use and Meaning, in *Environmental Design, Vol 1-2*, 1991, p 47.

<sup>127</sup> Elizabeth B. Moynihan, The Lotus Garden Palace of Zahir Al-Din Muhammad Babur, *Muqarnas Online, Vol 5, Issue 1*, p135.

<sup>128</sup> Ahmad Yadgar, *Tarikh-i-Salatin-I Afghana*, Eng.Tr. in H.M. Elliot and Dowson, *The History of India As Told By Its Own Historians, Vol V*, Trubner and Co, London, 1878, p 38. Also see Ebba Koch, Mughal Waterfront Garden, in *Gardens in the Time of the Great Muslim Empires: Theory and Design*, ed by Attilio Petruccioli, E.J.Brill, New York, p140.

for the gardens, they made the beginning with a large well which supplied waters for hot bath and laid out plots of gardens which were in symmetry with borders and had parterres at every corner, with roses and narcissus being arranged in every border<sup>129</sup>. The 18<sup>th</sup> Century plan of Agra that was recently discovered at the Jaipur Palace Museum, has words inscribed in devanagari script which refers to “chahar bag patishahi next to a “chahar bag dusaran patishahi” (second imperial fourfold garden) which was located on other side of Yamuna adjoining Mahtab Bagh and almost opposite to Taj Mahall<sup>130</sup>. Although initially he was laid to rest in Aram bagh (Garden of rest) which was opposite to where Taj Mahal stands today, but was later shifted to Kabul and was laid to rest in one of the gardens in that city. This shows that gardens were given a lot of importance during his period<sup>131</sup>.

It was during Humayun’s reign that the merger of Timurid elements and local building traditions took place special in terms of facing of buildings and architectural decoration. This style mainly had characteristics of red sandstone, inlaid with white marble and other colored stones, wall surfaces being covered with flat geometrical ornaments, carved motifs, perforated stone screens, and monolithic sandstone pillars and stepped ornamental brackets in trabeate constructions. The buildings of Purana Qila in Delhi, the palace citadel founded as Dinpanah<sup>132</sup> (Asylum of Faith) by Humayun, are example of the above mentioned characteristics. The buildings mentioned by Khwandamir, no longer exists<sup>133</sup>.

In 1540, the Mughal rule in India was interrupted by Sher Shah Suri. The Surs who ruled over the next fifteen years embarked on a profound architectural projects and it is they who laid the ground work for the structures that were later built by the Mughals. Sher Shah Sur’s architectural projects, according to Percy Brown, are divided into two distinct phases. First was the one where mausoleums were erected at his capital Sasaram in Bihar,

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<sup>129</sup> Babur, *Baburnama Vol II*, pp 531-532. Also see Moynihan, *Paradise*, p 102.

<sup>130</sup> Koch, *Mughal Architecture*, p33.

<sup>131</sup> Babur, *Baburnama Vol II*, p 709.

<sup>132</sup> Khwandamir, *Qanun-I Humayuni*, Eng.Tr by Bains Prasad, Royal Asiatic Society of Bengal, Calcutta, 1940, pp 59-60. Khwandamir wrote that in this city a magnificent palace of seven storeys should be erected, surrounded by gardens and orchards. It should be an asylum for the wise men, and the refuge of the watchful and vigilant people, should be called Dinapanah.

<sup>133</sup> *Ibid*, p 62. Khwandamir mentions that walls, bastions, ramparts and the gates of the city of Dinpanah are nearly finished and the great and small, the Tajiks and the Turks all except that the great and lofty buildings of that large city will soon be completed. Also see Koch, *Mughal Architecture*, p 37.

while the second was the phase one which took place in Delhi after he wrested the throne of Delhi from the Mughals. The first phase is represented by a group of tombs that were built at Sasaram, of which three belonged to the ruling family (Hasan Khan, Sher Shah and Islam Shah) and one belonged to the architect who had built the other three tombs. One of these tombs is that of Sher Shah's own tomb which is built in the middle of a lake which has stone embankments and stepped ghats on all sides. Double staircases in the middle of each side lead a visitor to the terrace of the platform which is square with octagonal chhatris at each corner. The tomb is octagonal in plan with three pointed arches span on each side. The main building comprises of an octagonal chamber surrounded by an arcade<sup>134</sup>.

As soon as Sher Shah took over Delhi in 1540, he went on to initiate an architectural movement which began with the construction of Purana Qila. This was a walled enclosure forming a citadel around which Sher Shah planned his capital. Qila-i-Kuhna Masjid, the most important structure built in the citadel of the Purana Qila, was the Chapel Royal of the Sur rulers. The façade of this mosque is made of five archways of which the central one is larger than the other ones and this façade is made of black and white marble and red sandstone with central arch being flanked by narrow fluted pilasters. One important feature of this structure is the shape of the arch which has slight drop or flatness in the curve towards the crown, which marked the last stage of this feature.

When Humayun returned after having been ousted by Sher Shah, he used the small fortress of Salimgarh, which had been constructed by the Surs, as a sub-urban retreat and place of recreation. Salimgarh took its name from Salim Shah Sur, who built it opposite to Dinpanah, in the middle of the waters of Yamuna. Jahangir further wrote that on Humayun's orders a square chaukandi with glazed tiles was made<sup>135</sup>. Writing about Salimgarh, Inayat Khan, remarks that for the construction of a fort in Shahjahanabad a site was chosen outside the city of Delhi which was called Nurgarh, commonly called

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<sup>134</sup> Nath, *Glories*, pp 47-48.

<sup>135</sup> Jahangir, *Tuzuk-i-Jahangiri*, p 137. Also see Carr Stephen, *The Archaeology and Monumental Remains of Delhi*, Mission Press, Calcutta, p 195.

Salimgarh<sup>136</sup>. This was used by the Mughals as their residence until the construction of Shahjahanabad. In other words, no major building projects were taken up by Humayun on his return to India.

The only surviving building of the Dinpanah citadel is the *Sher Mandal*<sup>137</sup>, which represented a Timurid Safawid pavilion type. An axial passage connects the upper storey to four of the outer eight niches, which in turn are linked to form an ambulatory. Made up of red sandstone, this structure is crowned with a chhatri. This structure is usually described as the library of Humayun, from where he fell to death<sup>138</sup>. Although Sidi Ali Reis, the Turkish admiral, who traveled in India from 1553-1556, refers to this incidence, but refers to the structure as castle of pleasure<sup>139</sup>, instead of Sher Mandal.

The structures that were built during the reign of Akbar represented the finest example of the fusion. The structures that came up during Akbar's reign were chiefly made of red sandstone with insertions of white marble. The dome of this phase was one which was a true double order. During this period pillar shafts were multi faceted and their capitals took the form of brackets. An important feature of the elevation aspect was the arched and brackets. During this period inlaid patterns were common and interior walls and

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<sup>136</sup> Inayat Khan, Shah Jahan-nama, in Eng.Tr. by Elliot and Dowson in *History of India as Told by Its Own Historians Vol VII*, Trubner and Co, London, 1877, p 85. Also see Ebba Koch, Shah Jahan's Visit To Delhi Prior to 1648: New Evidence of Ritual Movement in Urban Mughal India, in *Environmental Design: Journal of the Islamic Environmental Design Research Centre 1-2*, Ed.by Attilo Petruccioli, 1991, p 24.

<sup>137</sup> Koch, *Mughal Architecture*, p 38.

<sup>138</sup> Gulbadan Begum, Humayun-Nama, Eng.Tr. by A.S.Beveridge, in *The History of Humayun*, Royal Asiatic Society, London, 1902, p 54. Writing about the incident, Gulbadan Begum remarks, that he met his death in a building of Shir Shah... . He had gone up to the roof of the Shir Mandal, which he used as his library, and had shown himself to the crowd assembled below... . The Shir Mandal is a two-storied building with flat roof in the middle of which rises a small cupola which looks like a shade from the sun. The roof is reached by two discontinuous, steep and narrow flights of high and shallow granite steps, which are enclosed in walls and the upper one of which emerges through the roof. The Emperor on that Friday evening of January 24<sup>th</sup> 1556, had started down the upper flight and was on its second step, when the mu'azzin raised the cry for prayer from the neighbouring mosque... .His foot became entangled, his staff slid along the smooth step, and he fell to the bottom of the flig with severe injuries to head and arm. Three days later Humayun died on January 27<sup>th</sup>, and in the 48<sup>th</sup> year of his age.

<sup>139</sup> Sidi Ali Reis, *The Travels and Adventures of the Turkish Admiral Sidi Ali Reis in India, Afghanistan, Central Asia and Persia*, Eng. Tr by A.Vambery, Luzac & Co, London, 1899, p 55. He wrote Humayun had given audience on Friday evening, when, upon leaving his castle of pleasure, the Muezzin announced the Ezan just as he was descending the staircase. It was his wont, wherever he heard the summons, to bow the knee in holy reverence. He did so now, but unfortunately fell down several steps, and received great injuries to his head and arm... . On the third day, however, that was on the Monday, he died of his wounds.

ceilings were mainly made of painted designs. The use of trabeate method shows that Akbar had encouraged the artisans of India with their traditional crafts<sup>140</sup>.

The first major building project of Akbar's period was Humayun's tomb, which saw a synthesis of Timurid ideas and the local traditions. Haji Begum, the daughter of the brother of Humayun's mother, wrote Abul Fazl, was made the in-charge of Humayun's tomb<sup>141</sup>. Badauni refers to Mirak Mirza Ghiyas, as the architect of this mausoleum and about 8-9 years were spent on building this structure<sup>142</sup>. Writing about this tomb, Father Monserrate remarks that Humayun was buried in a tomb built by Akbar, which is of a great size and is surrounded by beautiful gardens<sup>143</sup>. This is a square tomb, which has an appearance of an irregular octagon because of the corners that chamfered, giving the building a three dimensional form. It is composed of four discrete octagonal units separated by four recesses. Irregular octagonal units form the corner elements of the main nine part figure, which Ebba Koch remarks, as one inspired by Humayun's wooden boat palace, which has only been described by Khwandamir. This was made of four two storey pavilions (Chahar taq) on boats which were joined together in a way that there was an arched unit (taq) being produced. The eight hasht bihisht units formed on octagonal pool between them. This description also falls in place for Humayun's tomb with an exception of the inner pool<sup>144</sup>.

Built of red sandstone and white marble in the middle of an enclosed garden, this structure rests on a large plinth that is made up of 56 cells containing more than 100 gravestones<sup>145</sup>. A series of cross axially arranged canals and pathway divides the garden in which this tomb is set, into a char bagh<sup>146</sup>. Two radially symmetrical floors, of which

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<sup>140</sup> Brown, *op.cit*, p 92.

<sup>141</sup> Abul Fazl, *Ain-i-Akbari, Vol I*, p 465. Also see Abul Fazl, *Akbarname*, Eng.Tr. by H.Beveridge in *Akbarname Vol III*, Baptist mission Press, Calcutta, p 551. Abul Fazl writes that from the time Haji Begam returned from the Hijaz she had, in order to perform the duties, taken up her abode near the tomb of H.M.Jinnat Ashiyani (Humayun) and had looked after it.

<sup>142</sup> Badauni, *Muntakhabu-T-Tawarikh Vol II*. p 135.

<sup>143</sup> Father Monserrate, *Father Monserrate's Commentary on the First Jesuit Mission to Akbar*, Eng. Tr. by J.S.Hoyland in *The Commentary of Father Monserrate, S.J.: On his journey to the Court of Akbar*, Oxford University Press, London, 1922, pp 95-96. Also see Glenn D.Lowry, *Humayun's Tomb: Form, Function And Meaning in Early Mughal Architecture*, in *Muqarnas, Vol IV*, 1987, p136.

<sup>144</sup> Koch, *Mughal Architecture*, p 46.

<sup>145</sup> Lowry, *op.cit*, p134.

<sup>146</sup> *Ibid*, p 135.

first consists of a central chamber with the gravestone of Humayun in the middle and four corner rooms which are connected to one another and to the main chamber by corridors, while elaborate system of halls and passageways organized around a central chamber is what second floor is made of. Illuminating the interiors of the tomb is made of sandstone and marble screens. This tomb has a double dome, i.e., space between the inner shell that is above the central mortuary hall and the outer shell which outlines the monument from outside<sup>147</sup>. Humayun tomb was the first experiment in the funeral architecture by the Mughals.

The palace forts that were introduced during the Sultanate period were continued, however extensive application of dressed stone on large scale was introduced. Fortification was done with massive enclosure walls consisting of solid sand stone rampart. Gateways were designed in a way that two octagonal towers were joined by an arch way and there was a façade with arcaded terrace in the middle of this, which was surmounted by cupolas, kiosks and pinnacles. The parapet was perforated from behind with raised kiosks and the façade was crowned. We also see the application of wagon vault with groins<sup>148</sup> which is distinct from the system of beam and bracket. The domes that built during this period were more pointed and were less in width, forming a semi circular shape<sup>149</sup>.

Divided into two main groups, the building projects of Akbar's reign represent different phases. Forts and a few palaces like that of Agra, Allahabad and Lahore were buildings that were built under the first phase. The second phase of Akbar's building project comprised of construction of his new capital Fatehpur Sikri, which further could be divided into two categories- religious and secular ones. Of the first group, the Agra fort was the earliest building project of Akbar's reign. Agra fort, Abul Fazl wrote, was built of red sandstone and had more the five hundred masonry buildings<sup>150</sup>. He further wrote that the principal event of the 10<sup>th</sup> year of Akbar's regnal year was the founding of the Agra fort. Akbar had given the orders of the old fort of Agra which was on the eastern

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<sup>147</sup> R.Nath, *History of Mughal Architecture Vol I*, Abhinav Publications, New Delhi, 1982, p 268.

<sup>148</sup> Groins is a curved edge where two vaults meet.

<sup>149</sup> Brown, *op.cit*, pp 95-96.

<sup>150</sup> Abul Fazl, *Ain-i-Akbari, Vol II*, pp 179-180.

bank of Yamuna to be removed and to build a strong fort. Abul Fazl mentions Muhammad Qasim as the architect of the Agra fort<sup>151</sup>. He refers to 7 layers of foundation being laid and the wall of three badshahi yards in breadth and its height was 60 yards<sup>152</sup>. Irregular semi-circular in form this fort is parallel to the right bank of river Yamuna. In this fort for the first time the application of dressed stones on such large scale was seen when the enclosure wall was made of sandstone rampart which was just less than 70 feet in height and one and half mile in circuit. The walls of this fort are also known for the features like battlements, embrasures, machicolations and string-courses.

This fortified wall of the Agra fort consisted of two gateways of which one was located on the southern side which was intended for private use and the one on the west, known as the Delhi Gate was used as the main entrance. Delhi gate was the earliest of Akbar's architectural efforts that displayed originality. Joined by an archway, this gateway consists of two broad octagonal towers in front while a façade with arcaded terraces covers its back which is surmounted by cupolas and kiosks. The ornamentation is made of white marble inlay. The Hathi pol gate in the west, which was meant for public, had arcade façade towards the city and stepped elevation with trabeate elements towards inside of the fort. Two stone effigies of elephants have been placed at this gateway with the statues of Jaimal and Patta<sup>153</sup>.

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<sup>151</sup> Abul Fazl, *Akbarnama, Vol I*, p 507 footnote no-5.

<sup>152</sup> Abul Fazl, *Akbarnama Vol II*, p 372.

<sup>153</sup> Francois Bernier, *Travels in the Mogul Empire 1656-1668 A.D.*, Ed. by Archibald Constable, Archibald Constable and Company, 1891, p 256-257. Describing the Agra Fort Bernier writes that the entrance of the fortress presents nothing remarkable except two large elephants of stone, placed at either side of one of the principle gates. On one of the elephants is seated the statue of Jemel, the renowned Raja of Chitor; on the other is the statue of Potta, his brother. These are the brave heroes who, with their still brave mother, immortalized their names by the extraordinary resistance which they opposed to the celebrated Ekbar; who defended the towns besieged by that great Emperor with unshaken resolution; and who, at length reduced to extremity, devoted themselves to their country, and chose rather to perish with their mother in sallies against the enemy than submit to an insolent invader. It is owing to this extraordinary devotion on their part, that their enemies have thought them deserving of the statues here erected to their memory. These two large elephants, mounted by the two heroes, have an air of grandeur. Also see Vincent Smith, *The Oxford History of India From the Earliest Times to the end of 1911*, Clarendon Press, Oxford, 1919, p 351. Also see Syed Muhammad Latif, *Agra Historical & Descriptive With An Account of Akbar And His Court And of The Modern City of Agra*, Calcutta Central Press Company Ltd, Calcutta, 1896, p 76.

Of the surviving structures of Akbar's period here, is the Jahangiri Mahal, which is made up of irregularly grouped halls and rooms<sup>154</sup>. The ground plan of this Mahal resembles the Timurid plans on the pattern of Khwaja Ahmad Saswr's mausoleum at Turkestan. The only addition to this is the open courtyard building. The roof of this building is small rectangular pavilion with veranda on three sides. The architectural aspects of this Mahal combine in it the Timurid tradition and the local architectural traditions<sup>155</sup>.

After the rebuilding of the fort of Agra, next most important architectural project of Akbar's reign was construction of his new capital Fatehpur Sikri. Abul Fazl remarks that Fatehpur, which is situated 12 kos from Agra, was one of the dependencies of Bianah and was later called Sikri. It rose to prominence after Akbar took over it. He refers to this being a masonry fort and there were two effigies of elephants carved out of stone<sup>156</sup>. Badaoni on the other hand refers to the bond between Shaikh Salim Chisti and Akbar as the reason for the emperor to build a palace on top of the hill of Sikri, where he further laid foundations of a new chapel and a mosque, a bazaar, baths and gate. And in a span of 5 years many buildings were built here and this place was called Fatehpur Sikri<sup>157</sup>. The building of Fatehpur Sikri, Percy Brown divided into two categories – the religious and secular ones. Jami Masjid, Buland Darwaza and the tomb of Shaikh Salim Chisti were of the religious nature while the buildings of the secular nature were grouped under palaces, administrative buildings and other structures like Jodh Bai palace, Panch Mahal, Diwan-i-am etc<sup>158</sup>.

Paintings gained an upper hand during the reign of Jahangir when compared to the building activities. However there were many changes in the building field like false doorways were added for symmetry, bold ornamentations were used, use of white marble minaret which was used for the first time<sup>159</sup>, the surfaces of the building were highly

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<sup>154</sup> Brown, *op.cit*, p 93. Also see William G.Klingelhofer, The Jahangiri Mahal of the Agra Fort: Expression and Experience in Early Mughal Architecture, in *Muqarnas Vol V*, 1988, pp 153-169.

<sup>155</sup> Catherine B.Asher, Architecture of Mughal India, in *The New Cambridge History of India I:4*, Cambridge University Press, Cambridge, 2008, p 50. Also see Koch, *Mughal Architecture*, p 55.

<sup>156</sup> Abul Fazl, *Ain-i-Akbari Vol II*, p 180.

<sup>157</sup> Badaoni, *Muntakhabu-T-Tawarikh Vol II*, p 112.

<sup>158</sup> Percy Brown, *op.cit*, p 94-96.

<sup>159</sup> *Ibid*, p 99.

decorated, framework of bands on walls and chun khana was the motif of the walls<sup>160</sup>. The vaults that were made during the reign of Jahangir were that generated fan-like formations of lozenge shaped muqarnas. Oversailing concentric tiers of small arched muqarnas, a technique of lining domes is exclusive to Jahangir's period<sup>161</sup>. In Jahangir's first building project i.e., Akbar's tomb, several of these features can be found.

The date of Akbar's death mentioned by Abul Fazl is given as "Wafat-i-Akbar", which is taken to be Tuesday night 15<sup>th</sup> October 1605. His body was taken out of the Agra fort and laid to rest in the sacred garden (Rauza Muqaddas) known as *Bihishtabad*<sup>162</sup>. The tomb stands in the centre of a vast garden "char bagh" enclosed by high walls on all sides and each of the enclosing walls has a monumental gateway. Of these gateways the southern one is the main one while the remaining three are false doorways which were added for symmetry<sup>163</sup>. The Southern gateways most important feature is the set of four white marble minarets, which were built for the first time. Each of these minarets is three storeys and is crowned with 8 pillared circular chhatri. Stone intarsia work of the southern gate is another important aspect of the southern gateway. Writing about this mausoleum Jahangir remarks that after he had ordered, a lofty building was erected with bright garden arranged around it and large and lofty gateway with minarets were built in white stone. In the whole 1,500,000 rupees were spent to build this edifice<sup>164</sup>.

Jahangir also laid a number of gardens like the Mughal gardens of Kashmir. His earliest project after accession was laying out a garden around the source of Jhelum at Vernag. A group of gardens were developed after his visit to Kashmir in 1620 like that of Nur Afza in fort of Hari Parbat, Achabal and the lower garden, the Farah Bakhsh of the Shalimar Bagh. Springs are the central feature of the Mughal garden at Kashmir, whose water are collected in a canal that forms main axis of the garden. The garden are laid out keeping the hillside slope in mind and the plan consists of terraces, ponds, branch canals etc,

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<sup>160</sup> Koch, *Mughal Architecture*, p 72.

<sup>161</sup> Koch, *Mughal Architecture*, p 72.

<sup>162</sup> Abul Fazl, *Akbarnama Vol III*, p 1260-1262.

<sup>163</sup> Brown, *op.cit*, p 99. Also see R.Nath. *History of Mughal Architecture Vol III*, Abhinav Publication, New Delhi, 1994, p 363.

<sup>164</sup> Jahangir, *Tuzuk-i-Jahangiri Vol I*, pp 151-152.

along the water course<sup>165</sup>. Besides the above mentioned building activities, Jahangir also took up the construction of roads and sarais, bridges, kos minars and wells and baolis. One of the examples of kos minars that Jahangir ordered to be erected was the one on the road from Agra as far as River of Attock<sup>166</sup>. Of the bridges built by Jahangir one was on the river Mahi<sup>167</sup>. During the reign of Shah Jahan architecture received at most attention due to which it reached the highest degree of perfection. It was an age of marble. The curve of the arch was more foliated during this period, usually comprised of nine cusps. The domes of this period were bulbous in its outline and constricted at its neck, which brought along with it system of true double doming<sup>168</sup>. New architectural motif which appears during Shah Jahan's reign is the baluster column which was used in three fortress palaces of Agra, Lahore and Delhi. Made of four parts- base, a pot like element, shaft and capital, the base of this column is the least standardized element which often appears to be inverted capital of acanthus leaves. Different elements of the column are separated by protruding rings and additional concave contraction at the joint<sup>169</sup>. The impulse to the use of *pietre dure* inlay in the buildings was given during the reign of Shah Jahan. The sphere of tomb art saw its appearance for the first time. One of the vault forms that were used during the reign of Shah Jahan was the one coved ceiling which was suitable for covering the preferred rectangular halls<sup>170</sup>.

Shah Jahan's most important and popular architectural project is the Taj Mahal. In the words of Muhammad Amin Qazwini, early historian of Shah Jahan's reign, a dome of high foundation and a building of great magnificence were founded and nothing similar to it had been constructed and which will be masterpiece for the days to come<sup>171</sup>. There are different views regarding the architect of this monumental memorial. Father Sebastian

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<sup>165</sup> Koch, *op.cit*, p 86.

<sup>166</sup> Jahangir, *Tuzuk-i-Jahangiri Vol II*, p100. Jahangir wrote that previously to this according to order, they had planted trees on both sides from Agra as far as the River of Attock (the Indus), had made an avenue and in the same way from Agra to Bengal. I now ordered that from Agra to Lahore they should put up a pillar (mil) at every koss, to be the sign of a koss, and at every koss make well, so that wayfarers might travel in ease and contentment, and not endure hardships from thirst or the heat of the sun.

<sup>167</sup> Jahangir, *Tuzuk-i-Jahangiri*, Eng.Tr. by H.M.Elliot in *Waki'a't-i-Jahangiri*, Calcutta, 1875, p 88.

<sup>168</sup> Brown, *op.cit*, p 102.

<sup>169</sup> Koch, *The Baluster Column*, p 251.

<sup>170</sup> Koch, *Mughal architecture*, p 93.

<sup>171</sup> Ebba Koch, *The Taj Mahal: Architecture, Symbolism and Urban significance*, in *Muqarnas*, Vol 22, 2005, p128.

Manrique, a Spanish Augustinian friar, who visited this place, refers to the architect as a Venetian jeweller and silversmith named Geronimo Vernoneo, who was a court artist at the Mughal court<sup>172</sup>. Writing about the same R.Nath remarks that the plan and design of the Taj Mahal cannot be attributed to a single mind<sup>173</sup>. Rectangular in plan with high closure walls and a lofty entrance in the middle of the southern side, the main building of Taj Mahal stands on a high marble platform at the northern end of the enclosure. There are octagonal towers attached to the corners of the main entrance which are surmounted by octagonal kiosks. The main part of the building is a square one with deep alcove recesses in each side and its four corners are beveled to form an octagon. A bulbous dome covers this structure which is topped with an inverted lotus finial and a metallic pinnacle. The main hall's ceiling is a semi circular vault which forms the inner shell of the double dome. Francois Bernier in 1663 describes this mausoleum as the one with a vast dome of white marble and encircled by a number of turrets. The whole of the wall from top to bottom are faced with white marble and jasper, jade and other semi precious stones are to be seen everywhere<sup>174</sup>.

The architectural works of Aurangzeb's reign were less in number and their standards very lower than the previous ones. Of the major buildings built during his reign was the mausoleum of his wife Rabia ud Dauran in Aurangabad, popularly known as Bibi ka Maqbara. Although inspired by the design of Taj Mahal, it is half the size of the Taj. This depicts the decline in architectural ideas during this period. The compressed proportions caused the upper elements to form confused grouping of pinnacles and cupolas<sup>175</sup>. The building projects that were carried out during the late 17th and early 18th century were of lower standards when compared to the ones under the early Mughals. The method of construction which was clumsy depicted the declining trends. No new architectural projects were taken up which could be attributed to the low quality of material used in the construction and also to the lack of interest shown by the Emperor. Towards the later part of the 18th century the art of the building construction passed from the Mughals to the regional dynasties.

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<sup>172</sup> Brown, *op.cit*, p 107.

<sup>173</sup> Nath, *Taj Mahal*, p 48.

<sup>174</sup> Bernier, *op.cit*,p298.

<sup>175</sup> Brown, *op.cit*, p 111.



## Medieval Technology and Building construction:

### Jahaz Mahal Complex

Mandu, the medieval capital of Malwa is situated on top of an offshoot of Vindhya Range. It is 36 kms south of Dhar, the Paramara capital and is separated from the main Malwa plateau by the Kakra Koh valley which eventually merges with the Nimar plains. The archaeological sites here are maintained and protected by the both the central and state Archaeological Survey department and are open to the tourists from the sunrise to the sunset. The temperatures during the winters from November to February ranges from 8<sup>0</sup>C to 22<sup>0</sup>C and the summers which prevail from March to June see temperatures between 24<sup>0</sup>C to 40<sup>0</sup>C. Rainy seasons are the best time to visit Mandu. The climatic conditions in Mandu have been also described by Jahangir when he refers to it as a place unmatched with pleasant climate and scenery. Referring to the hot season of July in Mandu, Jahangir writes that at nights one cannot sleep inside the house without a coverlet and during the day there is no need for a fan<sup>1</sup>.

There are a number of contemporary sources which refer to the fortification of Mandu. The earliest reference to the fortification of Mandu comes from Father Monserrate who refers to its circuit of walls as ones which are 24 miles approximately<sup>2</sup>. Ferishta, describes it as an extraordinary one in the world with its circumference being 19 cos (28 miles). The nature forms a deep ravine around the fortification making it difficult to take the fort by regular approach<sup>3</sup>. De Laet in his work describes this as a city whose walls surround the whole mountain and covers many miles in circumference<sup>4</sup>. Jahangir writes

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<sup>1</sup> Jahangir, *Tuzuk-i-Jahangiri*, p 383. Also see James Campbell, History of Gujarat in *Gazetteer Of The Bombay Presidency, Vol I, Part I*, Government Central Press, Bombay, 1896, p 374.

<sup>2</sup> Monserrate, *op.cit*, p 15. Father Monserrate writes that the importance of it is indicated by the huge circuit of its walls, the vastness of the buildings which remain standing, and the ruins of those which have fallen. The walls are still perfect in those places which are not defended by precipitous crags; their total circuit is nearly 24 miles.

<sup>3</sup> Ferishta, *Vol IV*, p 108.

<sup>4</sup> De Laet, *De Imperio Magni Mogolis sive India Vera Commentarius*, Eng.Tr. by J.S.Hoyland in *The Empire of the Great Mogol: A Translation of De Laet's Description of India and Fragment of Indian History*, The British India Press, Mazgaon, Bombay, p 31.

that the hill on which the fort of Mandu stands is 10 kos in circumference<sup>5</sup>. William Finch, an English merchant visited India during the reign of Jahangir along with Captain Hawkins and John Jourdain. Both William Finch<sup>6</sup> and John Jourdain<sup>7</sup> leave a similar account of the fortification of Mandu. Thomas Roe<sup>8</sup>, the English ambassador of King James I to the court of Jahangir, remarks that Mandu is a city which stands on the crest of the Vindhya, nearly 2000 ft above the sea level<sup>9</sup>. Thomas Herbert writing in 1620 refers to Mandu as a city with a strong castle with a defensive wall of 5 miles and the whole city had defensive wall of 15 miles<sup>10</sup>. The next description that we find of Mandu's fortification comes from John Malcolm who describes it as 37 miles in circumference with wall of considerable height surrounding it. Mandu's natural strength made it invincible<sup>11</sup>. Major William Stirling who visited Mandu in 1855 refers to it as a city which is 1944 feet above the sea levels which has walls and battlements 30 miles in circumference<sup>12</sup>.

Building construction was the first attempt made by man to create an artificial environment within an enclosure. From natural shelters like caves to the artificial shelters like houses made of reeds, clay and timber and then to the ones made of bricks and stones, the history of artificial shelter has come a long way. An important impulse to the building construction came with the use of stone. The physical properties of the stone are of primary importance with its use to support the foundations or in masonry structures

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<sup>5</sup> Jahangir, *Tuzuk-i-Jahangiri*, p 384.

<sup>6</sup> William Finch, in *The Journal of John Jourdain 1608-1617*, The Haklyut Society, 1895, p 362.

Describing Mandu, Finch writes this ridge of mountain extends north-east and south-west ... The old city is from gate to gate 4 cos long north and south but east and west 10 Or 12 coses, and yet to the eastward of all lie good pasture ground for many coses.

<sup>7</sup> John Jourdain, *The Journal of John Jourdain 1608-1617*, Ed. by William Foster, The Haklyut Society, 1895, p 148. Jourdain writes from the gate which we came in at to the south to the north gate it is about six miles, and from the east to the west by report it is 20 cose, which is above 25 miles, waled round aboute with bricke; standing on the top on an high mountayne, that the hill it selfe weare a sufficient defence if there weare people within it".

<sup>8</sup> Anonymous, Roe and Coryate in *Calcutta Review, Vol XXVIII*, Thacker, Spink and Co, Calcutta, January-June, 1857, p 228. Thomas Roe was born in 1580 at Low Leyton in Essex. He went to study in Paris. In 1604 he was knighted by James I and it was on Prince Henry's attention that he undertook a voyage of discovery to South America. It was however in 1615 he was commissioned by King James I to be the ambassador to the Mughal court.

<sup>9</sup> Thomas Roe, *op.cit*, p 391, footnote 1.

<sup>10</sup> Thomas Herbert, *Some Years Travels into Divers Parts of Asia And Afrique*, R.Bi<sup>p</sup>, London, 1638, p 82.

<sup>11</sup> Malcolm, *op.cit*, pp 29-30.

<sup>12</sup> Major William Stirling, *The Rivers of Paradise And Children of Shem*, London, 1855, p 8.

and these physical properties include *strength, durability, permeability, expansion and contraction, solubility, workability, fire resistance, colour and appearance*. *Strength* of the stone is an important property, whether the stone is used to support a foundation or built into stone masonry. Such stones are considered strong which are durable when exposed to weathering in a masonry wall. *Durability* of the building stones is mainly affected by the weathering agencies which act on the rock formations. The indicator of a stone's resistance to frost action is by its porosity which is the proportion of pore volume to the total volume. However, it is the ability of a stone to permit water to pass through its pores measured as *permeability* which is important. A stone may be very porous and still be quite impermeable because of the lack of continuity in the pores.

Stone expands when subjected to heat and contract on cooling but unlike most other materials they do not return to their original volume when cooled after heating, but show swelling which is permanent. This is an important property of stone. The rate at which stones dissolve in water, specially limestone and marble is so slow that in the context of buildings it is of no importance. Major aspect to be taken into account before choosing a stone is its *fire resistance*. No stone building is resistant to very high temperatures. In the order of their fire resistance sandstone and limestone are highly resistant when compared to other kinds of stones. *Workability* also is a major factor for choosing a kind of stone or material in construction. *Durability, strength and appearance* are some factors that influence the workability of the stones like stones that are soft to work with are frequently not durable<sup>13</sup>.

The principal material used in the buildings of Mandu is the masonry stone blocks. Red Shaded sandstone has also been used in many monuments of Mandu, which Percy Brown writes, was acquired from the adjacent quarries of Bijawar<sup>14</sup>. In building construction natural rock of various kinds are employed which are geologically classified into three types- *Igneous, Sedimentary and Metamorphic rocks*<sup>15</sup>. Sandstone is one of the

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<sup>13</sup> Whitney Clark Huntington, *Building Construction: Materials And Types of Construction*, John Wiley & Sons, Inc, New York, pp 84-86.

<sup>14</sup> Brown, *op.cit*, p 59. Also see Maria, *op.cit*, p 132.

<sup>15</sup> Huntington, *op.cit*, pp 79-83. **Igneous rock** are formed from the solidification of the molten rock. The molten rock mainly consists of a hot solution composed principally of feldspar, quartz, mica, and gases such as water vapor and Carbon dioxide. The solidification of igneous rocks is due to a decrease in both

sedimentary rocks that is composed of rounded and angular grains of sand that are cemented by materials like silica, carbonate of lime, an iron oxide or clayey matters and compacted to form a solid rock. Sandstones come in various colours, of which red is most common one to be found. The colour of the sandstone is largely due to iron in them and the red colour of the sandstone as in case of the ones used in Mandu comes from the iron oxides present in them. In other words if the iron oxide quantity is less the colour of the sandstone is lighter shade of red and as the iron oxide quantity increase the red colour of the sandstone becomes darker. Sandstone is found in every geological formation above primary rocks. The possibility of sandstone being used so easily and in large scale is because when sandstone is quarried it contains a variable amount of water which makes it soft and easier to work with, although it is liable for injury by freezing<sup>16</sup>.

The characteristics of *sandstone*, its strength and durability is determined by sharpness of grains, smallness of the quantity of cementing material and a clear, shining and translucent appearance on a newly broken surface. The porosity of sandstone is such that it can absorb water but moisture has very little impact on it. J.Coggin Brown, Superintendent of the Geological Survey of India, in 1936 took pride in the sandstone found in the Vindhya ranges<sup>17</sup> and the quarries of Bijawar located 586 kms from Dhar is also located in the Vindhya range. Henry B. Medlicott, a Professor of Geology from Roorkee, refers to semri sandstone, one of the subdivisions of Semri group, as found in Bijawur<sup>18</sup>.

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temperature and pressure. Their texture is influenced by the rate of cooling and by the volatile substances present. Most common igneous rocks are granite, felsites, basalt and obsidian. **Sedimentary rocks** are formed from the disintegration products derived from the igneous rocks or from other sedimentary rocks. This disintegration is brought about by the action of weathering agencies. Sedimentary rocks are formed chiefly of the minerals quartz, kaolinite, calcite and dolomite. The more common sedimentary rocks are sandstone, conglomerate, limestone and shale. **Metamorphic rocks** are either igneous or sedimentary rocks whose physical or chemical characteristics have been altered by the action of pressure resulting from the earth movements or from temperature changes caused by intrusions of molten rock or by vapors or liquids which have permeated the rocks. The common metamorphic rocks are gneiss, schist, slate, quartzite and marble.

<sup>16</sup> George P. Merrill, *Stones for Building And Decoration*, John Wiley & Sons, New York, 1891, pp 247-248. Henceforth cited as *Merrill, Stones for Building*.

<sup>17</sup> J. Coggin Brown, *India's Mineral Wealth*, Oxford University Press, London, 1936, p 158. Henceforth cited as *C. Brown*.

<sup>18</sup> Henry B. Medlicott, On the Vindhyan rocks, and their associates in Bundelcund, in *Memoirs Of The Geological Survey of India Vol II*, Calcutta, 1860, p44. Henry writes that the top rock of the Bijawur series- as in the Kane, the semri sandstone gradually overlies a thick mass of conglomerate breccias, a purple

Besides red sandstone, the builders also made of marble and various other kinds of stones like black stone, yellow stone, slate etc. *Marble*, a metamorphic rock, is derived from limestone and chiefly is composed of calcium carbonate. In other words it is a calcareous stone which has carbonate of lime predominant. When there are deposits of limestone on the roofs and floors of caves, they are called *Stalactite* and *stalagmite*, which are often crystalline and coloured by metallic oxides, giving rise to marbles called *onyx*<sup>19</sup>. Onyx marbles are formed by the evaporation of water holding carbonate of lime in solution. The intermittent character of the deposition and the presence or absence of various impurities, mainly metallic oxides gives it variegated colours. Major William Stirling in his *Expedition of Sesostris Into India*, refers to Malwa stone as onyx stones<sup>20</sup>. J.G.Medlicott in the context of metamorphic series found in Narmada district refers to crystalline limestone found in Sehore village which is 227 kms from Dhar.

James B.Fraser in his account of *Journey from Delhi to Bombay* describes the metamorphic rocks and sandstones of neighborhood of *Bagh*, also called *Baug*<sup>21</sup>. *Baug*, located on the road from Gujarat to Malwa, was first brought to notice by Dangerfield in 1823 with reference to the iron ore, brown ironstone and clay ironstone found in the jungles around *Baug*<sup>22</sup>. However in the context of the metamorphic rocks of *Bagh/ Baug*, an important reference comes from the account given by Blanford where he refers to the sandstones and limestone of *Burwai, Bagh, Allerajpoo*, etc and *Coralline limestone* employed in the ruins of *Mandu*, are to be found only in tracts east of *Bagh, Cherakhan* being one of them<sup>23</sup>. Hence in and around Malwa there were many places where metamorphic stones like marble could have been acquired from.

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sandy ashy base, with pebbles of quartzite, and of varieties of sandstone; the conglomeratic character diminishes and at the bottom there is little but red clay.

<sup>19</sup> Merrill, *Stones for Building*, p 81.

<sup>20</sup> Stirling, *op.cit*, p 23.

<sup>21</sup> James B.Fraser, Description accompanying a Collection of Specimens made on a Journey from Delhi to Bombay in *Transactions Of The Geological Society Vol I Part The First*, R. And A.Taylor, Shoe Lane, London, 1822, p 157. Also see William T.Blanford, On the Geology of the Taptee And Lower Nerbudda Valleys and some adjoining districts in the *Memoirs of the Geological Survey of India Vol VI, Part I*, Calcutta, 1869, p 9, Chapter 2.

<sup>22</sup> Captain F.Dangerfield, Some Account of the Caves near *Baug* called The Panch Pandoo, in *Transactions Of The Literary Society Of Bombay Vol II*, Longman, Hurst, Rees, Orme, And Brown, Paternostee Row, London, 1820, p 207.

<sup>23</sup> Blanford, *op.cit*, pp 45-47.

Black stone inlaid along with marble or limestone in some of the buildings of Mandu like the marble entrance of the Jahaz Mahal palace, is called *Argillaceous Limestone* which is to be found throughout Malwa<sup>24</sup>. The black or grey colour of the limestone occurs due to the presence of carbonaceous matters derived from the organic remains<sup>25</sup>. This must have been procured from Neemkhera, which lies about 16 kms from Dhar. The yellow stone, a variety of limestone found in monuments like Jahaz Mahal's marble entrance, must have been procured from the region west of Bari hills where yellow coloured argillaceous limestone containing 75 % of earthy carbonates could be found<sup>26</sup>. It is the presence of iron oxide which makes a limestone look yellow<sup>27</sup>.

Marble along with semi precious stones like jasper, agate and carnelian is another noticeable feature in many of the buildings of Mandu. *Silica or Silicon dioxide (SiO<sub>2</sub>)* is one of the most abundant constituents of earth's crust and comes in various forms. It is given various names based on structure, method of formation, colour and degree of purity. *Chalcedony* is a crystalline variety of silica found in the cavities in older rocks, where it is deposited by infiltration and *jasper* is one variety of chalcedony that is dull or bright red or yellow that comes from iron oxides. Jasper contains alumina<sup>28</sup>. Jasper comes in various colours from heliotrope or bloodstone, green blotched with blood red etc<sup>29</sup>. William Stirling refers to green and purple jasper rocks in plenty in Vindhya<sup>30</sup>. The jasper used in the monuments of Mandu must have been procured from the green and purple jasper rocks found between Nalchha and Dhar, as mentioned by Stirling<sup>31</sup>. *Agate* and *Carnelian*, two other semi precious stones used in the monuments of Mandu are forms of chalcedony silica. Abundance of large tables of agate with its surface being covered by quartz crystals found along the crest of Vindhya is referred by Dangerfield in

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<sup>24</sup> W.D.Conybeare, Summary Sketch of the Geology of India, in *Journal of the Asiatic Society of Bengal Vol II*, Ed. by James Prinsep, Baptist Mission Press, Calcutta, 1833, p 607. Also see Subaltern, *op.cit*, p 97.

<sup>25</sup> Merrill, *Stones for Building*, p 79.

<sup>26</sup> James Hardie, Explanation of the Sketch giving a geological Section of the Strata from Nimach to Merta, in *The Journal of Asiatic Society of Bengal Vol III*, Ed.by James Prinsep, Baptist Mission Press, Calcutta, 1834, p 239. Also see Subaltern, *op.cit*, p 97.

<sup>27</sup> Merrill, *Stones for Building*, p 79.

<sup>28</sup> George P.Merrill, *A Treatise on Rocks, Rock-Weathering And Soils*, Macmillan Company, New York, 1906, pp 103-104. Henceforth cited as *Merrill, A Treatise*.

<sup>29</sup> Merrill, *Stones for Building*, p 173.

<sup>30</sup> Stirling, *op.cit*, p 12.

<sup>31</sup> *Ibid*, p 52.

his report<sup>32</sup>. Carnelian, writes Dangerfield, is included in the formation of the Malwa tract<sup>33</sup>. Blue and yellow painted tiles can also be found in these buildings. The blue enamel of the ultramarine colour is very common in Mandu which could have been either *Lapis Lazuli* or a colour obtained by simple preparation of copper<sup>34</sup>. Lapis Lazuli is a rock rich in azure blue colour and is a combination of minerals, lazurite and calcite. Its chemical formula is  $(Na\ Ca)_8\ (AlSi)_{12}\ O_{24}\ FeS\ CaCO_3\ Al_2O_3$  (Sodium Calcium aluminosilicate)<sup>35</sup>. Copper ore Azurite is mainly of bluish green colour which also possibly must have been made use of, for many of the copper ore are found in Bijawar, which has been mentioned above in the context of Sandstone<sup>36</sup>. *Azurite or chessylite* ( $2CuCO_3, Cu(OH)_2$ ) contains 55 % copper and is a decomposed product of the sulphides. It generally occurs with *malachite* which is another copper ore<sup>37</sup>. The raw materials used in the construction of the monuments of Mandu were procured easily from the neighboring areas.

An entry from Indore or Dhar via Nalchha is through three darwazas (gates) styled as *Alamgir Darwaza, Bhangi Darwaza and Delhi Darwaza* which was built as entry points to the capital city of Malwa<sup>38</sup>. A little ahead from the Delhi gate the road bifurcates, of which one leads to the Royal complex or the Jahaz Mahal complex while the other leads to the Mandu's inhabited area where another group of monuments stand – *the Jami Masjid, Hoshang Shah's tomb and the Ashrafi Mahal*. The group of individual monuments within the Royal complex has been constructed during different time periods. Although the exact date of founding of the fort of Mandu is a contested one, Ferishta refers to it as the one built during the reign of Anand Deo of the Bais tribe, who was a contemporary of Khusru Parwiz, Sassanian ruler<sup>39</sup>.

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<sup>32</sup> Captain F.Dangerfield, Report on the Geology of Central India, in *A Memoir of Central India Vol II*, by Sir John Malcolm, Parbury, Allen & Co, London, 1832, p 328.

<sup>33</sup> *Ibid*, p 321.

<sup>34</sup> Subaltern, *op.cit*, p90.

<sup>35</sup> Colin Griffith Author, *New Materia Medica Vol II*, Watkins Publishing, London, 2011, p 16.

<sup>36</sup> C.Brown, *op.cit*, p86.

<sup>37</sup> Prof. Adelbert. P. Mills, *Materials of Construction: Their Manufacture And Properties*, John Wiley & Sons, New York, 1922, Section 6, p4.

<sup>38</sup> See Figure 1- Map of Mandu

<sup>39</sup> Ferishta, *Tarikh I Ferishta, Vol VI*, p 563. Ferishta writes “Anand Deo was of the Bais tribe. After the death of Raja Partab Chand, he revolted in the country of Malwa, and his power increased from day to day,

The arrangement of the monuments in Mandu included in the Royal complex is shown in through the Figure 2 and the discussion of the styles of monuments is done accordingly. The Royal complex is constructed on the south - north axis and has two entrances to it that are built at the southern end of the complex. Adjacent to the main entrance to the south east of the Royal complex is the *Taweli Mahal*, which is a three storey monument. From the main entrance of the Royal complex a visitor climbs a flight of small steps that lead to the first floor which today houses a museum and the Mandu branch of Archaeological Survey of India<sup>40</sup>. From this floor there are steps leading to the top floor and on reaching the top of this building one gets the first glimpse of the Jahaz Mahal and Kapoor Talao. A small gate from the garden in front of this monument leads to the ground floor of this Mahal. And to the extreme east of this floor there is a pathway which leads to the eastern edge of the Kapoor Talao. In 1881 H.H. Cole reports that this structure was in complete ruins and was occupied by *Bhil tribes*<sup>41</sup>. Taweli Mahal, according to Yazdani, is a corrupt form of Hindi word '*Tabela*' meaning stables mansion<sup>42</sup>. However this view is a questionable one. We cannot ignore that this structure is close to the waters of the Kapoor Talao and if the ground floor of the Taweli Mahal was used as stable mansion, the possibility of the water getting polluted is more which suggests that this may not be possibly used as a stable mansion. Another evidence of this comes from the evidence found during the excavations in 1932-33 carried out by Archaeological Survey of India. A bath fitted for the supply of hot water and hot steam through hollows in the floor with a conduit fixed with a metal pipe for carrying cold water was found towards the south gate of the Taweli Mahal<sup>43</sup>. This evidence cannot be

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until he became possessed of all the countries of Malwa, Nahrwala, Mahrat and the territory of the Dakhin and Birar. He built the forts of Ramgar and Mahur. The fort of Mandu also dates from his time”.

<sup>40</sup> See Plate 1. D.R.Patil, *Mandu*, Archaeological Survey of India, New Delhi, 1982, p 36. Also see Yazdani, *Mandu*, pp 61-63.

<sup>41</sup> *First Report of the Curator of Ancient Monuments in India for the year 1881-82*, Government Central Branch Press, Simla, 1882, p Appendix R, clxiv. Also see Henry Yule and A.C.Burnell, *Hobson Jobson: A Glossary Of Colloquial Anglo-Indian Words And Phrases, And of Kindred Terms, Etymological, Historical, Geographical And Discursive*, Ed. by William Crooke, John Murray, London, 1903, pp 91-92. Bhil-The name of a race inhabiting the hills and forests of the Vindhya, Malwa and of the N-Western Deccan, and believed to have been the aborigines of Rajputana.

<sup>42</sup> Yazdani, *Mandu*, p 61.

<sup>43</sup> *Annual Reports of the Archaeological Survey of India for the years 1930-31, 1931-32, 1932-33 & 1933-34 Part I*, Ed.by C.L.Fabri, Delhi, 1936, p 49. The 1932 report suggests “An interesting structure of a bath fitted for the supply of hot water and hot steam through hollows in the floor with a conduit fixed with a metal pipe for carrying cold water has been brought to light towards the south gate of the Taweli Mahal”.

ignored and from it one can understand that this must have been a private chamber and the possibility of animals and guards being placed here is not possible. Another possibility which cannot be ignored is that this structure had a south gate which means that the main entrance of the Royal complex must have been a little ahead of what is seen today. In all probability the location of the main entrance close to the gate of this bath is not possible because baths are private chambers and are not meant to be visible to anyone. Hence the actual entrance of the Royal Complex must have been as shown in Figure 3. Between 1934 and 1995 Taweli Mahal was taken up for repair and restoration works by the Archaeological Survey of India<sup>44</sup>.

The pathway from the entrance which is to the left of Taweli Mahal further leads to the *Jahaz Mahal* or *Ship Palace*<sup>45</sup>, a triple storied structure. This building is styled so for it is located on a narrow strip of land<sup>46</sup> between two water bodies- the *Kapoor Talao* to its east and the *Munja Talao* to its west. The earliest reference to Jahaz Mahal comes from Ahmad ul-Umari, who refers to it in the context of the baths that were used by Rupmati<sup>47</sup>. Jahangir in 1617 wrote that a meeting was held in the houses of the palace Nur Jahan Begum and this palace is situated in the midst of large tanks<sup>48</sup>. Considering this as the final building project representing the classical phase of the Malwa style of architecture

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<sup>44</sup> *Indian Archaeology, 1954-55- A Review*, Archaeological Survey of India, New Delhi, 1993, p 44. The retaining walls in front of Taweli Mahal were extensively underpinned and partly restored and the existing garden was further developed. Also see *Indian Archaeology 1980-81- A Review*, Archaeological Survey of India, New Delhi, 1983, p 125. In 1980 the decayed floor in the basement of the Taweli Mahal was provided with fresh layer of lime concrete. Also see *Indian Archaeology 1984-85- A Review*, Archaeological Survey of India, New Delhi, 1987, p216. The damaged and missing chhajja stones in the first floor of the Taweli Mahal were replaced by new Zeerabad quarry limestone. Also see *Indian Archaeology 1985-86- A Review*, Archaeological Survey of India, New Delhi, 1990, p161. The next year the restoration process that was started last year was carried on. Also see *Indian Archaeology 1987-88-A Review*, Archaeological Survey of India, New Delhi, 1993, p 180. In 1987 the old railing here of the flight steps and first floor were replaced with fine chisel-dressed limestone railing. Also see *Indian Archaeology 1995-96-A Review*, Director General of Archaeological Survey of India, New Delhi, 2002, p 159-160. In 1995 Taweli Mahal was provided with angle iron door shutters for safety and its floors were repaired with fresh lime concrete.

<sup>45</sup> Patil, *The Cultural Heritage*, p 119. This palace stands on a narrow strip of land between the waters of Kapoor Talao in the rear and Munj Talao behind and hence is fancied to look like a ship, giving it the name of Ship palace.

<sup>46</sup> *Ibid*, p 33. Also see Maria, *op.cit*, p 137. Also see Yazdani, *Mandu*, p63. Yazdani provides measurements in Feet which is 361 feet long (110 m) land strip whose width being 48 feet (14.6304m) and its façade is 31 feet and 6 inches ( 9.7m).

<sup>47</sup> Ahmad-ul-Umari, *op.cit*, p14. Ahmad ul Umari writes that after a long night of love he left her, she would call her women at will and bathe in the Turkish baths or in the open air baths of the Jahaz Mahal.

<sup>48</sup> Jahangir, *Tuzuk-i-Jahangiri*, p 385. Also see Patil, *Mandu*, p 34.

Percy Brown remarks that this must have been probably built by Mahmud in the last half of the 15<sup>th</sup> century<sup>49</sup>.

On looking from the East, i.e., standing in front of the Kapoor Talao, this seems to be a single storied structure<sup>50</sup> but actually it is a triple storied structure whose lower storey is submerged in the waters of the Munja Talao during the most parts of the year and is visible from the west, i.e., view from the Munja Talao's side<sup>51</sup>. When a visitor looks at the Jahaz Mahal from the Kapoor Talao, he gets a glimpse of Jahaz Mahal's floor which is visible from the eastern end, the steps to the extreme south of the Jahaz Mahal lead to the terrace which comprises of four pavilions. Also noticeable to the left of the steps on the southern end of the Jahaz Mahal which leads to the terrace is a water tank known as *Suraj Kund*<sup>52</sup>. The floor which is visible from the eastern side of this Royal complex is made up of arched openings which lead a visitor into halls that have been built inside. This storey is divided into odd sections by a marble arched opening which is also the main entrance of the storey. This arched opening is made of marble, black stone and yellow stone. There are five arched openings to the south of this marble arched opening and nine are to its north. These arched openings are protected by wide awning above which are series of in built with a parapet that must have been decorated with glazed tiles<sup>53</sup>.

The marble arched opening leads a visitor into hall which is separated from two other replica halls by corridors and small enclosures at the extreme ends. The interiors of the Jahaz Mahal is as shown in the plan<sup>54</sup> –

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<sup>49</sup> Brown, *op.cit*, p 64.

<sup>50</sup> See Plate 2.

<sup>51</sup> See Plate 3

<sup>52</sup> See Plate 4.

<sup>53</sup> Maria, *op.cit*, p 137.

<sup>54</sup> In the above figure *C* = corridors, *M* = Marble entrance, *TF* = tank with a fountain and *P* =pavilion on the western edge of the Kapoor Talao.

Figure 4



From the marble arched opening leads a visitor into hall<sup>55</sup> which is divided into three sections by two pillars and these two pillars are located 15ft 8.98 inches apart. The hall

<sup>55</sup> G.Yazdani, In Praise of Mandu: Development of Mandu Architecture in *Marg: A Magazine of the Arts*, Vol XII, No-3, Marg Publication, Bombay, June 1939, p 28.Henceforth cited as *Yazdani, In Praise of Mandu*. Yazdani writes the measurements of this double hall as 55 feet 6 inches in length and 36 feet 6 inches in breadth.

has a pavilion on the western end overlooking the Munja Talao which as gallery with a balustrade<sup>56</sup> on three sides. This gallery is made of five arched openings, three of which are facing west and one each on the south and the north. The arched openings are divided into three parts<sup>57</sup>. The ceiling of this hall is decorated with band of blue and yellow colours alternatively which are similar in patterns<sup>58</sup>. Beyond this hall on either side are corridors which further lead a visitor into replica halls which are rectangular in shape with pointed vault ceilings. The replica halls also have pavilions on the western side which are compared to the central hall are smaller. These pavilions are rectangular in shape. The extreme south hall has a water channel running from south to the north and gets connected to the *Diya tank* in front of the northern end. The southern end of the Jahaz Mahal is connected to Munja Talao and Suraj Kund (Suraj Kund is the one which is to the south of the steps leading to the terrace that can be seen from the Kapoor Talao). From the Suraj Kund water was lifted which fed the fountain in front of the marble entrance of Jahaz Mahal, the *Diya tank* on the northern end of this floor and the *lotus tank* on the terrace. The water was being lifted using the charasa system<sup>59</sup> which fed the fountain and the garden in front of the Jahaz Mahal. From this fountain a water carrying channel is attached to the pavilion on the western edge of the Kapoor Talao and with the help of capillary effect<sup>60</sup> the water was allowed to flow into the basement of this pavilion which acted as Jal Mahal.

The *Diya Tank* has steps made on its northern and southern edge to reach to the bottom of the tank, although this tank is not a deep one. On reaching the bottom of this tank one

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<sup>56</sup> John Weale, *Rudimentary Dictionary of Terms Used In Architecture, Civil Architecture, Naval, Building And construction, Early and Ecclesiastical Art, Engineering, Civil, Engineering, Mechanical, Fine Art, Mining, Surveying, etc.*, London, 1849-50, p 36. Balustrade means a series or row of balusters (small column or pillar) joined by a rail, serving for a rest to the arms, or as a fence or enclosure to balconies, altars, staircases, etc.

<sup>57</sup> See Plate 5.

<sup>58</sup> See Plate 6.

<sup>59</sup> A. Jan Qaisar, Agricultural Technology Depicted in Mughal Paintings, in *Itinerario, Vol XVI, Issue 2*, Leiden, July 1992, p 69. Henceforth cited as *Qaisar, Agricultural Technology*.

<sup>60</sup> *Capillary Action* is a phenomenon in which the surface of a liquid is elevated or depressed when it comes in contact with a solid. The result depends on the outcome of two opposing forces- Adhesion and cohesion. Adhesion between glass and water causes the water to rise along a glass until this force is balanced by the cohesive force acting to minimize the liquid's surface area. When adhesive is less than cohesion, as with glass and mercury, the surface is lowered. The upward flow of water in soil and in plants is partially caused by capillary effect.

would notice to the south-eastern edge an inlet that carried water into this tank<sup>61</sup>. The rectangular room to the northern end of the floor of Jahaz Mahal discussed above leads to colonnade built adjacent to the *Diya tank* which is built on the northern end of the Jahaz Mahal. To the north of this colonnade is built another set of steps which also leads to the terrace<sup>62</sup>. Climbing these steps one would reach the terrace which is made up of four pavilions and a lotus tank. The two pavilions which are built on the northern and the southern end of the terrace are rectangular in shape<sup>63</sup>. The ceiling of these two pavilions are divided into three compartments with the central one having a hemispherical dome while the dome of the extreme compartments is conical in shape. The height of the dome of the central compartment externally is more than that of the conical domes. The conical domed compartments internally are *vaulted*<sup>64</sup>. The pavilion to the south on the terrace is located right above the pavilion that is made behind the main hall in the floor below the terrace. This is a square pavilion with domical roof externally and a flat ceiling from inside. Opposite to this pavilion on the eastern end of the terrace is another pavilion which is rectangular at its base with a hexagonal ceiling and externally has a conical dome<sup>65</sup>. This pavilion is right above the marble entrance of the floor below it. This pavilion is the smallest one amongst the four pavilions that are on the terrace. This pavilion is made on plinth which can be climbed by taking the three steps which are made on the northern side of the pavilion. This pavilion comprises of pillars which are built on pillar and beam concept. Overlooking the Kapoor Talao this pavilion gives a view of the Kapoor talao, Taweli Mahal and the hammam that have been constructed to the east. To the northern end of the terrace there is lotus shaped tank which is connected to the water channel that runs from the southern end of the terrace<sup>66</sup>. This tank was supplied with water from the Suraj kund using the water lifting device. Along the south-eastern edge of the tank the water channel is not built straight but is made to curve towards the inner part of the tank. At the beginning of the curve the water is allowed to run through a vent segregating the impurities and allowing the water to flow with pressure into the tank.

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<sup>61</sup> See Plate 7.

<sup>62</sup> See Plate 8.

<sup>63</sup> See Plate 9.

<sup>64</sup> Vault is an arched covering in stone or brick over any space.

<sup>65</sup> See Plate 10.

<sup>66</sup> See Palte 11.

Reporting regarding Jahaz Mahal in 1881 Cole refers to this structure being used as an elephant stable<sup>67</sup>. Even in 1903 John Marshall suggested that this structure required serious attention<sup>68</sup>. When in 1903 Jahaz Mahal was taken up for restoration the ground in front of the eastern façade was removed to about 1 feet bringing to light the original plinth, paved flooring and water channels. Archaeological Survey of India has been taking measures to repair and restore this structure<sup>69</sup>.

To the north of the Taweli Mahal lies the Kapoor Talao which is a rectangular tank. In other words Kapoor talao is flanked by Taweli Mahal to its south, Jahaz Mahal to its

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<sup>67</sup> *First Report*, Appendix R, clxiv.

<sup>68</sup> *Archaeological Survey Of India: Annual Report 1902-03*, Superintendent of Government Printing, Calcutta, 1904, p 17. Henceforth cited as *Annual Report 1902-03*.

<sup>69</sup> *Archaeological Survey Of India: Annual Report 1912-13 Part I*, Superintendent of Government Printing, Calcutta, 1915, p5. Henceforth cited as *Annual Report 1912-13*. The jungle around the Jahaz Mahal was also cleared. The cracked lintels in the interiors of the Jahaz Mahal were supported by angle irons and the masonry over the chhajjas that was missing was restored. Also see *Annual Reports of the Archaeological Survey of India 1935-36*, , Manager of Publication, Delhi, 1938, p49. Until 1935 minor repair works were carried out during which jungle and debris were cleared. At Jahaz Mahal, the northern wall of the west wing which had fallen due to the superstructure above, was repaired. On the North West the missing pillar was repaired. Broken masonry in number of places was underpinned. Debris covering the cistern in the ground floor of the Jahaz Mahal was cleared. Also see *Annual Report Archaeological Survey of India, 1936-37*, Government of India Press, Delhi, 1940, p 32. The report of 1936-37 suggests that the gaps in the staircase to the south of Jahaz Mahal that led to the terrace were closed. The water channel of the reservoir along the plinth on the east side was exposed and the compound was made tidy. The cistern in the ground floor of the Jahaz Mahal was cleared out, its broken masonry was repaired and once existedjali covers were repaired and strengthened with iron bars. The floor on the north was leveled using perished lime. Red stone pillar of the northern part were restored with dressed *ashlar masonry* of similar material. The western edge of the Jahaz Mahal that is close to the cistern in the ground floor was restored to its old style. The western wall of the northern wing was also restored. The cracks in the north western room were filled up with cement grouting. Also see *Indian Archaeology 1954-55-A Review*, Archaeological Survey of India, New Delhi, 1993, p44. In 1954 the walls of the reservoir attached to Jahaz Mahal were made watertight and its sluice valve and steps were also repaired. *Indian Archaeology 1957-58-A Review*, Archaeological Survey of India, New Delhi, 1958, p103. In 1957 after the pulverized portion on an extensive wall surface was scraped off in Jahaz Mahal, the lime plaster was filleted. Also see, *Indian Archaeology 1965-66-A Review*, Archaeological Survey of India, New Delhi, 1973, p 110. In 1965 vegetation from many places was cleared and approach roads to monuments were reconditioned and the floors of the Jahaz Mahal were laid out with fresh concrete. Also see *Indian Archaeology 1987-88*, p 180. In 1978 at Jahaz Mahal the collapsed section of the vaulted chamber on the north side of the ground floor were taken up. To restore the arches and pillars to their original form, they were rebuilt in rubble masonry with limestone facing at the Jahaz Mahal. Continuing the works started in the previous year, in 1987 the pathway and drains at Jahaz Mahal were provided with chiseled dressed red limestone flooring on lime concrete base. The passage near the upper cistern of the Jahaz Mahal was restored with chiseled limestone slabs. Fresh limestone slabs were used to replace the missing stones from the steps leading to the upper storey. For the safety of the visitors teak wood railing was provided on the flight of steps. Also see *Indian Archaeology 2000-2001-A Review*, Director General of Archaeological Survey of India, New Delhi, 2006, p221. To replace the damaged wooden railing with stone railing at Jahaz Mahal, stone blocks were procured from Zeerabad in 2000.

west, a hammam to its north and a compound wall made of alcoves<sup>70</sup> on the east. The word Kapoor in the colloquial language means camphor. Scientifically named as Cinnamomum Camphora, is a tree that Abul Fazl refers to as a large one growing in ghats of Hindustan and in China<sup>71</sup>. Mandu being located on an offshoot of Vindhya, there is possibility that this tree must have grown even there. Another reason to take this aspect into account is a miniature painting showing Ghiyath ud din, the ruler of Mandu in the late 14<sup>th</sup> century carrying out the process of distillation of Camphor which is mainly done using the woods of the tree, giving a possibility to this tree being grown in Mandu<sup>72</sup>. In all probabilities this tree must have grown along the banks of the Kapoor Talao giving it the name, for one of the contemporary reference to this tree comes from one of the poems attributed to Rupmati.

*“Raindrops form pearls and thirst of quails they slake,*

*Camphor in tree, poison in serpent make:*

*Tadpoles and swans are two contrasted breeds,*

*Whose virtue shows in that on which each feeds,*

*Vile son f man, respect thy neighbour’s wife, ...<sup>73</sup>”.*

While writing about a feast held on Jahangir’s birthday on the 1<sup>st</sup> September 1617, Thomas Roe refers to this Talao. Thomas Roe refers to the ceremony of weighing the king<sup>74</sup>, which has been described in detail by Edward Terry, a chaplain to Thomas Roe to

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<sup>70</sup> Alcoves is recess made in the wall.

<sup>71</sup> Abul Fazl, *Ain-i Akbari Vol I*, p 78. Abul Fazl wrote that camphor within the tree looks like small bits of salt and on the outside looks like resin. Also see Bana Bhatta, Harshacharita, Eng. Tr by E.B.Cowell and F.W.Thomas in *The Harsa-carita of Bana*, London, 1897, p 15. The earliest reference to camphor being grown in Indian subcontinent comes from Bana Bhatta’s Harshcharita where he refers to the camphor sap in the Dandaka forests which comprised of the forests that lay between rivers Yamuna and Krishna. Also see P.V.Kane, Ed, *The Harshacharita of Banabhatta: Text of Uchchhvasas I-VIII*, Motilal Banarsidass, Delhi, 1986, p186.

<sup>72</sup> Anonymous, *Ni’matnama*, p xvii.

<sup>73</sup> Yazdani, *In Praise of Mandu*, p58.

<sup>74</sup> Edward Terry, *A Voyage to East-India*, London, 1777, p 376. Terry writes that “The first of September he retaining an antient was in presence of his chief grandees weighed in a balance; the ceremony performed

the court of Mughal. Roe wrote that after the ceremony was performed he was taken into a very large garden where there was a square within the water with flowers and trees on all sides<sup>75</sup>. The square structure which Roe refers to could have been the one built in Kapoor Talao<sup>76</sup>, although this not a square one but octagonal in shape. This platform is made towards the south east edge of this tank. To the western edge of this tank is another octagonal pavilion which is made of arched openings. The arched octagonal pavilion comprises of two sets of 14 steps each going down to the waters of the Kapoor Talao. This pavilion consists of an octagonal hall with 8 arched openings. The base of this pavilion also comprises of arches<sup>77</sup>. In all probability this pavilion also acted as a Jal Mahal which has a basement and the steps on the south east and the north east of this pavilion leads to the basement.

The other octagonal pavilion which is to the south eastern edge of the Talao is a smaller one in size when compared to the pavilion on western edge of the Talao and also acted as a second Jal Mahal. This pavilion has 4 sets of steps which lead to the waters of the Kapoor Talao. The location of this pavilion is at a place within the Kapoor Talao where the terrain is deep, in other words the gradient of water is towards this pavilion. This also means that even if the pavilion on the western edge is not surrounded by waters during the peak summers, this pavilion will have waters around it and hence the basement below it was used when the water levels had further gone down.

The Talao was taken up for restoration for the first time in 1931<sup>78</sup>. In 1936 the wall and steps on the northern side of the pavilion of the Kapoor Talao were repaired<sup>79</sup>. At Kapoor Talao the walls were repaired by filling up the joints in the masonry and water-tightening

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within his house or tent, in a fair spacious room, wherein none were admitted but by special leave. The scale in which he was thus weighed, were plated with gold, and of the beam on which they hung, by great chains made likewise of that most precious metal; the king sitting in one of them was weighed first against silver coin, which immediately after was distributed among the poor; then he was weighed against gold; after that against jewels, as they say; but I observed that he was weighed against three several things, laid in silken bags on the contrary scale.”

<sup>75</sup> Thomas Roe, *The Embassy Vol II*, pp 411-412.

<sup>76</sup> See Plate 12.

<sup>77</sup> See Plate 13.

<sup>78</sup> *Annual Report, 1930-34*, p 49.

<sup>79</sup> *Annual Reports, 1936-37*, p32.

of the crevices in 1966<sup>80</sup>. The floor of the octagonal pavilion in the Kapoor talao's southern end was re-laid in lime concrete<sup>81</sup>. In 1974 the collapsed portions of the western wall of Kapoor Talao were reconstructed<sup>82</sup>. Until 1987 minor repair works were carried out at this tank. In 1987 the upper stone courses of the retaining wall of the Kapoor talao were restored with random rubble stone masonry in lime surkhi mortar. Debris from the tank was removed<sup>83</sup>. By 1989 the restoration process of the enclosure walls at the Kapoor talao were completed<sup>84</sup>.

To the north of Kapoor Talao is a masonry hammam which must have been the open air bath referred to by Ahmad ul-Umari<sup>85</sup>. This is a rectangular bath which is divided into many sub baths of various sizes and shapes. This bath was supplied with waters from the Kapoor Talao with the help of water lifting device which was attached to the structure which is made to the northern edge of the Kapoor Talao<sup>86</sup>. The device that was used to lift water was ungeared *saqiya*<sup>87</sup>. The water was allowed to flow via the water channel which was made along the southern, eastern and northern wall. Further along the eastern and the northern wall<sup>88</sup> the water was allowed to fall from the cascades and then fill the tanks, while the channel along the southern wall filled up the sub baths which are made close to the southern wall. These sub baths are provided with hollow passages allowing

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<sup>80</sup> *Indian Archaeology 1966-67-A Review*, Archaeological Survey of India, New Delhi, 1975, p87.

<sup>81</sup> *Indian Archaeology 1971-72-A Review*, Archaeological Survey of India, New Delhi, 1975, p 103.

<sup>82</sup> *Indian Archaeology 1974-75-A Review*, Archaeological Survey of India, New Delhi, 1979, pp 91-92.

<sup>83</sup> *Indian Archaeology 1987-88*, p 180.

<sup>84</sup> *Indian Archaeology 1989-90-A Review*, Director General of Archaeological Survey of India, New Delhi, 1994, pp 162-163.

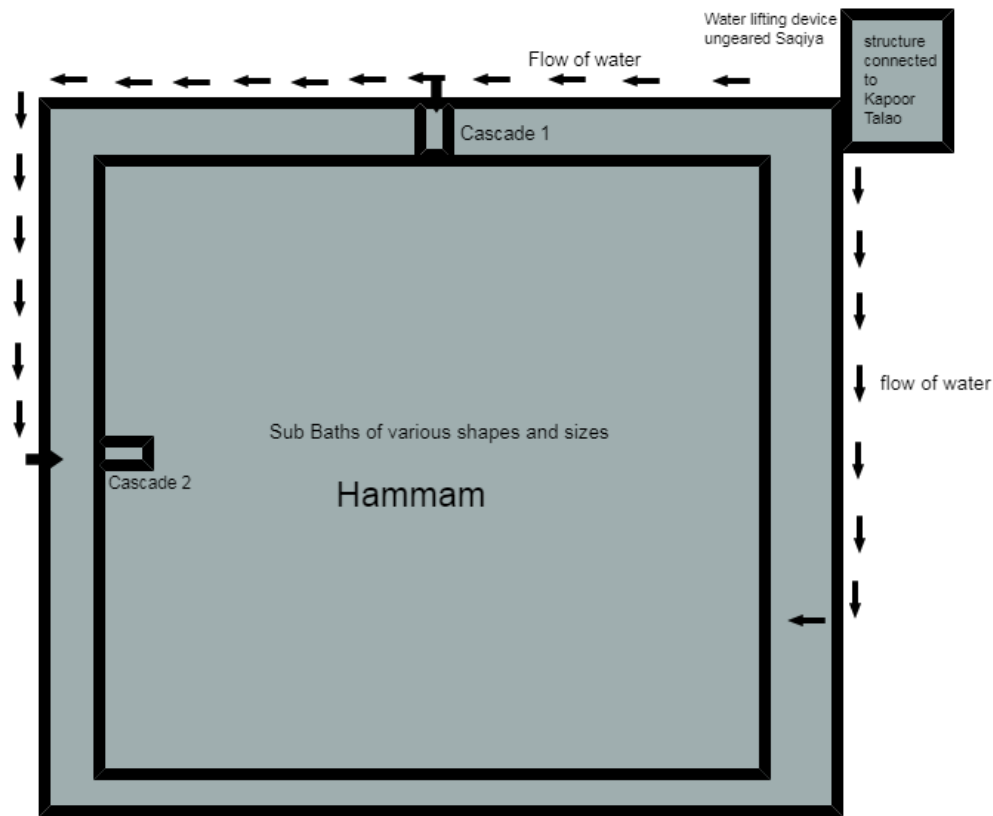
<sup>85</sup> Ahmad-ul-Umari, *op.cit*, p14.

<sup>86</sup> See Plate 14.

<sup>87</sup> Joseph Needham, *Science and Civilization in China: Physics and Physical Technology*, Vol IV, part II, Cambridge University Press, 1965, p 352. Saqiya has chain hanging normally straight down below the upper wheel and carries whole pots or buckets which fill at the lower end and discharge at the top. Also see Irfan Habib, Joseph Needham and the History of Indian Technology, in *Indian Journal of History of Science*, Vol 35 Series 3, New Delhi, 2000, p 9. The earliest reference to the use of potgarland comes from the 6<sup>th</sup> century when Yasodharman's Mandasor inscription dated 589 in Malava era first attest it. With Bana in the next century the references to the potgarland become fairly numerous. Gearing is not yet present, for Bana says explicitly that both rosary and the water pot device were turned by the right hand. Human drive would imply vertical rotation and so no gearing while animal power, usable only with horizontal rotation, needed gearing to convert the horizontal into vertical motion.

<sup>88</sup> See Plate 15.

the water to flow into the next sub bath after the previous one was filled<sup>89</sup>. The flow of water can be understood from the Figure 5–



Of the sub baths there is only one which is deeper when compared to the others and has flight of steps leading to the base of the bath. The eastern end of this bath is now in ruins, but once must have had a structure with first floor or even more floors. There are remains of steps that can be seen even today<sup>90</sup>. The southern edge of the bath must have had rooms which must have been used as changing rooms.

To the north west of this hammam is a structure styled as ancient baoli. A Baoli is a stepwell which had inherent features accessing water at the depth. It is also called as vav, vavdi, bauri, bowrie or bauli. In case of this structure next to the bath in Royal complex there are no steps leading to the waters of the well. Hence this structure has been wrongly named. The contemporary sources are silent regarding this well. This is a masonry well

<sup>89</sup> See Plate 16.

<sup>90</sup> See Plate 17.

which had a water lifting device fitted on it. The device must have been a Persian Wheel<sup>91</sup>. In the working of a Persian wheel there has to be ground space for the movement of the animals in order to rotate the wheel to which attached are vessels for water lifting. Further one can also notice that there is a water channel along the top edge of the well on the eastern side from where water was allowed to travel and flow through the cascade which is along the southern wall of the well and was collected in the small tanks next to it.

To the west of this well there is a pathway leading to the Champa Baoli and Royal palace, but prior to reaching Champa Baoli one would find himself in front of a structure styled as Hindola Mahal. Literally meaning ‘swing’ in the colloquial language, Hindola Mahal is styled so for its inclined side walls, which is similar to the sides of an angle formed by a swing. Placing this structure as one built during the classical phase of Malwa style of architecture, Percy Brown attributes this as Hoshang Shah’s project<sup>92</sup> and so does Upendra Nath Day, which in other words places its construction around A.D. 1425<sup>93</sup>. Yazdani in one of his work refers to an audience hall as a chief project of Hoshang Shah but was unsure if it was built during his lifetime or later period<sup>94</sup>. However elsewhere he attributes this structure to one constructed during the later part of Ghiyath-ud-Din’s reign, i.e. towards the end of the 15<sup>th</sup> Century<sup>95</sup>. Like Yazdani, J.M.Campbell attributes this to Ghiyath-ud-Din’s reign<sup>96</sup>. Having found no inscription during excavation and unable to find a history that refers to this building, E.Barnes writes that it is difficult to fix a date for the construction of Hindola Mahal<sup>97</sup>.

Hindola Mahal, which originally was a masonry structure and was later redone most probably during Jahangir’s stay in Mandu, stands out different from other buildings in the

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<sup>91</sup>Ananda Coomaraswamy, The Persian Wheel, in Journal of the American Oriental Society, Vol 51, No.3, American Oriental Society, Sept 1931, p 283. This a device consisting of a series of vessels bound sidewise on a wheel, and so used to rise water from a shallow well as the wheel is made to revolve by means of a geared shaft worked by oxen, usually for irrigation purposes. Also see Irfan Habib, *Technology*, pp 11-12. Also see Qaisar., *Agricultural Technology*, pp 73-75.

<sup>92</sup>Brown, *op.cit*, p 63.

<sup>93</sup>Day, *op.cit*, p 386.

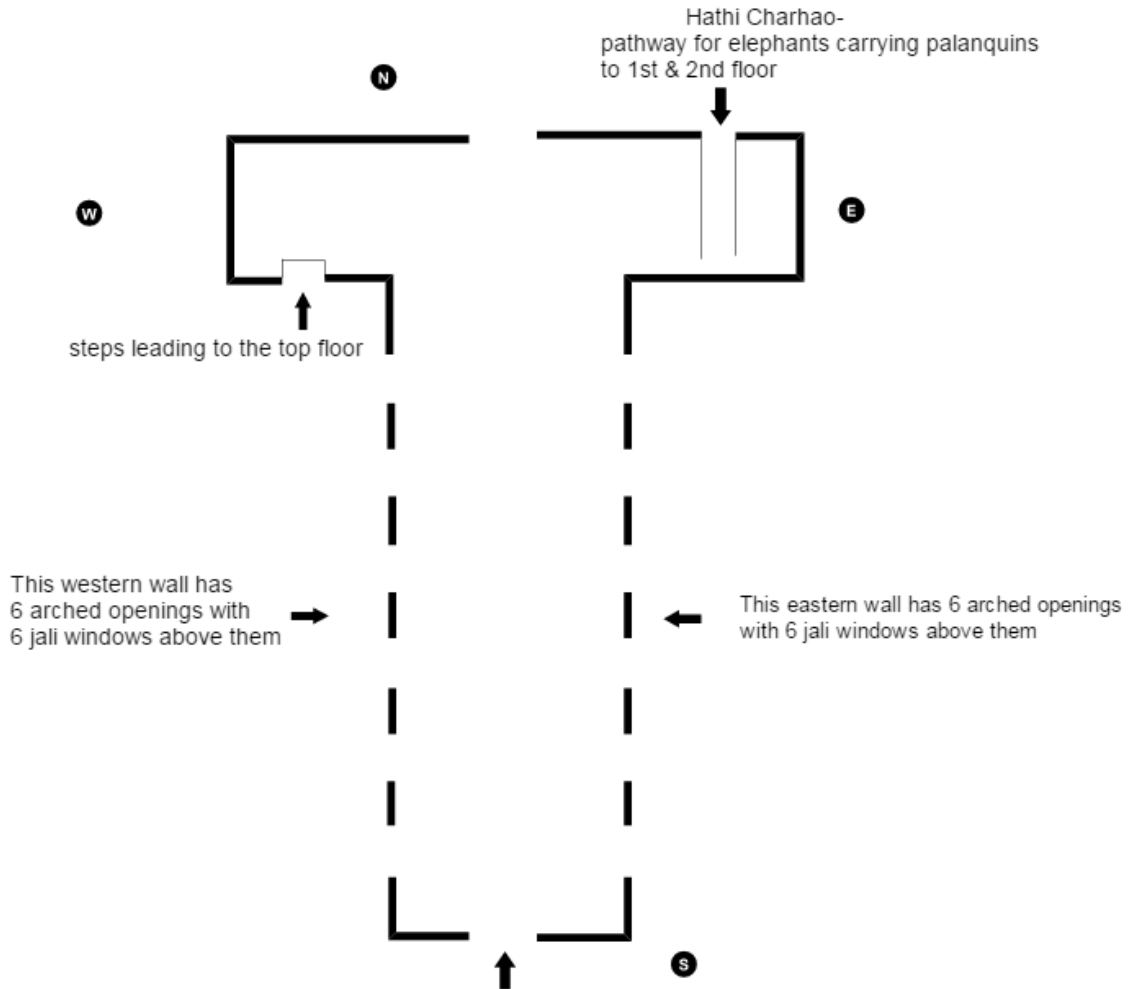
<sup>94</sup>Yazdani, *In Praise of Mandu*, p 24.

<sup>95</sup>Yazdani, *Mandu*, p 71.

<sup>96</sup>Campbell, *op.cit*, p 169.

<sup>97</sup>E.Barnes, Conservation of Ancient Buildings At Mandu And Dhar, in *Archaeological Survey of India Annual Report 1903-04*, Calcutta, 1906, p 31.

Royal complex. This structure in its ground plan is similar to the English alphabet 'T'. One striking feature here is the massive buttresses supporting the walls externally and which form an angle of over  $77^{\circ}$ , giving it an oscillating look. This structure has a main hall which is longitudinal and has a transverse projection at north. The plan of the structure can be understood better from the Figure 6 –



The longitudinal part of the monument comprises of 6 arched openings with 6 jali windows above them along the eastern and western wall. The northern wall of this longitudinal part has a main entrance<sup>98</sup>. I had taken measurements at Hindola Mahal which are as follows –

<sup>98</sup> See Plate 18.

Width of door facing south on the longitudinal section 7 feet 0.65 inches

Width of the 1<sup>st</sup> arched door on the eastern wall from south to north 7 feet 1.85 inches

Width of the 6<sup>th</sup> arched door on the eastern wall 7 feet

Width of the 1<sup>st</sup> arched door on the western wall from south to north 6.56 feet

Width of the 6<sup>th</sup> arched door on the western wall from south to north 5 feet 6.93 inches

The base of the inclination

Length 8 feet 2.43 inches

Breadth 8 feet 7.94 inches

The arches that have been used to make this arched openings and the jalis are made using a keystone. Of the 6 jali window on the eastern wall from south to north, the first and the last one today no longer have jalis while the second one is a closed one. The jalis of the windows on the western wall are all intact. The southern wall comprises of only one arched opening above which is a small window. The transverse projection of this monument must have been a later addition because here one can see that the parapet which is visible along the longitudinal part is not to be seen here. Also noticeable are the difference in external part of the upper storey, i.e., the compound wall of the roof of the longitudinal section and that of the transverse section are different in their designs. Another important aspect that is noticeable here along the transverse projection is that the windows that have been made are all of different sizes and shape. The windows of the eastern wall facing south are not aliened<sup>99</sup>. The windows made on the eastern wall are different in their design from the ones made on the western wall<sup>100</sup>. Along the western

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<sup>99</sup> See Plate 19.

<sup>100</sup> See Plate 20.

wall of the transverse projection facing west is a jharoka kind of window whose inner section is blocked with jali must have been a latter addition.

The roof of the longitudinal part of this structure has fallen down. Creswell suggested that the roof had a series of barrel vaults resting on transverse arches<sup>101</sup>. On the other hand Cousens suggested that the roof was supported on wooden beams, as in case of many of the structures of Bijapur, must have been carried away<sup>102</sup>. Bianca Maria remarks that the lateral walls are some 3m thick, but they are also reinforced by massive inclined buttresses which neutralize the thrust of the five massive ogee arches on the interior that once held the immense flat roof. This last rested on wooden beams of which the joints are still visible although the beams themselves have disappeared<sup>103</sup>. Regarding the vaulting system, Creswell remarks like in the *Gothic*<sup>104</sup> *style of vaulting*<sup>105</sup>, the roof was carried on fixed points which were well spaced apart and the wall between them was only a curtain wall that could be pierced when needed. This kind of provision was not possible in case of barrel vaulting<sup>106</sup>.

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<sup>101</sup> K.A.C.Creswell, The Vaulting System Of The Hindola Mahal At Mandu, in *The Indian Antiquary Vol XLVII*, Ed. by R.C.Temple And Prof. Devadatta Ramkrishna Bhandarkar, Swati Publications, Delhi, 1985, p 169.

<sup>102</sup> Henry Cousens, *Bijapur And Its Architecture*, K.B.Publications, New Delhi, 1977, p 41. Henry Cousens writes that the inner ceiling was the chef d'oeuvre of the architect of the Ibrahim Rauza. It is simply a hanging ceiling. The whole span is the breadth of the room... Upon closely examining this it is found to be composed of slabs of stone set edge to edge, with no apparent support. There are certainly two deep ribs or beams across both ways, but these too are made up of separate stones and so do not in any way support the slabs in the nine bays into which they divide the ceiling. Also see Cousens, *Bijapur The Old Capital*, p 42.

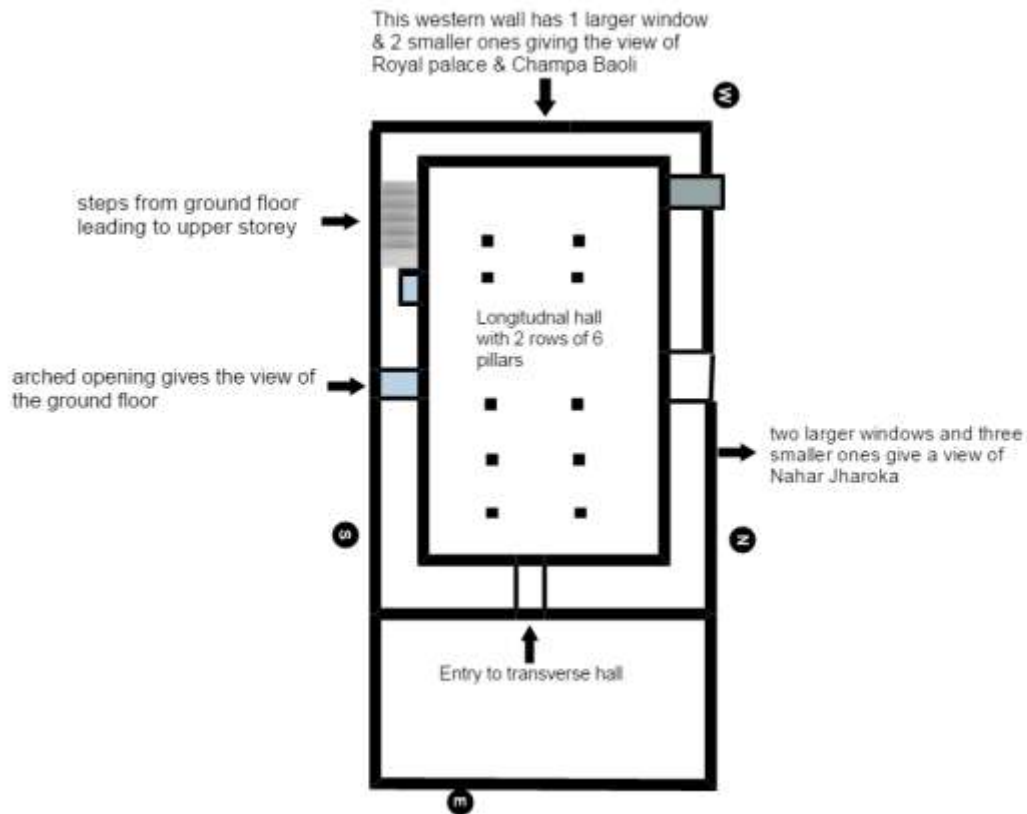
<sup>103</sup> Maria, *op.cit*, p 135.

<sup>104</sup> A.D.F.Hamlin, *A Text Book Of The History of Architecture*, Longmans, Green and Co, New York, 1920, p 185. Gothic style of architecture is a sequel and out-growth of the Romanesque style of architecture. It took form where the Romanesque style had left and was same in its fundamental principles as the Romanesque style.

<sup>105</sup> Fletcher, *op.cit*, p 117. Vaulting although used previously used by Assyrians, the early Greeks, and the Etruscans, yet it was the Romans who generalized vaulting as a structural system. They made it simple and practical by the employment of concrete, by which they covered the largest areas. Also see *Ibid*, p 272. Gothic vaulting was a carry forward of the Roman system of vaulting and consisted of a framework of independent ribs which were first constructed and which supported thin panels of stone. The difficulties of vaulting oblong compartments were now overcome by the introduction of the pointed arch, which was used to cover the shorter spans, while the semicircular arch was still used for some time for the diagonal ribs. The ribs became permanent centres on which the panels or "infilling" of thin stone could rest, and enabled the building to be erected all at one or in parts without disadvantage to the solidity of the edifice.

<sup>106</sup> Fred S.Kleiner, *Gardner's Art Through The Ages: The Western Perspective, Vol I*, p161. Barrel vaults, also called the Tunnel vault, the barrel vault is an extension of a simple arch, creating a semi-cylindrical

The transverse projection consists of two other floors which can be reached by climbing the steps that are constructed along the western wall<sup>107</sup>. On entering the first floor one could notice that the reuse of old materials which has been placed upside down in a wall<sup>108</sup>. The view of the bottom hall from this floor is the one of the arches that has been built from within in the floor below. Overlooking the main hall of the longitudinal part of the ground floor is the upper storey which contains two halls – one longitudinal and the other which is transverse. The plan of this floor can be understood from figure 7 -



Here the longitudinal hall is divided into three bays by two rows of masonry blocks which must be connected to the floor below this. This must have been used as a escape vent for the hot air in the floor below<sup>109</sup>. Leading to the upper floor there are steps as well as a separate sloping stage which is called the *Hathi Charhao* (meaning Elephant climb), which according to Ahmad-ul-Umari was meant to carry the palanquins, horses and even

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ceiling over parallel walls. The barrel vaults required buttressing of the walls below the vaults to counteract their downward and outward thrust.

<sup>107</sup> See Plate 21.

<sup>108</sup> See Plate 22.

<sup>109</sup> See Plate 23

elephants of the royal ladies<sup>110</sup>. The possibility of palanquins and horses travelling along this slope is there, but this slope may not be enough for the elephants to climb. This floor is completely in ruins. Even on this floor one could notice reused material which is a carving that has been placed upside down<sup>111</sup>. From here visible is the part which once carried the vault shaped roof.

Hindola Mahal has been referred to by many scholars as an audience hall<sup>112</sup>, a view which is questionable one. This structure is located within the Royal complex which has structures that are of private nature. It is not possible to have an audience hall which is a public structure in the midst of private structures. Another important aspect which cannot be ignored is the Archaeological Survey report of 1903-04 which suggests that the southern end of this building was connected with Jahaz Mahal. This means that Hindola Mahal was connected to Jahaz Mahal along the terrace which makes it difficult to be used as an audience hall. Further this report suggests that the rubble masonry which connected the two structures was not built into the original wall of Hindola Mahal and that the south western corner was dismantled for reconstruction. In other words the south western corner of Hindola Mahal was connected to north western edge of the terrace of Jahaz Mahal and this connectivity must have been as shown in figure 8–

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<sup>110</sup> Ahmad-ul-Umari, *op.cit*, p 87. Also see Patil, *Mandu*, p 31. See Plate 24.

<sup>111</sup> See Plate 25.

<sup>112</sup> Yazdani, *Mandu*, p 72. Day, *op.cit*, p 386.

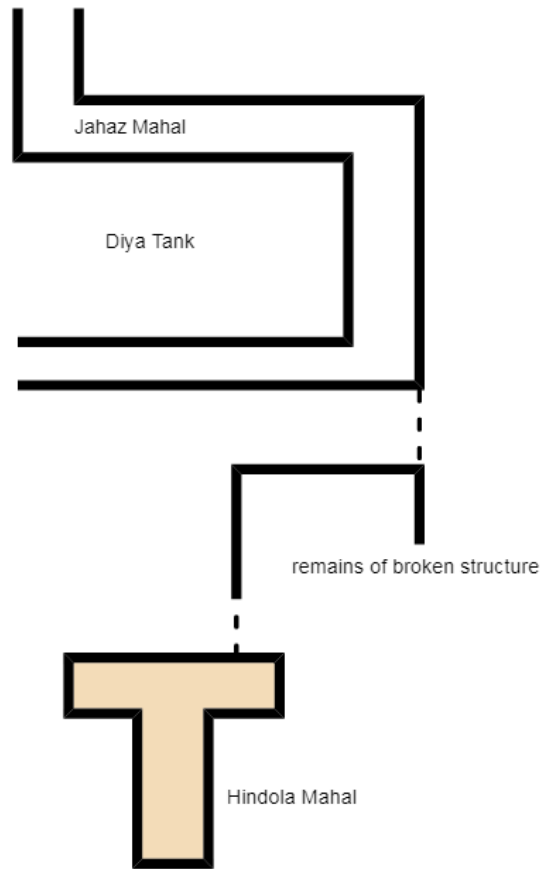


Figure 8 – probable connectivity between Jahaz Mahal and Hindola Mahal

The broken masonry structure which stands between north western edge of Jahaz Mahal and Hindola Mahal must have been a part of this very connectivity<sup>113</sup>. The masonry structure which today stands in ruins must have been a passage kind of structure which had steps to the North West which leads to the pathway further leading to the Champa Baoli. In other words it can be understood that this structure was being used to walk down from the terrace of the Jahaz Mahal to the Hindola Mahal’s first floor.

In 1903 when the restoration and revival works were undertaken here and trail pits proved that the stone steps leading to the floor from a door at the south eastern end of the Darbar hall, 4ft below the ground level outside, was later addition, most probably of the

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<sup>113</sup> See Plate 26.

Jahangir's stay in Mandu. *Trail pits* are excavations carried out from the ground surface. The advantage of trial pits is that they allow direct visual examination of the material below ground level and taking of large samples of solid materials and ground water<sup>114</sup>. The trail pits also brought to light the 4ft 9 inches original plinth<sup>115</sup>. The ground to the base of the plinth was cleared. The rubble part of the southern part of the Hindola Mahal, which connected it with Jahaz Mahal and was probably built during Jahangir's stay, was removed without causing damage, for it was not built into the original wall. The south west corner of the vertical end of the "T" shaped hall was dismantled due to growth of vegetation and was restored to its original form<sup>116</sup>. From time to time Archaeological Survey of India has been taking up repair and restoration works at the Hindola Mahal<sup>117</sup>.

Jahangir in his memoirs remarks that having appointed Abdul Karim, an architect, he ordered him to repair and rebuild old buildings in Mandu and to build new ones. Considering this one cannot ignore that Hindola Mahal must have been one of the rebuilt structures during Jahangir's stay in Mandu. Originally this must have been a masonry structure which had addition of red sandstone later on. One can also see the difference in the shape and sizes of the windows made on the transverse projection. Another difference that is noticeable is the longitudinal part of the monument comprises of parapet which is missing from the transverse projection. Abul Fazl while describing the laying of foundations of the Agra fort, remarks that excavations were made through seven strata of

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<sup>114</sup> I.G.Richards, Palmer, and Barratt, *The Reclamation of former Coal mines and Steelworks*, Elsevier Science Publishers B.V., Netherlands, 1993, p 44.

<sup>115</sup> See Plate 27.

<sup>116</sup> See Plate 28. Annual Report, 1903-04, pp 31-34. Excavation here brought to light three levels of concrete flooring above the original plinth level on eastern and southern sides of the hall. The debris in the rooms of the ground floor, along the ramps for the elephants carrying palanquins and the ones on the top floor, were all cleared. The archway in the north face of the building which was previously been closed with pierced stone trellis work, was opened. The vegetation which occupied the rooms of the upper floor was also cleared and the floor there was rammed with concrete making it watertight. Work on the western window of the upper room was in progress.

<sup>117</sup> Annual Report 1912-13., p5. In 1912 the tie rods on the western balcony of Hindola Mahal were removed and the debris from its courtyard was cleared. Also see *Annual Report Of the Archaeological Survey of India 1928-29*, Government of India Central Publication Branch, Calcutta, 1933, pp 49-50. Until 1927 there were minor repair works that were carried out at Hindola Mahal. Further clearing of debris and vegetation was carried out here until 1965. The process of making measured drawing of this monument was taken up in 1928. Also see *Indian Archaeology 1966-67*, p87. In 1966 at Hindola Mahal the walls were repaired by filling up the joints in the masonry and water-tightening of the crevices in 1966.

earth<sup>118</sup>. Considering the laws of nature that were used in building the medieval structure and the evidence that comes from the excavations that were carried out by the Archaeological Survey in 1903 using the trail pits which brought to light the stone steps leading to the floor from a door at the south eastern end of the Darbar hall which was 4 feet below the ground level outside<sup>119</sup>, suggests that this must have been a redone structure during Jahangir's stay at Mandu.

To the north of Hindola Mahal stands a structure styled Nahar Jharoka or the Tiger Balcony. Facing an extensive square, this was built as a balcony from where the king could show himself to his subjects, which is the literal meaning of Jharoka darshan that no longer exists. It is important to understand the ceremony of *Jharoka darshan*<sup>120</sup> which was started by Akbar. Referring to the manner in which Akbar spent his day, Abul Fazl wrote that after the day breaks people of various professions who had gathered around the palace at the close of the previous night, were allowed to make kornish<sup>121</sup>. This seems to be the ritual followed every morning by Akbar, one of the Portuguese missionaries who visited Akbar's court in 1595, also gave a similar description<sup>122</sup>. Depicting this ritual

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<sup>118</sup> Abul Fazl, *Akbarnama Vol II*, p 372.

<sup>119</sup> Annual Report, 1903-04, pp 31-34.

<sup>120</sup> Michael Brand, Mughal Ritual In Pre Mughal Cities: The Case of Jahangir in Mandu, in *Environmental Design, Vol 11*, 1991, p 17, Footnote 22. Darshan is most commonly used in the context of viewing a Hindu image during worship, while Jharoka usually refers to a certain kind of projecting window. Also see Catherine B. Asher, Sub-Imperial Palaces: Power And Authority In Mughal India, in *Pre-Modern Islamic Palaces Vol 23*, Freer Gallery of Art, The Smithsonian Institution and University of Michigan, 1993, p 282. The practice of darshan in the royal context derives from a religious concept in which beholding a deity's image imparts auspicious blessing to the beholder. Hindu kingship extended darshan to the monarch... The Mughal rulers presented themselves in two ways- one was a truly public presentation that anyone could attend, that is, through a window, jharoka-i-darshan, opening to the outside of the palace.

<sup>121</sup> Abul Fazl, *Ain-i-Akbari, Vol I*, pp 156-158. With the view, then, of promoting this true humility, kings in their wisdom have made regulations for the manner in which people are to shew their obedience. Some kings have adopted the bending down of the head. His majesty has commanded the palm of the right hand to be placed upon the forehead, and the head to be bent downwards. This mode of salutation in the language of the present age is called Kornish and signifies that the saluter has placed his head into the hand of humility, giving it to the royal assembly as a present, and has made himself in obedience ready for any service that may be required of him. Also see Balakrishna Shivram, Mughal Court Rituals: The Symbolism of Imperial Authority during Akbar's court, in *Indian History congress Proceedings, 67<sup>th</sup> Session*, 2006-2007, p 338.

<sup>122</sup> Hugh Murray, *Historical Account of Discoveries and Travels in Asia Vol II*, 1820, p 96. The missionary writes that Akbar showed himself every morning at a window, in front of which multitudes came and prostrated themselves; while women brought their sick infants for his benediction, and offered presents on their recovery.

during the Jahangir's reign in the form of painting is one by Abu'l Hasan<sup>123</sup>, one of Jahangir's favorite artists<sup>124</sup>. Edward Terry's also gives a similar description in his account<sup>125</sup>.

Jahangir refers to four events in the context of Jharoka during his stay in Mandu, of which first two were related to military contingent<sup>126</sup>, while the third was of political importance as it was in Mandu that post his successful Deccan campaign that Khurram was given the title of 'Jahan' and bestowed the title of *Shah Jahan* upon him. Jahangir then came down the jharoka and poured over Shah Jahan's head a small tray of jewels and a tray of gold coins<sup>127</sup>. The last one took place three weeks later in the courtyard of jharoka at Mandu, an event where offerings produced by Shah Jahan were all laid out in the courtyard along with horses and elephants and which were looked through in great detail by Jahangir<sup>128</sup>.

Presumably built during Jahangir's stay at Mandu, Michael Brand remarks, the building program at Ahmadabad provides further evidence of Nahar Jharoka at Mandu being built by Abd al-Karim Ma'mur Khan, for Jahangir<sup>129</sup>. Describing his stay at Ahmadabad, Jahangir wrote that he could not withstand the heat and every day after completing his midday prayer, he sat in the Jharoka which was facing the river. For administering

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<sup>123</sup> Jahangir, *The Tuzuk-i-Jahangiri or the Memoirs of Jahangir Vol II*, Eng.Tr by Alexander Rogers, Royal Asiatic Society, London, 1914, p 20. Henceforth cited as *Jahangir, Tuzuk-i-Jahangiri, Vol II*. Writing about Abu'l-Hasan, Jahangir in his memoirs states that he has been honoured with the title of Nadiru-z-zaman, drew the picture of my accession as the frontispiece to the Jahangirnama, and brought it to me. His work was perfect, and his picture is one of the chefs d'oeuvre of the age. At the present time he has no rival or equal. His father Aqa Riza'I, of Heral, at the time when I was prince, joined my service. He (Abu-l-Hasan) was Khanazad of my court.

<sup>124</sup> Stuart Cary Welch, *India: Art and Culture 1300-1900*, Metropolitan Museum of Art, New York, 1985, p 185.

<sup>125</sup> Edward Terry of William Foster, Ed, *Early Travels in India 1583-1619*, Oxford University Press, London, 1921, p 326. Terry writes the King shewes himself thrice a day; first, at sun-rising at a bay-window towards the east, many being there assembled to give him the salam, and carrying Padsha salament, that is: Live, O King. At no one he sees his elephants flight or other pastimes. A little before sun-set he shewes himself at a window to the west.

<sup>126</sup> Jahangir, *Tuzuk-i-Jahangiri*, pp 374-375. Jahangir mentions that "On the 25<sup>th</sup> the contingent of I'timad-ud-daulah passed before me in review on the plain under the jharoka. There were 2000 cavalry well horsed, most of the whom were Moghuls, 500 foot armed with bows and guns, and fourteen elephants. Also see *Ibid*, p 377. In another instance Jahangir refers to Lashkar Khan bringing his men to the darshan jharoka. There were 500 horses, 14 elephants, and 100 musketeers.

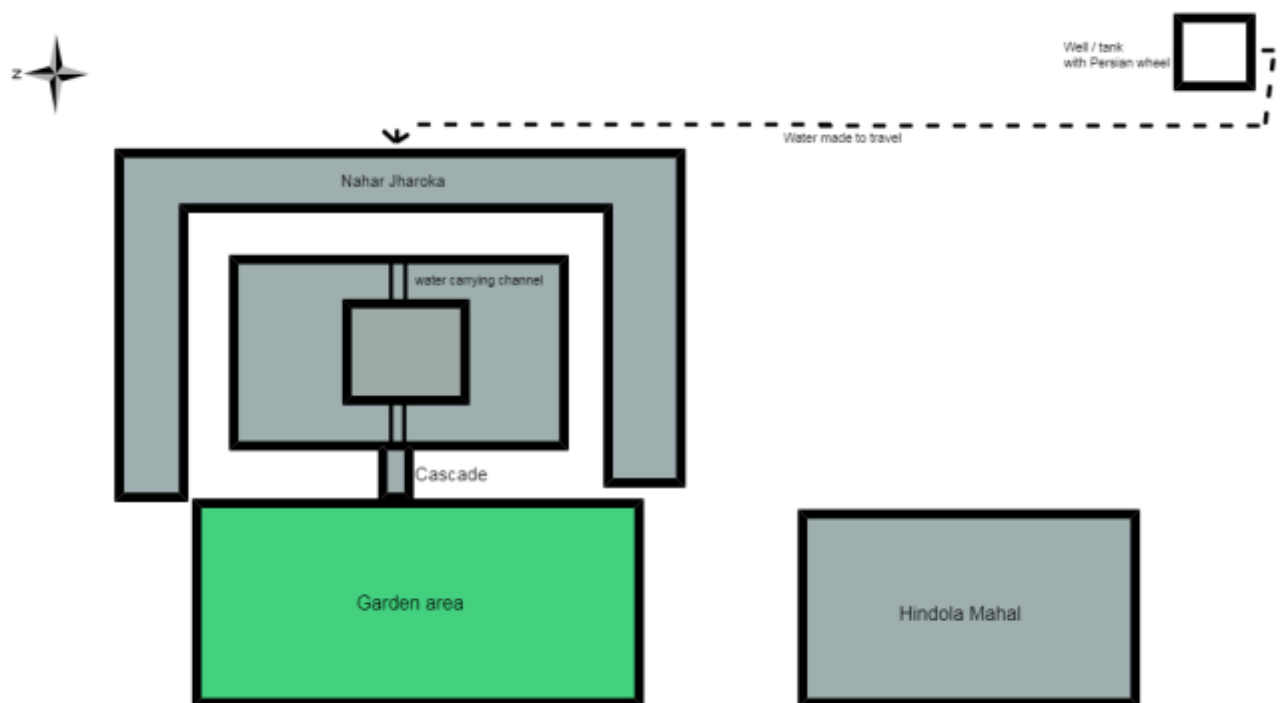
<sup>127</sup> *Ibid*, pp 393-395.

<sup>128</sup> *Ibid*, p 399.

<sup>129</sup> Brand, *op.cit*, p16.

justice, Jahangir sat there for 2-3 hours. Further he wrote that even when he was unwell, he everyday went to jharoka according to the fixed custom<sup>130</sup>. Writing about the building works of Muqarrab Khan, Jahangir states that when he was proceeding from Mandu to Ahmadabad, Muqarrab Khan had done with old buildings and prepared other places for sitting like Jharoka, public audience hall, etc<sup>131</sup>. Hence in all probabilities the one at Mandu must have been built during Jahangir's stay. But this view is a questionable one. Main features of the Mughal architecture are construction in straight lines, uniformity, symmetry, Char bagh pattern and proportion. Nahar Jharoka does not exhibit these features.

A visitor here can notice a water tank which is connected to the eastern side of the Nahar Jharoka by a water channel and further to the west is connected by a cascade to the garden area. There is every possibility that the water channel which is to the eastern side of Nahar Jharoka may be connected with the well which is now styled as Ancient Baoli as shown in the Figure 9 – probable connectivity between Well and Nahar Jharoka



<sup>130</sup> Jahangir, *Tuzuk-i-Jahangiri*, Vol II, p14.

<sup>131</sup> Jahangir, *Tuzuk-i-Jahangiri*, p 424.

Since 1927 efforts and labor have been put in place to repair and restore this structure. These restoration works are still in progress<sup>132</sup>.

Along the northern walls of Nahar Jharoka towards north-west there is flight of three steps leading to the Dilawar Khan's mosque. The inscription on the eastern door of the mosque bears an inscription suggesting that this was built by Dilawar Khan Ghori in 1405 A.D.<sup>133</sup>. To the east of this structure lies an open auditorium. There are no contemporary sources which make a reference to this structure. This mosque belongs to the same period as Dhar's *Kamal Maula Masjid*<sup>134</sup> and *Lat Masjid*<sup>135</sup> and the *Malik*

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<sup>132</sup> *Annual Report 1936-37*, p32. Since 1927 efforts and labor has been put in place to clear the jungle from this monument. In 1936 Nahar Jharoka which was in complete ruins and on the verge of collapse was repaired. Missing stone lintels were replaced and underpinning of the gap over the stepped opening at the north eastern end of this building was carried out. The missing red stone steps leading to the first floor of this structure were restored. The broken arch of the western hall here was rebuilt and its jambs were repaired. *Indian Archaeology 1973-74-A Review*, Archaeological Survey of India, New Delhi, 1979, p 61. The floor of the Nahar Jharoka was provided with a fresh layer of brick-bats in lime mortar. *Indian Archaeology 1974-75*, pp 91-92. In 1974 the Rani Mahal of the Nahar Jharoka's terrace was provided with lime concrete. *Indian Archaeology 1975-76-A Review*, Archaeological Survey of India, New Delhi, 1979, p96. At the Nahar Jharoka, the debris from the eastern quadrant was cleared and the damaged wall of the complex was restored and water tightened.

<sup>133</sup> See Plate 29. *Epigraphia Indo-Moslemica 1909-10*, Superintendent Government Printing, Calcutta, 1912, p 20.. The following inscription measuring 28' by 22 ½ is over the eastern entrance to this mosque. Some words in line 4 and 5 did not come out well in the rubbing but are legible on the stone. (1) "Nasiruddin Dilawar Khan, the centre of the law of the prophet, the refuge of the world, high as sky in dignity and angel like appearance, (2) Whose praiseworthy deeds and laudable good fortune are his helpers, and whose time is devoted to good purposes and worship of God, (3) Built this Jami Masjid in the fort of Mandu, which (Jami Masjid) is certainly this Ka'ba beneath this revolving dome. (4) By the help of the Almighty, the Merciful, this noble edifice was completed at an auspicious and happy time in the year 808 (1405-6 A.D.). (5) for the sake of the Jesus, the son of Maria, and Moses, the son of Imran... may be.. preserver and helper of his justice." Also see Yazdani, *op.cit*, p 74. The inscription may be translated thus " (1) the axis of the law of the Prophet, the support of the expanse of the Universe, high as heaven and an angel in appearance, Nasir-ud-Din, Dilawar Khan. (2) Whose laudable deeds confirm his praiseworthy words: whose entire time is devoted to pious pursuits and worship of God: (3) He built this assembly mosque in the fort of Mandu, which is the envy of the Holy House under the revolving dome (of the sky), (4) By the grace of the All-powerful and compassionate this lofty structure was completed in an auspicious and opportune time during the year 808 H (A.D. 1405-06), (5) May God protect and help him through the grace of Jesus the son of Mary and Moses the son of Imran..Also see Barnes, *op.cit*, p 384. The Inscription is translated as follows- "Dilawar Khan, the guardian of religion, who is an assistant to the Prophet, and supporter of his people. High as the sky in honour and like the angels in aspects. Whose actions are unrivalled, and whose majesty and dignity is great, who is praised by all, who is wealthy, happy, and of good health, over whose actions God watches and is always present to render him aid in his work. By the grace of the Almighty God and in an auspicious hour. He (Dilawar Khan) laid foundation of this mosque in the fort of Mandu in A.H. 808.

It resembles the kaaba whereof a copy stands in the sky. By the grace of Jesus, Son of the Blessed Virgin Miriam, and of Moses, son of Amran, may he be always blest by God".

<sup>134</sup> *Ibid*, pp 15-16. Kamal Maula contains also the oldest Muhammadan inscription of Dhar. The inscription measures 21"x 15 ¼". (1) "During the reign of Mahmud shah, the son of a Sultan, to whom God entrusted the control of the world, (2) In the city of Dhar the mosques which were old, and were rained and made

*Mughlith*'s mosque at Mandu. This phase, which can be described as the first phase of Mandu architecture, saw the existing structures were dismantled and were converted into mosques. The rectangular plan of this mosque has a court which is surrounded by colonnade on all four sides, of which, the western side consists of four aisles while other three sides consists of only one aisle. The colonnade towards the north, east and south are less deep than the western side. Although today the entrance to this mosque is from the south eastern side, originally the entrance was towards the east which no longer is accessible. This eastern entrance is made of arch which is made out of red sandstone. This arch is made with the help of keystone. The prayer hall towards the west has seven mihrabs and central one is decorated with band of carvings. The pillars of the colonnade are made of reused material and the ceiling is made of pillar and beam concept<sup>136</sup>. The Archaeological Survey Report of 1912 suggests that this structure had ladies gallery which was repaired in that year<sup>137</sup>. But today there is no evidence of any such gallery. Dilawar Khan's mosque has been taken up by the Archaeological Survey of India for repair works since 1902 until today<sup>138</sup>.

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desolate by the tyranny of the revolution of sky, (3) the khan of rank high as sky, Dilawar Khan, who again renewed the whole of Malwa, rebuilt them, (4) In the year 795 (1392-3 A.D.) . . . God . . . made". Also see C.E.Luard, *Dhar and Mandu: A Sketch for the Sight-seer*, 1916, p9. The inscription on this cemetery states that Dilawar Khan, then only governor in Malwa under Muhammad Shah, repaired the ruined mosques of Dhar in 795 A.H. or 1392 A.D.. Also see E. Barnes, Dhar and Mandu, *The Journal Of The Bombay Branch Of The Royal Asiatic Society Vol XXI*, London, 1904, pp 348- 349. The enclosure comprises of the tomb of Shaikh Kamal-udOdin Sahib Malvi, alleged tomb of Mahmud Khilji, the third king of Mandu, a mosque and several other ruined tombs of no historic importance. Kamal-ud-din, known as Malwi, because of his long residence in Malwa, was one of the many disciples of the famous Nizam-ud-din Auliya, who flourished in Delhi at the beginning of the fourteenth century. Sent by his spiritual guide to Malwa, Kamal became famous as a preacher and "attained the height of sanctity". The date of his death is unknown, but it must have occurred many years prior to the erection by Mahmud Khilji of the buildings which adorn his grave.

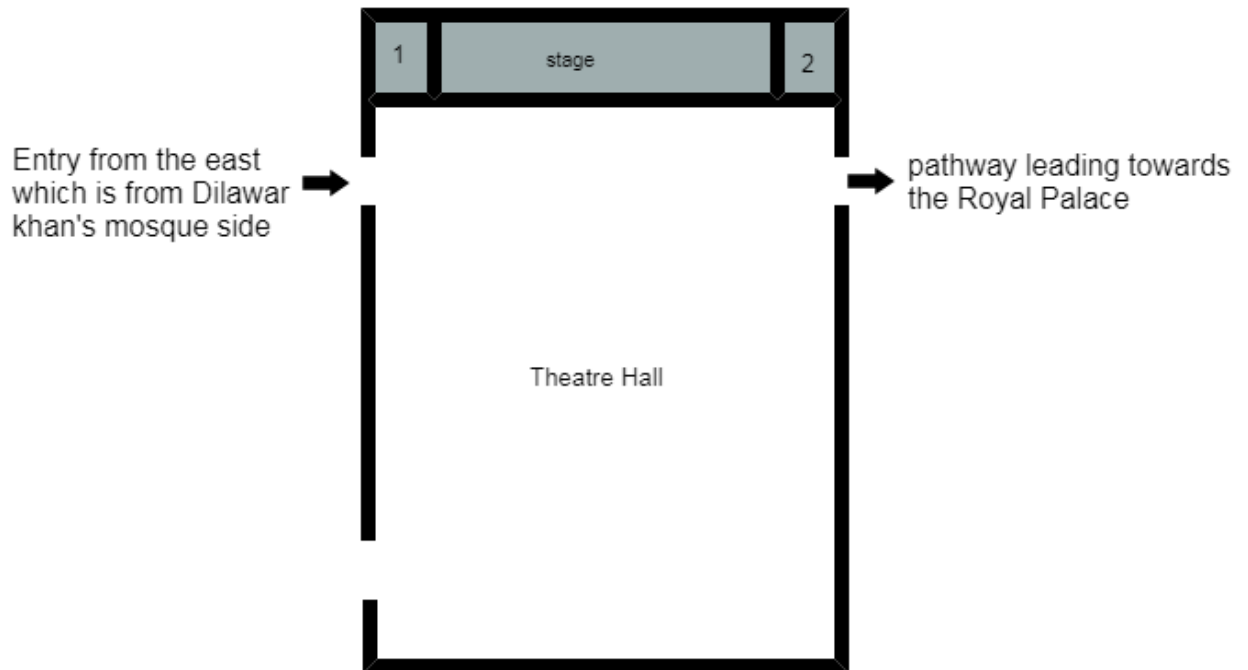
<sup>135</sup> *Epigraphia Indo-Moslemica 1909-10*, pp 11-12. This mosque was built by Dilawar Khan, the first Mohamedan King of Malwa. It possesses two inscriptions, one on the eastern and the other on the northern entrance to the mosque. Barnes, op.cit, p 347. Lat Masjid was erected by Dilawar Khan Ghorī. The materials used in its construction were taken from the remains of a temple. There are two inscriptions here of which the one on the northern doorway is in prose and to the effect that Ahmed Shah, known as Dilawar Khan, laid foundation stone in the year A.D. 1405.

<sup>136</sup> See Plate 30.

<sup>137</sup> *Annual Report 1912-13 Part I*, p 5.

<sup>138</sup> *Annual Report 1902-03*, p 17. The conservational activities here were started in 1902 when repairs were undertaken in some parts, although majority of the parts were intact. Also see *Annual Report 1928-29*, pp 49-50. Works of clearing jungle and vegetation and the debris from Dilawar Khan's mosque was carried out until 1925. In 1928 measured drawing of this monument was prepared. Also see *Indian Archaeology 1957-58*, p103. The bulged portion of the eastern enclosure wall of Dilawar Khan's mosque was repaired and the holes in the walls were filled up in 1957 restoration works. Also see *Indian Archaeology 1976-77-A*

To the south west of the Dilawar Khan's mosque is a structure styled as Theatre Hall. The contemporary sources are silent regarding this structure. The earliest reference to this comes from the Archaeological Survey report of 1987 when it was taken up for restoration for the first time<sup>139</sup>. This is a rectangular structure with an entry from the east. Figure 10 explains the plan of the theatre hall-



The Theatre hall is a masonry structure comprising of a stage with a room on either sides of the stage. The hall has a room made along the northern wall which is in complete ruins now. The two rooms are made up of pointed vault shaped ceiling and have a circular opening in the southern wall. The southern wall of the stage has three openings which are made within the arched wall. The central arch is larger in height and breadth when compared to the two outer arches. The outer two openings are circular in shape while the

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*Review*, Archaeological Survey of India, New Delhi, 1980, p100. In 1976 here the flag stone flooring was re-laid.

<sup>139</sup> *Indian Archaeology 1987-88- A Review*, Archaeological Survey of India, New Delhi, 1993, p 180.

central one is octagonal. The walls of this hall are made of arches<sup>140</sup>. However it is difficult to assess the period in which this structure was constructed.

From the theatre hall making headway towards the south, i.e., towards the Munja Talao, one would reach to a group of monuments styled as Hammam, Royal palace and Champa Baoli. The first of these is a hammam which is a closed structure with a domical ceiling comprising of cuts of various shapes and sizes for the light<sup>141</sup>. Going by the size we can assume that this was a private hammam. The only textual reference to this comes from Ahmad ul Umari when he refers to Rupmati calling her women at her will and bathe in Turkish bath<sup>142</sup>. There are two entrances to this hammam which leads a visitor into an octagonal room which is made of arches. The first of this arch which is to the left of the entry was used with a mechanism that worked like a oven. Here one can notice a fire place at the bottom and a little above this is a rectangular section where vessel with water was placed for heating<sup>143</sup>. On heating the steam that was generated was allowed to run through the vents that have been provided along the ceiling here and travel through channels into the first and then into the second chamber, where one could take steam bath. The steam bath was used during the winters and rainy season but during the summers this same hammam acted as an auxiliary chamber to the bath tub made behind this hammam<sup>144</sup>. During the summers the water from nearby Champa baoli or the Munja Talao was carried to this hammam and then the water here was allowed to travel in pressurized form and then allowed to fall into the bath tub behind.

To the south east of this hammam are the fragmentary remains of some masonry structures which are now in ruins, whose date of construction, original plan and layout are difficult to assess today<sup>145</sup>. It is amongst these ruins that a well named Champa Baoli exists, which gets its name from the fragrance of the Champa flowers, scientifically called *Michelia Champaca* that the waters of this well carried. Although it is difficult to fix a date of this well, it can be understood that it was in use during the reign of Baz

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<sup>140</sup> See Plate 31.

<sup>141</sup> Yazdani, *In Praise of Mandu*, p 31. See Plate 32.

<sup>142</sup> Ahmad-ul-Umari, *op.cit*, p14.

<sup>143</sup> See Plate 33.

<sup>144</sup> See Plate 34.

<sup>145</sup> See Plate 35.

Bahadur, as Rupmati, wrote Ahmad ul Umari, spent long days by the cool water of this well which is deep below the ground level<sup>146</sup>.

The base of this baoli can be reached by the steps from a subterranean passage<sup>147</sup>. This passage leads to the base of the well with vaulted rooms, called *taikhana*, that were used by the members of the Royal household during summer<sup>148</sup>. As seen in the plate 38, there are steps leading to the base of the well from the taikhana. The base of the well is made of arched niches in the wall around the baoli. In front of them is a pavement extending to the water. The well is an open one from above<sup>149</sup>. As precaution, the well is enclosed by a stone balustrade. A careful look at the vaulted rooms one can see that the arched entrance of one room overlaps the arched entrance of another. In other words these arches have been made in such a way that they block the view of preceding room. Another important aspect that needs to be understood is the connectivity of this baoli with the water of the Munja Talao. While clearing the debris here 1995 the Bhopal Circle of Archaeological Survey came across wall with copper pipes that carried water during the summers, which cooled the vaulted rooms made around the well<sup>150</sup>. Archaeological Survey of India has taken up the repair and restoration works here<sup>151</sup>.

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<sup>146</sup> Ahmad-ul-Umari, *op.cit*, p14.

<sup>147</sup> See Plate 36.

<sup>148</sup> See Plate 37.

<sup>149</sup> See Plate 39.

<sup>150</sup> *Indian Archaeology 1995-96*, p 128.

<sup>151</sup> *Annual Report of the Archaeological Survey of India 1926-27*, Ed, by John Marshall, Government of India Central Publication Branch, Calcutta, 1930, pp 49-50. The Archaeological Survey of India's annual report for the year 1926 suggests that the repair works carried out at this well were completed this year. Toned lime and cement concrete was used in repairing the vaulted ceilings of the underground chambers of the Champa Baoli. Arched walls were underpinned wherever necessary. Also see *Annual Reports 1930-34*, p 49. The semi octagonal pavilion at this well was almost on the verge of collapse, which was rebuilt in 1932-33. Repair works of minor nature were carried out here in 1933-34. Also see *Indian Archaeology 1954-55*, p44. In 1954 dry stone compound was constructed around the Royal complex near Champa Baoli. In the same year leaking terrace over the underground rooms near Champa Baoli was concreted. As a temporary measure, masonry pillars were erected to support the vaults of the underground chambers. Also see *Indian Archaeology 1973-74*, p61. Reports of 1973 suggest that the decayed roof of this baoli was replaced by a layer of fresh lime concrete. Also see *Indian Archaeology 1994-95-A Review*, Director General of Archaeological Survey of India, New Delhi, 2000, p 145. In 1993 similar sized brick as used in Champa baoli originally, were procured to repair the brick dome. Removal of the debris of the fallen portions of the underground cells of the Champa baoli was in progress. Also see *Indian Archaeology 1995-96*, p 128. The *Bhopal Circle* of the Archaeological Survey in 1995 while clearing the debris from Champa Baoli came across the cells with stepped original entrance, floor levels, and colored tiles of the walls and floor. The walls and the arches were underpinned and made water tight. Here fresh flooring was provided

To the south of the ruins of the Royal palace lies the *water pavilion* or *Jal Mahal*<sup>152</sup>, built near the western margin of the Munja Talao. It is difficult to fix the date of the Jal Mahal. In the popular traditions Munja Talao gets its name from the ruler Vakpati Munja, who was the son of Siyaka and fourth in line of the Paramara rulers according to the Udaipur Prasasti and who also bore the names like *Utpalaraja*, *Munja*, *Amoghavarsha*, *Prithivivallabha* and *Srivallabha*<sup>153</sup>. Merutunga in his 15<sup>th</sup> century historical work *Prabandha Chintamani* wrote owing to his origin this king was called Munja i.e., he was found by King Simhadantabhata of the Paramara dynasty in the midst of the thickest Munja reeds<sup>154</sup>. This narrative finds a place in many of the contemporary and later texts like that of Ahmad-ul-Umari<sup>155</sup> and Abul Fazl's *Ain-i-Akbari*<sup>156</sup>. Hence in probabilities this talao in Mandu got its name, as did the Paramara king, from the Munj grass that must have grown there once.

A causeway from the Royal palace leads to the Jal Mahal which is built on the western margins of Munja Talao. Three stepped ramps on either sides of the causeway leads to the waters of the Munja Talao. At the southern end of the causeway there are flights of steps leading to the courtyard in front of the two storied Jal Mahal<sup>157</sup>. This court comprises of 7 tanks that are open and are made of various sizes and shapes that were used for storing water<sup>158</sup>. Two of the seven tanks are floral in design. Three of these tanks have steps leading to the bottom of the tanks. Jal Mahal is a two storey structure has steps leading to the top floor. All that now remains in this water pavilion are a pair of halls

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with lime concrete matching the original one. The damaged dome in front of the Champa baoli was restored with brick masonry in lime-surkhi mortar.

<sup>152</sup> See Plate 40.

<sup>153</sup> Bühler, *Udepur Prasasti*, p 226.

<sup>154</sup> Marutunga Acarya, *Prabandhacintamani*, Eng.Tr by C.H.Tawney in *The Prabandhacintamani or Wishing Stone of Narratives*, Bibliotheca Indica New Series, No. 931, Asiatic Society of Bengal, Calcutta, 1899, p 30. Also see Trivedi, *op.cit*, p 13.

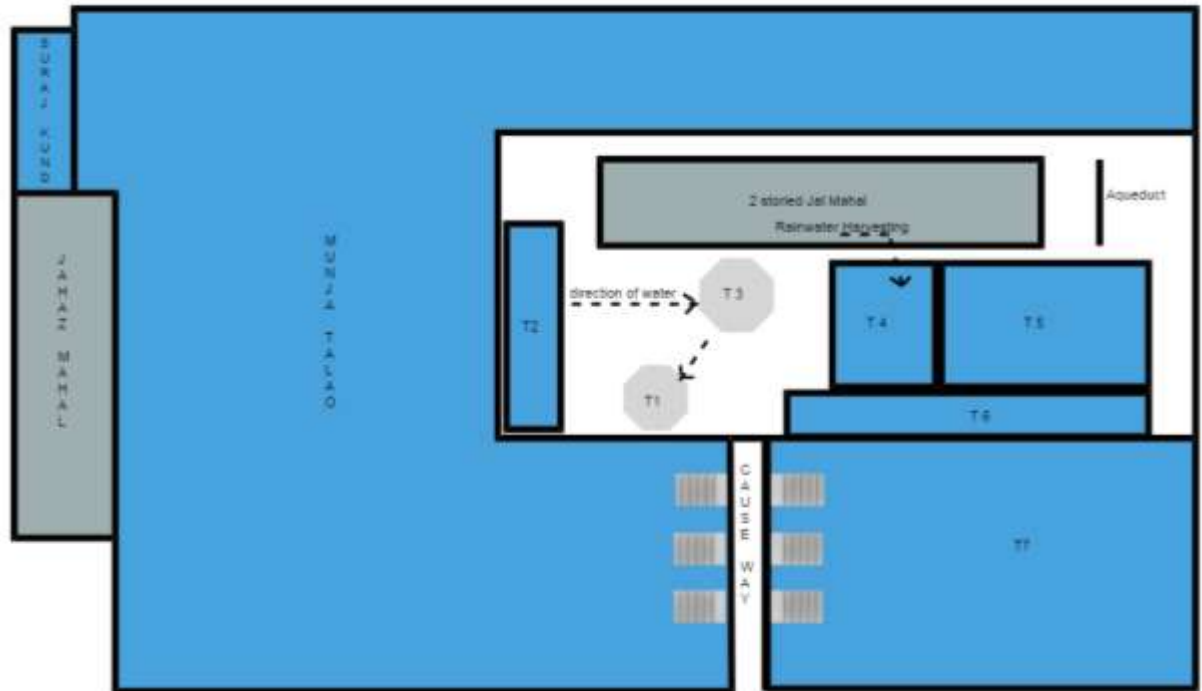
<sup>155</sup> Ahmad-ul-Umari, *op.cit*, p 86.

<sup>156</sup> Abul Fazl, *Ain-i Akbari Vol II*, p 215. Abul Fazl gives details of this reed and writes *Saccharum Munja*, a rush or grass from the fibres of which a string is prepared of which the Brahmanical gridle is properly formed.

<sup>157</sup> See Plate 41.

<sup>158</sup> See Plate 42.

with barrel shaped ceilings. A masonry aqueduct is noticeable behind the Jal Mahal<sup>159</sup>. The figure 11 shows the arrangement of the tanks, aqueduct and the 2 storied Jal Mahal –



Here one can notice that rain water was being channelized here. The rain water was being allowed to collect in these seven tanks directly. Besides direct collection of rainwater in these tanks, terrace rain water was also being channelized into the tanks. The first floor of this Jal Mahal comprises of water carrying channels which fed the T4 tank with terrace rainwater. Another aspect that can be notice here is that these tanks were inter-connected. In other words tank T2 was connected to T3, which means that on the western wall of the tank T2 there is provision for water carrying channel which was attached to the tank T3. Once the T2 was filled it allowed the water to be carried to T3, which in turn is connected to the T1. One can notice that T2 and T3 have provision for outlet and inlet of water.

One of the aspects attached to Jal Mahal is the idea of having a basement which can be used during the summers when the temperatures are high. In the context of Jal Mahal at the Munja Talao, there must be a basement which covers the four tanks – T4, T5, T6 and

<sup>159</sup> See Plate 43.

T7 shown in the plan above. This basement must have been closed during the repair and restoration works. Another aspect which supports this is the vents which are provided to the southern wall of the Jal Mahal which allowed the south eastern wind to enter the basement via a passage which may be located somewhere in hall that is made in the ground floor's eastern room. Here one can notice that an arched opening which was previously made was later altered and a rectangular door and perforations were made<sup>160</sup>. This allowed pressurized air to enter in and then in turn was allowed to enter the basement.

At the Jal Mahal the arches were made using keystone. The western wall of tank T7 is made of arches. One can notice here that the tip of the arches vary which means that some of them were repaired and restoration process. The Archaeological Survey report of 1935 suggests that the edging of the 12 sided fountain was carried out<sup>161</sup>. The 12 sided fountain which is being referred here is the tank T3 which is 12 sided but does not have a fountain. This tank has provision for the capillary effect to take place which has been wrongly written as fountain<sup>162</sup>. The Archaeological survey report has taken up the restoration and repair works here since 1925<sup>163</sup>.

On the northern side of the Royal complex there are remains of a gate named *Hathipol* and one can reach this gate after crossing the Hindola Mahal and taking the path on its right. The gate gets its name from the two effigies of the elephants that stand on the platforms on either sides of the gate<sup>164</sup>. Effigies of two elephants were erected by Akbar at the gate of Agra fort to commemorate the gallantry of *Jaimall* and *Pata*, the warriors of

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<sup>160</sup> See Plate 44.

<sup>161</sup> *Annual Report 1935-36*, p49

<sup>162</sup> See Plate 42.

<sup>163</sup> *Annual Report, 1925-26*, p 55. The earliest report of repair works carried out in Jal Mahal was in 1925. Also see *Annual Reports 1930-34 Part I*, p 49. Special works were carried out at Jal Mahal in 1929. It was taken up for repair in 1933-34. Also see *Annual Report 1935-36*, p49. In 1935-36 money was spent on repair works at Jal Mahal. Gaps within the walls of Jal Mahal were repaired and the cracks were grouted with cement. The roof of this palace was water-tightened. Parapet walls were repaired and displaced coping was set right. The missing door lintels were replaced and the edging of the 12 sided fountain, the gangway and one of the boar approaches were repaired and the steps at the entrance were also restored. Also see *Indian Archaeology 1984-85- A Review*, Archaeological Survey of India, New Delhi, 1987, p216. Minor repair works were carried out at Jal Mahal until 1985, when the decayed lime concrete floors were dismantled and replaced and the roof was made watertight.

<sup>164</sup> See Plate 45.

Chittor campaign<sup>165</sup>. And the style of arches and the bastions of the effigies in Mandu don't suggest that they were built by the earlier kings of Malwa so the possibility of them being built during Jahangir's stay is more. These effigies are not life size and their upper body parts are now broken. Both these elephants are made up of multiple pieces of stone and joined together using mortar. They are not simple chiseled piece of stone and the usage of the mortar and not of the plaster is visible as of today<sup>166</sup>. On both sides of the gate ramps are visible which do not match with the building material used in the gate and the platform in front of it. The purpose of the ramps too is not very clear and indicates it may have been a later construction and not part of the original.

The technological advancement in making the arch was such that the arches here were made where the keystone was absent. This arch is similar to the arches made during Alauddin Khalji's reign with no cusped arches. Another noticeable feature here is a water channel which allowing the water to travel north of the Royal complex which is now an open area which must have been an agricultural land. Efforts were made by the Archaeological Survey of India to repair this gate<sup>167</sup>.

On the eastern side of the imperial complex before the Hathi Pol gate, one would come across two wells named *Ujali Baoli* (bright well) and *Andheri Baoli* (dark well), named

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<sup>165</sup> Bernier, *op.cit*, p 256-257. Describing the Agra Fort Bernier writes that the entrance of the fortress presents nothing remarkable except two large elephants of stone, placed at either side of one of the principle gates. On one of the elephants is seated the statue of Jemel, the renowned Raja of Chitor; on the other is the statue of Potta, his brother. These are the brave heroes who, with their still brave mother, immortalized their names by the extraordinary resistance which they opposed to the celebrated Ekbar; who defended the towns besieged by that great Emperor with unshaken resolution; and who, at length reduced to extremity, devoted themselves to their country, and chose rather to perish with their mother in sallies against the enemy than submit to an insolent invader. It is owing to this extraordinary devotion on their part, that their enemies have thought them deserving of the statues here erected to their memory. These two large elephants, mounted by the two heroes, have an air of grandeur. Also see Smith, *op.cit*, p 351. Also see Latif, *op.cit*, p 76.

<sup>166</sup> Yazdani, *Mandu*, p77.

<sup>167</sup> *Indian Archaeology 1975-76*, p96. The Annual Report of Archaeological Survey of India 1923 repair works were carried out at Hathi Pol gate. The next reference to the repair works to this gateway is to be found in annual report f 1975. Also see *Indian Archaeology 1979-80- A Review*, Archaeological Survey of India, New Delhi, 1983, p 126. In 1979 this gateway was taken up for restoration along with Gada Shah's shop and Taweli Mahal. Also see *Indian Archaeology 1980-81- A Review*, Archaeological Survey of India, New Delhi, 1983, p 125. The dome surface of the Hathi Pol Gate was plastered with lime mortar and the terrace was given a layer of lime concrete with lime mortar. The cavities in the stone pavement were repaired with brick masonry. Also see *Indian Archaeology 1981-82- A Review*, Archaeological Survey of India, New Delhi, 1984, p 115. Next year the only structure of the Royal complex taken up for repair was Hathi Pol gate where big cavities in the walls were underpinned in lime surkhi mortar and the wall was reconditioned.

so for the variations in their illuminations. Thomas Roe<sup>168</sup> and Corryat<sup>169</sup> in their accounts make a mention of the scarcity of the water and that it was being safeguarded, which goes on to show the necessity of guard rooms at every stage of the Ujali baoli and the pavilion along the southern wall of the well being used by the guards<sup>170</sup>. Of these two wells the Ujali Baoli is the larger one with flight of steps from three sides-Eastern, western and northern sides leading to the water levels. The steps along the northern wall are broader while the steps along the eastern and the western wall are narrow<sup>171</sup>. This well is provided with a cupola on the southern edge of the well. A water lifting device which must have been charas with a pulley and shaft, was attached to the northern wall of this well, to pull the waters. Using the charas system water was being pulled to irrigate the garden area which is located between the Gada Shah's House and Gada Shah's shop. Although there is no physical evidence to support this theory, looking at the terrain and the water carrying mechanism one can take this into account that water from this well was drawn to irrigate the garden mentioned above. While Andheri Baoli which is provided with a dome with an aperture at the apex for light and air to enter the interiors, was being used to supply drinking water. Both these wells were taken up for restoration and repair works by the Archaeological Survey of India since 1926 until now<sup>172</sup>.

To the south of Ujali baoli lies a monument which is now styled as Gada Shah's shop, which Yazdani remarks as one which must have been built on the lines as that of Hindola

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<sup>168</sup> Thomas Roe, *Vol II*, p 392. Thomas Roe writes that "At night I went towards the court, but the king upon news of a lion that had killed some Horses, was gone to hunt; s that I had leisure to seeke some water. For we were brought to a hill with a multitude of people where was no water, that men and cattle were like to perish. That little that was in Pooles some great men possessed, and kept by force".

<sup>169</sup> Thomas Coryat cf William Foster, Ed, *Early Travels in India 1583-1619*, Oxford University Press, London, 1921, p 277. Coryat states that the fountain found the first day by one of My Lords people, Master Herbert; which if he had not done, he must have sent ten course every day for water to a river called Narbode, that falleth into the Bay of Cambaya at Buroch; the custome being such that whatsoever fountain or tanke is found by any great man in time of drought, hee shall keepe it proper and peculiar to himself, without the interruption of any man whatsoever.

<sup>170</sup> See Plate 46.

<sup>171</sup> See Plate 47.

<sup>172</sup> *Annual Report 1926-27*, pp 49-50. There were repair and restoration works that were carried out at these two baolis. In 1926 at Ujali baoli, repair of the water raising platform and reconstruction of the parapet wall around the baoli were completed. Silt accumulated in the baoli was cleared. Remains of a water lifting arrangement discovered under the debris were preserved carefully. Lower steps on the western side were restored. Also see *Annual Report Of the Archaeological Survey of India 1927-28*, Government of India Central Publication Branch, Calcutta, 1931, pp 52-53. H.H. Khan wrote in the annual report for the year 1927 that debris from the Andheri baoli was cleared.

Mahal but on a much larger scale<sup>173</sup> and may not be a shop as it is called. Yazdani further refers to the name Gada Shah as a nickname given to Medini Rai, who was in the service of Mahmud II. The name Gada Shah meant *beggar master*<sup>174</sup>. However this view is questionable one. To the south of this monument is the Gada Shah's house which is a two storey structure. Contemporary sources are silent about these structures. Gada Shah's house (private Structure) and shop (public structure), both are two storey structures. The ground floor of Gada Shah's house has arched entrance and its upper storey has a hall with a fountain. The surplus water from this fountain was taken away by two spouts one in the shape of elephants<sup>175</sup> and while the other has a tiger head<sup>176</sup>. Ornamental panels and honeycomb designs can be seen in the façade of the building. Two wall paintings, one of a male and other of a female, could be seen in one of the room on the upper floor<sup>177</sup>.

The Gada Shah's shop, as written by many scholars, must have been used as a *Diwan-i-Am*, an audience hall for public<sup>178</sup>. This is a two storey structure with gigantic arches supporting the roof, of which only two remain today<sup>179</sup>. The measurement of this hall which is 129.67 feet long and 31 feet in breadth, suggests that this must have been an audience hall<sup>180</sup>. Another theory to support this view is the evidence from the Archaeological Survey report of 1979 which suggests that this structure must have had vaulted ceiling which is in used for acoustics<sup>181</sup>. Here another noticeable feature is that the arches here were built without a keystone, which shows the technological advancement. Both these structures were taken up by Archaeological Survey of India for repair and restoration since 1925<sup>182</sup>.

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<sup>173</sup> Yazdani, *In Praise of Mandu*, p 38.

<sup>174</sup> Yazdani, *Mandu*, p 80. Maria, op.cit, p 140.

<sup>175</sup> See Plate 48.

<sup>176</sup> Patil, *Mandu*, p 30.

<sup>177</sup> See Plate 49.

<sup>178</sup> *Ibid*, p 29.

<sup>179</sup> See Plate 50.

<sup>180</sup> Yazdani, *Mandu*, p 80. Yazdani suggests that the hall of this structure is 130 feet long and 31 feet in breadth.

<sup>181</sup> *Indian Archaeology 1979-80*, p 126.

<sup>182</sup> *Annual Report 1925-26*, p 55. The annual report of 1925 published by the Archaeological Survey of India suggests that Gada Shah's palace was taken up for restoration along with other monuments of Royal Complex. Also see *Indian Archaeology 1954-55*, p44. In 1954 dry stone compound was constructed around

The study of medieval structures have been limited for long to the study of their architectural features and have often been seen as a form of art rather than as representative of contemporary knowledge and technology. The term ‘*Science*’, would be difficult to use in medieval context in the same sense as it is understood today. Derived from the Greek word ‘*Technologia*’, the word technology means systematic treatment of art. The modern usage of the word technology has extended the meaning to all kinds of mechanical devices and forms of practical activity, by which certain material objectives are attained<sup>183</sup>. However in medieval Indian context we are looking into the laws of nature known to the people and their application in building construction.

Water, an essential ingredient for the survival of living beings, covers 3/4<sup>th</sup> of the earth’s surface. Water makes up 60% of the human body weight. Besides consumption, human beings make use of it in various other ways ranging from maintenance of hygiene to production of energy to irrigation etc. Although 3/4<sup>th</sup> of the earth’s surface is covered by water, many areas across the earth face lack of water from drought, improper or inadequate resourcing or other reasons. Of the total water available on the earth 97 % is saline and only 25 % is freshwater. Drought in many areas is a frequent phenomenon

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the Gada Shah’s palace. Screen walls were erected to protect the paintings in the Gada Shah’s palace. Also see *Ibid*, p 144. Organic solvents, detergents and emulsifying agents were used to preserve the paintings at Gada Shah’s palace. Transparent thin solutions of synthetic preservatives were used to prevent the flaking of pigments and to minimize the dust laden winds and moisture. Also see *Indian Archaeology 1966-67*, p87. At the Gada Shah’s palace the walls were repaired by filling up the joints in the masonry and water-tightening of the crevices in 1966. Also see *Indian Archaeology 1974-75-*, pp 91-92. At the Gada Shah’s shop the original flooring was brought to light after the debris was cleared. Also see *Indian Archaeology 1975-76*, p96. The flooring at the Gada Shah’s palace was restored and the terrace was water-tightened. The cistern in this building was restored and the masonry wall was underpinned. Also see *Indian Archaeology 1979-80*, p 126. Debris at the Gada Shah’s shop was cleared which brought the original flooring and arches to light. The strength of the dome at the south-eastern corner was tightened by reconstructing the vaults and providing iron rods to hold the bifurcated masonry. Most of the work started in the previous year was continued in 1979-80. Also see *Indian Archaeology 1988-89- A Review*, Director General Archaeological Survey of India, Janapath, New Delhi, 1993, pp 141-142. During the repair works in Gada Shah’s Palace in 1988 the fallen portions of the cells were removed, decayed old flooring was replaced with fresh lime concrete and the damaged and missing decorative door sil lintel jails were restored with similar decorative designs. Also see *Indian Archaeology 1989-90*, pp 162-163. At the Gada Shah’s Palace, the old pipe line of fountain was restored. Its floor and platforms were replaced with fresh lime concrete. Door –sill, lintel and jails were repaired with fine chisel dressed lime stone with similar decorative designs. Also see *Indian Archaeology 1996-97-A Review*, Director General of Archaeological Survey of India, New Delhi, 2002, p 253. The work at the Gada Shah’s shop which was started in 1995 was continued in 1996. Also see *Indian Archaeology 1999-2000-A Review*, Director General of Archaeological Survey of India, New Delhi, 2005, p272. In 1999 of the two monuments taken up for repair and restoration one was Gada Shah’s shop where concrete was laid for water tightening the excavated pits.

<sup>183</sup> Habib, *op.cit*, Preface, p ix.

which is due to scarcity of water which extends over a period of months and even years when the region notes deficiency in its water supply or underground water. Mandu was one such city where water became a contentious issue. In 1616 when Jahangir's camp reached Mandu they faced massive problems of water availability. Thomas Roe remarks that on the 11<sup>th</sup> March 1616 when he had leisure to seek some water, they were taken to a hill where there was no water and that men and cattle were like to perish<sup>184</sup>.

In such situation the main source of water is the rain water. Collection and storing of rain for future use is the basic idea behind rainwater harvesting. Rainwater collected from the roofs of houses, tents etc or from specially prepared areas of ground, can make an important contribution to water conservation. This is one of the main aspects related to water which have been made use of in structures of Mandu. In the context of Jal Mahal in Mandu's Royal complex one can notice that terrace water is being channelized into the tanks that have been made in the court below. Another important aspect which is taken into account while harvesting rainwater is the land gradient. Land gradient, as in case of Kapoor Talao, is made use to collect water even during the peak summer when other parts are running short of water. This rainwater is mainly supplied using water channels, pipelines, qanats<sup>185</sup> etc, a feature that is put into practice in Mandu.

'*Hydraulics*' is application of the fluid mechanics principles to water engineering structures, especially hydraulic structures like canal, river, dam etc<sup>186</sup>. Water deficient regions were known to primitive man since time immemorial but he had little need for planned water control while being dependant on gathering, hunting and fishing. But as he began to utilize the reproductive process of plant life, he began to manipulate newly discovered qualities of old setting through small scale irrigation farming (hydro-agriculture) and/or large scale and government directed farming (*Hydraulic Agriculture*).

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<sup>184</sup> Thomas Roe, *Embassy of Thomas Roe*, p 392. Also see Samuel Purchas, *Hakluytus Posthumus or Purchas His Pilgrimes Vol IV*, James MacLehose and Sons, Glasgow, 1905, p 396-397. Also see Yogesh Sharma, The Circuit of Life: Water and Water Reservoirs in Pre-modern India, in *Studies in History* 2009, p 92.

<sup>185</sup> Irfan Habib, *History of Science, Philosophy and Culture in Indian Civilization, Vol III Part I, Economic History of Medieval India 1200-1500*, Pearson, Delhi, 2011, p4. Using of snow fed streams and springs to draw water from elevated points into underground channels connected by wells, until it came to the surface to irrigate the fields. Such works are called qanat or kariz.

<sup>186</sup> Hubert Chanson, *Hydraulics of Open Channel Flow*, Butterworth Heinemann, 2004, p 3.

There are mainly three kinds of regions covering the earth- arid, semi arid and humid of which arid and semi arid cover around 3/5<sup>th</sup> of the earth's surface while humid covers 2/3<sup>rd</sup>. Water, especially in arid regions are treated as valuable commodities and hence are the testing grounds for new techniques<sup>187</sup>. Karl Wittfogel coined a term '*Hydraulic Societies*' which is applied to the agrarian societies in which agro hydraulic works and other large hydraulic and non hydraulic constructions which develop with them are managed by the strong government<sup>188</sup>.

With the practices of governmental control over the hydraulics agriculture the need for a defense mechanism arises. With the governmental control over the hydraulic and non hydraulic works, man began to learn the art of using various kinds of buildings material like stones, timber, etc. Strong governmental control allowed these hydraulics and non hydraulics works to be used in building palaces and pleasure houses for the royalty. Many structures like palaces, monuments and tombs were built using them. Hydraulics and non hydraulics constructions were made keeping both aesthetics and technical aspects in mind. Hydraulic works include canals, aqueducts, reservoirs, drainage canals etc., while the non hydraulic works include the works of defense and communication like walls, roads, etc., and edifices of both public and private nature like palaces, tombs, etc<sup>189</sup>.

The region of Malwa (part of present state of Madhya Pradesh) is a dry one where water is seen as a precious commodity. And as Karl Wittfogel suggests, Mandu must have been one of the hydraulic societies of the sub-continent, where hydraulics, non-hydraulic and agro-hydraulic works were managed by the government. In Mandu, according to the report of John Malcolm, there were baths, gardens, mosques, small and large wells, king's palaces, serais, roads, tanks-small and large both, etc.<sup>190</sup>, which in other words

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<sup>187</sup> Wittfogel, *Oriental Despotism*, p 19.

<sup>188</sup> Wittfogel, *Development Aspects*, p17.

<sup>189</sup> Wittfogel, *Oriental Despotism*, p 42.

<sup>190</sup> Malcolm, *Vol I*, p 41. Writes John Malcolm that he obtained parts of the records of the zamindars of the city, and the following is an account taken by measurements of the contents of the whole of the ground within this circumference. The document is rendered more curious, from giving the exact dimensions occupied by buildings, as well as by baths, tanks, rivers, mountains, and cultivations, and thereby enabling us to judge with tolerable correctness of the degree of splendor it had obtained.

The following is the details of square begahs within the fort of Mandu –

means there were hydraulic and non-hydraulics constructions undertaken under the governmental control. Making use of hydraulic and non-hydraulic constructions, the buildings in Mandu, writes Percy Brown, took the form of summer houses, palaces, and pavilions, ground floor of these usually consisted of a central courtyard with series of compartments and pools and fountains<sup>191</sup>.

One major source of water in a region like Mandu is rainwater. Rainwater has been harvested since the first human settlements. For the future use to meet the demands of human consumption or activities rainwater is harvested locally and rain water is stored through different technologies. In case of Mandu's Jahaz Mahal complex there are several tanks and wells and pleasure houses where rainwater was being collected for later use. These wells and baolis were fitted with water lifting devices like Charasa, Persian wheel, ungeared saqiya, etc. *Ashma Chakra*, pulley wheel used to draw water from a well, was the earliest device used, which finds a reference in Rig Veda. The next development that comes in water lifting mechanism was the use of oxen to pull water in a leather bag out of the well by tying it to a rope which was attached to a pulley. *Chullavagga Nikaya* refers to this as *Chakkavattaka* (turning wheel), which later must have been called *noria*<sup>192</sup>. The next advancement that came in the mechanism of water

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Fort of Mandoo	Begahs
Nemazur	2555
Baths	400
Small hills or ridges	2350
Gardens or Orchards	363
Mosques	705
Wells, large and small	310
King's Palaces	500
Caravan Serais	305
Laul Bag, a royal garden or pleasure ground	200
Twelve Bazar Roads	147
Tagaur Tallau	910
Small Tanks	263
Inhabited	2258
Cultivated	845
Enams grants to Zamindars	125
	11,416
Begahs	

<sup>191</sup> Brown, *op.cit*, p 64.

<sup>192</sup> Habib, *op.cit*, p 9. Noria is a vertical wheel fitted with water containers on its rim. Also see Abbott Payson Usher, *A History of Mechanical Inventions*, McGraw Hill Book Company, New York, 1929, p 80. The wheel was applied at an early date to the task of raising water to great heights. There are two forms, the noria or Egyptian wheel and the chain of pots which is frequently, through inexcusably, confused with noria. The noria consists of a large wheel having a series of containers fastened inside of the rim. They are

lifting was the transformation of pots from spokes to rope chain (pot-garland). This was an ungeared saqiya<sup>193</sup> and its earliest reference comes from Yashodharman's Mandasor inscription<sup>194</sup>.

*Charasa*, another water lifting mechanism, was an improvement kind of rope bucket pulley contraption. In this pair of oxen was used instead of man-power. This method was specially meant to draw water for irrigation. In this huge leather bag was used which enabled one to raise water from the well in one single haul-up<sup>195</sup>. *Persian wheel*, a device whose basic component is wheel, consisted of three important aspects – addition of two more wheels, a gearing mechanism and animal power. This mechanism was used in both the contexts, when the ground water was close to the surface as well as when present at a greater depth<sup>196</sup>. These three water lifting devices were made use of in Mandu.

Most of the buildings were built with a purpose which may not be evident at first glance. These building were created for comfort and safe for living. Besides material, location etc, while constructing the medieval buildings heat, ventilation and temperature control were also taken into account, which are essentially a part of the interior environment. Geographical location, climate, material used, system of construction and the use of internal space, all of these play an important role in quantity of natural light used in the buildings. Many aspects used in construction of the buildings to provide natural light are massive stone or brick bearing walls which offer good thermal insulation, many small windows, roof lights, and light wells. Due to hot and humid climatic conditions in most parts of India, passive environmental control was being employed in the building construction which is also the case of Champa baoli where there are labyrinth of underground well ventilated rooms. The royalty treated to these rooms during summers<sup>197</sup>.

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partially filled with water as they pass through the stream and they begin to discharge before they have reached the top, so that the water cannot be raised to the full height of the diameter of the wheel.

<sup>193</sup> Joseph Needham, *Science and Civilization in China Vol IV, Part II: Mechanical Engineering*, Cambridge University Press, 1965, p 365.

<sup>194</sup> Habib, *op.cit*, p 10.

<sup>195</sup> Qisar, *op.cit*, p 69.

<sup>196</sup> Habib, *op.cit*, p 12.

<sup>197</sup> Hazel Conway and Rowan Roenisch, *Understanding Architecture: An Introduction to architecture and architectural history*, Routledge Taylor & Francis Group, London, 2005, p76.

Copper pipes found after clearing the debris from Champa Baoli must have been laid in all probabilities during Jahangir's stay in Mandu for this was one of the structures that was renovated during his stay. Copper pipes were used during the Mughal period to run the water like in the case of Dig, where water is led through copper pipes over the openings of the buildings in order to flow over screens of khas grass, to cool and perfume the air passing through<sup>198</sup>. Copper (Cu) has an atomic number 29 and its electronic configuration is 2.8.18.1. Copper which is near the noble end in the electrochemical series of elements normally does not displace hydrogen even from acid solutions. Inherently not a reactive element the rate of corrosion of copper is low. Corrosion, an adjective of corrode is derived from the Latin word '*corrodere*' which mean wear away gradually. In other words deterioration of the material and its properties due to the chemical or electrochemical reaction between a material and its environmental surroundings is called corrosion<sup>199</sup>.

Atmosphere, aqueous solutions, soils, acids, bases, inorganic solvents, liquid metals etc, are all included in corrosive environments. Water also has corrosive characteristics. Freshwater which contains dissolved oxygen and other minerals which account for hardness, causes pitting and crevice corrosion, although less than sea water. Copper like cast iron, steel, aluminum etc is generally suitable for freshwater use<sup>200</sup>. Copper pipes are resistant to external corrosion in most soil conditions and also to internal corrosion from water supplies.

Within Jahaz Mahal the water associated structures like tanks, baolis, reservoirs, etc, are mainly open or have provisions for the penetration of sun light and air which means that sunlight and air have been used for purification of water there. The study of chemical reactions, isomerizations<sup>201</sup> and physical behavior under the influence of ultraviolet light (UV light) is called *Photochemistry*. UV radiation treatment of water is a method of purifying water using the UV radiations which is a simple and reliable process. Water

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<sup>198</sup> C.E.Bosworth, E.Va Donzel, B.Lewis and Ch.Pellat, Ed, *The Encyclopaedia of Islam Vol V*, E.J.Brill, Leiden, 1983, p 889.

<sup>199</sup> J.R.Davis, Ed, *Corrosion Understanding the Basics*, ASM International, Ohio, 2000, p 2.

<sup>200</sup> Willim D.Callister, Jr, *Materials Science and Engineering*, John Wiley & Sons, Inc, 2007, p 649.

<sup>201</sup> Isomerization is the process by which one molecule is transformed into another molecule which has exactly the same atoms but arranged differently.

may constitute dissolved and un-dissolved matters. Un-dissolved matters include soil residues, plant residues etc, in addition to microorganisms like phytoplankton, zooplanktons, virus, bacteria, etc and unicellular organisms like chlorophyll-containing algae etc. while the dissolved organic matters include biodegradable or biologically non-degradable substances<sup>202</sup>. UV radiations help in removing the concentration and accumulation of virus, bacteria or other microorganisms without influencing the odor and taste of water<sup>203</sup>.

Another water related aspect found in Mandu is step-well. The term '*step-well*' basically indicates the architectural features which a well of this kind carries. Step wells basically originated from the need to ensure supply of water during the drought period<sup>204</sup>. *Vav, vavdi, vai, baoli, baoris* etc, variously named, Tod writes that they were included in the domestic structures which served as reservoirs and abodes in the hot season. They are generally built as circular pits with suites of chambers and have many stories that are approached by staircase. These chambers form retreats for the chiefs and their families during the summers<sup>205</sup>. Step well's major parts are underground and mainly consists of three major parts- vertical well (*kupa*) with an arrangement for pulling water up by buckets, stepped corridor leading several storeys into the earth and numerous intermediate tower like pavilions called *Kuta* built as open halls in the stepped corridor. Supply of water being its main function step wells not only supplied water for household purpose but also for watering animals and irrigation of fields<sup>206</sup>. Like in Gujarat, in Mandu also there are baolis, of which Ujala baoli is located outside the settlement indicating that these were being frequented by the travelers and caravan traders. Step wells are not just a source of water but are also meeting spots for communication for men and women<sup>207</sup>. As remarked by Father Monserrate, the wells of Mandu can never fail of

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<sup>202</sup> Thomas Oppenlander, *Photochemical Purification of Water and Air*, Wiley-Vch, Weinheim, 2003, p101.

<sup>203</sup> Oppenlander, *op.cit*, p23.

<sup>204</sup> Shuichi Takezawa, Stepwells-Cosmology of Subterranean Architecture As Seen In Adalaj, in *The World of Indian Architecture Special*, No.1492, Vol. 117, August 2002, p 24.

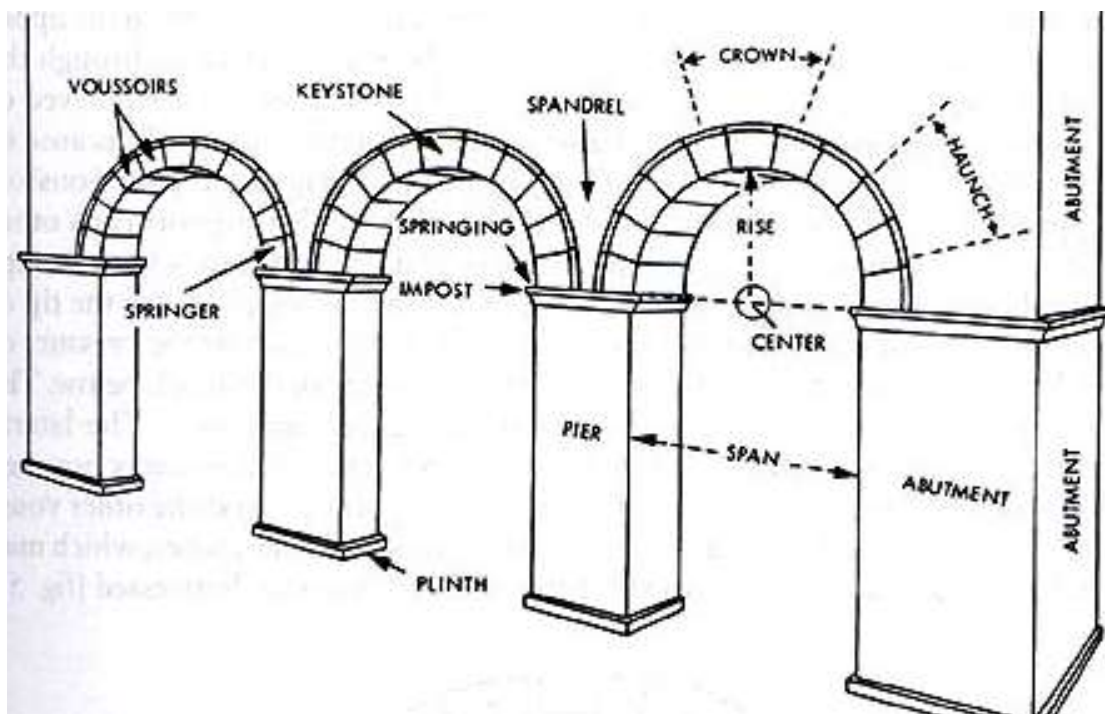
<sup>205</sup> James Tod, *Travels in Western India Embracing A Visit To The Sacred Mounts of the Jains*, Wm.H.Allen and Co, London, 1839, p 133.

<sup>206</sup> Jutta Jain Neubauer, *The Stepwells of Gujarat In Art- Historical Perspective*, Abhinav Publications, 1981, p2.

<sup>207</sup> *Ibid*, pp 2-4.

abundant and sweet water<sup>208</sup>. Step well also played an important role in water conservation.

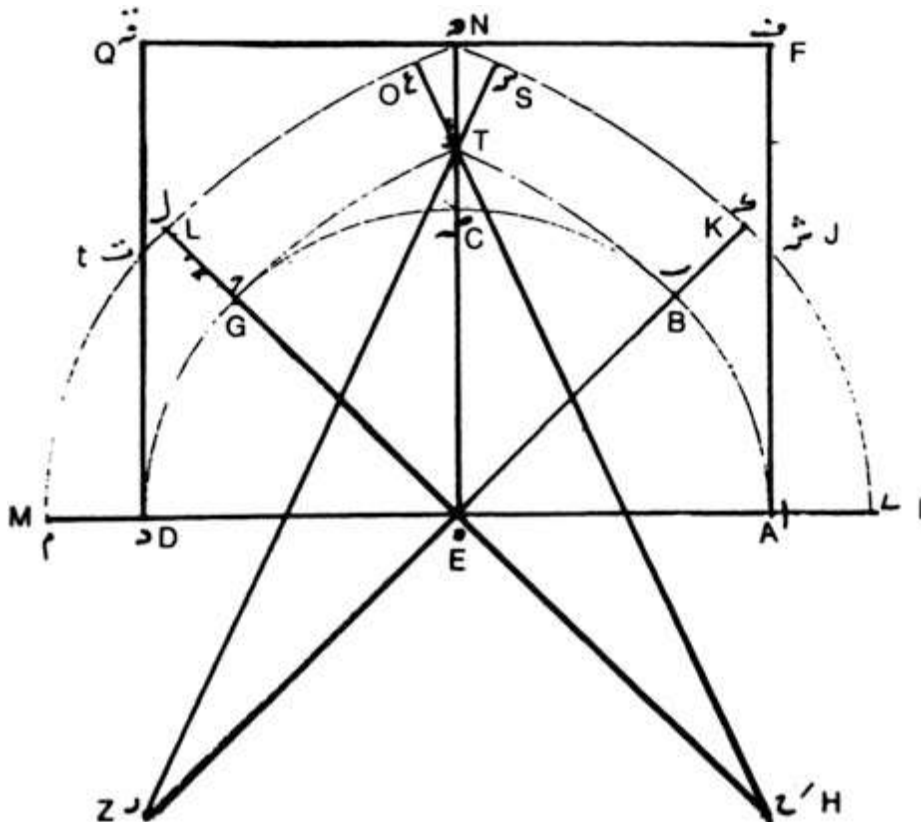
In the medieval Indian architectural context there was widespread use of arch as main structural form. With the advent of the Turks in the India new structural forms were introduced and employed in the building construction like arches and vault/dome. Arch is usually of curved form and geometrically is prone to cracking or collapsing at one or more points along the curvature. In order to retain all its properties an arch has to retain its curved shape. Various parts of arches are as follows<sup>209</sup> –



<sup>208</sup> Monserrate, *op.cit*, p 16.

<sup>209</sup> <https://blogs.vsb.bc.ca/dkeller/past-projects/arch-triumphal-exsperience/>. Also see J.G.Medley, *The Roorkee Treatise On Civil Engineering In India Vol I*, Thomas College Press, 1878, p 351. Also see G.J.Kulkarni, *A Textbook Of Building Construction*, Ambalal J.Patel, 1956, pp 120-122. **Voussoirs** are wedged shaped stones forming the course of an arch. **Springer** is the two lowest extremities of an arch and the line extending from the springing line on one side of the arch to the springing line on the opposite side is called the **span of an arch**. **Keystone** is uppermost or central voussoir of an arch. **Extrados** is the convex side of an arch and **intrados** is the concave side of an arch. **Crown** is the highest point in the extrados. **Haunches** are that parts of the arch for a certain distance up each side from the springing lines while **Spandrels** are the spaces contained between the extrados and a horizontal line from the crown. **Abutment** is the end support of an arch designed to resist the inclined thrust of an arch or a series of arches. **Piers** are the intermediate supports of a series of arches or an arcade. **Rise** of an arch is the vertical distance from the springing point to the highest point in the intrados.

Many forms of arches have been made use of in many of the buildings like the circular, semi circular, semi elliptical and pointed. In Mandu's context pointed arches have been employed within the structures. *Mas'ud al-Kashi*<sup>210</sup>, an astronomer and a mathematician from Samarkand, explained different elements of an arch and how they were connected and gave five methods for drawing the façade of an arch. He describes the method of making an arch in the following way (they provide an approximation for most arches) –



First step is to draw a semi circle with 'E' as the centre and 'AD' equals the span of the arch. Then arcs are drawn from centre E and also from the point H and Z and perpendiculars SN and ON are erected. Five sections 'MDGL', 'GLTO', 'ONST', 'STBK' and 'KSAI' form the façades of the arch. The spandrels of the arch are obtained when we construct AFQD with parallel sides and right angles. The segments 'MDt' and 'AIj' could be situated inside a wall and these segments can be calculated by taking the difference of circle segment MtE and triangle tDE-

<sup>210</sup> <http://www-history.mcs.st-and.ac.uk/Biographies/Al-Kashi.html>.

$$\frac{ED}{EM} = \frac{ED}{Et} = \cos \angle tEM, EM = MD + ED,$$

$$tM = \arccos \angle tEM \Rightarrow \arctM, \arctM \times ME = 2MtE,$$

$$\sin \angle tEM = \frac{tD}{tE} \Rightarrow \sin \angle tEM \times tExDE = 2\Delta tDE,$$

$$2MtE - 2\Delta tDE = 2tDM$$

On obtaining this amount, when we subtract it from the total surface area of the arch we obtain the surface area of the visible part of the arch<sup>211</sup>. If the depth exceeds the span, the façade becomes a vault. There are various kinds of vault that are often employed in constructions like barrel, coved, groined, ribbed, cloister, fan, net etc.,. *Barrel or tunnel vault* is the earliest and the simplest form of vault which consisted of a continuous surface of semicircular or pointed sections. It resembles a barrel or tunnel which been cut in half lengthwise<sup>212</sup>. This kind of barrel vault that has been used in Jahaz Mahal is the *pointed barrel vault* – the corridors on either sides of double hall have pointed barrel vault.

*Sound* is a mechanical wave which is transmitted by wave motion and what we hear is due to pressure fluctuations or pressure impulses, produced by a sound, reaching our ears. The matter or substance through which sound is transmitted is called a *medium* which can be a solid, liquid or gas and the most common medium through which it travels is air. *Acoustics* is the science of sound which deals with the origin of sound and its propagation, either in free space or in pipes and channels, or in closed space<sup>213</sup>. *Acoustics in architecture* (Architectural Acoustics) is a branch of science which teaches how to construct rooms for an audience in such a manner that the speaker could be heard easily and distinctly. The acoustics within a room depends upon reverberation, room shape and interior noise control.

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<sup>211</sup> Kim Williams and Michael J.Ostwald, Ed, *Architecture and Mathematics From Antiquity to the Future Vol I: Antiquity to 1500s*, Springer International Publishing, Switzerland, 2015, pp 299-302. Also see <https://www.youtube.com/watch?v=oNZCXGJIQZA> .

<sup>212</sup> <http://www.pitt.edu/~medart/menuglossary/barrel.htm>

<sup>213</sup> Heinrich kuttruff, *Acoustics: An Introduction*, Taylor & Francis, Abingdon, 2007, p 4.

The quality of sound and the distance to which it travels is determined by frequency of the sound. The speed of a sound wave depends on the properties of the medium through which it travels. Two types of properties which essentially affect the sound wave speed are *inertial* and *elastic* properties. Elastic properties are those related to the tendency of a material to maintain its shape and do not deform whenever a force or stress is applied to it. Inertial properties are those properties related to the material's tendency to be sluggish to changes in its state of motion. The density of a medium is an example of an inertial property. The greater the inertia (ie. mass density) of individual particles of the medium, the less responsive they will be to the interactions between neighboring particles and the slower that wave will be. The inertial property of density tends to be the property which has greatest impact upon the speed of sound. The speed of a sound wave in air depends upon the properties of the air, such as temperature and pressure. The mass density of air and strength of particle interactions are affected by pressure of air and temperature respectively. Speed of a sound wave is often expressed in units of meters/second. At normal atmospheric pressure, the temperature dependence of the speed of a sound wave through air is as shown:

$$V = 331 \text{ m / s } + (0.6 \text{ m / s / C } ) \cdot T$$

Where T = temperature of the air in degree Celsius (C), the speed of a sound wave in air at a temperature of 20 degrees Celsius can yield the following solution.

$$V = 331 \text{ m / s } + (0.6 \text{ m / s / C } ) \cdot T$$

$$V = 331 \text{ m / s } + (0.6 \text{ m / s C } ) \cdot (20 \text{ c } )$$

$$V = 331 \text{ m / s } + 12 \text{ m / s }$$

$$V = 343 \text{ m / s }$$

Using the above equation accurate speed value for temperatures between 0 to 100<sup>0</sup> C could be calculated. In case of Mandu where the temperatures are between 22<sup>0</sup> C to 36<sup>0</sup> C, the sound would travel at a speed of 343 m/s. At the human beings lips there are several frequencies or harmonics that are produced. The number of times the vocal folds vibrat (in Hertz) per second is called Fundamental frequency. There is a difference

between the male and female voice frequency. The Fundamental frequency (FO) of male voices ranges from 100 to 150 Hz while for female it ranges from 170 to 220 Hz. The conversational fundamental frequency is approximately 200 Hz for adult women and 125 Hz for adult men. The frequency and the wavelength determine the speed of the sound wave. The mathematical relationship between speed, frequency and wavelength can be understood by the following equation:

$$\text{Speed} = \text{Wavelength} \times \text{Frequency}$$

Using the symbols  $v$ ,  $\lambda$  and  $f$ , the equation can also be written as  $v = f \lambda$ .

In a room, sound produced is reflected on the surfaces of the walls, floor, ceiling etc., and echoes are formed. The sound is reflected back and forth against the walls, ceilings and floor several times which continue even after the source has stopped producing the sound. This prolongation of sound even after the source producing it is called *Reverberation* and *reverberation time* is measured by the length of time required for the sound to become inaudible after the source has stopped. Material from which the surfaces of walls, ceiling or objects within the room are made to control the nature of the reflected sound in terms of the amount of sound energy that is absorbed by the surface and that which is reflected. Reflection of sound from surfaces, like walls, floor, ceiling or objects within the space, govern the acoustics of a space<sup>214</sup>. Besides above mentioned interiors of the room, the room also could comprise of human beings and Sabine gives the absorption of human beings in terms of a square meter of complete absorption<sup>215</sup>.

Ceiling, another important part of the room also plays an important role in acoustics. Convex surfaces tend to scatter the sound they reflect and diffuse the sound where as concave surfaces like the dome or barrel vault ceilings cause sound foci<sup>216</sup>. The concave shape catches the sound and distributes it in the shape of an umbrella. Sound waves are longitudinal in nature and as a result get reflected from the smooth surface, gets focused

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<sup>214</sup> David M. Howard, *Voice Science, Acoustics and Recording*, Plural Publishing INC, San Diego, 2008, p 78.

<sup>215</sup> Wallace Clement Sabine, *Collected Papers On Acoustics*, Harvard University Press, Cambridge, 1922, p223. Sabine gives Audience per person absorption coefficient as 0.44, Isolated woman's sound absorption coefficient as 0.54 and isolated man's sound absorption coefficient as 0.48.

<sup>216</sup> Esmond Reid, *Understanding Buildings: A Multidisciplinary Approach*, Routledge Taylor and Francis Group, London, 2013, p167.

on the curved surfaces (in this case concave) and attenuated due to the obstacles in the path of propagation. The intensity of the sound is measured in decibels (db). Standing wave pattern is formed when sound is restricted between two plane surfaces and this wave has a maxima and minima points at regular intervals which are called nodes and anti nodes. Wavelength is the term used to measure the distance between two nodes or antinodes. Frequency range of sound that human beings can hear is between 20-20,000 Hz. In the context of Mandu's Jahaz Mahal palace the sound produced in the double hall has intensity of about 75 db, and as one moves towards the southern end of the Jahaz Mahal palace the decibels reduced from 75 to 65 db while on the northern side the sound in the last hall is about 55 db.

Hence, it can be understood that science had been put to use while constructing the structures of the Jahaz Mahal or the Royal complex. Having given the detailed description of the architecture and the science and technology that were used in making the monuments of the Royal complex, a study three of other structures styled as Rewa Kund, Baz Bahadur Palace and Rupmati pavilion which are located on the southern fringes of Mandu is required.

## Medieval Technology and Building Construction:

### Baz Bahadur Palace And Rupmati Pavilion

Located on the southern edge of Mandu are another group of monuments styled as Baz Bahadur Palace and Rupmati Pavilion. These monuments are the focus of this chapter. Baz Bahadur and Rupmati were contemporaries of Akbar. After the reign of Nasiruddin, Mandu remained under the rulers of Gujarat, until Humayun took it over from them. Humayun held it only for a short time period, after which Sher Shah Suri took over it and gave its governorship to Shuja'at Khan<sup>1</sup>. He soon died and one of his sons Bazid Khan, who later took the title of Baz Bahadur, was successful in capturing the throne. After his defeat against Rani Durgawati, the widow of Raja of Katangah<sup>2</sup>, he quit all his military activities and retired to Mandu<sup>3</sup>.

Khawajah Nizamuddin Ahmad and Ferishta, both remark that Baz Bahadur spent his days in pleasure and in the company of musicians and singers who had come from different places<sup>4</sup>. Abul Fazl also provides similar account of Baz Bahadur after this defeat by Rani Durgawati<sup>5</sup>. Further writing about the same, Ahmad ul Umari remarks that his court was never short of musicians. Besides music, he also took to hunting<sup>6</sup>. While on a hunting expedition Baz Bahadur came across Rupmati<sup>7</sup> and was attracted towards her beauty and voice. He asked her to be his bride. Rupmati put forward a demand that she would marry

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<sup>1</sup>Abul Fazl, *Ain-i-Akbari*, Vol I, p 428 No.120. Abul Fazl wrote that Baz Bahadur's father was Shuja'at Khan, who is generally called in histories *Shajawal* or *Sajawal*, Khan. The large town Shajawalpur, or Sajawalpur, in Malwah bears his name; its original name Shuja'atpur, which Abul Fazl gives below under Sirkar Sarangpur, Malwah, appears to be no longer in use.

<sup>2</sup> *Ibid*, p 367. Abul Fazl wrote that Baz Bahadur planned the famous expedition against Gadha-Katangah or Gondwanah, south of Bhat'h, which was governed by Durgawati, the heroine of Central India. Also see Badaoni, *Muntakhabu-t-Tawarikh*, Vol II, p 65. Also see Nizamuddin Ahmad, Vol III, p 630.

<sup>3</sup> Ahmad-ul-Umari, *op.cit*, p 6.

<sup>4</sup> Khawaja Nizamuddin Ahmad, Vol III, p 631. Also see Ferishta, Vol IV, p 167.

<sup>5</sup> Abul Fazl, *Ain-i-Akbari*, Vol I, p 428 No.120. Abul Fazl wrote that he gave himself up to a life of ease and luxury, his singers and dancing women were soon famous throughout Hindustan, especially the beautiful Rupmati, who is even now-a-days remembered.

<sup>6</sup> Ahmad-ul-Umari, *op.cit*, pp 7-8.

<sup>7</sup> *Ibid*, pp 86-87. Rupmati was the daughter of T'han Singh, a Rajput of the Rathor clan. He was the lord of Dharmपुरi. Also see Bombay Subaltern, *op.cit*, p 108. Bombay Subaltern refers to her as one who came from the village of Tandapuri, near Mandlesar, located on the right bank of Narmada. Also see John Malcolm, *op.cit*, p 39-40. John Malcolm in his *Memoirs of Central India* refers to her as a dancing girl of Sahrnupoor.

him only if water of *Rewa*<sup>8</sup> flowed in the city of Mandu<sup>9</sup>. Baz Bahadur determined to make Rupmati the queen of Mandu, decided to fulfill the demand. In the local traditions it is said that the river goddess Rewa rose and bade him to find a spring beneath the roots of a tamarisk which shall be called by her name. A couplet referring to this episode is as follows –

“ Monarch! Thy ras attempt forbear!...

But search that spot on Maandoo’s height

Whence our broad stream salutes the sight;

Where springs our sacred Tamarisk know,

Beneath our own, bright waters flow;

There dig thy font, thy palace rear,

Thy Bride of Beauty thither bear,

To live, to love, whilst Rewa’s wave,

Sparkles in Maandoo’s mountain cave.”<sup>10</sup>

Baz Bahadur according to traditions fulfilled the demand. He once again asked Rupmati to marry him but was resisted by her father who soon was defeated and had to bow down to Baz Bahadur and give Rupmati in marriage to him<sup>11</sup>. The construction of the Baz Bahadur palace has been regarded by Umari as the one built by Baz Bahadur on Rupmati’s entreaty. He related it to the anger that Rupmati sensed for Baz Bahadur. On realizing that the nobles were offering him so much wine that he almost was unaware of it being a day or night, she asked him to build a palace close to Rewa<sup>12</sup>. Although Umari suggests that this palace was built by Baz Bahadur, one cannot ignore the Persian

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<sup>8</sup> James Abbott, *The T’hakoarine: A Tale of Mandoo*, James Madden and Co, London, 1841, p 1. Rewa is the other name of river Narmada.

<sup>9</sup> Ahmad-ul-Umari, *op.cit*, p11. Also see Stirling, *op.cit*, p 58. Also Abbott, *op.cit*, p 124.

<sup>10</sup> Abbott, *op.cit*, p 108. Also see Ahmad-ul-Umari, *op.cit*, pp 12-13.

<sup>11</sup> *Ibid*, p 13.

<sup>12</sup> *Ibid*, p 16

inscription on the main entrance of the monument which refers to this being built by Nasiruddin in 1508 A.D.<sup>13</sup>. In all probabilities this palace must have been already standing during the reign of Nasiruddin. It must have been used as a retreat palace and the region to its east must have been used as a hunting ground. One cannot ignore that Jahangir in his memoirs refers to Nur Jahan gunning down four tigers in Mandu and also refers to him going out for hunting when rain came down pouring<sup>14</sup>. The practice of hunting must have been carried out even during the reign of Nasiruddin and the possibility of Baz Bahadur palace being used as a retreat for hunting is probable. Umari also adds that Baz Bahadur erected an aqueduct which carried the water from the Rewa Kund to the baths of the palace<sup>15</sup>. This is the narrative which has been mentioned by most of the contemporary sources.

Stone that have been used in the construction of Rupmati Pavilion are masonry blocks along with a conglomerate like limestone which is intermixed with yellow clay. In the context of Baz Bahadur Palace, besides red sandstone, white stone inlaid with black stay stone like in that of Jahaz Mahal have been used. The ornamental interiors of the pavilion on the terrace of Baz Bahadur palace, as given by Harris, once must have been decorated with enameling colors mainly blue<sup>16</sup>. I have already mentioned in the previous chapter the places from where these stones were procured.

A visitor on approaching this group of monuments from Mandu's inhabited area, would first come across Rewa Kund, which according to tradition is the other name of Narmada. Legend goes on to say that the waters of Narmada were redirected to Mandu on the

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<sup>13</sup> *Epigraphia Indo Moslemica, 1909-10*, p 24. Near Rewa Kund there is a palace built by Nasiruddin said to have been repaired by Baz Bahadur and locally known as "Baz Bahadur ka Mahal". The entrance arch bears the following inscription of which no rubbing could be taken and which has been read on the stone – "During the time of ... of the Sultan the just and great, the learned and noble khanq written by Yusuf in the year 914 (1508-9 A.D.)". Also see Yazdani, *In Praise of Mandu*, p 33. Also see Barnes, *op.cit*, p 388. The inscription is as follows – "In the time of the Sultan of Nations, the most just and great, and the most learned and magnificent Sultan Nazir Shah Khilji, written by Yusuph, the year A.H. 914". Also see Campbell, *op.cit*, p 159. The following Persian inscription, carved on the entrance arch, shows that though it may have been repaired by Baz Bahadur, the building of the palace was fifty years earlier (H.914, A.D. 1508):- "In the time of the Sultan of Nations, the most just and great, and the most knowing and munificent khakan Nasir Shah Khilji (A.D. 1500-1512). Written by Yusuf, the year (H. 914) A.D. 1508). Also see plate 51.

<sup>14</sup> Jahangir, *Tuzuk-i-Jahangiri*, p 375 and 382.

<sup>15</sup> Ahmad ul-Umari, *op.cit*, p 16. Also see Stirling, *op.cit*, p 59. Also see Abbott, *op.cit*, p125.

<sup>16</sup> Harris, *op.cit*, p 12.

demand of Rupmati. However looking at the gradient of the Kund one can understand that this must have been a catchment zone<sup>17</sup> and a check dam was made towards its north-eastern edge not to allow the waters of this kund to flow away<sup>18</sup>. The closest place from Mandu where Narmada flows is Maheshwar which is about 40 kms away from Mandu. Through the route from Maheshwar to Mandu there are no traces of waters which indicate that the possibility of Narmada being diverted towards Mandu was not possible. Another aspect that could not be ignored is if this was a reservoir that came up during Baz Bahadur's reign and if the palace was nearby was built earlier to Baz Bahadur's period, what the source of water to this palace was.

The waters of this kund are lined in masonry and have a flight of steps leading to the waters of the kund. To the west of the kund there is an apartment comprising of five arched openings and there is a separate compartment with steps which is now under water and encloses the spring, which according to the previous writers was a spring that accommodated Narmada<sup>19</sup>. This reservoir was taken up for restoration for the first time in 1997. The debris was removed and the repairs of this tank were undertaken. Today Rewa Kund is spread over only the area to the south west of Baz Bahadur palace, but it must have also extended over the north eastern part.

To the east of this kund is Baz Bahadur palace which can be reached by a flight of forty broad steps which are built in sets of four, in other words the steps  $4 \times 10 = 40$ . These steps further lead one to the first gateway of the palace facing the north<sup>20</sup>. The gateway leads a visitor into a covered passage<sup>21</sup> which comprises of rectangular chambers on either side with arched openings<sup>22</sup>. Further this passage turns towards east leading a visitor to a small courtyard which further leads to outer section of the palace<sup>23</sup>. The western wall of the courtyard comprises of six arches of which three are closed ones while two are open and one is partially open. The arch to the extreme south is wider in

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<sup>17</sup> See Plate 52.

<sup>18</sup> See Plate 53.

<sup>19</sup> Bombay Subaltern, *op.cit*, p 25.

<sup>20</sup> See Plate 54.

<sup>21</sup> See Plate 55.

<sup>22</sup> See Plate 56.

<sup>23</sup> See Plate 57.

span when compared to the other five arches. The second arch to the south is the one which leads a visitor from the passage to the inner parts of the palace. The third and the fourth arch (in direction from south to north) are closed ones. While the third arch is of the same height as that of the second arch, the fourth one is smaller in height and also in span when compared to the first three. The fifth arch is of the same height as that of the fourth but smaller in span and this is the one which is partially closed. Smallest of the arches, in terms of span and height is the one to the extreme north. In all probabilities one of the last two arches to the north comprises of steps leading to the terrace of the passage of the main entrance of the Baz Bahadur palace<sup>24</sup>. All of these arches are made up of keystone. In all probabilities the arched opening made on the southern wall of this courtyard must have given a direct access to the inner section of the Baz Bahadur's palace. In other words the outer section of the Baz Bahadur's palace (discussed below) must have been later addition.

From here a visitor can reach to the outer section of the Baz Bahadur palace which comprises of halls and rooms and a tank in the middle<sup>25</sup>. This tank is a square one with steps on all sides for landing<sup>26</sup>. This tank received water from the Rewa kund by the means of an aqueduct whose traces can be seen even today outside the main entrance of the palace. The northern side of the court comprises of a colonnade made up of nine arched openings that are of three different spans and at the end of the colonnade on each end is a room<sup>27</sup>. The central arched opening of the outer colonnade is made of white stone. The span of the arches to the west and to east of the central arch of the inner part of the colonnade are different. To the west of the central arch there are four arches of which two are smaller in span when compared to the remaining two, whereas the arches on the eastern side of the central arch are made of three different spans. The arch to the immediate east of the central arch is the smallest in span when compared to the other three arches. Of the other three arches to the east the central one is smaller when compared to the other two arches. The white stone arched opening made on the outer colonnade is divided into two parts, is more like double arch. Although this is an arch which

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<sup>24</sup> See Plate 58.

<sup>25</sup> See Plate 59.

<sup>26</sup> Yazdani, *op.cit*, p 94. The dimension of the tank given by Yazdani is 50 feet on each side.

<sup>27</sup> See Plate 60.

is wider when compared to the other arches made along the outer colonnade, the arched opening made within it is smaller in span and height when compared to the other arches. This white stone arched opening leads a visitor into a gallery which gives over view of the terrain below. This gallery is made up of four double arched openings<sup>28</sup>. This gallery is right above the porch of the basement below this gallery. In order to reach the basement one can take steps leading from the northern end of the outer court. The basement comprises of a series of rooms of which the central one is rectangular<sup>29</sup>. From the basement there is a slope leading into another stage which leads a visitor into a Royal garden, traces of which can be seen even today. The tank on the floor above must have acted as a cooling agent of the basement keeping it cool during the hot seasons. However the access to this basement now is a very difficult one.

The outer court of the Baz Bahadur palace comprises of square rooms on each end of the eastern side of the court which is separated by an open space. Like the rooms on the eastern side, there are rooms on the west, which are on either sides of the entrance to this section of the palace. However the apartments on the south are not similar to the ones on the north. The southern part of this court comprises of three arched openings leading a visitor into a passage which has rooms on either ends. The ceiling of the passage is a flat one<sup>30</sup>. The windows that have been made in these two rooms- one facing east while the other facing west, are made at an angular level and are located at a height, which did not allow direct air or sunlight to enter the rooms<sup>31</sup>. These windows are comprises of arches made one within another. These rooms also comprise of arched windows facing the outer section and the inner section of the palace.

Behind this hall, there are steps leading into another quadrangle of a smaller dimension. The eastern side of this quadrangle has a hall with three arched openings and to the south of this quadrangle are two apartments. The western side of the quadrangle comprises of an entrance with two rooms on each side. The quadrangle and the main building are separated by a wall comprising of 31 steps which lead a visitor to the terrace. The terrace

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<sup>28</sup> See Plate 61.

<sup>29</sup> Yazdani, *Mandu*, p 93. Yazdani gives the measurement of this room as 46 feet 6 inches by 16 feet 2 inches. Also see Plate 62.

<sup>30</sup> See Plate 63.

<sup>31</sup> See Plate 64.

comprises of two open pavilions or *Baradaris*<sup>32</sup> which gives a view of the countryside and the courtyard below. From here Baz Bahadur must have watched Rupmati whose palace is located on a nearby hill<sup>33</sup>. Both these baradaris are square in plan and rest on pillars forming arches with dome. These baradaris comprises of three arched openings on all four sides, of which the central one is larger in span when compared to the outer two<sup>34</sup>. The dome of the baradaris is plain in style with a parapet above the arched openings. Above this parapet is a square platform on which the dome has been built.

H.H.Cole in his report in 1881-82 refers to preservation activities in Mandu being carried out by Maharaja of Dhar. He remarks that the colonnade of the Baz Bahadur palace was being used by the cattle. He suggested that the jungle outside Baz Bahadur palace and the courtyard in the Baz Bahadur palace were to be cleared and cleaned<sup>35</sup>. However again in his next report he suggested that the courtyard in the Baz Bahadur palace required cleaning<sup>36</sup>. The conservational activities between the years 1902 and 1912<sup>37</sup> mainly focused on removing vegetation and keeping the buildings of Mandu clean. The same was carried out through the years between 1913 and 1919<sup>38</sup>. The report of 1924-25 suggests that the repairs to Baz Bahadur palace had been completed along with other monuments of Mandu<sup>39</sup>. In the year 1928-29 measured drawings of many of the monuments of Mandu were prepared of which one was Baz Bahadur palace<sup>40</sup>. In 1934-35 ordinary repair works like water proofing the dome, replacing the worn out stones with new ones, filling up of the gaps between the stones, etc., were carried out at the monuments like Baz Bahadur palace<sup>41</sup>.

It was only in 1957-58 that the steps leading to the Baz Bahadur palace were brought to the light to their full length. The walls were made water tight during repair works in this

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<sup>32</sup> Yazdani, *Mandu*, p 95. Baradari is a square or rectangular pavilion with three arched openings in each of its side. Also see Patil, *op.cit*, p 48. Also see *Plate 65*.

<sup>33</sup> See *Plate 66*.

<sup>34</sup> See *Plate 65*.

<sup>35</sup> *First Report*, p clxiv.

<sup>36</sup> *Third Report of the Curator of the Ancient Monuments in India for 1883-84*, Calcutta, 1885, p 10.

<sup>37</sup> *Progress Report Western Circle 1912*, p 18.

<sup>38</sup> *Annual Report of the Director General of Archaeology in India 1919-20*, Superintendent Government Printing, Calcutta, 1922, p 10.

<sup>39</sup> *Annual Report 1924-25*, p 46

<sup>40</sup> *Annual Report 1928-29*, p 50.

<sup>41</sup> *Annual Report 1934-35*, pp 26-27.

year<sup>42</sup>. In the next year the arched openings carrying the aqueduct at Baz Bahadur palace were made watertight and the process of grouting the cracks and fissures were started<sup>43</sup>. Between the years 1959 and 1961 the debris from the Baz Bahadur palace was removed and the walls were made watertight<sup>44</sup>. Further repairs to the worn out floors of the halls and rooms in the Baz Bahadur palace were carried out when they were replaced with a layer of lime concrete in 1973. In the same year the steps of the entrance gateway were also repaired<sup>45</sup>. Between the years 1974 and 1985 general repair works were carried out in Mandu. In 1986 the damaged steps and the floor of the tank in the courtyard of Baz Bahadur palace were replaced with fresh chiseled and dressed lime stone, masonry wall was restored and made watertight<sup>46</sup>.

On a hill top to the south of the Baz Bahadur palace is located Rupmati Pavilion. The contemporary sources are silent regarding its construction. However from Umari's remark one can understand that this must have been a structure which already existed and two chhatris were added to it by Baz Bahadur when Rupmati asked him to, to gaze at Dharmapuri, her old home<sup>47</sup>. An inscriptional tablet built into the wall of the entrance to room at the northern end of the central hall refers to existence of a khanqah here<sup>48</sup>. In all probabilities this structures must have existed and one cannot rule out that it must have been used for military purpose because its location is such that one can view the approach of an enemy from the south. The possibility of this being used as a monastery seems

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<sup>42</sup> *Indian Archaeology 1957-58*, p 103.

<sup>43</sup> *Indian Archaeology 1958-59*, p 84.

<sup>44</sup> *Indian Archaeology 1959-60*, p 85. Also see *Indian Archaeology 1960-61*, p 79.

<sup>45</sup> *Indian Archaeology 1973-74*, p 61.

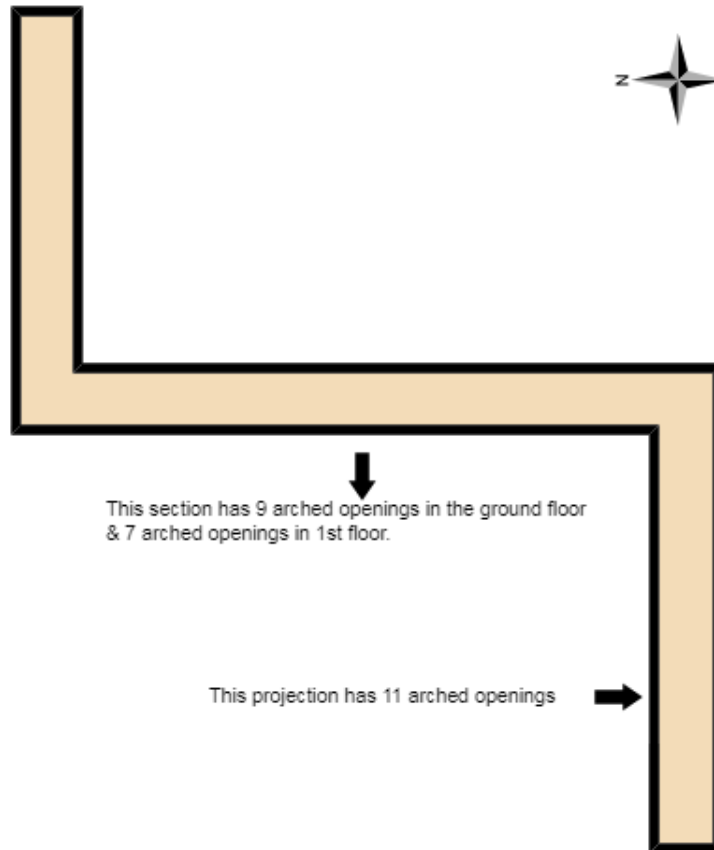
<sup>46</sup> *Indian Archaeology 1986-87*, p 145.

<sup>47</sup> Ahmad ul-Umari, *op.cit*, pp 16-17

<sup>48</sup> *Epigraphia Indo Moslemica, 1909-10*, p 25. At a short distance from Rewa Kund, there is Rupmati Chhatra (a small ornamental pavilion). It bears an inscription engraved on a black stone slab measuring 36" by 20" in small letters. The inscription has been very badly damaged ... I could read the following words the slab – This inscription seems to refer to a kanqah and one Jami'at Khan is mentioned in connection with it. Also see Yazdani, *Mandu*, p 98. Writing about the inscriptional tablet "Above the entrance to the room, at the north end of the hall, an inscriptional tablet is built into the wall. As the letters are much abraded, the tablet was probably fixed originally into the empty niche shown in the east façade of the building, for inside the hall there appears no reason for its weathering; further, the marginal stones around the tablet are clumsily set, and seem to have been inserted in comparatively modern times. The few words of the inscription which can be made out refer to a monastery connected with some saint of Dhar, and it is just possible that at some period in its history, the building may have assumed that character, but essentially it appears to be constructed more for military purposes than for religious meditation.

improbable looking at its architectural style, which in other words means that this structure was constructed over different time periods.

The architectural plan of this structure can be understood from the figure 12-



This pavilion consists of a gallery comprising of two floors facing the west and which is made up of arches. The road to this pavilion is steep and curvy<sup>49</sup>. Behind this pavilion on the eastern side one can notice a garden area<sup>50</sup>. The ground floor comprises of a large hall with two rooms built at each end. This has 8 arched openings facing west<sup>51</sup>. The inner part of this floor comprises of arches that have been from west to east as well as from north to south. Both these sets of arches intersect each other in the centre of the ceiling<sup>52</sup>.

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<sup>49</sup> See Plate 67.

<sup>50</sup> See Plate 68.

<sup>51</sup> See Plate 69.

<sup>52</sup> See Plate 70.

This pavilion comprises of a basement which must have once housed guards<sup>53</sup>. The western extension of the pavilion comprises of a covered tank<sup>54</sup> which is supplied with rainwater that was allowed to drain from the chhatris on the terrace to the pipes on the walls of the structure and allowed to fall in a smaller tank<sup>55</sup> on the ground level and then allowed to fall into the tank located on the western part of the structure<sup>56</sup>. In other words this western extension was made with a plan to channelize the rain water into the reservoir located here. The projection to the west comprises of 11 arched openings facing the north.

The room to the south of the hall of the ground floor consists of steps which lead a visitor to the terrace which consists of the chhatris that are externally square in plan but octagonal in shape from the interiors and is crowned with a hemispherical dome. The supporting columns of these pavilions are square with high cupolas. The domes that are made over these pillars are ribbed in their form<sup>57</sup>. Behind here is a place which is recognized as the spot of Sati of Rupmati or funeral burning, however there is no structure which marks this spot<sup>58</sup>. However there are various claims of the death and on the location of the burial of the queen of Mandu and her beloved Baz Bahadur. Neamet Ullah remarks that Rupmati consumed camphor and took her own life, after she was captured by Adham Khan<sup>59</sup>. Abul Fazl refers to her having a cup of deadly poison after hearing the news of Adham Khan's capture of Baz Bahadur's property<sup>60</sup>. In another instance Abul Fazl makes a mention of both Baz Bahadur and Rupmati being buried together in a tomb which stands in the middle of a tank in Ujjain<sup>61</sup>.

Cole in his first report suggested that the lower section of Rupmati Pavilion was being used as dwelling. Further he suggested that vegetation in the roof and the walls of the Rupmati pavilion and the jungle outside Baz Bahadur palace and the courtyard in the Baz

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<sup>53</sup> See Plate 71.

<sup>54</sup> See Plate 72.

<sup>55</sup> See Plate 73.

<sup>56</sup> See Plate 74.

<sup>57</sup> See Plate 75.

<sup>58</sup> Harris, *op.cit*, p 12. Also see Bombay Subaltern, *op.cit*, p 23.

<sup>59</sup> Neamet Ullah, *History of the Afghans*, Eng.Tr. by Bernhard Dorn, London, 1836, p 178.

<sup>60</sup> Abul Fazl, *Akbarnama Vol II*, p 211.

<sup>61</sup> Abul Fazl, *Ain-i-Akbari Vol I*, p 428. No 120.

Bahadur palace were to be cleared and cleaned<sup>62</sup>. The 1922-23 report refers to suggestion given by Maulvi Zafar Khan who deplored the idea of carrying out the works in many monuments at a time. Instead he suggested that one or two should be completed at a time and of the many monuments taken up in 1922 were Rupmati Pavilion and Baz Bahadur palace<sup>63</sup>. Next year the repair works had been completed in Rupmati Pavilion<sup>64</sup>. Special conservational works were carried out at Rupmati Pavilion in 1930-31<sup>65</sup>.

In the year 1969 the repair works were once again carried out at the Rupmati Pavilion when the decayed concrete was replaced with fresh lime concrete on its 1<sup>st</sup> and 2<sup>nd</sup> storeys<sup>66</sup>. There were repair and conservational works carried out in Mandu until 1995, although the group of monuments focused in this chapter were not the main focus. It was in 1995 that one of the damaged domes of one of the pavilions on the terrace of Rupmati pavilion which was struck by lightning and damaged, was strengthened. Limestone blocks from Zeerabad quarry were used to restore the half damaged dome and to maintain its alignment with the original one<sup>67</sup>. This repair of the half damaged dome was also carried out in the next year<sup>68</sup>. The works that were carried out last year at the Rupmati Pavilion were continued this year too. The restoration of the pillars to reconstruct the dome was taken up and the plastering of the dome was in progress<sup>69</sup>. In the year 2000 the exposed parts of Rupmati Pavilion which was damaged by the deteriogenic organisms like mosses, lichens, etc., were subjected to chemical treatment. Calcium hypochlorite or bleaching powder was used as an effective for removing micro- organism from the plastered surfaces of this pavilion. The mixture of aqueous ammonia solution and Ranklene neutral mixture in water was used to clean the surface of the stones<sup>70</sup>. The conservational activities are still being carried out. In constructing these structures, like the monuments of Royal Complex, science and technology has been made use of.

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<sup>62</sup> *First Report*, p clxiv.

<sup>63</sup> *Annual Report 1922-23*, pp 85-86.

<sup>64</sup> *Annual Report, 1925-26*, p 55.

<sup>65</sup> *Annual Report 1930-34 part I*, p 49.

<sup>66</sup> *Indian Archaeology 1969-70*, p 84.

<sup>67</sup> *Indian Archaeology 1995-96*, p 128.

<sup>68</sup> *Indian Archaeology 1996-97*, p 253.

<sup>69</sup> *Indian Archaeology 1997-98*, p 275.

<sup>70</sup> *Indian Archaeology 2000-2001*, p 221.

Having given the background to the necessity of having hydraulic structures in the dry regions like Malwa in the previous chapter, here in Baz Bahadur palace and Rupmati Pavilion one can notice mechanism used with water system using science and technology being implemented. Between Rewa Kund and the Baz Bahadur palace there is an aqueduct<sup>71</sup> and a tank<sup>72</sup> which have been made. ‘*Aqueduct*’, an artificial conduit for the delivery of water<sup>73</sup>, is a technique that has been put into use in Baz Bahadur palace. Roman aqueducts are well known in the history which helped Rome to solve the problem of diverting waters from Alban hills to the south east, from the Sabatini to the northwest and from Apennine mountains in the north to the east. A reference to the aqueducts of Rome was made by Strabo<sup>74</sup> and Pliny<sup>75</sup>. The *De Aquis*, a work written by Frontinus, is a repository of information about the aqueducts of Rome. Frontinus indicates that an aggregate volume of water was 12,755 quinariae<sup>76</sup> set down in records, but 14,018 quinariae actually delivered<sup>77</sup>.

Vitruvius<sup>78</sup>, a Roman architect, gives three kinds of ducts of water- channels of masonry conduits, or in lead pipes or in pipes of baked clay. He suggests that when channels are made, the masonry should be as solid as possible, and the bed of the channel should have a gradient of at least a quarter of an inch for every hundred feet. He also suggested that the masonry structure be arched over, so that sun may not strike the water at all. When this masonry structured has reached the city, a reservoir is built with a distribution tank in three compartments connected with the reservoir to receive the water. This reservoir he

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<sup>71</sup> See Plate 54.

<sup>72</sup> See Plate 76.

<sup>73</sup> Jack Challoner, Ed, *1001 Inventions That Changed The World Since 2600 BCE*, Hachette India, Gurgaon, 2013, p 86.

<sup>74</sup> Evan James Bembskey, *The Aqueducts of Ancient Rome*, University of South Africa, 2009, p2. Strabo tells “So much, then, for the blessings with which nature supplies the city... water is brought into the city through the aqueduct in such quantities that veritable rivers flow through the city and the sewers; and almost every house cisterns, and service-pipes, and copious fountains, with which Marcus Agrippa concerned himself most...”

<sup>75</sup> John F.Healy, *Pliny the Elder on Science And Technology*, Oxford University Press, New York, 2009, p 168.

<sup>76</sup> Frontinus, *De Aquis*, Eng. Tr. By Charles E. Bennett in *Frontinus The Stratagems And The Aqueducts of Rome, Aqueducts of Rome, Book I*, William Heinemann, London, 1925, p 366. The quinaria was a measure not of volume but of capacity, i.e. as much water as would flow through a pipe one and a quarter digits in diameter, constantly discharging under pressure.

<sup>77</sup> *Ibid*, *Aqueducts of Rome, Book II*, p 389.

<sup>78</sup> [http://www.romanaqueducts.info/picturedictionary/pd\\_anderwerpen/vitruvius.htm](http://www.romanaqueducts.info/picturedictionary/pd_anderwerpen/vitruvius.htm). Vitruvius was a Roman architect who worked for both Caesar and Augustus.

writes should have three pipes one for each connecting tanks so that when the water runs over from the tanks at the ends, it may run into the one between them. Pipes shall be laid to all the basins and fountains from the central tank. The baths would be connected to the second tank by pipes while from the third tanks pipes are connected to private houses, so that water for public use will not be short<sup>79</sup>.

At the Baz Bahadur palace one can see that water from the Rewa Kund was allowed to be collected in a smaller tank<sup>80</sup>, and then with the help of the aqueduct, located at the western edge of the Baz Bahadur palace, fitted with a water lifting device, water was carried through the water channels<sup>81</sup> and allowed to fall into the tank in the outer section of the Baz Bahadur palace. Another scientific effect that has been put into practice here in Baz Bahadur palace is the capillary effect. The courtyard which is between the main entrance of the palace and the outer section of the palace to the south has the water channels that run along the arched opening. These water channels are inbuilt and using the capillary effect the water was allowed to pass from the channel to one side of the arched opening to the channel on the other side of the arched opening<sup>82</sup>.

At the Rupmati Pavilion one can clearly understand that the process of harvesting rainwater was put into practice to channelize water into the tank located along the western extension of the pavilion through channels which are visible even today. This pavilion is located 364m above the sea level. It must have been used as an outpost serving as a pavilion which allowed Rupmati to view Narmada River. By harvesting rain water, the water requirement was met here. As already mentioned this western extension which comprises the tank has 11 arches facing west and to the south of the tank is a corridor which is connected to the pavilion and the tank<sup>83</sup>. Rainwater from the two chhatris on the terrace were allowed to drain through the pipes on the walls and allowed to fall into a small tank on the ground level and then allowed to fall into the larger tank. The pipes are no longer exists. Before water was allowed to fall into the larger tank, water from the small tank was purified using layers of sand and wood ash. The corridor

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<sup>79</sup> Vitruvius, *op.cit*, p 244.

<sup>80</sup> See Plate 76.

<sup>81</sup> See Plate 77-78.

<sup>82</sup> See Plate 79-80.

<sup>83</sup> See Plate 81.

to the south of the larger tank does not allow direct sunlight to enter and fall on the water of the larger tank. The arches that have been made around the tank are made keeping winter and summer solstice in mind. In other words these arches allowed only minimal sunlight to enter inside which played a minimal role in evaporation of water.

Water is classified into various types according to their origin like surface, ground, rain or waste water, etc. The constituents of water can be divided basically into undissolved and dissolved matters. Soil residues, solid food wastes, plant residues, oil, grease etc., are examples of undissolved matters. Water also contains micro-organisms like phytoplankton<sup>84</sup>, zooplankton<sup>85</sup>, virus, bacteria, parasites like Giardia lamblia<sup>86</sup>, Cryptosporidium etc., and fungi. Dissolved matters include organic and inorganic substances that are either biodegradable or non-biodegradable. Solar disinfection of water is one of the techniques being used for disinfecting water with the help of UV radiations in wavelength between 240 nanometer and 290 nanometer. Sunlight basically consists of UV-A radiations<sup>87</sup> and infrared radiation. Former has a germicidal effect while the later raises the temperature of water. When water reaches 70<sup>0</sup>C – 75<sup>0</sup>C temperature due to infrared radiations, this is called pasteurization and this heating up of water can help killing micro-organisms, which is same as heating the water for an hour<sup>88</sup>. Recent

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<sup>84</sup> <http://oceanservice.noaa.gov/facts/phyto.html>. Phytoplankton, also known as microalgae, are similar to terrestrial plants in that they contain chlorophyll and require sunlight in order to live and grow. They are mainly buoyant and float in the upper part of the ocean, where sunlight penetrates the water.

<sup>85</sup> <http://marinebio.org/oceans/zooplankton/>. Zooplankton are diverse group of animals, that drift in aquatic environments. Several aquatic animals live out their life as part of the zooplankton like copepods and amphipods, while the egg and larval stages of some animals of part of zooplankton only until they grow large enough to start their adult life on the sea floor.

<sup>86</sup> <https://www.cdc.gov/parasites/giardia/>. Giardia lamblia is a microscopic parasite that causes the diarrheal illness known as giardiasis.

<sup>87</sup> Columbia University Press, *The Concise Columbia Encyclopedia*, Avon Books, New York, 1983, p 869. Ultra violet radiation is electromagnetic radiation with frequencies between that of visible violet light and X rays. It ranges in wavelength from 400 to 4 nanometers. As per ISO standards the Ultraviolet rays are broadly subdivided into a number of ranges like UV-A, NUV, UV-B, MUV, UV-C, etc. Of these UV-A is a long wave and black light which is not absorbed by the ozone layer. The UV-A wavelength ranges from 315nanometers to 400 nanometers. Also see [http://www.spacewx.com/pdf/SET\\_21348\\_2004.pdf](http://www.spacewx.com/pdf/SET_21348_2004.pdf).

<sup>88</sup> Regula Meierhofer and Martin Wegelin, Solar Water Disinfection: A Guide For the Application of SODIS, in *Swiss Department Water and Sanitation in Developing Countries (SANDEC), Report 06/02*, p 11.

experiments carried out in South India and Africa has concluded solar disinfection of water reduces diarrhoeal disease<sup>89</sup>.

Another technology which has been made use of in the Baz Bahadur palace is the system of acoustics. In the previous chapter I have already given details of how a vault is formed while construction. Even in this monument, as in case of Jahaz Mahal, the system of acoustics functions. To meet the requirement of the royalty, the system of acoustics in this enclosure of Baz Bahadur palace was implemented to serve as a music room<sup>90</sup>. Reverberation and resonance of the sound can also be felt in this structure, which has been explained in detail in the working of the acoustics system in Jahaz Mahal complex.

I have discussed these technologies based on the field work that I had carried out at these monuments. The contemporary sources however do not refer to these technologies and hence it becomes more difficult to corroborate such kind of knowledge and one has to mainly depend on field work. In the following chapter I have dealt with the remaining structures in Mandu including the interfaces located between Baz Bahadur palace and the habited area of Mandu and Malwa that were constructed between 12<sup>th</sup>- 18<sup>th</sup> century and the technologies that have been used in making them.

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<sup>89</sup> A. Rose, S.Roy, V.Abraham, G.Holmgren, K.George, V.Balraj, S. Abraham, J.Muliyil, A.Joseph and G.Kang, 'Solar Disinfection of Water for Diarrhoeal Prevention in Southern India', in *Archives of Disease in Childhood*, Vol 91 (2), Feb, 2006, pp 139-141.

<sup>90</sup> Sanjay Subodh and Pooja Rhine, Acoustics and Building Construction Technology in Medieval India: 14<sup>th</sup> to 17<sup>th</sup> centuries, in *International Conference Proceedings of International Conference on Social Sciences and Humanities*, 2015, p 34.

## Medieval Technology and Building Construction:

### Medieval Remains in Mandu

Apart from the previously mentioned monuments there are many other monuments in Mandu, of which only some have been documented. There are monuments which have been documented but do not exist in the present. There are also monuments which have not been documented so far. In this chapter such kind of monuments have been dealt. Medieval cities have seen introduction of gateways or Darwazas marking the entry or exist from the city. The multiple numbers of Darwazas in a walled fort city was also used as an obstruction and denial of free passage to the enemy armies. Many such darwazas can be found in Mandu. Referring to these gates in Mandu, John Jourdain wrote that the road leading from the north is easily accessible because of which there are five strong gates one within another<sup>1</sup>. A similar description of the gates built to the north are given by William Finch who adds that the gates are all very strong with walled places for guards between gates<sup>2</sup>.

While entering Mandu from Dhar or Indore, one would first pass by four gates that are styled as Alamgir Darwaza, Bhangi Darwaza, Kamani Darwaza and Delhi Darwaza. The first of these is the *Alamgir<sup>3</sup> Darwaza<sup>4</sup>* which according to the inscription on marble slab on one of its walls was rebuilt during Aurangzeb's reign<sup>5</sup>. This is built with an inclination

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<sup>1</sup> Jourdain, *op.cit*, p 148.

<sup>2</sup> Finch, *Description of Mandu*, p 363. Also see William Finch in *Early Travels in India 1583-1619*, Oxford University Press, London, 1921, p 141. Henceforth cited as *William Foster, Early Travels*.

<sup>3</sup> Saqi Must'ad Khan, *Maasir-i-Alamgiri: A History of Emperor Aurangzib-Alamgir (Reign 1658-1707 AD)*, Eng. Tr by Jadunath Sarkar, Royal Asiatic Society of Bengal, Calcutta, 1947, p 13. It was at his second coronation ceremony in May 1659 that the reading of the Khutba, the stamping of coins and the proclamation of the Emperor's title took place, which was postponed during the first coronation ceremony due to the expedition into Punjab. The Emperor's title on the grand seal was ordered to be engraved as Abul Zafar Muhi-ud-din Muhammad Aurangzib Bahadur Alamgir Padishah Ghazi.

<sup>4</sup> See Plate 82.

<sup>5</sup> *Epigraphia Indo Moslemica, 1909-10*, p 20. Delhi gate, this gate is also called Alamgir gate as it was repaired during the reign of that emperor. The inscription it bears is carved on a white stone slab built into a side wall and measures 24 1/2" by 13 1/2". The inscription reads " (1) During the reign of "Alamgir the Khaejan (the King) of the whole world, this gate resembling the sky was built ahew. (2) In the year 1079 (1668-9 A.D.) (the work of restoration) was commenced and finished under the supervision of the exalted khan Mahammad Beg Khan. (3) Since the accession of this emperor of the world Aurangzeb, it was the 11<sup>th</sup> year by way of writing and speaking". Also see Yazdani, *op.cit*, p 41. The inscription may be translated

towards the North West, i.e. the construction of the darwaza was done keeping in mind the terrain inclination. This is an arched masonry darwaza with a covered passage, which is just enough for one elephant to pass by at a time<sup>6</sup>. The inner part of the arched passage is supported by barrel shaped roof made of four arches<sup>7</sup>. In front of the gateway there is walled enclosure with two bastions at each end of the wall. Along the outer wall of the darwaza on the right side are steps leading to the roof of this arched gate<sup>8</sup>. Although repair and restoration were carried out at this darwaza, only three Archaeological Survey report refers to them. The estimate which was sanctioned for the repair of monuments in Mandu had a share for the repair works at Alamgir darwaza<sup>9</sup>. The 1925 Archaeological Survey report suggests that a repair to this gate was completed in that year<sup>10</sup>. The roof of the gate was made water tight in lime cement concrete and pointing to the southern wall of the gate was done after raking out the mortar<sup>11</sup>.

From the Alamgir Darwaza one would pass by a stone causeway leading to another darwaza styled as *Bhangi Darwaza* which stands in a dilapidated condition<sup>12</sup>. The roof of this darwaza has fallen down. When compared to the Alamgir darwaza, this is a darwaza which is comparatively smaller in height and the walls of this one are thicker than that of the Alamgir darwaza. Like in case of Alamgir darwaza this too has steps behind the right wall leading to the roof. Along the right wall a small chamber is made most probably for the guards to stand. A little ahead on to the right side one could notice that a pathway leads to the Delhi Darwaza which is the principle gate leading to the Mandu's inhabited

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thus: Line 1 'During the reign of the King 'Alamgir', the monarch of the world, this lofty gate was built anew'. Line 2 ' It was commenced and also completed under the supervision of the exalted Khan, Muhammad Beg Khan, in the year 1079 H. (A.D. 1668-9)'. Line 3 'Since the accession of the emperor of the world, Aurangzeb, it was the eleventh year, in writing as well as in speech'. Also see Barnes, *Dhar and Mandu*, p 379. Henceforth cited as Barnes, *The Journal of the Bombay Branch*. The inscription reads "In the time of Alamgir Aurangzeb, the ruler of the world, this gate resembling the skies in altitude was built anew, In the year A.H.1079 the work of renewal was begun and completed by the endeavour of the exalted khan Muhammaed Beg Khan from the accession of the Emperor of the world, Aurangzeb, this was the eleventh year by way of writing history". Also see plate 83.

<sup>6</sup> Yazdani, *Mandu*, p 42. Yazdani writes that the height of the gate is 34 feet with a covered passage measuring 31 feet in length and 13 feet in width.

<sup>7</sup> See Plate 84.

<sup>8</sup> See Plate 82.

<sup>9</sup> *Annual Report, 1923-24*, p 45.

<sup>10</sup> *Annual Report, 1925-26*, p 55.

<sup>11</sup> *Indian Archaeology 1977-78- A Review*, Government of India, New Delhi, 1980, p 103.

<sup>12</sup> See plate 85. According to popular tradition after completion of the fort and this gateway, a sweeper was immolated behind the stone which even today is covered with sindoor.

area. The Archaeological Survey report of 1977 is the only report to suggest that the repair works were carried out here. In that year the northern and the southern walls of the gate had collapsed which were rebuilt in coarse rubble and rubble masonry in lime mortar after removing the debris<sup>13</sup>.

Beyond this gate one would pass by two other gates named today as *Kamani Darwaza* and *Gadi Darwaza*. Yazdani refers to two other gates named *Ghari and Khirki Darwaza*<sup>14</sup>. In all probabilities the khirki darwaza must have been renamed as Kamani darwaza while the Ghari darwaza was renamed as Gadi darwaza. Kamani darwaza is an arched gate divided into two sections, one which one to the right is not in use any more. Keeping the terrain in mind this darwaza has been constructed which an inclination towards north east<sup>15</sup>. The roof of the left part of the gate has fallen down. No Archaeological Survey report refers to repair and restoration to this gate. Delhi darwaza is the next gate which can be reached by taking any of the two routes, one of which is from the Delhi darwaza which is not a concrete road while the road from Kamani darwaza further leads to a small toll gate to the north of which lies the Delhi Darwaza. This darwaza is no longer being used by the commuters. The naming of this darwaza is a questionable one<sup>16</sup>. This darwaza is built at a considerable height and depth with style of architecture which is different from the previous three gates. Although Ferishta refers to this as a gate which is most easy to access<sup>17</sup> but John Jourdain writing in 1608 refers to this as a gateway with steep descent<sup>18</sup>. This gateway has a passage which is a covered one and only a part of the roof of the passage remains today<sup>19</sup>. This roof which remains today is made up of four arches and these arches comprise of keystone. The fifth arch which is the outer most one is built at a lower height when compared to the other four and is

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<sup>13</sup> *Indian Archaeology 1977-78- A Review*, p 103.

<sup>14</sup> Yazdani, *Mandu*, p 43.

<sup>15</sup> See Plate 86.

<sup>16</sup> This darwaza is constructed in the North-west direction which is not same as direction of city of Delhi. Also see *Epigraphia Indo Moslemica, 1909-10*, p 20. Writing about the Alamgiri Darwaza, which has been entitled as Delhi Gate, Hasan remarks that this gate is also called as ‘Alamgir gate’ as it was repaired during the reign of that emperor. Hence both the direction and the reference to Alamgir darwaza in *Epigraphia Indo –Moslemica*, as Delhi Darwaza makes it evident that the other gate which today is called the Delhi darwaza has been renamed.

<sup>17</sup> Ferishta, *Vol IV*, p 109.

<sup>18</sup> John Jourdain, *op.cit*, p 363.

<sup>19</sup> See plate 87.

constructed similar to the Alai Darwaza of Alauddin Khalji. Ahmad ul Umari, also makes a reference to the triple arches of this gate in his work<sup>20</sup>. The inner side of the western wall has effigies of two elephants facing each other. Above the meeting point of the trunk of the two elephants there is effigy of a lotus bud while below the trunk is the effigy of a chakram. As mentioned by Yazdani, there were effigies of two peacocks below the effigies of the elephants, but today only one of the two peacocks can be seen<sup>21</sup>.

It was only in 1925 that this monument was taken up for repair and restoration. Of the monuments in Mandu where repair works were completed comprised of Delhi gate in 1925<sup>22</sup>. After 1925 this gate was taken up for repair by the Archaeological Survey was in 1977. Restoration to the passage between the inner and the outer gateway was completed in rubble masonry in lime surkhi mortar. The walls of the outer gateway were made water tight<sup>23</sup>. Carrying forward the work started in last year, the decayed concrete on the roof was replaced by fresh lime concrete 10 cms thick<sup>24</sup>. In 1983 the damaged stone masonry of the fortification walls adjoining the Delhi Darwaza was restored and the decayed lime concrete of the adjoining mosque to this darwaza was replaced with fresh lime concrete<sup>25</sup>. In continuation of 1983 work, the missing and damaged rubble stone masonry of the fortification wall adjoin the darwaza was restored and the floor of the adjoining mosque which was decayed was replaced with new lime concrete<sup>26</sup>.

Along the south-western part of the fortification walls of Mandu is the Tarapur gateway which is in the direction of the Tarapur village which is at the foothill. During the medieval period naming of a gate on the basis of direction to an important centre was a common practice. In the context of this gate, the naming on the basis of a village is a interesting example. Possibly Tarapur must have been the feeding centre to the city of Mandu. Medieval cities had to have rural centres of production in the background to meet requirement of urban population. Possibily Tarapur played that role. This gateway

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<sup>20</sup> Ahmad ul-Umari, *op.cit*, p 14.

<sup>21</sup> See plate 88.

<sup>22</sup> *Annual Report, 1925-26*, p 55.

<sup>23</sup> *Indian Archaeology- A Review, 1977-78*, p 104.

<sup>24</sup> *Indian Archaeology- A Review, 1978-79*, p 120.

<sup>25</sup> *Indian Archaeology- A Review, 1983-84*, p 206.

<sup>26</sup> *Indian Archaeology- A Review, 1984-85*, p 216.

comprises of two inscriptions, one on the upper gate and the other on the approach of the inner gate<sup>27</sup>. However, one of these inscriptions as suggested from *Epigraphia Indo-Moslemica*, has been brought from Kamala Maula's mosque in Dhar<sup>28</sup>. The first inscription on the upper gate shows that it was started by Dilawar Khan while the second inscription refers to repair works carried out to this gateway by one Sahib Mahomed Hussein during the reign of Akbar<sup>29</sup>. Humayun broke into the Fort of Mandu somewhere near this gate<sup>30</sup>. This gateway comprises of three gates, one facing the south, other facing

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<sup>27</sup> See Plate 89 & 90.

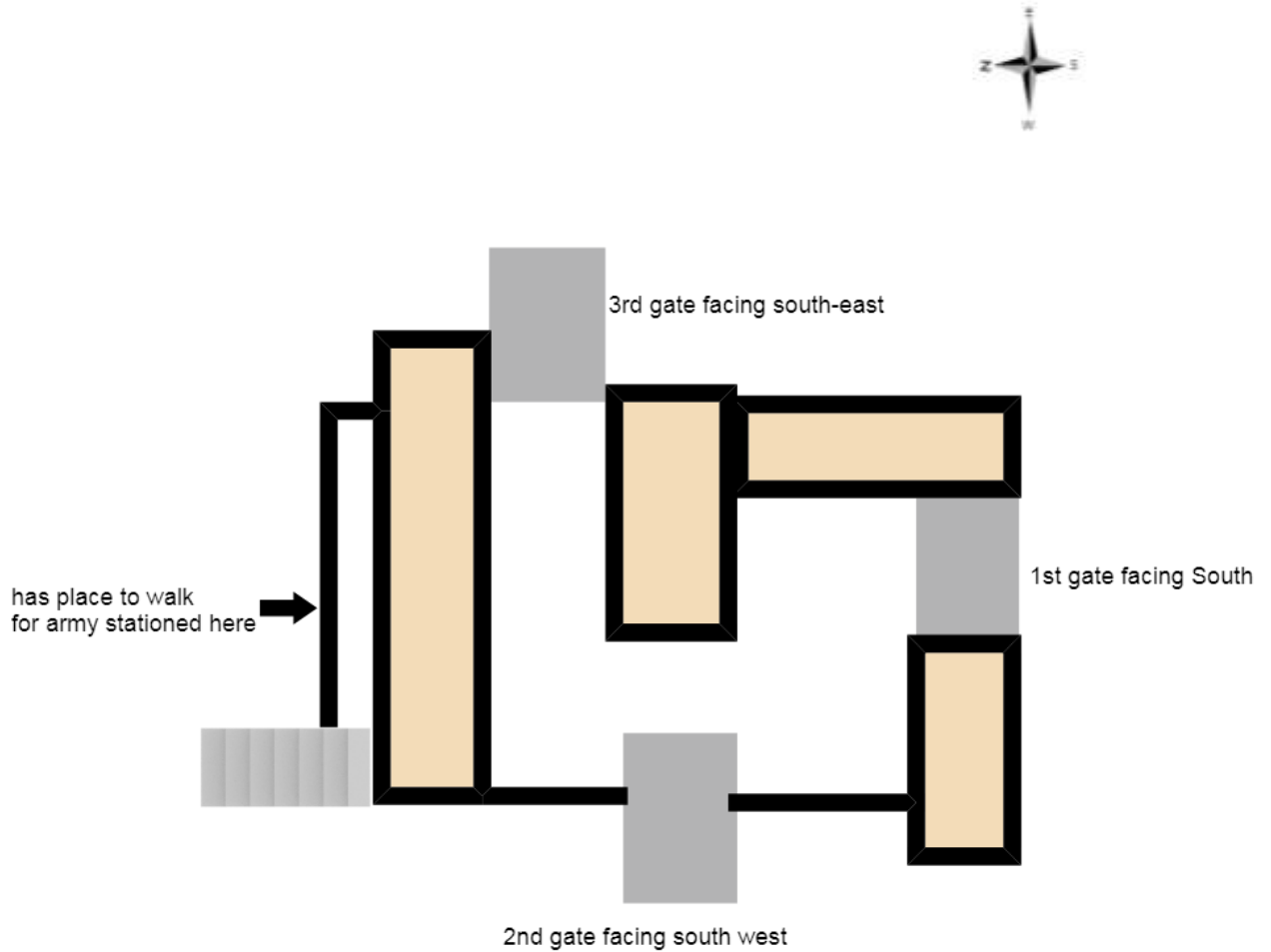
<sup>28</sup> *Epigraphia Indo-Moslemica 1909-10*, p 15. There is also a fragmentary inscription written on a broken piece of stone, which has been placed inside the enclosure of Kamal Maula. As, however, the complete text of this inscription has been carved on the Tarapur gate Mandu, the fragment is omitted here, while the whole of it will be published among the Mandu inscriptions. Also see for this inscription at the Tarapur gate footnote 35 below here.

<sup>29</sup> *Epigraphia Indo Moslemica, 1909-10*, p 19. **Inscription 1** -On a stone slab fixed on an arch. The inscription measures 28' by 23'. (1) "The centre of the religion of Islam and the cream of the nobles; the sky of grandeur and eminence and the mine of beneficence; (2) The conqueror of the world, fortunate, and high as the sky in rank; powerful as fate, mighty as destiny and prop of the world; (3) The refuge of the law of the prophet and helper of the true religion; the cloud of bounty and the sky of generosity Dilawar Khan (4) Constructed in the city of Shidiabad a gate, an equal to which no one could find in Daulatabad. (5) With regard to date 809 years (1406-7 A.D.) had passed from the (Hijrat) when by the good fortune of the one whom God had selected (the King) it was finished". **Inscription 2**-There is another inscription measuring 22" by 21" on a piece of stone built into a side wall of Tarapur gate. "During the reign and sovereignty of the slaves of His Majesty the shadow of God, Jalaluddin Muhammad Akbar, the Emperor and champion of faith- may God preserve his kingdom – This humble beggar Tahir Muhammad Hussain 'Imaduddin, son of Sultan 'Ali Sahrwari was, by the grace of God, successful in repairing this high road. Written in the holy month of Muharram of the year 1014 (Muharram of 1014 A.H. began on 9<sup>th</sup> May 16-5 A.D.)". Also see Barnes, *op.cit*, p 381. Inscription on the upper doorway reads "This gate, of which there is none finer in any other city, was built in the town of Shadiabad by Dilawar Khan, the head of Islam and leader of the community, most great in dignity and kind, ever Victorious and Powerful, Generous and Liberal. This door by the grace of God was completed in A.H. 809". On the main gate "In the reign of Jelal-ud-din Mohamed Akbar Badshah this beggar (fakir) Sahib Mohamed Hussain Imad-ud-din, son of Sultan Ali of Sabzwar, repaired this road by the grace of God in the year A.H. 1014". Also see Yazdani, *op.cit*, p 117. The inscription may be translated thus: 'During the government and administration of the servants of His Majesty, the shadow of God, Jalal-ud-Din Muhammad Akbar, the victorious King (May God protect his Kingdom 1), this humble and insignificant (official), Tahir Muhammad Husain 'Imad0ud-Din, son of Sultan 'Ali of Sabzwar, by divine grace succeeded in improving the main approach (to the fort). Written in the month of Muharram in the year 1014 H. (May, A.D.1605)'. The inscription consists of five lines of Persian verses, and may be translated thus: (1) 'The axis of Islamic faith, the chosen one of the nobility, the firement of eminence and glory, the mine of benevolence'. (2) The conqueror of the world, of youthful fortune and exalted rank, powerful as fate, irresistible as destiny, the support of the universe'. (3) 'the defence of the law of the prophet, the champion of the true faith, the cloud of bounty, the heaven of blessing, Dilawar Khan'. (4) 'He built a gate at Shadi Abad, the like of which could not be traced towards the region of Daulatabad'. (5) 'Eight hundred and nine years had passed from the Hijrat when through the effort of the chosen one of the Lord the building was completed, 809 H. (A.D. 1406-7)'. Also see Bendrey, *op.cit*, p 107 and p 138.

<sup>30</sup> Yazdani, *Mandu*, p 116. Also See Bosworth, *The Encyclopedia, Vol VI*, p 407. Humayun instead of taking the regular route to enter the fort of Mandu, must have attacked and broke into the fort of Mandu from this gateway giving an impression to the ruler of Mandu as if he was heading towards Burhapur and was not coming towards Mandu.

south west while the third one facing south east. These three gates are constructed at different levels which can be understood from the

Figure 13-



*Tarapur gateway*

Of the three gates, the first one shown in the figure above is at the lowest level while the second gate is at a higher level when compared to the first one and the third is at a greater height when compared to the other two gates. It can be understood from the plan of the gateway that two of the gates one and two were made with the purpose of misleading the enemies. Beyond the 3<sup>rd</sup> gate towards the north is built a ramp where military could be stationed, in a way that they could see the enemy's entry but the enemy would not be able

to see them. In other words the ramp was built for the military stationed who could hide and attack the enemies.

This gateway has two gates- one which is an outer gate located in the south which rounds about and leads a visitor to the second gate that is built in the south east, which is located at a higher level when compared to the outer one. To the south west between the two gate is a passage which has one the above mentioned inscriptions. The gateway must have had vaulted roof which now has fallen down. The entrance of the lower gateway is loftier than the one built during the reign of Akbar<sup>31</sup>. The Archaeological Survey report of 1926 suggests that the repair works were in progress on this gate<sup>32</sup> while interestingly 1927 report suggests that the work got completed in the last year<sup>33</sup>. Special repairs were undertaken at Tarapur gate in 1928, however the Archaeological Survey report does not specify what kind of works were carried out. This was last repair work that was carried out as no Archaeological Survey reports suggest regarding the further repair works here.

To the North West in Mandu is built a gateway styled as the *Songarh gate*. There is a citadel named after the same which now is in complete ruins and is inhabited by the locals. This gateway was rebuilt by Maina Bai, the Rani of Dhar. All that remains now of the gate is a bastion close to the gate and a circular masonry wall which was used to place the artillery and from here the one gets a beautiful view of the valley below<sup>34</sup>. It is from this cliff that King Bahadur of Gujarat with his horsemen lowered themselves with the help of ropes, when they were surrounded by Humayun's troops<sup>35</sup>. This gateway is an arched one with two kiosks that are built of brick which against the red masonry of the gateway. The inner face of the gateway has two effigies – of a tiger and an elephant.

The road from the Delhi gate to Jahaz Mahal complex has two monuments- Ashrafi Mahal and Jami Masjid standing near the crossing. Taking the road further from here towards Baz Bahadur palace one would come across a water body on to the west which is called the Sagar Talao and to the east of this talao lies the Malik Mughith's mosque

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<sup>31</sup> See Plate 91-92.

<sup>32</sup> *Annual Report, 1926-27, p 49.*

<sup>33</sup> *Annual Report, 1927-28, p 52.*

<sup>34</sup> See Plate 93.

<sup>35</sup> Nizamuddin Ahmad, *op.cit*, p 374. Also see Elliot & Dowson, *History of India, Vol V*, p 192, Also see Haig, *op.cit*, p 331. Also see Yazdani, *op.cit*, p28.

which according to the inscription carved on the doorway of this monument was built in 1432 A.D by *Malik Mughith*, Mahmud Khalji's father<sup>36</sup>. This mosque has been referred to as mosque of Humayun Khan in the *Epigraphia Indo-Moslemica*<sup>37</sup>. This is a double storey structure which according to Percy Brown was one built during the first phase of architecture in Malwa<sup>38</sup>. There are 12 arched openings in the ground floor beyond which are rooms. From the ground floor 20 broad steps lead to the first floor which has a porch that once must have had a dome which has now fallen down<sup>39</sup>. Now all that remains of this porch are a few pillars that formed the base of the dome and the rim the dome<sup>40</sup>. The arches of this porch are made with a keystone. The square plan of the porch was transformed into an octagonal one by making arches at the corners. The main entrance of

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<sup>36</sup> Ferishta, *Tarikh-i-Ferishta Vol IV*, p104. Ferishta refers to Malik Mughith as the cousin of Hoshang Shah. Yazdani, *Mandu*, pp 82-83. The inscription consists of seven lines of Persian verse which may be translated thus: (1) Under Happy omens and a lucky star, in an auspicious time and felicitous year, (i.e) on the fourth of the Divine month (Rajab) and the great day of Friday. (2) When according to the Arab calendar 835 years and six months had passed from the Hijrat (Migration), (3) This place of worship of the Islam was founded in the world, the apex of the dome of which rubs its top against the dome of the heaven. (4) It was built by Masnad-i-Ali, Mughlth ud Din wad-Dunya, Ulugh-i-Azam Humayun, the Khan of the seven climes and nine regions. (5) By his enterprising hand the mosque, which some style as the Abode of Safety and others believe to be the Ka'ba, came to be built. (6)The divine building was completed on the last date of the month of Shawwal; may this good act be recorded in the Khan's book of deeds. (7) May Mahmud Shah be praised and mentioned in the Khutbah as long as mountains stand on earth and stars shine in the sky. Also see Bendrey, *op.cit*, p 109. The inscription consists of 7 lines of Persian verses which reads that When according to the Arab calendar Friday 4<sup>th</sup> Rajab in 835 and six months from Hijra, the day of the month having been counted according to the Arabic system that this mosque was founded and was built by Masnad-i- Ali Mughithu'dDin wa'd-Dunya Ulugh May Azam Humayun the Khan,... end of Shawwal... completed. May Mahmud Shah be ever adorned...

<sup>37</sup>*Epigraphia Indo Moslemica, 1909-10*, p 21. To the east of Sagar lake near the camping ground stands the mosque of Ulugh A'gam Humayun khan, the father of Mahmud Khalji. The eastern entrance to the mosque bears the following inscription which measures 28 ½ by 21". (1) "With good omens, and at an auspicious time, and in a happy year and a noble month on the great day of Friday, the fourth of the month of God (Rajab). (2) It was in the year 835 (7<sup>th</sup> Mar.1432 A.D) and 6 months from Hijra; the days of the month having been counted according to the Arabic (Lunar) system, (3) that this mosque of Islam was founded in the world, the roof of whose dome rubbed its head against the green vault (of heaven) (4) It was built by Masnad-i-Ali Mughithuddin-wad-dunya Ulugh Azam Humayun, the khan of seven climes and nine regions (the whole world). (5) With his enterprising hand such a mosque was erected that one calls it Darul Aman (the mansion of safety) whilst others believe it to be the k'aba. (6) At the end of the month of Shawwal this mosque built by the King was completed, May this good deed be inserted in the Khan's book of actions. (7) May Mahmud shah be ever adorned with praises and khutba, so long as mountains stand on the earth and stars shine in the firament. "

<sup>38</sup> Brown, *op.cit*, p 60.

<sup>39</sup> See Plate 94.

<sup>40</sup> See Plate 95.

this monument is facing the east above which is an inscription which refers to its construction<sup>41</sup>.

From this porch one would enter the main area of the Malik Mughith's mosque. The mosque comprises of a courtyard which is surrounded by colonnades on the eastern, northern and southern side. The pillars of the eastern and the northern wall are intact while the ones on the southern side have fallen down but their bottom parts remain even today<sup>42</sup>. However as mentioned by Percy Brown<sup>43</sup>, it doesn't look like this a structure where reused material was used in construction. The only place where there is possibility of reused material is above the inscription which is above the entrance of the mosque<sup>44</sup>. In the reused construction a pillar generally comprises of remains of two or three structures, put together using mortar and making one single pillar. In this mosque the pillars are built of one single stone rather than attached together as parts of different pillars. The eastern colonnade to the extreme north has steps leading to the terrace<sup>45</sup>. The first look at the western wall gives a visitor a glimpse of the three domes that have been built in the arcuate order and which are hemispherical in shape<sup>46</sup>. The western wall is wider one and is divided into three bays by pillars. The following figure 14 is the inner plan of the monument –

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<sup>41</sup> See Plate 96.

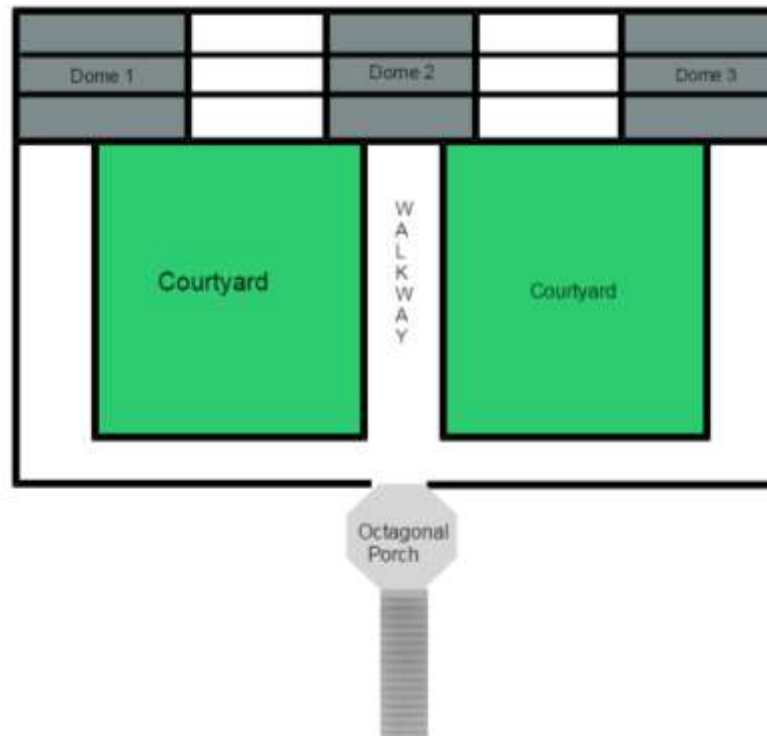
<sup>42</sup> See Plate 97.

<sup>43</sup> Brown, *op.cit*, p 60.

<sup>44</sup> See Plate 98.

<sup>45</sup> See Plate 96.

<sup>46</sup> See Plate 99.



Here one can notice the fusion of the trabeate and arcuate style of architecture. Below the domes at the northern and southern end, there are square halls which are converted into octagon by the use of diagonal lintels at four corners<sup>47</sup>. Within the interiors of the domes, one could notice remains of blue colour that were used at the rims for decoration purpose. The western wall comprises of a mihrab and thirteen niches of which 7 are to the right of the mihrab and 6 are to the left. The measurements of the Mihrab are as follows –

Width of the entrance            6 ft 3.98 inches

Height                                7 ft 2.61 inches

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<sup>47</sup> See Plate 100.

Depth

5 ft 8.11 inches

There have been restoration and repair works that were carried out here. During 1881, Cole suggests that this monument must be cleared of cattle, debris and vegetation and its entrances should be provided with wooden doors<sup>48</sup>. Although the 1902 report does not refer to any repair works carried out here, the photograph taken by an unknown photographer suggests that repair works were going on during that year<sup>49</sup>. Through the late 19<sup>th</sup> Century and the early 20<sup>th</sup> century repair works were carried out at this monument which according to the report of 1924 was completed<sup>50</sup>. Although repair works were carried out at Mandu, it was after a long gap that in 1957 repair works were again carried out at Malik Mughith's mosque. This can be understood from the Archaeological Survey of India report of 1957-58 which suggests that long neglected roof of this monument was made water tight<sup>51</sup>. After a long gap, the damaged flooring of this mosque was repaired using red sandstone slabs in 1976<sup>52</sup>. The next year the three domes on terrace which were leaking were made watertight. Work of filling up of the cracks, removing the old mortar from the roof and the surface of the dome and laying fresh lime-concrete, re-plastering of the domes and parapet walls were carried out<sup>53</sup>. Next report suggests minor repair works being carried out at this mosque. It was in 2006-07 recess pointing was done to the outer walls and plinth with rubble masonry and the northern and the southern verandah was provided with lime concrete<sup>54</sup>. In continuation to the work of 2007, the Archaeological Survey of India report suggests that the dome and the parapet wall were plastered with 40mm layer of lime plaster. Restoration of the chhajja at the front side of the mosque was done<sup>55</sup>.

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<sup>48</sup> *Third Report*, p 10.

<sup>49</sup> <http://www.bl.uk/onlinegallery/onlineex/apac/photocoll/c/019pho000430s32u00061000.html>.

<sup>50</sup> *Annual Report, 1924-25*, p 46.

<sup>51</sup> *Indian Archaeology 1957-58*, p 103.

<sup>52</sup> *Indian Archaeology, 1976-77*, p 101.

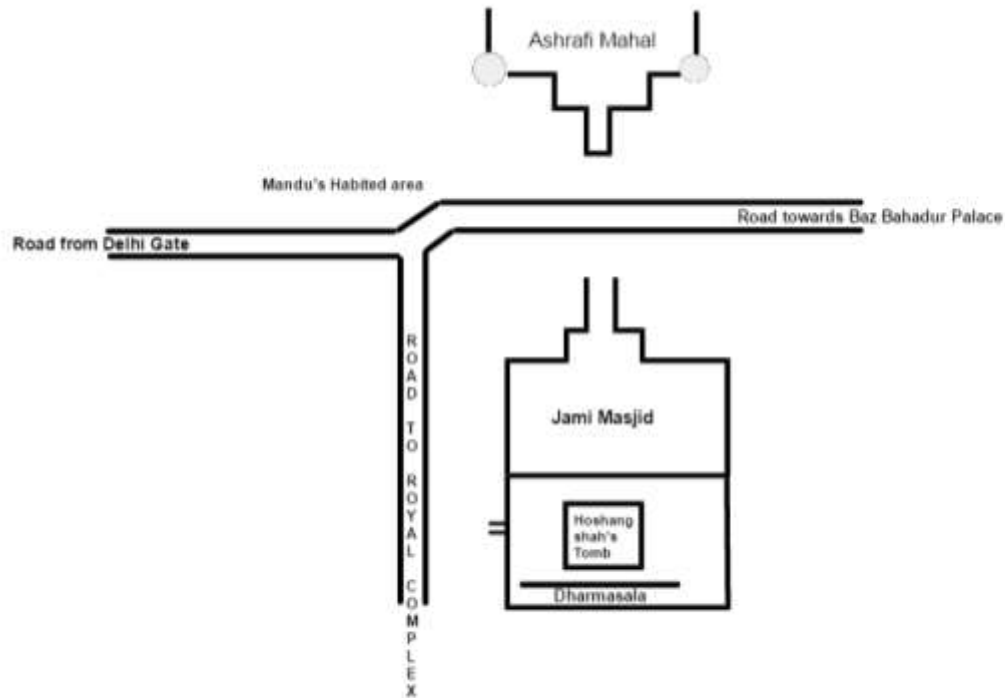
<sup>53</sup> *Indian Archaeology 1977-78-A Review*, Government of India, New Delhi, 1980, p 104.

<sup>54</sup> *Indian Archaeology 2006-07- A Review*, Archaeological Survey of India, New Delhi, 2016, p 197.

<sup>55</sup> *Indian Archaeology 2008-09- A Review*, Archaeological Survey of India, New Delhi, 2015, p 216.

Henceforth cited as *Indian Archaeology, 2008-09*.

Two monuments whose construction were started by Hoshang Shah, but were completed by Mahmud Khalji in 1454 were the Jami Mosque and the Tomb of Hoshang Shah<sup>56</sup>. Hoshang Shah's tomb lies on the route from Delhi gate to Baz Bahadur palace. It is located behind the Jami Masjid<sup>57</sup>. Their location is can be understood from Figure 15 below –



Nizamuddin Ahmad refers to this tomb as the one which was commenced by Sultan Mahmud Khalji in 1439 A.D.<sup>58</sup>. Ferishta wrote that King Hoshang Shah was laid to rest in a stone vault, which is the tomb that is next to the Jami Masjid<sup>59</sup>. Ferishta and Abul Fazl, both refer to water trickling from the roof of the mausoleum and that people regarded it as Hoshang Shah being a person of exceptional qualities and abilities<sup>60</sup>. A Persian

<sup>56</sup> Anonymous, The Hill Fort of Mandu, in *Gazetteer of the Bombay Presidency Vol I, Part I*, Government Central Press, Bombay, 1896, p 359. Henceforth cited as *Unknown, The Hill fort*.

<sup>57</sup> See Plate 101.

<sup>58</sup> Nizamuddin, *op.cit*, p 508.

<sup>59</sup> Ferishta, *Vol IV*, p 114.

<sup>60</sup> *Ibid*, p 115. Also see Abul Fazl, *Ain-i Akbari Vol II*, p 197.

inscription on the right pillar of the doorway on a marble tile refers to architects of the court of Shah Jahan who visited Mandu in 1659 A.D<sup>61</sup>. The tomb is adjoining the Jami Masjid. The tomb is located within an enclosed wall with Jami Masjid on one side and Dharmshala on the other side. The entrance to the tomb is north facing and comprises of a marble dome supported by pillared arches made of lighter shade of red sandstone which is caused due to presence of iron oxide. The porch is made up of arches on all sides of which the central one is wider in span when compared to the outer two<sup>62</sup>. Along the interiors of the dome of the porch one can notice the use of blue colour for decorative purpose<sup>63</sup>.

On entering this porch the tomb built on a platform is visible. But before reaching the entrance of this mausoleum, one has to pass by a hall on the western side of the porch, that is made of colonnade and is styled as Dharmasala today. This hall is divided into two sections- the outer most and the inner most. The outer most section is divided into three bays by pillars<sup>64</sup> which have been constructed in the trabeate order, while the inner section comprises of a long vault shaped hall<sup>65</sup>. To the northern and the southern end of the colonnade there are rectangular halls that have been built. The plan of the Dharmasala is as shown in figure 16 –

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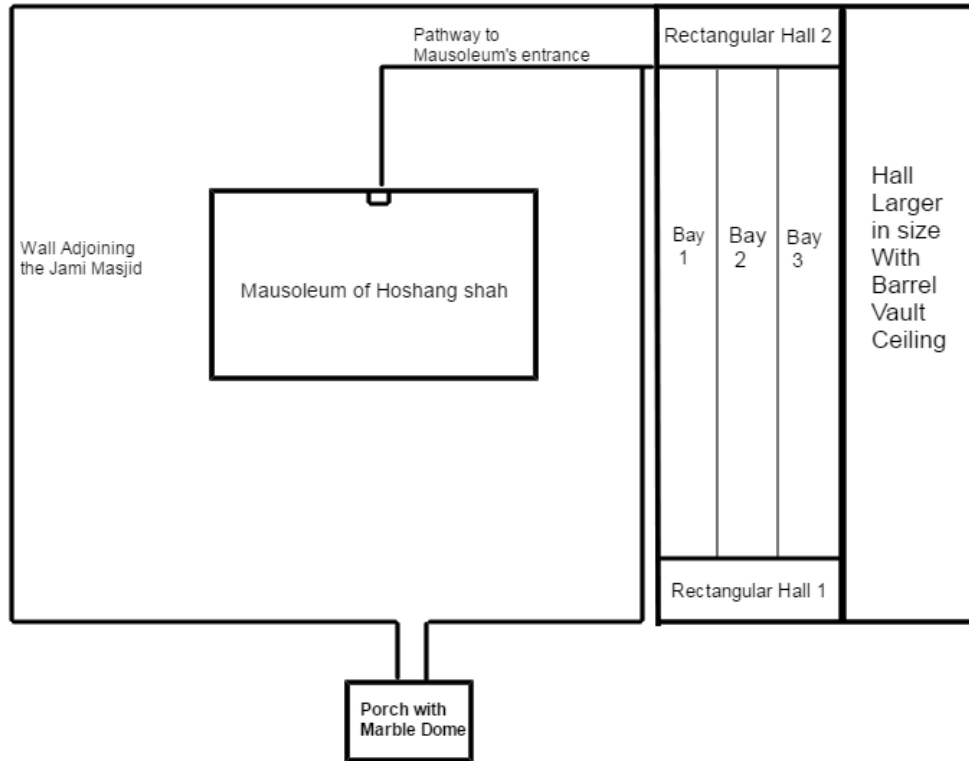
<sup>61</sup> See Plate 102. Luard, *op.cit* p 24. Also see Hunt Janin, *The Pursuit of Learning in the Islamic world, 610-2003*, McFarland & Company, Inc, USA, 2005, p 124. In one of the poems written by Luftallah Muandis, Ustad Ahmad Lahori's son, he states that Ustad Ahmad Lahori was monarch Shah Jahan's head architect and Shah Jahan had ordered him to build a mausoleum for Mumtaz Mahal.

<sup>62</sup> See Plate 101.

<sup>63</sup> See Plate 103.

<sup>64</sup> See Plate 104.

<sup>65</sup> See Plate 105.



**Plan of Tomb of Hoshang Shah**

Walking along the pavement made along the eastern edge of the colonnade and the rectangular hall on the southern end, one would find oneself in front of the steps leading to the mausoleum of Hoshang Shah. The flight of 12 broad steps leads a visitor onto the platform<sup>66</sup> on which the mausoleum is built. The platform and the mausoleum both are made of marble. Murlongs, alcoves and boss have been made use of externally for decorative purpose. The trabeate order has been put into practice during construction along the parapet. Above this doorway is a parapet which is set with blue colour that can be seen in some parts even today. Perforated screens with geometric designs of different patterns have been made on either sides of the arched doorway<sup>67</sup>. Single dome has been

<sup>66</sup> Yazdani, *Mandu*, p 46. Yazdani provides the measurement of the plinth as one which rises 6 ½ feet above the ground and which is 100 feet each way.

<sup>67</sup> See Plate 106.

constructed over the tomb. These perforated windows have been made on three walls of the mausoleum except the one facing Jami Masjid. One can also notice that no two windows have same geometric patterns. These perforated windows allow minimal light to enter into the main tomb area.

On entering the mausoleum one would first notice three tombs, of which one in the centre is made on a low marble pavement which is decorated with small squares of black and yellow stones. This one is of the King Hoshang Shah on which is carved the Kalma "*La ilah il illah, Muhammad ul Rasul ullah*"<sup>68</sup>. No contemporary text refers as to whom the other two tombs belongs to. Squinches have been used in the interiors of the mausoleum. Along the rim of the dome from inside one can notice various patterns and blue colour which have been used as decorative elements<sup>69</sup>. On the eastern end of this mausoleum from inside there are steps leading to the terrace which is now closed and is inaccessible to the general public. There are no evidences of steps or passage to the grave which is a necessary requirement of a tomb architecture.

Writing in his 1883 report Cole refers to this tomb as one where the weeds and debris are to be cleared and the marble here was blackened<sup>70</sup>. It was only in 1903-04 when considerable amount was laid out in collecting marble for restoring the dome and in 1904 the restoration work was started. The report also suggests that the whole marble covering was to be removed and rebuilt because the outer shall of the dome was coming off at many places. The walls in many places of the tomb were disfigured by grafitis on them. These were re- polished and only one inscription was left which records the pilgrimage of Muhammad to this tomb in 1659 A.D<sup>71</sup>. The reports of 1912-13 suggests that repair works to the enclosure wall was started. Southern wall of the tomb was underpinned and one of the walls on this side was dismantled and rebuilt<sup>72</sup>. Although between 1913 and 1926 repairs works were carried out in Mandu, it was only in 1927 that repairs were

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<sup>68</sup> See Plate 107. Bombay Subaltern, op.cit, p 12.

<sup>69</sup> See Plate 108.

<sup>70</sup> *Third Report*, p 10.

<sup>71</sup> *Annual Report 1903-04*, pp 39-40.

<sup>72</sup> *Annual Report of the Archaeological Survey of India Part I, 1912-13*, Government Printing, Calcutta, 1915, p 5.

taken up at Hoshang Shah's tomb again. The 1927 report suggests that the cracks within the chhajjas of the Hoshang Shah's tomb were grouted by cement<sup>73</sup>.

Special repair works that were carried out at Hoshang Shah's tomb in 1928 included restoration of marble lintels and the graves with the court which needed attention were repaired<sup>74</sup>. Although minor repair were carried out in Mandu, it was only in 1953 that special repair works were taken up at Hoshang Shah's tomb. Moss and lichen which were thickly encrusted on the dome and corner kiosks were chemically cleaned and then the cracks and fissures of the dome were filled with cement grout. The old decayed lime concrete of the Dharmasala was replaced with new one on the terrace of this part<sup>75</sup>. The next two years were spent in making the marble dome and the side walls of the Hoshang Shah's tomb watertight. Between 1972 and 1992 Dharmasala remained the focus of the repair and restoration works where the old damaged, decayed and missing flooring were replaced with finely chiseled Zeerabad lime stone<sup>76</sup>. The Hoshang Shah's tomb received attention in 1993 when the central dome and four small domes were covered with micro-flora and other accretionary deposits. These were cleaned using application of dilute ammonical and teepol solution<sup>77</sup>. In order to remove the accumulated dust, dirt and other deposits from the exterior marble surface in 1994 work was carried out using chemical treatment. *Sodium hexa-meta-phosphate* was used in places where thick and hard calcareous accretion was accumulated<sup>78</sup>.

The reports of 2001 suggest that the walls and the arches in the interior cenotaph structure of this dome were defaced and disfigured because of the bat excrement. In many places mortar was leached out which was removed mechanically and general chemical cleaning was carried out. The work was still in progress<sup>79</sup>. In 2008 the baoli located at the back side of the tomb was cleared of debris and was taken up for restoration. It was in

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<sup>73</sup> *Annual Report of the Archaeological Survey of India 1927-28*, Government of India Central Publication Branch, Calcutta, 1931, p 52.

<sup>74</sup> *Annual Report of the Archaeological Survey of India 1928-29* Government of India Central Publication Branch, Calcutta, 1933, p 49.

<sup>75</sup> *Indian Archaeology 1953-54- A Review*, Government of India, New Delhi, 1993, p 27.

<sup>76</sup> *Indian Archaeology 1992-93- A Review*, Government of India, New Delhi, 1997, p 154.

<sup>77</sup> *Indian Archaeology 1993-94- A Review*, Government of India, New Delhi, 2000, p 196. Henceforth cited as *Bisht, 1993-94*.

<sup>78</sup> *Indian Archaeology 1994-95- A Review*, Government of India, New Delhi, 2000, p 145.

<sup>79</sup> *Indian Archaeology 2000-01- A Review*, Archaeology Survey of India, New Delhi, 2006, pp309-311.

this year that stone flooring was provided at the main entrance of the tomb. In progress were the conservational activities of the main dome<sup>80</sup>. In March 2016 when I last visited the monument the conservational activities were still in progress.

The construction of the Jami Masjid and the Hoshang Shah's tomb were commenced by Hoshang Shah but were completed by Mahmud Khalji<sup>81</sup>. Jami Masjid, according to the inscription carved on the doorway of the mosque, was begun by Hoshang Shah and was completed by Mahmud Khalji in 1454 A.D.<sup>82</sup>. Ferishta refers to this Masjid as the one whose edifice has 230 minarets and 360 arches<sup>83</sup>. Referring to this mosque Nizamuddin Ahmad remarks that it had 230 cupolas and 380 pillars<sup>84</sup>. Jahangir in his memoirs remarks that although 180 years have passed by since the construction of this mosque, it seems that the builder has just finished constructing it. This is a very lofty building made

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<sup>80</sup> *Indian Archaeology 2008-09- A Review*, Archaeological Survey of India, New Delhi, 2015, p 216.

<sup>81</sup> Anonymous, The Hill Fort of Mandu, in *Gazetteer of the Bombay Presidency Vol I, Part I*, Government Central Press, Bombay, 1896, p 359. Henceforth cited as *Unknown, The Hill fort*.

<sup>82</sup> See Plate 119. *Epigraphia Indo Moslemica, 1909-10*, p22. This great mosque, as the inscription which it bears above, was commenced by Hoshang Shah and completed by Mahmud Khalji. The inscription is found on the eastern entrance to the mosque. It seems to have been carved on two slabs of stone joined together, but one of these containing the first half of the inscription fell down and disappeared. The other is in situ and contains 5 ½ verses or 11 hemistiches. It is apparent that there were originally 11 verses or 22 hemistiches. The author of *Armaghan-i-Shahjahani* quotes still 9 out of these 11 verses, but probably he took the text from some older chronicle, not from the stone. I gave here all the 9 verses including in brackets those which I copy from *Aramghan* and marking by dots verses 2 and 10 which are not to be found in *Armaghan* either. This inscription has been written in order to show that Mahmud Khalji had been entrusted with the administration of the state by Hoshang Shah, when he was on his death bed. The stone in situ measures 30' by 42'. (1) "The mosque of exalted construction and the place of worship of high position, every pillar of the surrounding wall of which is a copy of the sacred temple of Mecca, (2) . . . . (3) Out of respect for it and on account of its dignity the angels like the pigeons in the K'aba are always hovering around it in a sacred procession. (4) The founder of this sacred building was the King Hoshang Ghori. The second Mahmud, Mas'ud Shihabuddin and Sam. (5) When as a result of events born by the revolution of merciless sky, the sun of his life had descended the height of the roof (was ready to act, i.e. he was about to die). (6) that King (Hoshang) possessed of the pomp and glory of Dara foresightedly said to Mahmud Khalji, the light of the eyes (the son) of Mugith. . . . Also see Yazdani, *Mandu*, p 51. The Text of the left hand of the inscripational tablet, which is intact, may be translated thus: (1) Every pillar of its sacred enclosure is a replica of the Holy Abode of God (at Mecca). (2) . . . . (3) To show respect and reverence to this mosque, the angels are hovering and flying around it like the pigeons in the sacred Enclosure (the Ka'ba) (4) . . . . (5) By the revolutions of relentless sky when the sun of his (Hoshang's) life reached the end of horizon, (6) . . . . (7) To guard the Kingdom, to complete the buildings and to repel the enemies, is my parting advice, which carry out with earnestness and full effort, (8) . . . . (9) The embodiment of Divine grace, Sultan Alauddin, the manifestation of the light of faith and mirror of aspirations of the people (10) . . . . (11) According to the will Hoshang, the later King (Alaud-Din) completed the building in 858 H (A.D. 1454). Also see De Laet, *op.cit*, p 32 Footnote. Also see Finch, in *Journal of John Jourdain*, p 362. Also see Yazdani, *op.cit*, p 50. Also see Bendrey, *op.cit*, p 111. Also see Luard, *op.cit*, p 24. Also see Campbell, *op.cit*, p 157. Also see Barnes, *op.cit*, p 385.

<sup>83</sup> Ferishta, *Vol IV*, p 123.

<sup>84</sup> Nizamuddin, *op.cit*, pp 508-509. Also see Brand, *The Sultanate of Malwa*, p 87.

of hewn stone<sup>85</sup>. Edward Terry too makes a reference to this mosque as the one with vaulted over head<sup>86</sup>. A similar view has been put forward by Nur Jahan, who wrote about Jahangir's visit to Mandu in winter of 1617<sup>87</sup>.

This is a monument is a square one in plan. Flight of 26 wide steps leads a visitor into a porch made of red sandstone with entrance facing the east that is made of marble. The domed porch from interiors has six arched intricately perforated windows, three of which are facing north while remaining three are facing the south<sup>88</sup>. The wall of the entrance doorway has a window on either side which are hallow, while the inner doorway has two window made within the wall<sup>89</sup>. Here along the rim of the dome one could see the remains of blue tiles in some parts.

The western door of this porch leads a visitor into a square court comprising of colonnades on all four sides. Although some parts the northern and eastern colonnade of the court have fallen down, from the remains of the western and southern parts of the court it can be understood that all sides of the court were built similar. Each side of the court comprised of 11 arches supported by pillars. These pillars are made of red sandstone blocks. The terrace of the mosque is adorned with number of smaller dome and three large domes<sup>90</sup>. The western colonnade is divided into series of bays by rows of pillars<sup>91</sup>. The smaller domes and the dome on the terrace create a hollowness from inside<sup>92</sup>. Below the two domes located on the extreme ends of this hall are built upper apartments which are supported from below by smaller columns in height. The arches that are built on top of these columns intersect each other at their apex<sup>93</sup>. The Qibla wall comprises of 17 mihrabs made within the wall, of which one is larger when compared to the rest. These are adorned with polished black stone. At many places along the western wall one would notice the remains of the blue tiles that were used to adorn it.

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<sup>85</sup> Jahangir, *Tuzuk-i-Jahangiri*, p 365. Also see Jahangir, *Wak'a'it*, p 74.

<sup>86</sup> Terry, *op.cit*, p 183.

<sup>87</sup> Ellison Banks Findly, *Nur Jahan: Empress of Mughal India*, Oxford University Press, New York, 1993, p 185.

<sup>88</sup> See Plate 110.

<sup>89</sup> See Plate 111.

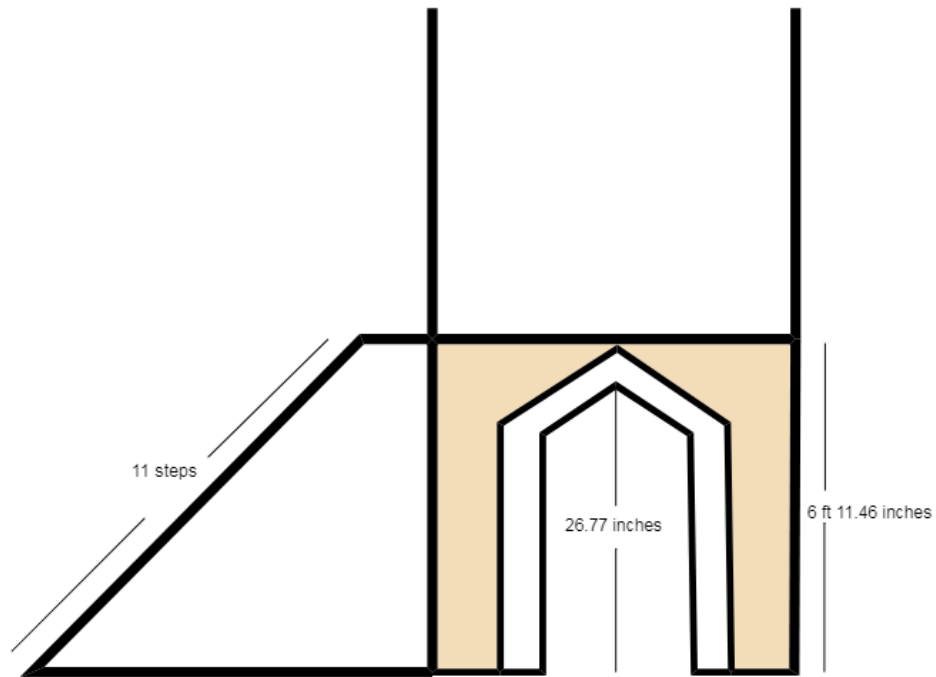
<sup>90</sup> See Plate 112.

<sup>91</sup> See Plate 113.

<sup>92</sup> See Plate 114

<sup>93</sup> See Plate 115.

The bay along the western wall is divided into two by a pulpit which is eleven steps high and has a canopy supported by four arches and is covered with a dome. The pulpit is made of marble and its design is as shown in figure 17 -



Details of each steps  
 Length of each step - 3 ft 11.64 inches  
 Height of each step - 7.09 inches  
 Width of each step - 1.08 inches

In front of the pulpit is a small square platform measuring 10 feet 3.62 inches by 10 feet and 3.62 inches and its height is 2 feet 6.98 inches<sup>94</sup>, which Yazdani refers to as a Mukabbar from which during the service the divine salutation was repeated to guide a large congregation<sup>95</sup>. Along the northern wall of the first bay of this hall, there is a narrow doorway which leads a visitor into a passage which to has steps leading to the upper apartment on this side of the hall and close by is another door which leads the

<sup>94</sup> See Plate 116. Yazdani, *Mandu*, p 55. The measurements given above are the ones that I have taken during my field study while the ones given by Yazdani are 10 feet 3 inches square and 2 feet 7 inches high.

<sup>95</sup> *Ibid*, p 56. This view that Mukabbar was used for divine salutation of Allahu-Akbar is a questionable one because this salutation comes up only during Akbar's reign.

visitor into a porch which further leads him towards the path that leads to the Hoshang Shah's tomb<sup>96</sup>.

It was during the reign of Mahmud Khalji that the earliest repair works were carried out at this mosque<sup>97</sup>. In his first report as the curator, Cole refers to the clearing of the jungle and vegetation and repair works at Jami Masjid being carried out by the workmen of the Maharaja of Dhar<sup>98</sup>. Subsequently the Archaeological Survey of India carried out restoration and preservation of the monuments and at present too it is the custodian of the sites. The Archaeological Survey of India report of 1903 suggests that the mihrabs and the minbar of the prayer hall needed urgent repair which were undertaken during this period. Besides these the repair works to the roof making it water tight, the south western corner of the building was strengthened and the plinth in the south was reconstructed to the level of the dalan<sup>99</sup>.

Jami Masjid was amongst the chief monuments taken up for restoration in 1914. Here attention was given to one of the wall arches at the rear that carried the load of the dome, was shattering and the vault masonry below the Zeenan galleries which also were crumbling down<sup>100</sup>. In 1922 many monuments in Mandu were taken up for conservation which also included Jami Masjid and this was one of the points that were taken up by Maulvi Zafar Hasan<sup>101</sup> who recommended that only one or two monuments should be taken up at a time<sup>102</sup>. The 1928 report suggests that besides the annual repair and maintenance, there were special repair works that were carried out at some of the monuments of which Jami Masjid was one. The coping stones of the plinth in the main hall were repaired during the year<sup>103</sup>. The report referring to the repair works carried out at Jami Masjid suggests that attention was given to the repairs of the leaking terrace

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<sup>96</sup> See Plate 117.

<sup>97</sup> Ferishta, *Vol IV*, p 123. Ferishta writes that in the year A.H. 843 (A.D. 1439), he (Mahmud Khalji) commenced the repairs of the palace of the late Sooltan Hooshung and the masjid built in commemoration of that monarch near the Rampoor gate.

<sup>98</sup> *First Report*, Appendix R, clxiv.

<sup>99</sup> *Annual Report 1903-04*, pp 40-41.

<sup>100</sup> *Progress Report of the Archaeological Survey of India, Western Circle*, Government of Bombay, Bombay, 1914, p 79.

<sup>101</sup> Maulv Zafar Hasan was the Assistant Superintendent of Archaeology.

<sup>102</sup> *Annual Report of the Archaeological Survey of India, 1922-23*, p 86.

<sup>103</sup> *Annual Report 1928-29*, p 49.

which was renewed by lime concrete<sup>104</sup>. The domes on the terrace of Jami Masjid were all damaged in 1955, which were taken up for repairs in that year. The cracks in the domes were filled and their surfaces were re-plastered with lime mortar<sup>105</sup>.

General repair works like clearing of jungle and vegetation were carried out until 1974. It was in that year that the decayed flooring in Jami Masjid was re-laid with red limestone slabs and using cement mortar the recesses in the flooring and adjoining verandah were pointed<sup>106</sup>. Between 1980 and 1992 the damaged and missing chhajjas and stone jalis were replaced by new ones. The domes on the terrace were made water tight. To check the encroachment and improvement of the area, the old damaged stone masonry wall was restored in lime cement mortar and mounted with M.S. grill<sup>107</sup>. Special attention was given to the limestone blocks of the wall and the lime plaster of the dome in 2006. Ammonia solution and non-ionic detergent with soft nylon brushes were used to clean the surface of the walls and the dome which were the growth of micro-flora and dust and dirt were causing surface erosion, scaling and blackening<sup>108</sup>. Further biocidal treatment with SPC in de-ionized water was carried out and then hydrophobic treatment was carried out using *Wacker BS-290*<sup>109</sup> solution in *MTO solvent*<sup>110</sup> of 1:15 ratio.

The wall surface of the mosque was treated with ammonia solution and non-ionic detergent in 2007. In the same year it was also cleaned with biocidal treatment – solution

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<sup>104</sup> *Indian Archaeology 1954-55*, p44.

<sup>105</sup> *Indian Archaeology 1955-56: A Review*, Archaeological Survey of India, New Delhi, 1993, p 50.

<sup>106</sup> *Indian Archaeology 1974-75-*, p 91.

<sup>107</sup> *Indian Archaeology, 1980-81*, p 125. Also see Ajai Shankar, *Indian Archaeology 1992-93*, Archaeological Survey of India, New Delhi, 1997, p 154.

<sup>108</sup> *Indian Archaeology 2006-07- A Review*, Archeological Survey of India, New Delhi, 2016, p 324.

<sup>109</sup> <https://www.wacker.com/cms/en/products/product/product.jsp?product=10085>. Wacker BS 290 is a solventless silicone concentrate that is based on a mixture of silane (an inorganic compound with chemical formula SiH<sub>4</sub> and is colourless, flammable gas with a sharp smell) and siloxane (is a functional group in organosilicon chemistry with Si-O-Si linkage. BS 290 is dilutable with organic solvents. Dilute solution of BS 290 in organic solvent serves as high quality general purpose water repellents for impregnating and priming minerals and highly alkaline substrates.

<sup>110</sup> *International Programme on Chemical Safety, Health and Safety Guide No. 103*. White Spirit (Stoddard Solvent), World Health Organization, Geneva, 1996. MTO, Mineral Turpentine Oil, is also known as white spirit or Stoddard Solvent. White Spirit is a mixture of saturated aliphatic and alicyclic C<sub>7</sub> to C<sub>12</sub> hydrocarbons with a maximum content of 25 % of C<sub>7</sub> to C<sub>12</sub> alkyl aromatic hydrocarbons. White spirit is clear, colourless, non-viscous solvent with a characteristic odor. White Spirit is used as an extraction solvent, as a cleaning solvent, as a degreasing solvent and as a solvent in aerosols, paints, wood preservatives, lacquers, varnishes and asphalt products.

of *Sodium penta Chloro phenate*<sup>111</sup> in de-ionized water and finally the wall were treated with Hydrophobic treatment- Wacker BS 290 solution in mineral turpentine oil solvent<sup>112</sup>. The next year to remove the unwanted accretions from the stone surface of the prayer hall, scientific conservation works were carried out. The walls were treated in order to remove the extraneous matter and micro vegetational growth. To clean the marble surface in this mosque clay pack treatment was used and then the surfaces that were cleaned were given fungicidal and hydrophobic treatment<sup>113</sup>. The inner surface of the dome was taken up for repair in 2012 and the arches of the mosque were conserved by replacing the old and damaged ones with Zeerabad stones<sup>114</sup>. Repair works are still being carried out.

Another structure which corresponds to Hoshang Shah's reign is the mosque built on the south-west of Delhi Darwaza<sup>115</sup>. Entry into this one is not possible today because the gates are for most of the times locked. The main entrance of this mosque, facing east, bears an inscription which refers to a title Husam-ud-Dunya wad-Din and date 28<sup>th</sup> Rabi' II, 820 H<sup>116</sup>. This mosque is built within a small enclosure. The trabeate style of construction has been made use of in the construction here. The western wall comprises of arched niches of which the central one is made of red sandstone. There is every possibility that the western wall must have been covered by a dome which has now fallen down<sup>117</sup>. One needs to look further into the purpose of the mosque.

Ashrafi Mahal which stands on the front side of the Jami Masjid is credited to Mahmud Khalji<sup>118</sup>. Three distinctively different structures- Madrassa, Mausoleum of Mahmud

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<sup>111</sup> [https://pubchem.ncbi.nlm.nih.gov/compound/Sodium\\_pentachlorophenate#section=Top](https://pubchem.ncbi.nlm.nih.gov/compound/Sodium_pentachlorophenate#section=Top). Sodium Pentachlorophenate is an insecticide and herbicide that is used as wood preservative. It is a white or tan, powdered solid which is soluble in water. It is used as a fungicide, herbicide and as a disinfectant. Its chemical formula is C<sub>6</sub>Cl<sub>5</sub>NaO.

<sup>112</sup> *Indian Archaeology 2007-08- A Review*, Archeological Survey of India, New Delhi, 2016, p 334

<sup>113</sup> *Indian Archaeology 2008-09- A Review*, Archeological Survey of India, New Delhi, 2015, p 301.

<sup>114</sup> *Indian Archaeology 2012-13- A Review*, Archeological Survey of India, New Delhi, 2015, p 254.

<sup>115</sup> See Plate 118.

<sup>116</sup> See Plate 119. Also see Hasan, *Inscriptions*, pp 24-25. The following inscription measuring 22 ½" by 20 ½" is found on the doorway of a ruined mosque near the Delhi gate. ... the King, Dhar ... mosque ... the exalted and great Khan ... the encamped of the high thrones, the sword of the world and (Hussainu-d-dunys eud-din) A'zam Humayun ... styled Shah Alam... .. Rabi'ul Akhir the year...". Also see Yazdani, *Mandu*, p 44.

<sup>117</sup> See Plate 120.

<sup>118</sup> See Plate 121.

Khalji and the Victory tower, together are called Ashrafi Mahal. The Madrassa was the first of the three to be built. Originally it must have been a single storied structure with a number of halls and compartments built around a large rectangular court yard, Mahmud got the open court filled up to form the basement of his own tomb and extended the north-western tower to a seven storied tower of victory<sup>119</sup>. Very few contemporary sources refer to this madrasa. According to Shihab Hakim Mahmud issued an order for the construction of a religious college which had a khanqah on the left and the right of the lower level of the structure and which hosted high ranking scholars and learned people<sup>120</sup>. Father Monserrate makes references to a half finished tomb and its architecture and size. Further writing he says that in the tomb are buried three kings and also the tutor of one these kings and each of their tombs are embellished with mosaic, bass reliefs and inlaid work. In front of these tombs are the thrones of the three kings which are covered with thin layers of gold, which are regarded as the symbols of royalty<sup>121</sup>. Writing in 1860 Captain Claudius Harris refers to this College as one whose only one side remains which has two stories with several apartments<sup>122</sup>.

As described by Shihab Hakim, Persian workers (*amala-i-fars*) dedicated themselves for 20yrs to decorate the building and gave it the form but still it remained incomplete<sup>123</sup>, which must have been one of its kinds if it had been intact. Originally a seven storey column, this victory tower was erected to commemorate Mahmud Khalji's victory over Rana of Chitor<sup>124</sup>. Abul Fazl refers to this as an octagonal tower<sup>125</sup>. An account of the

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<sup>119</sup>D.R. Patil, *The Cultural Heritage of Madhya Pradesh*, Government of Madhya Pradesh, Gwalior, p 120.

<sup>120</sup> Brand, *The Sultanate of Malwa*, p 88.

<sup>121</sup> Father Monserrate, *op.cit*, pp 15-17. He writes there is an excellently fortified citadel, and a half finished royal tomb, which I suppose will never be completed; but it is worth seeing for its architecture and huge size. It stands in the middle of a square platform, which is raised five cubits above the ground, is eighty feet wide at the top, and is everywhere surrounded below by arches and colonnades. The tomb itself, which is crowned by a dome, measures twenty feet across, forty feet from that point to the top of the dome. At the four corners of the platform rise minarets, seven storeys high and octagonal in shape. Each storey of these minarets is five cubits high. They have windows directed towards the four winds, out of which the Musalman call to prayers is pronounced. Opposite this tomb is another great building of similar magnificence and costliness. In the tomb are buried three Mongol Kings, and also the tutor of one of these Kings. Each sepulcher is embellished with mosaics, bass-reliefs and inlaid works. In front of these sepulchers are preserved the gilded thrones of the three kings, these being regarded as the emblems of royal rank, just as we regard the crown and scepter as such emblems.

<sup>122</sup> Harris, *op.cit*, p 6.

<sup>123</sup> Brand, *The Sultanate of Malwa*, p90.

<sup>124</sup> See Plate 122. Ferishta, *Vol IV*, pp 126-127.

tower by Nizamuddin Ahmad suggests that this was planned by Mahmud Khalji and was erected as a seven storey minaret in front of the Masjid constructed by Hoshang Shah<sup>126</sup>. Ahmad ul-Umari also makes a reference to this seven storied tower in his work dedicated to Rupmati<sup>127</sup>.

De Laet refers to this as a tower which is 170 steps high with balconies, windows, fine columns and arches<sup>128</sup>. Jahangir who visited this structure also provides a detailed description of the tower in his memoirs. He describes it as a seven storey column with each storey containing four chambers with four windows. Its height being 54 ½ cubits and its circumference 50 yards. The seven storeys are adorned with 171 steps<sup>129</sup>. Making a similar reference, Finch writes that a high turret of 170 steps high built round with galleries and windows to every room, stands by the side of the tomb. And its walls were made of green stone<sup>130</sup>. However this column could not stand the test of the time began to crumble. A year after William Finch's visit when John Jourdain, an East India company servant, visited this place he saw only six storeys, i.e., one of the storey had fallen down<sup>131</sup>. Thomas Herbert remarks that this town has a tower which has 170 steps supported by pillars and has gates and windows and was built by the King who is buried

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<sup>125</sup> Abul Fazl, *Ain-i-Akbari, Vol II*, p 196. Abul wrote "Mandu is a large city; the circumference of its fort is 12 kos, and in it there is an octagonal tower..."

<sup>126</sup> Nizamuddin, *op.cit*, p 515.

<sup>127</sup> Ahmad ul-Umari, *op.cit*, p 16. Umari writes that Baz Bahadur and Rupmati rode into Mandu and followed the path which is "Past the Red palace to the east and beyond the dell of the Blue Jay to the Hill of Gold in the west they rode, but found it not. Then on a day riding south past the white mausoleum of Hoshang Shah, under the walls of the great mosque, 'the mosque of exalted construction, the temple of heavenly altitude, whose every pillar is as those of the Ka'aba', under the shadow of Mahmud Khilji's seven storied tower of victory, by the waters of the great lake and beyond it, they came to a sheltered vale in the hills, and there beneath a tamarisk tree, as the Goddess had foretold, they found the gushing spring which to this day men call by her name- the spring of Rewa.

<sup>128</sup> De Laet, *op.cit*, p 33.

<sup>129</sup> Jahangir, *Tuzuk-i-Jahangiri*, pp 381-382. Writing about the Ashrafi Mahal, Jahangir remarks that at the end of the I went with the ladies to look round the building of the Haft Manzar (Seven storeys), and at the beginning of the evening returned to the palace. The building was founded by a former ruler of Malwa, Sultan Mahmud Khalji. It has seven storeys and in each storey there are four chambers (Suffa) containing four windows. The height of this tower (minar) is 54 ½ cubits and its circumference 50 yards (gaz). There are 171 steps from the ground to the seventh storey. In going and returning I scattered 1,400 rupees.

<sup>130</sup> Finch in *Journal of John Jourdain*, p 363. Finch writes that at the Entrance on the south, within the gate of the city now inhabited, as you passé along on the left hand stands a goodly meskite, and over against it a faire palace, wherein are interred the bodies of the

<sup>131</sup> Jourdain, *op.cit*, p 148. Jourdain writes that in one of these churches there is a very statelie tower of 170 steps to goe upp, built round aboute with many windows curiouslie made. This tower hath six storeys, and in every storeye chambers for men to lodge in, very pleasantly contrived, and built all with greene stone marbell.

there<sup>132</sup>. This monument had collapsed and its debris scattered and it was only by the efforts of Sir John Marshall that the tomb was carefully excavated and brought to light.

Taking into account the description of Ahmad ul Umari, Abul Fazl, Father Monserrate, Jahangir and John Jourdain, we can understand that this structure comprised of minirates on all four sides and that each of the minirates had chambers to accommodate people. In other words this madrassa, unlike the other madrassas of the medieval period, was not constructed in the regular plan. The description of the tower by Abul Fazl and Father Monserrate who describe it to be an octagonal one cannot be ignored. Today the remains of one of the towers which survive is circular in shape<sup>133</sup>. Hence in all probabilities there was more than one minirate constructed here, which now do not survive. Jahangir and John Jourdain, both make mention of chambers that have been made on each of the storeys of the seven storey structure. Taking into account this reference and the Father Monserrate's remark that there were four minirate and the visible evidences available today, one can understand that this madrassa was constructed which could accommodate approximately eighty people at a time. This can be understood from the following figure and calculation –

19 rooms made along the section (E) can accommodate 2 people each       $19 \times 2 = 38$

6 rooms along (C) and 5 rooms along (B) can accommodate 1 person each  $11 \times 1 = 11$

4 minirates with 4 chambers each may have accommodated 2 people each  $4 \times 4 \times 2 = 32$

Total number of people accommodated in the madrassa at a given time      80

approximately

Today on the first floor there exists a well which is octagonal in shape<sup>134</sup> and must have been the octagonal tower mentioned by Abul Fazl. An important feature of this madrassa is that the entries to the rooms on the ground floor are facing the east which is not the same as the today's entry<sup>135</sup>. In other words anyone who wanted to reach the rooms in the

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<sup>132</sup> Herbert, *op.cit*, p 82.

<sup>133</sup> See Plate 123.

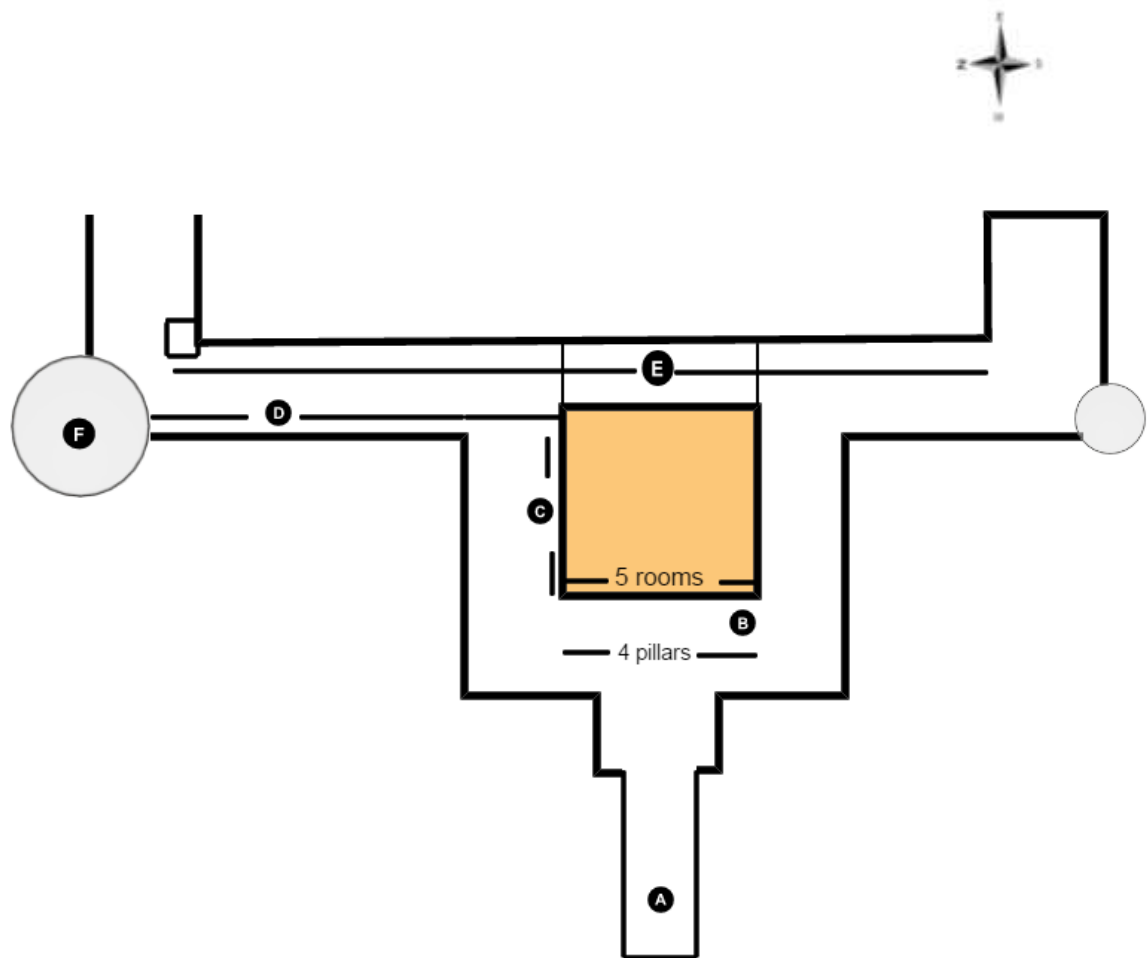
<sup>134</sup> See Plate 124.

<sup>135</sup> See Plate 125.

ground floor could enter directly from the eastern entries of the ground floor and did not have to come from the entry which today faces Jami Masjid.

The raw material used in making this monument comprises of a form of red sandstone whose colour is due to the presence of lesser iron oxide, white onyx marble, the black stone which gets its colour due to the presence of carbonaceous matters and the yellow limestone. I have already made a reference to the places from where these raw materials were being procured. Today the entry to this monument is facing the Jami Masjid. Architecturally this monument comprises of two floors, plan of which are given below. For a better understanding of the ground floor, I have divided it into 6 parts as shown figure 18 -

### Ground Floor of Ashrafi Mahal



A – Steps leading to the first floor

B – comprises of 5 rooms in front of which are four pillars

C – comprises of 6 rooms

D – 7 pillars

E - 19 rooms with pillars in front

F – remains of seven storey tower

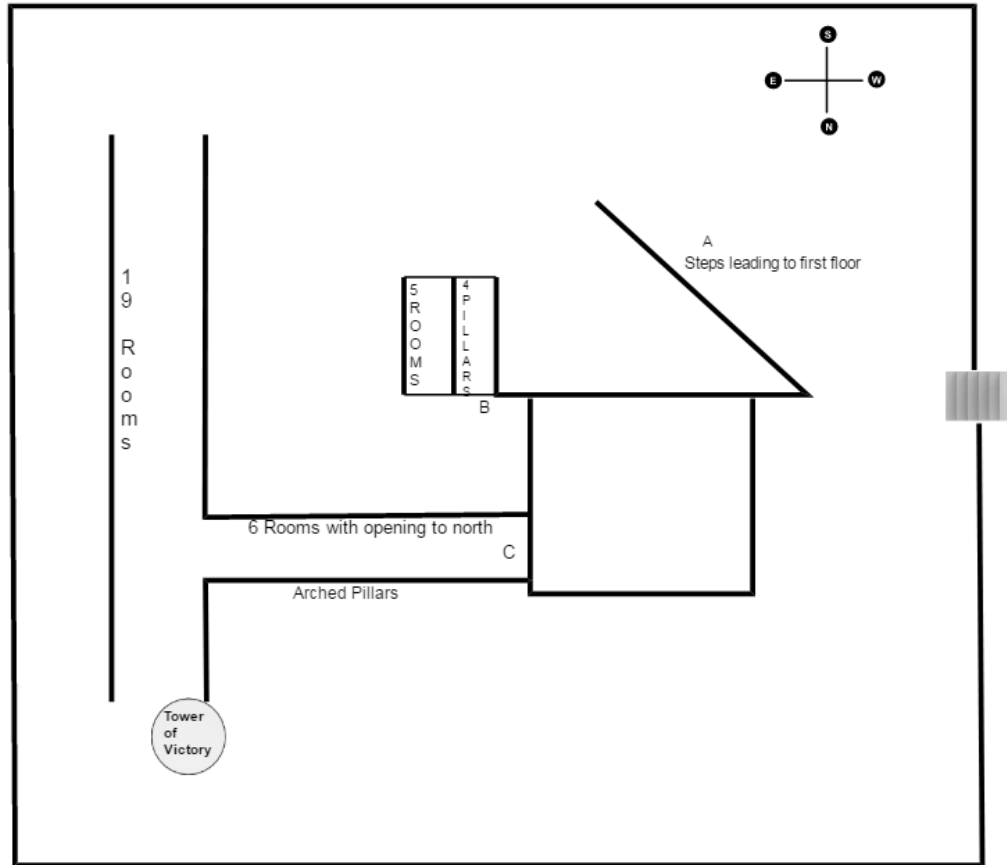
This monument is mainly built of red sandstone along with white marble and blue and yellow glaze. From the road a series of small steps leads a visitor into a courtyard where the first noticeable part of the monument is the steps which lead a visitor to the first floor of this monument. Before taking these steps, one could take the pavement which is made along the left side of the steps, which will bring him in front of a section B which is right below the steps (shown in the Figure above as A). This section comprises of 5 rooms with 4 arched pillars in front. The measurements by the author are given below-

Distance between the pillar and the entrance of the room	5 ft 4.96 inches
Distance between each pillar	6 ft 7.92 inches
Width of the entrance of the room	3 ft 7.11 inches
Height of the room	6 feet 7.53 inches
Length of the room	6 feet 8.91 inches

From this section a pavement leads a visitor to section C which again comprises of 6 rooms and arched pillars. The measurements of the rooms are as follows –

Height of the room	5 ft 8.5 inches
Length of the room	7 ft 1.04 inches
Width of the room	6 ft 1.62 inches

The measurements provided by Yazdani do not match with that of the author<sup>136</sup>. To the east of this section lies the section D and E which is made up of pillared arches and 19 rooms<sup>137</sup>. Figure 19 gives the side view of the Ashrafi Mahal -



To the extreme northern end of the section D are the remains of the Tower of Victory, whose only ground floor remains today. There are steps leading from the ground floor to the base of the first floor of the tower<sup>138</sup>. Right above this floor of the tower of victory on the first floor one can see the remains of steps which once must have led to the first floor

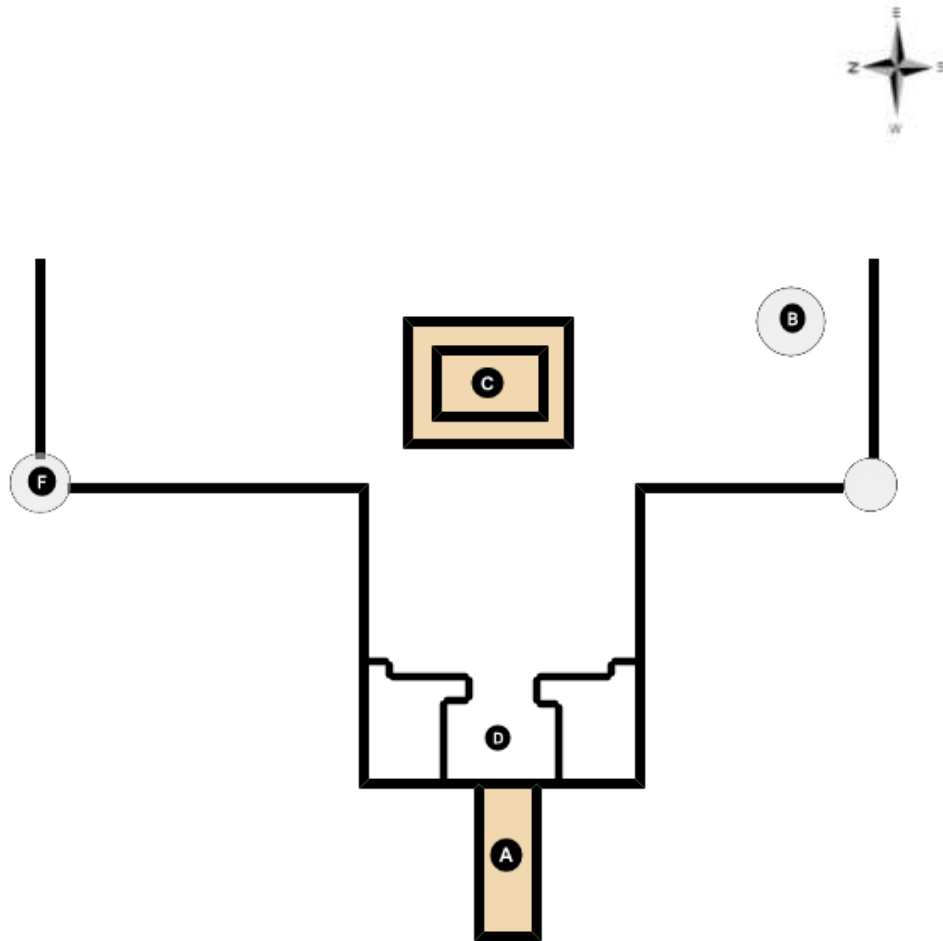
<sup>136</sup> Yazdani, *In Praise of Mandu*, p 15. Yazdani provides the measurement of the rooms as 7 feet.6 inches by 5 feet. 6 inches.

<sup>137</sup> See Plate 125.

<sup>138</sup> See Plate 126.

of the tower<sup>139</sup>. The Section E of the ground floor forms the base of Mahmud Khalji's tomb located on the first floor.

Seventeen broad steps shown in the above two plans as section A, lead a visitor to a porch which is made of white marble with bands of black and yellow stones<sup>140</sup>. Figure 20 shows the floor plan of the first floor of the Ashrafi Mahal –



A Steps leading from the ground floor to this floor

B Probably remains of Minaret

C tomb of Mahmud Khalji

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<sup>139</sup> See Plate 127.

<sup>140</sup> See Plate 128.

D Porch

F broken parts of the Tower of Victory

This porch must have had a dome which has fallen down<sup>141</sup>. This porch comprises of three arched openings on all sides, of which the central one is larger in span than the other two. It can be clearly understood that it was originally built of red sandstone but which must have been replaced by marble, yellow and black stone during repair and restoration work. About 8 steps from this porch to the west is located the tomb of Mahmud Khalji. The mausoleum of Mahmud Khalji which once had a dome and a hall made of marble and doorways and windows, all of which were carved, which now is in complete ruins. The window built on the northern wall has remains of epigraphic bands of calligraphic text carved on it<sup>142</sup>. One can see the fallen pieces of the carved stone with inscription along the floor here<sup>143</sup>. From the description of Sahib Hakim one could understand clearly that in its full form with ornamental details if this monument would have survived the time, it would have been one its kinds<sup>144</sup>.

The earliest reference to the measurements of tomb comes from Father Monserrate who refers to this tomb as the one crowned by a dome which measured 20 feet across, the height of the dome from the floor level to its base as 40 feet and from the base of the dome to the top of the dome as another 40ft<sup>145</sup>. Built in haste, the builder of this monument did not pay due attention to its foundation because of which the levels of the floor are disturbed and could not stand the weight of the walls and the dome and hence causing the fall of the structure. Here one can notice three graves of which one in the

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<sup>141</sup> See Plate 128 & 129.

<sup>142</sup> See Plate 130.

<sup>143</sup> See Plate 131.

<sup>144</sup> Brand, *The Sultanate of Malwa*, p 90. Sahib Hakim writes “they decorated its walls in all directions with colored stones such as red cornelian, green striped and dark blue jasper, yellow ‘Stone of Mary’ [*Sang-i-maryam*; perhaps a variety of agate], white alabaster, black marble, and so forth in the manner that inlay workers [*khatambandan*] produce ivory and ebony decoration... Persian workers [*amala-i-fars*] ... decorated the sides of the lofty dome with tile work [*kashikari*] inscriptions in *thuluth* and *muhaggaq* scripts of ... extreme fineness and straightness ... They strove to accomplish the joining of the knot-work [*taqid-i-girabandi*] in such a manner that the engineer could not fathom the depts. Of its multiplicity of forms... [I]t has been for some twnty odd years that artists [*hunarmandan*] of dexterous hand and artisans [*pishavaran*] endowed with wisdom have dedicated themselves with elegant endeavor to the decoration [*arayish*] of the building and making it form. Yet it has still not been completed”.

<sup>145</sup> Father Monserrate, *op.cit*, p 17.

middle belongs to Mahmud Khalji. On to the north and on to the south of Mahmud's grave, one can find two other graves. When one stands in the middle of Mahmud Khalji's tomb one would notice that the Hoshang Shah's tomb, the Jami Masjid and this monument are all been constructed in a straight line and it seems that this building stands taller than the other two.

It was during the reign of Akbar that the earliest mention of repairs carried out to this building is found<sup>146</sup>. The Archaeological Survey of India's 1902-03 report suggests that Tower of Victory was in ruins in that year and discoveries were made here when H.Cousens paid a visit to the place. Until this year the place was full of fallen masonry and it was in this year that workmen after clearing three quarters of fallen masonry brought to light the marble lined walls of the chamber nearly 65 feet square, containing graves with grave stones. One of the graves was cleared which was inlaid in black and yellow stone but this was to the north of the centre of the tomb. And after clear the centre another grave was brought to light which was in the centre while a third one was discovered to the east of the centre one. As once seen there were four bastions around the basement of this ruined tomb and one at north-west corner was larger than the others and on measuring these one of the four was 150 feet in circumference while the other three were 89 feet. Masonry upon the bastion rose to twice the height of the top of the basement which was not the same with the other bastions. There is staircase leading from here to the top suggesting this to be the remains of the Tower of Victory<sup>147</sup>.

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<sup>146</sup> *Epigraphia Indo Moslemica, 1909-10*, p 27. The inscription may be translated thus: let it not be concealed from the spectators of this turquoise balcony that during the reign and government of his Majesty, the support of the caliphate, the shadow of the God, Jalal-udDin Muhammad Akbar, the victorious King, this humble servant Muhammad Tahir... 'Imad-ud-Din Husain, son of Sultan 'Ali of Sabzwar, succeeded to build this lofty structure. In the month of Muharram 1014 H. (May, A.D.1605). Also see Bendrey, *op.cit*, p 138. One of the inscription reads as follows "1014 H.Muharram (Thurs: 9<sup>th</sup> May to Fri: 7<sup>th</sup> June 1605 A.D.) During the reign of ... Akbar the King... Muhammad Tahir... u'ddin Hussain, son of Sultan Ali Sabzwari was successful in erecting this... building... Also see Yazdani, *Mandu*, p 59 Footnote no 1. Also see J.H.Marshall, *Annual Report of the Archaeological Survey of India 1903-04*, Office of the Superintendent of Government Printing, Calcutta, 1906, p36.

<sup>147</sup> *Annual Report 1902-03*, pp 18-20. Cousen remarks "Jahangir, in the account of the buildings of Dhar and Mandu in his diary mentions a seven storeyed tower or minar, standing out in front of the great Jami Masjid, which, he says, was erected by Sultan Mahmud Khalji. It is said to have been built as a Tower of Victory after the Sultan had vanquished the forces of Rana Kumbha of Chitor. Its height was 54 ½ gaz, its girth at the base was 50 gaz, while from ground level to the top there were 171 steps". Sir James Campbell makes the gaz three feet. Upon the middle of a great platform, about 270 feet square, and at the same height above ground level as the courtyard of the great Jami Masjid, supported upon arched colonnades around its

The 1903 Archaeological Survey report suggests that the centre of the platform here in Ashrafi Mahal was filled with debris and mass of jungle and until March 1904 about 779,000 cubic feet of debris, earth and marble was removed. The remains found showed that this monument must have been a magnificent one with marble being used extensively and the doorways, windows and cornices being carved and inlaid with jasper, agate, black and yellow marble, cornelian and other stones. Blue and yellow coloured tiles were used extensively. On clearing the floor that was covered with debris, 9 tombs were brought to light of which one was made of white marble and was pushed 6 feet out of its place. This monument stood on a platform which measured 267' 6" north to south by 261 east to west and rose 27 feet above the ground level. A plinth that is 4 ½ feet high was brought to light here on the ground floor of the western side of the platform on which the mausoleum stands. During the excavation carried out here 106 copper coins were found buried at the south western corner of the plinth which dated A.H. 937-941, period when Mandu was under the ruler of Bahadur Shah of Gujarat.

Excavations carried out in that year have show that the main structure (Tower of Victory) was made of red stone throughout and had string course of marble at each floor with slabs of sandstone inlaid with white, black or yellow marble in the form of small mihrabs. Amongst the debris were found capitals of pillars which must have been a part of the balconies. Excavations show that the entrance porch was filled with rubble masonry<sup>148</sup>. Minor repair works were carried out at the Ashrafi Mahal until 1923-24. By 1925, the report suggests, repair works were completed at Mahmud's tomb and tower of victory<sup>149</sup>. The Archaeological Survey of India's report suggests that until 1934 works like waterproofing the dome, replacing of the worn out stones, filling of the gas and tidying of

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four sides, with round bastions at the corners, stood until the beginning of this year, a great unshapely mass of fallen masonry, out of which rose portions of the four walls of a great building. This had been pointed out as the remains of the great Tower of Victory, and up to the time of my visit was accepted as such... .The interior measurement of the tomb is 64 feet 9 inches square, far larger than Hoshang's. It is of white marble, within and without, decorated with bands of ornamental carving the interstice of which have been filled in with black and yellow stone so closely fitted that it is only the difference in color of adjacent parts which shows where the joints are... .There is also a great deal of colored tile work, blue, white, green and yellow. There were three openings in each of the four sides of the tomb, which were all, except the central one on the west, facing the Jami Masjid- the entrance doorway- filled with lovely jali works; and there are indications of a row, all round, of clear story windows above these.

<sup>148</sup> *Annual Report, 1903-04*, pp 34-39.

<sup>149</sup> *Annual Report of The Archaeological Survey of India, 1925-26*, Government of India Central Publication Branch, Calcutta, 1928, p 55.

the approaches were executed<sup>150</sup>. Next special repair works that were carried out at Ashrafi Mahal were in 1957 when the exposed core of two columns here were consolidated with toned and recessed mortar. The main portico's pitted floors were replaced with fresh concrete floor and the dome here was made watertight<sup>151</sup>.

The report of 1961-62 of Archaeological Survey of India suggests that morum was mixed with boulders was consolidated in the quadrangle for a proper gradient for discharge of rain water in the Ashrafi Mahal<sup>152</sup>. The 1963 report suggests that the work of laying fresh concrete over the terrace was extended to the top of the cells of Ashrafi Mahal<sup>153</sup>. Until 1975 minor repair works were carried out at Ashrafi Mahal and in that year the original concrete flooring at the tomb was restored<sup>154</sup>. Although repair works were carried out in Mandu, it was only in 1993 that restoration process at Ashrafi Mahal was carried out again. In that year the damaged and missing compound wall in R.R. masonry laid in lime mortar with 100m M.S.grill railing for security and development of the area and to check the encroachment was completed<sup>155</sup>. In 2008 scientific conservation works were carried out on the interior of the corridor and ceiling of this monument. In order to remove the micro vegetational and other accretionary deposits scientific cleaning was carried out<sup>156</sup>.

The deposition of dust, dirt and dried microbiological growth enhanced the process of decay and deterioration of the stone. The deposition of accretions was causing blackening and paling of the marble portions of the monument. To remove dust, dirt and dried biological growth from the surface of the monument scientific cleaning was done. The growth of micro organisms was checked by the biocidal treatment and further the clay pack method was used to clean the marble portion<sup>157</sup>. Though repair and restoration works have been carried out in Mandu even today, only minor ones like clearing of debris and jungle, cleaning of stones etc are being carried out at the Ashrafi Mahal.

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<sup>150</sup> *Annual Report of The Archaeological Survey of India, 1934-35*, Government of India Central Publication Branch, Calcutta, 1935, p27.

<sup>151</sup> *Indian Archaeology 1957-58*, p 103.

<sup>152</sup> *Indian Archaeology 1961-62- A Review*, Government of India, New Delhi, 1964, p 116.

<sup>153</sup> *Indian Archaeology 1963-64- A Review*, Government of India, New Delhi, 1967, p 102.

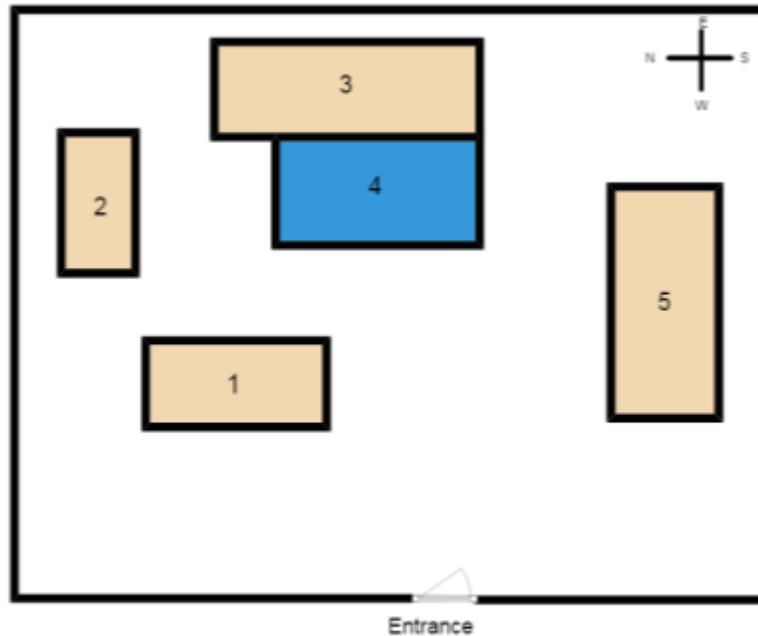
<sup>154</sup> *Indian Archaeology 1975-76- A Review*, Government of India, New Delhi, 1979, p 96.

<sup>155</sup> *Indian Archaeology, 1993-94*, p 164.

<sup>156</sup> *Indian Archaeology, 2008-09*, p 301.

<sup>157</sup> *Indian Archaeology 2009-10- A Review*, Director General Archaeological Survey of India, New Delhi, 2016, p 362.

From Ashrafi Mahal towards the Sagar Talao in the east stand a group of monuments which are styled as Darya Khan's group of monuments. Five monuments: Darya Khan's tomb, Darya Khan's mosque, Somvati Kund, a Sarai and an unnamed tomb, together form this group<sup>158</sup>. Figure 21 shows the arrangement of the structures within the complex-



**Darya Khan Group of Monuments**

1 – Darya Khan's mosque

4 – Somvati Kund

2 – Untitled tomb

5 – Lal Sarai

3 – Darya Khan's mausoleum

The tomb and the other monuments must have been built during the reign of Mahmud II in whose court there was an officer called Darya Khan Lodi<sup>159</sup>, possibly after whom these

<sup>158</sup> See Plate 132. Figure 12 shows the location of these monuments.

<sup>159</sup> Ferishta, *Tarikh-i-Ferishta Vol IV*, pp 160-161.

monuments are named<sup>160</sup>. Before entering Darya Khan's tomb one would first pass by a tank which is styled as Somvati Kund<sup>161</sup>. To the south west of this kund is a sarai called the Lal Sarai and to its north-east is a mosque called the Darya Khan's mosque. Another structure that can be seen in this compound is a tomb which is located north of Darya Khan's mausoleum. It is difficult to trace its period of construction as the contemporary sources are silent about it<sup>162</sup>.

The main entrance to this group of monuments is towards west. Looking at these groups of monuments within an enclosure one can understand that they were constructed in the lines of a Rauza<sup>163</sup>. The general feature of a Rauza is the presence of a garden, however there is no evidence of a garden within the complex of Darya Khan group of monuments. To the north-west of the Somvati kund is a mosque (1 in the above figure) which is located in this complex has prayer hall with 9 arched openings towards the east<sup>164</sup>. Of these 9 arches, the fourth and the sixth one are smaller and are divided into two parts- lower part is an arched opening while the upper portion has an arched window. The arched openings are made up of arches that are built with keystones. The arches towards the extreme north and south are wider in span than the other ones. This monument is divided into 4 bays by rows of pillars. The ceiling of this monument comprises of seven domes of which the central one is larger in height when compared to the other six. To the north of this mosque is a tomb (2 in the above figure) which is not named<sup>165</sup>. No contemporary texts refer to this structure and hence it is difficult to assess its date of construction. This is a square structure comprising of a gallery around a central apartment<sup>166</sup>. This has three arched openings on all four sides. The terrace of this structure comprises of five domes, four which are located at the corners right above the

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<sup>160</sup> See Plate 132.

<sup>161</sup> See Plate 133.

<sup>162</sup> See Plate 134.

<sup>163</sup> For meaning of Rauza see Thomas Patrick Hughes, *A Dictionary of Islam*, W.H.Allen & Co, New York, 1885, p535.

<sup>164</sup> See Plate 135.

<sup>165</sup> See Plate 136.

<sup>166</sup> Yazdani, *Mandu*, p 104.

corners of the gallery below. The central dome is a larger one when compared to the other four<sup>167</sup>.

To the east of the enclosure is the Darya Khan's tomb which as mentioned earlier must have been built during the reign of Mahmud II, for his officer Darya Khan. This tomb is built within an enclosure whose western side comprises of halls<sup>168</sup>. The western side comprises of three halls and they are all connected by arched openings that are facing the north. However these halls have openings towards the east, i.e., facing the tomb. The northern wall comprises of a single hall with 9 arched openings<sup>169</sup>. It is difficult to understand the plan of the building along the eastern and the southern wall. The western edge of the southern wall has steps leading to the terrace above the western wall which comprises of one hemispherical dome<sup>170</sup>. To the eastern end of this monument one can notice the remains of a small tank<sup>171</sup>. This tank is lined up with masonry stones and has narrow steps along the northern wall leading to the base of the tank. There are no evidences of source of water to this tank today.

The main tomb is built on a platform which about 4.96 feet above the ground. This monument is built using red sandstone of a lighter shade and along the exteriors below the parapet one can notice in some parts glazed colours of blue and white<sup>172</sup>. The terrace of this tomb comprises of five domes- the outer four are located at the corners and are smaller when compared to the central one. The central dome also comprises of a finial. Other noticeable feature here is that the corner domes have small arched openings facing the central dome and there niches also that have been made<sup>173</sup>. There are two other domes- ribbed domes, which have been made to the north-west and south west corners of the enclosure within which the tomb is constructed. The entrance of the tomb which faces the south can be reached with help of five steps. The southern and the eastern wall have arched openings while the central arches made along the northern and the western walls

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<sup>167</sup> See Plate 136.

<sup>168</sup> See Plate 132, 133 and 137.

<sup>169</sup> See Plate 137 & 138.

<sup>170</sup> See Plate 139.

<sup>171</sup> See Plate 140.

<sup>172</sup> See Plate 141.

<sup>173</sup> See Plate 142.

are closed. However a careful look at the central arch along the northern and the western wall, one can understand that these must have been perforated arches which have been later closed<sup>174</sup>. The northern and the southern wall also comprise of perforated windows while the eastern and the western wall do not have any such windows. These perforated windows allow minimal light to fall inside the main tomb area. Internally this tomb comprises of a hall where visible are three tombs made of marble<sup>175</sup>. Internally ceiling is hollow and one can notice here band of dark blue colour along the rim of the central dome externally<sup>176</sup>. The arches that have been used in the main tomb area are different in their style when compared to the arches that have been made along the walls which surround the main tomb area. The surrounding walls have arches which are made using the keystone while one can see a technological advancement in the arches of the main tomb area.

Coming out from this chamber, into the main enclosure of the Darya Khan group of monuments, one would notice to its west a tank which is styled as *Somvati Kund*. This is a tank which is lined with masonry stones and has twenty five broad steps on the southern edge which leads one to the waters of this tank. These twenty five steps are split into 10, 9 and 6<sup>177</sup>. However there are no evidences of sources of water to this kund. The southern wall of the Darya Khan's tomb, from outside comprises of chamber, which today are not accessible. There is every possibility that this kund must have acted as a cooling mechanism for the chambers which are located below it. In other words in all probability this structures like many other structures in Mandu, must have had a basement for which the waters of the kund acted as a coolant. The basement must have been closed during the renovation and restoration process. To the south- west of this kund one can notice a masonry sarai which is styled as Lal Sarai. This structure is mainly in ruins today. All that remains today is part of few rooms on the eastern side. This sarai comprises of a main arched entrance and along its eastern wall one can notice a few arched openings

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<sup>174</sup> See Plate 143.

<sup>175</sup> See Plate 144.

<sup>176</sup> See Plate 145.

<sup>177</sup> See Plate 146.

which must have one lead into the rooms built there. The Archaeological Survey of India has taken up repair and restoration works to these monuments<sup>178</sup>.

Moving towards the south west edge of Mandu, one would come across a monument which is styled as Nilkanth palace<sup>179</sup>. Built on a slope of a hill, this structure is associated with *Shah- Budagh Khan*<sup>180</sup> who was an amir of Akbar's period and held this province as jagir<sup>181</sup>. One of the inscriptions on the arch of the wall of the monument corroborates this<sup>182</sup>. There are five inscriptions<sup>183</sup> in the Nilkanth Palace amongst which two are on the wall facing the south east, one on the north- west while the other two are on the southern wall. Two of the inscriptions suggest that Akbar had visited Mandu after the conquest of Deccan and Khandesh<sup>184</sup>. Referring to this monument as the one built by Shah-Budagh

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<sup>178</sup> *Third Report of the Curator of the Ancient Monuments in India for 1883-84*, p 9. Also see *Annual Report of the Archaeological Survey of India 1924-25*, p 46. Also see *Annual Report of the Archaeological Survey of India 1927-28*, p 53. Also see *Annual Report of the Archaeological Survey of India 1928-29*, p 49. Also see *Indian Archaeology 1977-78- A Review*, Archaeological Survey of India, New Delhi, 1980, p 103. The 1977 report suggests that the mosque was in dilapidated condition and was taken up for a major conservation work. The arches of the Darya Khan's Sarai were reconstructed. Also see *Indian Archaeology – 1978-79- A Review*, p 120. Also see *Indian Archaeology 1979-80- A Review*, p 126. Also see *Indian Archaeology 1980-81- A Review*, p 124. Also see *Indian Archaeology 1995-96- A Review*, Archaeological Survey of India, New Delhi, 2002, p 159. Also see *Indian Archaeology 1996-97- A Review*, Archaeological Survey of India, New Delhi, 2002, p253. Also see *Indian Archaeology 2000- 2001- A Review*, Archaeological Survey of India, New Delhi, 2006, p 221. Also see *Indian Archaeology 2009-10- A Review*, Director General Archaeological Survey of India, New Delhi, 2016, p 362. Also see *Indian Archaeology 2010-11- A Review*, Director General Archaeological Survey of India, New Delhi, 2016, p 311.

<sup>179</sup> See Plate 147.

<sup>180</sup> Abul Fazl, *Ain-i-Akbari Vol I*, p 371. Abul Fazl wrote that Shah Budagh Khan distinguished himself under Humayun and was made by Akbar a commander of three thousand. In the 12<sup>th</sup> year of Akbar's reign he went with Shibabuddin Ahmad against the Mirzas in Malwa, received Sarangpur as tuyoil, fought under Aziz Kokah in the battle at Patan and was for a long time Governor of Mandu, where he died... Further he wrote that inside the fort of Mandu, to the south, close to the walls, he erected a building, to which he gave the name Nilkanth, regarding the inscription on which the Maasir gives a few interesting particulars.

<sup>181</sup> Jahangir, *Tuzuk-i-Jahangiri*, p 382. Jahangir writes "I went with the ladies to see the Nil-Kund, which is one of the most pleasant places in the fort of Mandu (Mandogarh). Shah-Budagh khan, who was one of my revered father's most considerable Amirs, at the time when held this province in Jagir, built in this place an exceedingly pleasing and enjoyable building.

<sup>182</sup> Campbell, *op.cit*, p 180. Also see Bendrey, *op.cit*, p 129. Also see Yazdani, *op.cit*, p 114. Also see Anonymous, *The Hill fort*, p 370. The inscription reads " (call it not waste) to spend your life in water and earth (i.e. in buildings). If perchance a man of mind for a moment makes your house his lodging – written by Shah Budagh Khan in year A.H. 982-87".

<sup>183</sup> See Plate 148.

<sup>184</sup> *Epigraphia Indo Moslemica, 1909-10*, pp 25-26. In a valley towards west there is a building called Nil Kanth which at present serves as a Hindu temple. Literally Nil Kanth means 'blue necked', and there is an Indian bird of that quality that is held sacred by the Hindus. There are five inscriptions found in it. (a) Over the big northern outer arch. This inscription is written in one line, 31" by 11 1/2". The stone slab on which the inscription is written have been wrongly put together by some illiterate restorer. The plate is the reproduction of the rubbing in which the text has been arranged in the correct order. "This pleasant building

khan, an amir under Akbar, Jahangir describes this as a pleasing and enjoyable building<sup>185</sup>.

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was ordered to be built in the reign of the great Sultan, the most merciful and just khanqan, the lord of the Kings of 'Arab and 'Ajam, the shadow of God on the two earths, the ruler of the sea and of the land, who raises the standards of holy wars and campaigns, Abul Fath Jalaluddin Muhammad Akbar, the King Champion of faith, may God make his dominion and Kingdom last for ever! Written by Faridun Hasain, son of Hatimi, the year 982 (1574-5 A.D.)". (b) On the northern inner arch. This inscription is quoted in Maathir-ul-umara, where also a biography of Shah Budagh Khan is to be found. "The whole life may be spent in water and earth (i.e. in building), as possibly a man of piety may choose this place as his lodging for a moment. Written by Shah Budagh Khan, the year 982 Hijra (1574-5 A.D.)". (c) On the right wing of the outer arch. The inscription measures 41" by 21". "In the 44<sup>th</sup> year of the divine era corresponding to 1008 (1599-1600 A.D.) the slaves of His Exalted Majesty, the protection of the world, whose court is like the sky, the shadow of God passed by this place on their way to the conquest of the Deccan. (1) How long wilt then say "our house is raised to heaven"? All the people laughed at our vain heart. (2) Come and derive a lesson from the story of others before they hear our story". On the left hand side of the outer arch two inscriptions are found, viz (d) and (e). Also see Nawwab Samsam-ud-Daula Shah Nawaz Khan and his son Abdul Hayy, Maathir-ul-Umara, Eng.Tr. by H.Beveridge in *The Maathir-ul-Umara*, Asiatic Society, Calcutta, 1952, pp 745-746. A reference to this text comes from the Epigraphia Indo Moslemica. Shah Budagh Khan, was one of the Miyankal Aimaqs of Samarqand. He was given the assignment of Sarangpur and for a long time he kept the lamp of justice alight in Mandu. He died there. Inside the fort, on the south side near the wall of the fort, he built an imposing and strong edifice and gave it the name of Nilkanth. The following verse was inscribed on it – "One could spend one's life here engaged with water and clay, As perchance some pious soul may rest here a moment". Composed and inscribed by Shah Budagh. Under it Masum Bakkari whose nom-de-plume was Nami, inscribed his own hand the following quatrain: - "At early dawn I saw an owl perched, Upon the pinnacle of the tomb of Shirwan Shah. Lamenting it uttered this warning: "Where is all the splendor? Where all the grandeur?". The building in question occupies a large space. In 1026 A.H. (1616 A.D.) when this territory was honoured by the visit of Emperor Jahangir, the latter on several Friday nights went there with the ladies of his harem. Also see Yazdani, *Mandu*, pp 113-114. The first inscription has been mentioned in the previous footnote. **Second inscription** – On the great southern arch of the Nilkanth, dated A.D runs: "This pleasant building was completed in the reign of the great Sultan, the most magnificent and just Kha'ka'n, the Lord of the countries of Arabia and Persia, the shadow of God on the two earths, the ruler of the sea and of the land, the exalter of the standards of those who war on the side of God, Abul Fatah Jala'l-ud-din Muhammad Akbar, the warrior King, may his dominion and his kingdom by everlasting". Written by Fari'du'n Hussen, son of Ha'tim-al-Wardi, in the year A.H. 982.

**Third inscription**- on the right wall of Nilkanth dated A.D. 1591-92, runs "In the year A.H. 1000, when on his way to the conquest of the Dakhan, the slaves of the Exalted Lord of the Earth, the holder of the sky-line Throne, the shadow of Alla'h (the emperor Akbar), passed by this place. That time wastes your home cease, Soul, to complain, who will not scorn a complainer so vain. From the story of others this wisdom derive, Ere naught of thyself but stories survive".

**Fourth inscription** – on the left wall of Nilkanth, dated A.D. 1600, runs: "The (Lord of the mighty presence) shadow of Alla'h, the Emperor Akbar, after the conquest of the Dakhan and Da'ndes (Kha'ndesh) in the year A.H. 1000 set out for Hind (Northern India).

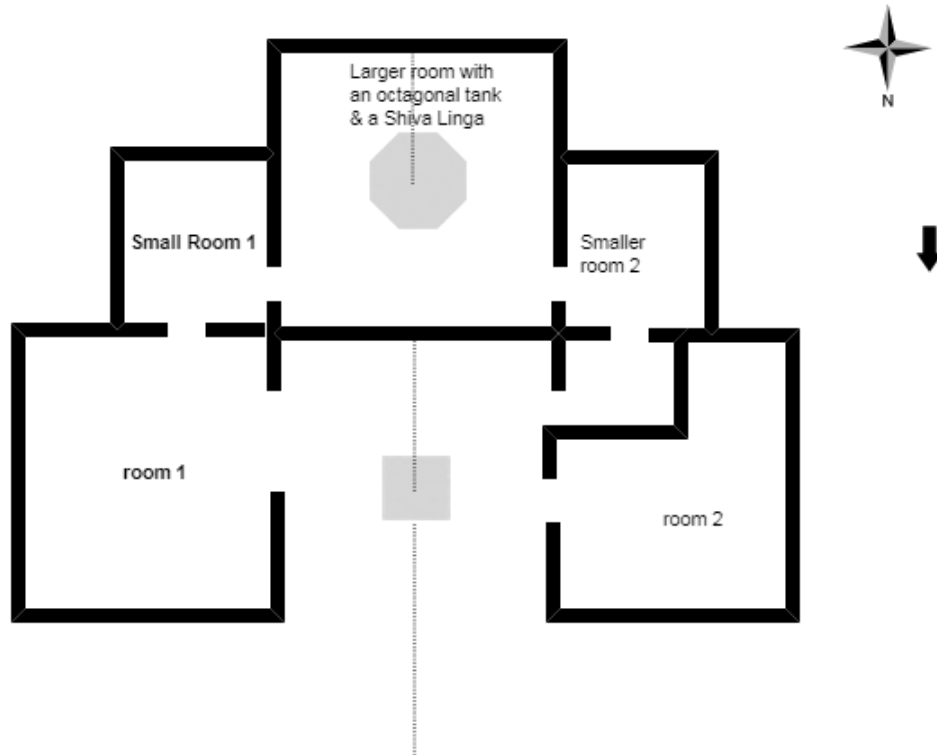
May the name of the writer last forever!

At dawn and at eve I have watched an owl sitting, On the lofty wall top of Shirwa'n Sha'h's tomb. The owl's plaintive hooting convey'd me this warning "Here pomp, wealth, and greatness lie dumb". Written by Nami.

**Fifth inscription** – on the left wall runs " In 1009 H. (A.D. 1600) His Majesty the King Akbar, having conquered Dandes (Khandesh) and the Deccan, proceeded to (North) India". Written by Muhammad Ma'sum. Also see Bendrey, op.cit, p 129. Also see *Ibid*, pp 137-138.

<sup>185</sup> Jahangir, *Tuzuk-i-Jahangiri*, p 382.

This monument built in red sandstone (a lighter shade of usual red sandstone- this colour is caused due to lesser quantity of iron oxide present in it) is located within a compound whose south- western side comprises of tank while the monument styled as Nilkanth Palace is located facing the valley below. The palace is located at a lower level when compared to the tank and there steps leading from west to the entrance of the palace which is built in a court. The plan of the Nilkanth Palace given in the figure 22 –



(.....) dotted line suggests flow of water

(—→) suggests entry to the Palace

This court comprises of rectangular tank and to the east, west and south of this court are rooms which have been built<sup>186</sup>. The room to the south is built on a plinth. The rooms on the east and the west have arched openings towards the court. The ceiling of these two rooms is semi domical. The room on to the east has a square opening towards the south which leads a visitor into a passage which has steps which further allows the visitor to

<sup>186</sup> See Plate 149 & 150.

reach the southern room of the structure. The southern side of the structure comprises of an inner room which is rectangular with an octagonal tank in the middle and beyond the tank on the southern most wall is a cascade built<sup>187</sup>. Here one can notice the three inscriptions that have been previously mentioned.

The water body which is located with the main compound is built with an inclination towards north – west. In other words the water from this is allowed to fall from a height<sup>188</sup> and allowed to fall from the cascade made along the southern wall of the inner room made on the southern wall of Nilkanth Palace<sup>189</sup>. From this cascade the water is allowed to be collected in the octagonal tank and then further allowed to flow through a channel which is further attached to another cascade that is made along the rectangular tank located within the court<sup>190</sup>. Today this water from the rectangular tank is allowed to fall into the valley below. In a dry region like Malwa, water being allowed to go waste is not possible. There is every possibility that water from this rectangular tank was allowed to fall into the valley and was collected in a catchment. The valley here is to the south-west of Jahaz Mahal complex and is about 1 km away from Jahaz Mahal complex. From this catchment possibly with the help of Capillary pressure water was carried through pipes and allowed to fall into the Suraj Kund in the Jahaz Mahal complex. Noticeable at the Suraj Kund along the southern wall are the passage which brought in water (***Jahaz Mahal***). In 2014 the passage of Suraj Kund was open<sup>191</sup> and visible but in 2016 on my third field visit these passages were closed<sup>192</sup>. This monument was taken up by the Archaeological Survey of India for repair and restorations for the first time in 1926<sup>193</sup>.

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<sup>187</sup> See Plate 151.

<sup>188</sup> See Plate 152.

<sup>189</sup> See Plate 153.

<sup>190</sup> See Plate 153.

<sup>191</sup> See Plate 154.

<sup>192</sup> See Plate 155.

<sup>193</sup> *Annual Report of the Archaeological Survey of India 1926-27*, Government of India Central Publication Branch, Calcutta, 1930, p 49. At Mandu, in the Dhar State of Central India, the works on the Lal Bungalow, Champa Baoli etc have been completed and those on the Nilkanth, Tarapur Gate, Songarh Gate and Hoshang's tomb are in progress. Also see *Annual Report of the Archaeological Survey of India 1927-28*, Government of India Central Publication Branch, Calcutta, 1931, p 52. At Mandu in the Dhar State repairs to the Nilkanth, Tarapur Gate, Songarh Gate and Hoshang's tomb have been completed. Also see *Annual Report of the Archaeological Survey of India 1928-29*, Government of India Central Publication Branch, Calcutta, 1933, p 49. Besides the annual repairs and maintenance of the archaeological buildings at Mandu, special repairs have been undertaken at Hoshang's Tomb, Jahaz Mahal, Tarapur Gate, Jami Masjid and Nilkanth. Also see *Annual Reports of the Archaeological Survey of India for the Years 1930-31, 1931-*

However after 1934-35 there was a break in the repair work and it was only taken up for repairs in 1978<sup>194</sup>. Since 1998 no work has been done for its restoration and repair.

Built in 1696 A.D., as understood from the inscription on the doorway, Dai Ka Mahal, is a little ahead to the east of Sagar Talao<sup>195</sup>. Many of the previous authors refer to tomb of Malahat Dai, which in all probability is this one. “Dai” is a term which is used for a wet nurse<sup>196</sup>. In other words Dai ka Mahal must have been made for a wet nurse. A reference to this structure is not available in any of the contemporary sources. Earliest reference to Dai Ka Mahal is found in Yazdani’s work. Dai Ka Mahal is made of red sandstone and stands on a basement. Seven broad steps leads a visitor into a court which has two monuments built- one of the west and the other on the east. The eastern one is the Dai ka Mahal. Before climbing the steps, one would notice that the part of the monument which forms the basement has five chambers and two other arched openings and a large arched opening. Before climbing the steps on to the left side there is another room which now stands in ruins. Taking the steps one reaches into a court which is divided into two parts one which has a tomb and the other which had a ruined structure which is referred to as mosque now-a-days. Some parts of the façade wall and some parts of the ceiling have fallen down but the Qibla wall remains intact<sup>197</sup>. The niches made in the western wall have carved decorations. The mosque consisted of three halls which can be seen even today and the two extreme halls which are located on southern and northern end of the

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32, 1932-33 & 1933-34, Part I, Delhi, 1936, p 49. During 1930-31 special conservation works were carried out at Mandu to the Rupmati Pavilion and the Nilkantha. Also see *Annual Report of the Archaeological Survey of India 1934-35*, Delhi, 1936, p 26. At the Nilkanth, cracks in the north façade of the east and west wings were grouted with cement, the disintegrated stones in the pavement on the east were replaced by new ones, a drain was provided along the length of the east wall; a dry stone wall was added to give additional support to the terraces above, which were restored a few years back, and, to avoid accident, a low edging of red stone was provided on the west of the man hole over the underground drain.

<sup>194</sup> *Indian Archaeology 1978-79- A Review*, Naba Mudran Pvt Ltd, Calcutta, 1981, p 120. The tank on the plateau which supplied water to the cistern in the palace below through a channel was full of accumulated silt, debris and overgrowth of vegetation as a result of which the tank used to dry up completely during late winter and summer. After tracing the outline of the original tank which was found to be having on its three sides a rubble wall, the work of clearance of vegetation, silt and debris was taken up and the tank was excavated to a depth varying between 2 to 3-5 metres. Thereafter, a foundation course in cement- concrete was laid, followed by constructing, a retaining wall in coarse rubble masonry on the north, west and east sides of the tank. The work is in progress. Also see *Indian Archaeology 1998-99- A Review*, Director General Archaeology Survey of India, New Delhi, 2004, p 276.

<sup>195</sup> See Plate 156. On the tomb of Malahat Dai. The inscription measures 25” by 12”. On Wednesday the 11<sup>th</sup> of Rabi the second in 1108 (28<sup>th</sup> Oct 1696 A.D.) the nurse Malahat died. Bendrey, *op.cit*, p 165.

<sup>196</sup> Angus Stevenson, *Oxford Dictionary of English*, Oxford University Press, New York, 2005, p438

<sup>197</sup> See Plate 157.

floor are covered by dome. These two domes are internally decorated with tiles. One can also notice remains of the base of the double pillars. Another noticeable feature here is the widow that has been made along the northern and the southern wall which projects towards outside is more on the patterns of a jharoka.

In all probabilities the plan of this structure has been altered. The first aspect that one cannot ignore that while entering this structure one's view is completely blocked by a large façade wall today. On a careful look at the chambers that have been made in the ground floor here one can notice that the parapet here is not extending up till the last chamber towards the south. Further also noticeable is the difference in the two domes that have been made in what is today called as a mosque. There are different in terms of their thickness, their base, the bottom band which has been made along the bottom of the dome and also the finial of both these domes are not in the same lines. In all probability this structure was made in the similar lines as that of Dai ki Chhoti Behan ka Mahal and the Echo point, both of which are also in the same enclosure as of Dai ka Mahal. Drawing inferences from these two structures one can safely presume that today what is referred to as a mosque of the Dai Ka Mahal must have been later addition. These structures have been constructed away from both Jahaz Mahal complex and Baz Bahadur palace, which explains that they were made for people who held important place in the society. Having visited this site I realized that the outer wall of this part facing the west was covered with vegetation in 2014, however it was cleared of the vegetation in 2016<sup>198</sup>. The Mahal, built on the eastern part of the court, is a square one and is made of red sandstone and is covered by a dome. Although externally this is a square structure internally it is octagonal in single with the help of arches made at the corners. This structure has an arched opening on all four sides. Behind this structure to the south - east one can see a catchment area, although no water carrying channels can be found<sup>199</sup>.

Close by are located *Dai Ki Chhoti Behan ka Mahal*, *Lal Bagh* and *Echo Mahal* and the ruins. Dai ki Chhoti Behan ka Mahal was built for the younger sister of the wet nurse. However it is difficult to determine their date of construction. Although designated as

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<sup>198</sup> See Plate 158.

<sup>199</sup> See Plate 159.

Mahal this is a mausoleum. This is a domed mausoleum which stands on a basement which has five arched openings, each of which leads into a rectangular room. When compared to the rooms of the basement of the Dai Ka Mahal, these rooms are smaller. Today the arched openings of these rooms are closed with masonry walls from bottom so it is difficult for a visitor to enter these rooms. Flight of twenty broad steps leads a visitor to the main area<sup>200</sup>. The plan of the tomb is an octagonal one both internally and externally, with arched openings on four sides. The remaining four sides of the octagon are decorated with closed arches. Along the out rim of the dome one can notice traces of blue colour which once must have adorned this monument<sup>201</sup>. Internally with the help of squinches, the section below the rim of the dome has been made sixteen sided. On my three visits to this monument I noticed that externally vegetation has grown on the walls of the dome here. Since 1924 only four Archaeological Survey reports suggests that this monument was taken up for repair but this needs serious attention<sup>202</sup>.

To the south of Dai Ki Chhoti Behan Ka Mahal a visitor would come across water carrying channels and tanks which are inter-connected, styled as *Lal Bagh*. This is constructed in a garden area which is to the south-east of Dai Ki Chhoti Behan Ka Mahal. This water associated structure runs from west to east. The western part of this must have been a tank which is at a higher level. On the other side of this structure there is water body from where water was allowed to flow into this tank and further channelized into the garden beyond this tank on the eastern side<sup>203</sup>. This rectangular tank with a height is further connected to another rectangular tank which is lower in height which further is connected through wider channels to the garden area. The water from the water body close by was allowed to flow into the first rectangular tank and then further allowed to flow into the other tank which must have been used for the gardens next to them today. It

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<sup>200</sup> See Plate 160.

<sup>201</sup> See Plate 161.

<sup>202</sup>, *Annual Report, 1924-25*, p 46. Also see *Annual Report, 1927-28*, p 53. Also see *Annual report 1928-29*, p49. Also see *Indian Archaeology 1978-79*, p 119.

<sup>203</sup> See Plate 162.

was only in 2008 and 2009 that this structure was taken up by Archaeological Survey of India for repair<sup>204</sup>.

In the same compound to the west of Dai Ka Mahal lies another structure which lies in ruins today. This has been referred to as a mosque by many scholars. Today all that remains of this masonry structure are two halls- located on the southern and the northern side of the structure and remains of walls of the western part of this structure. There are three arched openings to each of these halls. Of the three arched openings of the northern hall, the central one is larger in height and span<sup>205</sup>. This structure has been constructed keeping the terrain in mind. In other words land here is inclined towards the south and this structure has been built with an inclination towards south. To the south of this stands another two storey structure which is styled as *Echo point*. This masonry monument stands to the south of the water body in this complex<sup>206</sup>. This is a two storey structure with the basement comprising of seven arched openings on three sides- east, west and north and the southern side comprises of only six arched openings and steps which lead to the first floor. In plan this is a square structure which is domed with octagonal rim<sup>207</sup>. Internally this is an empty tomb. There are arched openings on all four sides which are made of red sandstone. This structure has been referred to as *Adhar Gumbaj*<sup>208</sup> by some scholars. Only one of the Archaeological Survey report refers to Adhar Gumbaj as one of the monuments which was being repaired<sup>209</sup>. To the west of this group of monuments is the natural water body styled Sagar Talao located close to Malwa Resort today. This is a

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<sup>204</sup> *Indian Archaeology- 2008-09- A Review*, Director General Archaeological Survey of India, New Delhi, 2015, p 85. During the period under review, debris clearance work was carried out which exposed the evidences of ancient/ medieval water works in this area. The area possess a symmetrical arrangement of terraces (platforms) interspersed by water channels besides tanks and cascades facing channels not only showed a system of channels not only showed a system of channels on four directions but also fountains along all four directions besides the central one. The evidence found here appears that the water was supplied from the Sagar Tank located on the west through a system of terracotta pipes connected with tank. Also see Rakesh Tewari, *Indian Archaeology- 2009-10- A Review*, Director General Archaeological Survey of India, New Delhi, 2015, p 243. Scientific clearance work is carried out to expose the buried remains. The work has revealed evidences of water structures including fountains etc. The work is in progress.

<sup>205</sup> See Plate 163.

<sup>206</sup> See Plate 164.

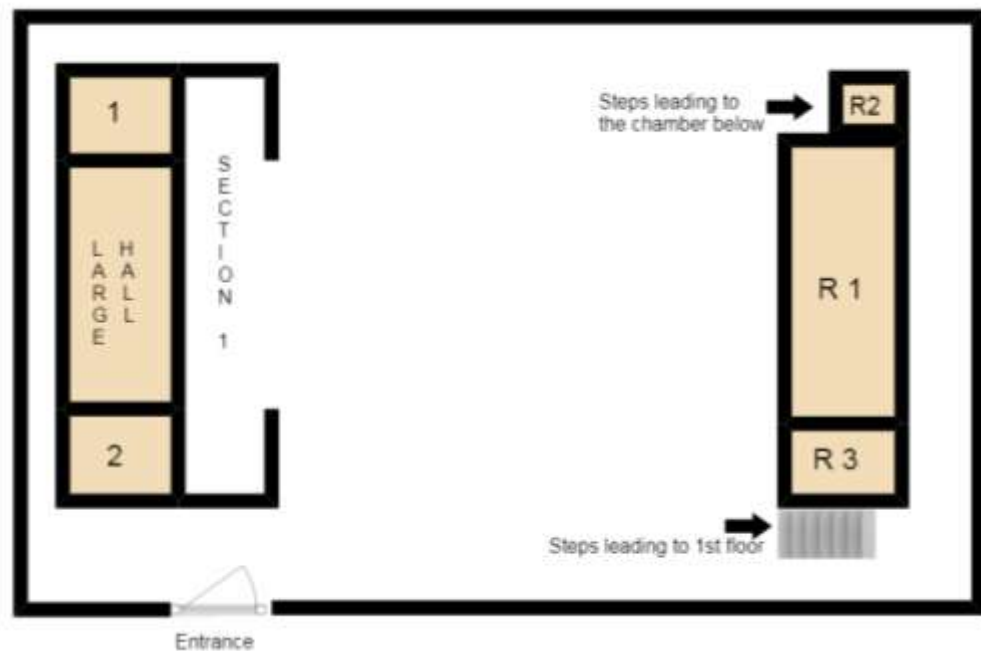
<sup>207</sup> See Plate 165..

<sup>208</sup> <https://rangandatta.wordpress.com/2017/01/27/sagar-talao-group-mandu-madhya-pradesh-mp/>

<sup>209</sup> *Indian Archaeology 1967-68 – A Review*, Archaeological Survey of India, New Delhi, 1968, p 93.

catchment area. On my three field works I noticed here was that from 2014 to 2016 the water levels had gone down<sup>210</sup>.

The above mentioned monuments are the ones whose approximate date of construction is known to us either through the inscriptions that are available on the walls of some of these, while a reference to the construction of some of them is available in the contemporary texts. There are many structures within Mandu which stand even today and have been mentioned by previous scholars but their date of construction is difficult to assess. The first of these monuments is the *Chisti Khan's palace* which a few steps from the Kammani Darwaza, on to the left. Standing in ruins today, its plan and date of construction is difficult to assess. However in its present state the plan of the palace can be understood from the figure 23-



This masonry structure is located within an enclosure whose entrance is facing north-west. A visitor on entering this enclosure finds himself in the middle of a court with two structures on his either sides. The structure on the southern end has remains of a rectangular hall with rooms on either ends. The room to the east has an arched opening

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<sup>210</sup> See Plate 166.

towards west<sup>211</sup> while the one on the west has arched opening facing the east. The hall is built horizontally while the rooms on either side are vertically built<sup>212</sup>. The room which is built to the east has steps from the northern side leading to a chamber below which is now inaccessible<sup>213</sup>. The southern wall of structure has arched windows. This structure must have had a first floor which could be reached with the help of steps which are intact even today. The part of the first floor is now in complete ruins<sup>214</sup>. The structure which is built to the north in this court today has two halls and a smaller room. Although on a careful look at the structure one can understand that before reaching these halls there must have been a section of the building which has now fallen down. The halls that have been made beyond this section can be entered through two arched openings<sup>215</sup>. The smaller room to the west is now in complete ruins and the two halls are made up of arches<sup>216</sup>. The arches that have been made throughout this palace is made using a keystone. The Archaeological Survey of India's report since 1924 suggests that repair works to this structure have been put in place<sup>217</sup>. But after 1925, this palace was taken up for repair works in 1974<sup>218</sup>.

Between Malik Mughith's mosque and Dai Ki Chhoti Behan ka Mahal one would come across a structure which is styled as *Caravan Sarai*. As the name suggests this was an inn built to shelter men, animals and goods along the route. This is a masonry sarai. This is not located very far from the remains of Lal sarai. Possibly it would have come up after Lal Sarai went into disuse. Mandu being located on the route from north to south and vice versa, the necessity to have an inn of this kind was important. The entrance to this sarai is through a large arched opening facing the west<sup>219</sup>. This is an arched doorway which leads a visitor into a court with all four sides comprising of a large hall flanked with rooms.

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<sup>211</sup> See Plate 167.

<sup>212</sup> See Plate 168.

<sup>213</sup> See Plate 169.

<sup>214</sup> See Plate 170.

<sup>215</sup> See Plate 171.

<sup>216</sup> See Plate 172.

<sup>217</sup> *Annual Report of the Archaeological Survey of India 1924-25*, Government of India Central Publication Branch, Calcutta, 1927, p 46. Also see *Annual Report of the Archaeological Survey of India 1925-26*, Government of India Central Publication Branch, Calcutta, 1928, p 55.

<sup>218</sup> *Indian Archaeology 1974-75- A Review*, Naba Mudran Private Ltd, Calcutta, 1979, p 91. Also see *Indian Archaeology 1975-76- A Review*, Naba Mudran Private Ltd, Calcutta, 1979, p 96.

<sup>219</sup> See Plate 173.

The eastern part of the sarai facing the west comprises of central arched opening leading a visitor into a larger hall. To the south of this central arched opening are two other halls with three arched opening each and which are separated by a wall which has an arch in built<sup>220</sup>. While northern side of the central arched opening is single large hall with seven arched openings. Beyond the seventh arched opening on the north there is another arched opening which leads a visitor into a small room. The northern wall of this sarai comprises of 5 halls<sup>221</sup>, each of which has three arched openings. Each of these halls is divided by a wall. The same pattern is repeated on the southern side of the sarai<sup>222</sup>. The arches that have been made here are ones with a keystone. The only reference to this sarai being taken up by the Archaeological Survey of India for repairs comes from the report of 1974 when remarks that the repairs to this had been completed<sup>223</sup>.

From the Dai Ka Mahal group of monuments while travelling towards Jami Masjid after crossing Darya Khan's group of monuments, a road branches towards east which leads a visitor to the monument styled as *Lal Bangla* or *Lal Mahal*. The main entrance of this is made of red sandstone and is an arched one. Four elements make this complex – the court which lies to the west with a large pavilion, a larger court with a baradari, a tank and baradari smaller in size to the east with a geometric garden. The court which lies to the west of the complex comprises of colonnades which are three aisles deep and have seven arched openings towards the court<sup>224</sup>. There are large sized halls on each end of the corridor here. The second court is larger when compared to the first one and has remains of a square baradari which stands on a platform and double pillared arches. The water tank close by has masonry lining on all four sides. On one side of the tank noticeable are traces of possibly a hammam<sup>225</sup>. There are water channels which are visible even today

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<sup>220</sup> See Plate 174.

<sup>221</sup> See Plate 175.

<sup>222</sup> See Plate 176.

<sup>223</sup> *Indian Archaeology 1974-75*, p 91.

<sup>224</sup> See Plate 177.

<sup>225</sup> See Plate 178.

within the garden area nearby<sup>226</sup>. Although the Archaeological Survey of India had previously taken up this monument for repairs, yet this needs serious attention today<sup>227</sup>.

From here while traveling towards the Malwa resort, a road branches out towards south-west which leads a visitor to a monument styled as Ek Khamba Mosque<sup>228</sup>. Contemporary sources do not provide any reference to this structure. Made of red sandstone this is a square domed structure. The purpose of this structure is a topic of further study. Although D.R.Patil mentions this structure in his map<sup>229</sup>, he does not refer to this monument in his text, nor do any other scholars who have previously written on Mandu refer to this structure. Two other monuments *Chhappan Mahal* and *Saath Sau Sidi* which need further investigation. Chhappan Mahal was originally a tomb but gets its name on the account of being repaired in Samvat 1956<sup>230</sup>.

The Above mentioned structures are the ones which have been listed by the previous scholars and which are still standing. In Mandu there are some structures which have not been referred to by previous scholars which are still standing. Here in my dissertation I have tried to document such structures. While travelling from north before reaching Alamgir Darwaza, one would come across three structures, one of which lies to the north-east and other two structures lie to the North West. The first of this is the Jali Mahal. This lies to the north east of Alamgir Darwaza. Jali Mahal, a domed structure has been styled so because of its interiors although they are not exactly jalties. The main entrance of this structure can be reached by flight of steps<sup>231</sup>. The arches that have been built in this structure have been made without a keystone which shows the advancement in technology of making arches.

From the main road in front of the Jali Mahal, another small concrete road branches out towards south west which leads to two other monuments which are styled as *Andha Ka Mahal* and *Andhi ka Mahal*<sup>232</sup>. The road leading to these monuments is steep. Before

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<sup>226</sup> See Plate 179.

<sup>227</sup> *Annual Report 1925-26*, p 55. Also see Marshall, *Annual Report 1926-27*, p 49.

<sup>228</sup> See Plate 180.

<sup>229</sup> Patil, *Mandu*, p58.

<sup>230</sup> *Ibid*, p 52.

<sup>231</sup> See Plate 181.

<sup>232</sup> See Plate 182.

reaching these monuments a visitor would come across masonry well<sup>233</sup>. The naming of these structures is a questionable one. Although the names suggests that these structures belong to two people who were visually challenged, what must have been their place in the society that there are structures been constructed for them. While travelling from Delhi Darwaza towards Ashrafi Mahal, after crossing Gada Shah's shop, a narrow road branches out towards east which leads a visitor to a monument styled as Sopi tank and Sopi mosque<sup>234</sup>. It is difficult to analyze the purpose of this monument and the period of its construction. The structure which is styled as mosque, has three arched openings facing the east and one on the north and south. Further there are steps leading to the basement<sup>235</sup>. The contemporary sources are silent on this structure and hence it is difficult to determine the date of construction and its purpose. Close to the Tarapur gate lies yet another unnamed monument which is similar in construction to the Sopi mosque and has tomb in front of it made on a platform<sup>236</sup>. A further analysis of all these monuments is needed in order to understand their nature and purpose.

Bendrey refers to a structures which had been previously documented but no longer exist was known as Badr Shah. It was suggested to have an inscription that read this was built by a descendant of Gopal Baras who dug up a well and planted a garden and he was a tax collector of Mandu<sup>237</sup>. There must have been a mosque styled as Tal mosque which was built by Shaikh Idrak in 1505 A.D. according to the inscription on it<sup>238</sup>. However this structure no longer remains today. Charba Masjid which once stood in Mandu and had an inscription which refers to Lutfullah, an engineer, who was the son of one of Shah Jahan's architect, Khwaja Jadu Rai, Ustad Sheo Ram, and Ustad Hamid had visited this and had written few words here<sup>239</sup>.

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<sup>233</sup> See Plate 183.

<sup>234</sup> See Plate 184.

<sup>235</sup> See Plate 185.

<sup>236</sup> See Plate 186, 187 and 188.

<sup>237</sup> Bendrey, *op.cit*, p 107.

<sup>238</sup> *Epigraphia Indo Moslemica, 1909-10* p 24. There is an Arabic inscription on Tal Masjid at Dharam Puri measuring 14 ½ by 2 ½ and containing a well known Hadith of ten quoted in Indian inscriptions. "The prophet, God's peace and blessing be with him, said 'who builds a mosque for God God builds for him a palace in paradise'. Built by Shaikh IDrak in 910 (1504-5 A.D.)". Bendrey, *op.cit*, p 115.

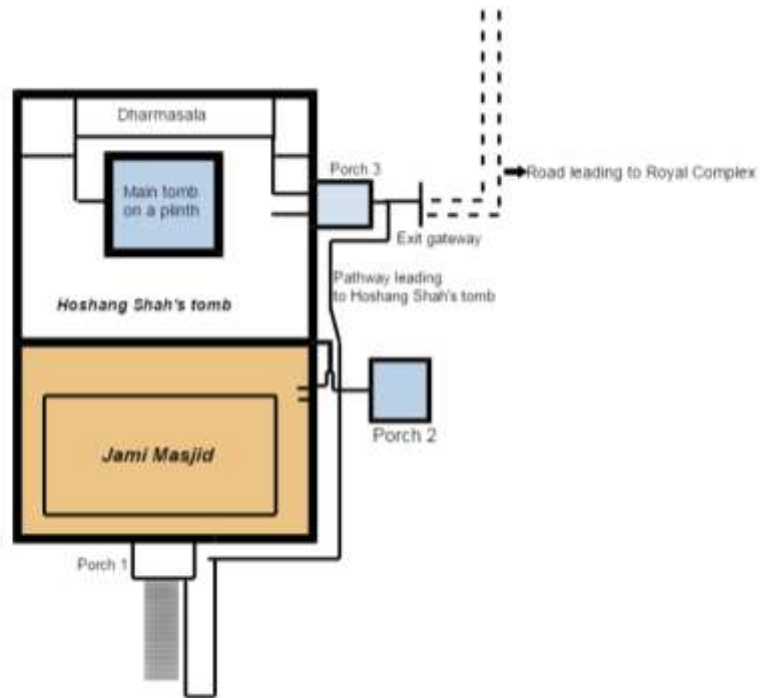
<sup>239</sup> Bendrey, *op.cit*, p 153.

Apart from the structures mentioned in the previous chapters, there are some other structures in Mandu where the system of acoustics functioning in the structures. One such structure is the Dharmashala located within the complex of Hoshang Shah's tomb<sup>240</sup>. Dharmashala here comprises of hall where the ceiling is made in the pointed barrel vault shape<sup>241</sup>. The working of acoustics here leads one to rethink that Jami Masjid could have served as a court in the beginning and later converted into a mosque. Considering that Jami Masjid initially must have served as a court, Dharmashala must have served as office of various departments and as and when the information of a specific department was needed at the court, it was being passed on using the acoustics which functions here. Another aspect which makes one to rethink on Jami Masjid having served as a court was the north facing entry here. In all probabilities the ruler would have come to the court from the Royal complex and then entered then court from the northern entry instead of the eastern one. The eastern entry must have been for the public. Looking at the structures in Mandu one can also safely presume that Jami Masjid must have once served as a court because there are no other structures in Mandu which must have served as court for larger group. Figure 24 shows the probable route of king from Royal palace to the court (now Jami Masjid)-

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<sup>240</sup> See Plate 104.

<sup>241</sup> See Plate 105. I have already given the details of the barrel shaped and pointed barrel shaped vaults in the chapter entitled "Medieval Technology and Building Construction: Jahaz Mahal Complex".



In the context of medieval Mandu interfaces played vital roles which are located between Delhi gate and the Baz Bahadur palace<sup>242</sup>. These interfaces were used as means of transferring information like an attack from an enemy, coming of a royal guest, etc. Between Delhi gate and Baz Bahadur palace there are seven interfaces located, some of which are today inaccessible. Internally these interfaces are concave in shape which was used as means of reverberating sound. The intensity of direct sound calculated here was 50 db and the intensity of reflected sound was 40 db. The loss of sound was possibility due to the surface and the damage which is causing the sound to escape in some of the interfaces. If we take into account that at a temperature of 20<sup>0</sup> C the sound travels 343m/sec, then we can safely presume that between Delhi gate and Baz Bahadur palace the sound at a temperature of 20<sup>0</sup> C travelled at a speed of 343 m/sec.

Medieval archaeology documents and reads the structures standing on the surface. In present day there are many structures which are not recorded or studied and are not able to withstand the vagaries of the time. Many of such structures have been lost or have gone into disuse in the few years of my research period itself and one such example is the

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<sup>242</sup> See Plate 189 & 190.

passage of water in the Suraj Kund at the Jahaz Mahal complex. Hence the documentation of such sites is as important as reading them. The current chapter has tried to bring out the record of such kind of structures located within Mandu. Some of them have been studied by the author and some need further explanation and research.

## Conclusion

Formation of future course of actions in the society can be understood with the help of History which takes into account the actions of the past. In one such branch of history which helps in co-relating the truth with the past society is Archaeology and medieval archaeology in one sub-branch of Archaeology which takes into account the structures which are standing on the surface and which are evidences of cultural movement and integration over ages. Medieval structures have been studied in terms of their architectural features and have been seen as a form of art rather than as representatives of contemporary knowledge and technology. In terms of architecture the traditional system of construction in India followed the trabeate order which was challenged with the advent of the Turks and the establishment of Delhi Sultanate. The beam and pillar style of construction was replaced by the arcuate style of architecture where the use of arch and dome put into practice. This new form of construction was made possible by the introduction of cementing agents in the form of lime mortar. The victory of the Turks in the Battle of Tarain brought them to the doorsteps of Delhi. They soon began to construct structures which were divided into three phases which came almost simultaneously. The first phase of architecture was the one in which raw materials for constructing new buildings were procured after demolishing old structures. In the next phase the structures were dismantled and its parts were removed to supply ready-made material for new structures. With the Turks establishing themselves firmly, they were able to devote their time in planning and construction of new building for which they procured raw materials from nearby regions. However this phase did not signify that it had to be preceded by the other two.

Under the Tughlaqs a new phase of architecture began and it was during the reign of Firoz Shah Tughlaq that the idea of palace forts got revised and began to serve both the residential and military requirement purpose. Coming of Khizr Khan to power after Timur's invasion, laid the foundations of Sayyid Dynasty. During this period tombs began to be made in two separate forms – square and octagonal in plan. However the politically instability during the Tughlaq period which was furthered by Timur's invasion,

allowed the governors to break their allegiance with Delhi and create successor states. Malwa one was one such successor state and it was Dilawar Khan who established himself in Malwa with Dhar as its capital. Dhar remained the capital of Malwa until Alp Khan, also known as Hoshang Shah, shifted it to Mandu. This independent kingdom of Malwa remained so until the 16<sup>th</sup> century when the Mughals brought it under their control during Akbar's reign. The structures which came up in Mandu during the reign of the Turks saw the adaptation of the architectural elements like the battering walls, pointed arches with spear head fringe, the arch lintel bracket combination of Firuz Shah Tughlaq, domical turret feature found in the mosques of Firuz Shah Tughlaq and of the Lodis, etc. The artists besides borrowing these features from the parent city, also developed new innovations like method of combining the arch with pillar and beam built using the ruins of temple material, long and stately flight of steps, use of both kinds of arches- with and without keystone, etc. One important aspect of medieval Mandu structures was the functioning of contemporary knowledge of science and laws of nature. System of acoustics, hydraulics and other laws of sciences like capillary effect, use of aqueduct etc., were put into functioning in many of the structures in Mandu.

centrally located, connecting Delhi and Deccan. Malwa suba under Akbar, according to Abul Fazl, was between Bandhu to the east, Narwar to the north, Baglanah to its south and Gujarat and Ajmer to west<sup>1</sup>. Further Abul Fazl also provides a list of cities that were included in various sarkars in Malwa suba<sup>2</sup>. The Malwa suba under Jahangir was similar to the one under Akbar's rule<sup>3</sup>. The province of Malwa under Aurangzeb, remarks Manucci consisted of 11 sarkars and 250 parganas<sup>4</sup>. Further writing about this province

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<sup>1</sup> Abul Fazl, *Ain-i-Akbari Vol II*, p 195. Abul Fazl gives details of Subah of Malwa. "It is situated in the second climate. Its length from the extreme point of Garha (Mandla) to Banswarah is 245 kos. Its principal rivers are the Narbadah, the Sipra, the Koli Sindh, the Betwa and kodi".

<sup>2</sup> *Ibid*, p 195-222.

<sup>3</sup> Jahangir, *Tuzuk-i-Jahangir*, p 349.

<sup>4</sup> Niccola Manucci, *Storia Do Mogor*, Eng.Tr.by William Irvine in *Storia Do Mogor or Mogul India 1653-1708 Vol II*, London, 1907, p 413. Also see Jadunath Sarkar, *India of Aurangzib Compared with the India of Akbar*, 1901, p 57. The length of Malwa province from the extreme limit of Garha to Banswara is 240 kos; its breadth from Chanderi to Nandurbar is 230 kos. In the east lies Bandhu (Banda), in the west Gujarat and Ajmir, in the north Narwar in the south Baglana. The Sarkars are Ujjain, Raisin, Chanderi, Sarangpur, Bijagarh, Mandhu, Gagron, Kobbri, Hindia and other- 12 sarkars comprising 309 mahals.

Manucci remarks that it produced white and colored cloth in abundance<sup>5</sup>. However Bernier refers to 9 sarkas and one hundred and ninety parganas as part of Malwa suba<sup>6</sup>.

Ujjain, which today is a religious centre, was the first capital of the Paramaras during the early medieval period. It was during the reign of Bikramajit who belonged to tribe of Powar that the city of Ujjain was built and it was he who built the Mahakal temple in Ujjain<sup>7</sup>. Jahangir describes it as one of the oldest cities and as a celebrated city in the Suba of Malwa. He further remarks that Raja Bikramjit who had introduced the observation of the heavens and stars into Hindustan, lived in this city<sup>8</sup>. A reference to the Mahakal worship is also found in account left behind by Alberuni<sup>9</sup>. Writing about Ujjain in 11<sup>th</sup> century Padmagupta remarks that Utpalaraja ruled from here<sup>10</sup>. In 1235 A.D. Iltumish sacked Ujjain and destroyed the temple which was dedicated to Mahakal<sup>11</sup>. Under the Paramaras Dhar occupied the position of being the capital city. Abul Fazl describes Ujjain as a large city located on the banks of river Sipra and as place of great sanctity<sup>12</sup>. Father Monserrate refers to Ujjain as one which was founded by Chandragupta II Vikramaditya. It is near the river Machiwara<sup>13</sup>. Ahmad ul Umari also refers to Ujjain as one of three great old cities<sup>14</sup>. William Hawkins and Thomas Roe refer to Ujjain as the chief seat of Malwa<sup>15</sup>. By the 18<sup>th</sup> century Maratha incursion into Ujjain had started and it

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<sup>5</sup> Manucci, *Vol II*, p 425.

<sup>6</sup> Francois Bernier, *op.cit*, p457

<sup>7</sup> Ferishta, *Tarikh-i-Ferishta, Vol IV*, p 101, footnote. Accession of Bikramjit has given rise to an era which commences fifty six years before Christ. Also see Elliot And Dowson, *History of India as told by its own Historians Vol VI*, Trubner and Co, London, 1875, p 559.

<sup>8</sup> Jahangir, *Tuzuk-i-Jahangiri*, p 354. Jahangiri remarks "Ujjain is one of the old cities, and is one of the seven established places of worship of Hindus. Raja Bikramajit, who introduced the observation of the heavens and stars into Hindustan, lived in this city and province. From the time of his observations until now, which is the 1026<sup>th</sup> Hijra year (1617 A.D. and the 11<sup>th</sup> year from my accession, 1675 years have passed. The deductions of astronomers of India are all based on his observations. This city is on the bank of River Sipra.

<sup>9</sup> Alberuni, *Tahkik-i-Hind*, Eng.Tr by Dr.Edward C.Sachau in *Alberuni's India Vol I*, Kegan Paul, Trench, Trubner & Co.Ltd, London, 1910, p 203.

<sup>10</sup> Bühler, *On the Navasahasankacharita*, p 165

<sup>11</sup> Ferishta, *Tarikh-i-Ferishta*, Eng.Tr. by John Briggs in *History of Rise of Mahomedan Power in India till the Year A.D. 1612, Vol I*, Calcutta, 1908, p 210. Henceforth cited as *Ferishta, Tarikh-i-Ferishta, Vol I*.

<sup>12</sup> Abul Fazl, *Ain-i-Akbari*, p 196.

<sup>13</sup> Monserrate, *op.cit*, p 18.

<sup>14</sup> Ahmad ul- Umari, *op.cit*, p 5.

<sup>15</sup> William Hawkins in *Early Travels in India 1583-1619*, Ed.by William Foster, Oxford University, London, 1921, p 100. Also see Roe, *op.cit*, p379.

was taken over by Scindias as their capital. It remained as the capital until Holkars shifted the capital to Indore<sup>16</sup>.

*Kaliadeh water palace*, a structure which Jahangir remarks was constructed by Mahmud Khalji, the son of Ghiyasuddin, ruler of Malwa, has been described by Jahangir as one of the noted habitations of Hindustan<sup>17</sup>. Abul Fazl remarks that Kaliyadah is a residence close to the city of Ujjain where there is a reservoir that is continuously overflowing<sup>18</sup>. Thomas Roe describes this as a palace built on an island of river Sipra and is connected with the mainland by a bridge. It was here that Mahmud Khalji of Mandu had drowned once<sup>19</sup>. The palace which has been built here is surrounded by the waters of the river which have been channelized into tanks giving the look of a floating palace. A further study of the hydraulics is required to be carried out to have a better understanding about the working of this structure. During the early 18<sup>th</sup> century, Ujjain was under the governorship of Jai Singh of Jaipur, who erected an observatory here. This observatory comprises of four instruments – Samrata Yantra, the Nada valaya Yantra, the Digamsha Yantra and the Bhatti Yantra<sup>20</sup>.

*Dhar* was one of the two cities of Malwa where Malwa style architecture developed. In the early medieval period Paramaras ruled the region of Malwa with Dhar as its capital. Padmagupta, writing during the reign of Sindhuraja, describes Dhar as “other town” of the king and also the “capital of his race”<sup>21</sup>. Dhar remained the headquarters of the Malwa Subha until 1405 when Hoshang Shah shifted his capital from Dhar to Mandu. Jahangir in his memoirs refers to Dhar as one of the oldest cities where Raja Bhoj lived. He also refers to a stone fort built by Muhammad Tughlaq<sup>22</sup>. The structures which came

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<sup>16</sup> P.N.Shrivastav, *Madhya Pradesh District Gazetteers: Indore*, District Gazetteers Department, Bhopal, 1971, pp 55-67.

<sup>17</sup> Jahangir, *Tuzuk-i-Jahangiri*, p 354.

<sup>18</sup> Abul Fazl, *Ain-i-Akbari*, p 196.

<sup>19</sup> Roe, *op.cit.*, p 380.

<sup>20</sup> Virendra Nath Sharma, *Sawai Jai Singh and his Astronomy*, Motilal Banarsidass Publishers, Delhi, 1995, p 212. Also see D.R.Patil, *Cultural Heritage of Madhya Bharat*, Department of Archaeology, Gwalior, 1952, p 115. Henceforth cited as *Patil, Cultural Heritage*.

<sup>21</sup> *Ibid*, p 155. Also see D.C.Ganguly, *History of The Paramara Dynasty*, University of Dacca, Ramna, Dacca, 1933, p 27.

<sup>22</sup> Jahangir, *Tuzuk-i-Jahangiri*, p 407. Jahangir writes “Outside it is very showy and handsome, but inside the fort is devoid of buildings. I ordered them to measure its length, breadth and height. The length inside the fort was 12 tanab, 7 gaz; the breadth, 17 tanab 13 gaz, and the breadth of the fort wall 19 ½ gaz. Its

up in Dhar during medieval period, the Kamal Maula Mosque and Lat Masjid, were considered by Percy Brown as part of the first phase of Malwa style of architecture. The first phase was where structures were built with reused material and both the above structures mentioned in Dhar are the ones where reused material was utilized to raise new ones. Locally referred to as Bhojshala, *Kamal Maula's mosque* remains can be seen even today. There are two pillar inscriptions which confirm the existence of Bhojshala<sup>23</sup>. This

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height up to the battlements appeared to be 17 ½ gaz. The length of the outer circuit of the fort was 55 tanabs”.

<sup>23</sup> *Epigraphia Indo Moslemica, 1909-10*, pp 14-16. The tomb of Kamaluddin Malvi lies within a shrine surrounded by a wall on all sides. There are many tombs within this enclosure and its vicinity, but none of them contains any inscription worth recording. Quotations from the Quran, no doubt, are to be found in more than one place, but they offer no historical interest whatever. The main entrance to the enclosure bears the following inscription measuring 67” x 30”- God is the helper of the believers (Mohamedans). (1) This is a Garden of Paradise, of such elegance and beauty, and this is the vault full of light of such Qutb Kamal. (2) As room had become scanty for the poor and needy pilgrims in the courtyard and quadrangle; (3) both the gallery and courtyard, and this bright dome with stone screen, the cells and pure water; (4) and that interior raised floor, and the monastery with the upper chambers and turrets each like the new moon; (5) both for the repose of all men of piny and for the occupation of all devout Sufis; (6) during his august reign that King of this world Mahmud Shah Khilji who resembles the sun, (7) embellished them anew in the year 861 (1456-7 A.D.), May the palace of his age ever remain embellished! (8) On the threshold of these two kings of the religion and of the world the beggar Mahmud lies prostrate in the row of shoes. (9) As there is a general proclamation from this door to all, it may be that the pillars (the aforesaid kings of the religion and the world) say to the helpless (Mahmud) “Rise and come”.

Writing and work of ... al-Hafiz al-Shirazi in the year ... ”

Kamal Maula contains also the oldest Mohammedan inscription of Dhar. This is said to have “been exhumed from the small grace-yard in this enclosure”. It shows that Mahmud (Tughlaq) was the ruling king in the year 795 (1392-3 A.D.) when Dilawar khan as his governor repaired the mosques in Dhar. The historians who wrote that he became king in 796 are wrong; not only our inscription but also a coin preserved in the Indian Museum proves that he was king already in 795. The last verse is much obliterated and I am sorry that I could not decipher the whole of it. The inscription measures 21”x 15 ¼” –(1) “During the reign of Mahmud Shah, the son of a Sultan, to whom God entrusted the control of the world, (2) In the city of Dhar the mosques which were old and were raised and made desolate by the tyranny of the revolution of sky, (3) the khan of rank high as sky, Dilawar khan, who again renewed the whole of Malwa, rebuilt them. (4) In the year 795 (1392-3 A.D) . . . God ..... made”. Also see Barnes, *op.cit*, p 350.

**Inscription I** –is made up by windings of one serpent only. It contains the Sanskrit alphabet in the Nagari characters of the 11<sup>th</sup> or 12<sup>th</sup> century A.D. and the chief inflectional terminations of nouns and verbs. The former are given in the body of the serpent and the latter in the tail. The consonants do not differ very much from those in common use now; but the vowels have quite a different shape. The whole inscription is 2 ft. 3 in. in height and 1 ft. in breadth. There are altogether 53 letters and symbols, and 21 nominal and 18 verbs inflectional terminations. As the alphabet plays the chief part in this inscription, it may be called alphabetical.

**Inscription II**- is bigger in size 2 ½ ft. in height and 1 ½ ft. in breadth, with greater contents. It is made up by the intertwining of two serpents, probably of the ten tenses and moods of Sanskrit grammar. There are three numbers in Sanskrit, and two sets of terminations (Parasmaipada and Atmanepada, transitive and intransitive) for each of the tenses and moods: so for the three persons in each there are altogether 18 terminations, 9 of each set... The probable meaning of the stanzas is as follows- “The swords of the King Udayaditya and Naravarman were equally ready for the protection of the varnas (i.e., the four castes) and the letters of the alphabet. This pillar inscription has been put here by the king Udayaditya for gratification of poets and princes”.

structure was later repaired by Dilawar Khan in 1392 A.D.<sup>24</sup>. *Lat Masjid*, the second monument in Dhar, owes its construction to Dilawar Khan. This is located on the southern edge of Dhar. There are two inscriptions here, one on the northern doorway and the other is on the eastern entrance. The earliest reference to these inscriptions is given by Jahangir in his memoirs<sup>25</sup>. Jahangir wrote that the Dilawar Khan built the Jami Mosque in the inhabitable area outside the fort and fixed a quadrangular iron column opposite to the gate of the mosque. Jahangir further wrote that this column was not lowered with precaution and hence had broken into two pieces and that he ordered that the larger piece of the column should be carried to Agra and placed in the courtyard of Akbar's mausoleum. However his orders were never carried out. One of the pieces of the column which is near the mosque, has a short inscription in Persian. This inscription refers to the engraving being carried out by one Sharif Mahommed on the orders of Akbar when he passed from here on his way to Deccan<sup>26</sup>. Reused material, as in case of Dilawar Khan's mosque in Mandu, was made use of in the Lat Masjid too. Once the capital was shifted from Dhar to Mandu major architectural works began to develop in Mandu, which have been dealt in the previous chapter in detail. The possession of Dhar was taken over in 1731 by the Pawars until 1857 when the British finally took over it<sup>27</sup>.

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<sup>24</sup> Bendrey, *op.cit*, p 106. An inscription on the tomb of Kamal Maula dated 1392 A.D. reads "During the reign of Mahmud Shah, Dilawar Khan who again renewed the whole of Malwa, rebuilt them". Also see Luard, *op.cit*, p 9.

<sup>25</sup> Jahangir, *Tuzuk-i-Jahangiri*, pp 407-408. Jahangir wrote "in front of the arch of one gate some sentences, in prose have been carved on a stone tablet; their purport is that 'Amid Shah Ghor founded this mosque in the year 870, and on the arch of the other gate a qasida has been written and these few couplets are from it – "The lord of the age, the star of the sphere of glory, Centre of the people of the earth, sun of the zenith of perfection, Asylum and support of religious law, 'Amid Shah Dau'ud, in whose excellent qualities Ghor glories, Helper and protector of the Faith of the Prophet, Dilawar Khan, Who has been chosen by the most mighty Lord (god), founded the Jami mosque in the city of Dhar, At a fortunate, auspicious time, on a day of happy omen. The date of eight hundred and seven had passed, When the court of hopes was completed by fortune". Also see Barnes, *op.cit*, p 347. The inscription on the northern doorway is in prose and to the effect that Ahmed Shah, known as Dilawar Khan, laid the foundation stone in the year A.D. 1405. The second inscription on the eastern entrance is in verse and may be thus translated – "Lord of the earth and mighty source of lofty heaven, the support of the people of this world, And sun of zenith of perfection, in Him all good qualities are entered – of descent noble as the heavens, Powerful as the angels, and equal to Jesus, ..... The great Support of Islam, A hero of such noble qualities, As Ghor may well be proud of. The helper and supporter of the religion of the Prophet, Dilawar Khan, the chosen one of the Great God, Disciple of Nazir-ud-Din Mahommed ... It was the year 808 Hijri that the construction of the mosque was completed with all splendor".

<sup>26</sup> Barnes, *op.cit*, p 348. Also see Luard, *op.cit*, p 10.

<sup>27</sup> *Ibid*, p 344.

Located on the borders of medieval Malwa and Bundelkhand, *Chanderi* is another city which has been mentioned by Abul Fazl as a part of Malwa Suba under Akbar. Chanderi, has been mentioned by Ziauddin Barani as the place where muster of the army under Alauddin Khilji's rule were held<sup>28</sup>. After a siege of 8 months, Chanderi was taken over by Mahmud Khalji of Malwa in the 15<sup>th</sup> century<sup>29</sup>. It was later captured by Rana Sanga of Mewar who bestowed it on Medini Rai. In 1528 Babur took over Chanderi which is described as a city with its citadel situated on a hill<sup>30</sup>. During Akbar's reign Chanderi was a sarkars under the Malwa Subha. It has been described by Abul Fazl as one of the largest cities which possesses a stone fort<sup>31</sup>. Chanderi has been described as a large town with a stone fort with 360 sarais and 12000 mosques<sup>32</sup>. Bundela Chief, Devi Singh was appointed in 1680 as the governor of Chanderi. It remained under the Bundelas until 1811 when Daulat Rao Scindhia of Gwalior annexed it to his territory<sup>33</sup>. It was later in 1858 Chanderi was captured by Sir Hugh Rose<sup>34</sup>.

Of the medieval structures that remain in Chanderi today, Kushk Mahal is one of them which has been credited to Mahmud Shah I of Malwa. Ferishta remarks that Sultan Mahmud built a palace close to Futhabad which was seven stories high<sup>35</sup>. Percy Brown refers to this as a four storied structure with a square plan<sup>36</sup>. Other medieval monuments

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<sup>28</sup> Amir Khusrau, *Khaza'inul Futuh*, p xxv.

<sup>29</sup> Ferishta, *Tarikh-i-Ferishta*, Vol IV, p 123.

<sup>30</sup> Babur, Baburnama, Eng. Tr. by John Leyden in *Memoirs of Zehir-ed-din Muhammad Baber Emperor of Hindustan*, James Ballantyne and Co. Edinburgh, Londn, 1826, p 377. Babur wrote that from Behjet Khan's tank for the purpose of attempting Chanderi by force, and encamped on the banks of middle tank, which is near the fort. . . . The citadel of Chanderi is situated on a hill; on one side of it they have made a covered way that runs down to the water. The walls of this covered way reach down below the hill and this is one of the places in which the fort is assailable with most hopes of success.

<sup>31</sup> Abul Fazl, *Ain-i-Akbari Vol II*, p 196.

<sup>32</sup> *Ibid*, p 196. Abul Fazl remarks that Chanderi was one of the largest of ancient cities and possesses a stone fort. It contains 14000 stone houses, 384 markets, 360 spacious caravan sarais and 12000 mosques. Also see Sarkar, *op.cit*, p lx. Sarkar writes "The Khulasat merely repeats the Ain without adding a single item of original information. . . . Chanderi, a large town with a stone fort. It is said to have contained 14,000 stone houses, 384 bazars, 360 sarais and 12000 mosques.

<sup>33</sup> Patil, *Cultural Heritage*, p 95.

<sup>34</sup> *The Imperial Gazetteer of India, Vol X: Central Provinces to Coompta*, Claredon Press, Oxford, 1908, p 164.

<sup>35</sup> Ferishta, *Tarikh-i-Ferishta*, Vol IV, p 128.

<sup>36</sup> Brown, *op.cit*, p 65. Brown remarks that this partially ruined structure has been identified as a seven storied palace order to be built in 1445 by Mahmud Shah I of Malwa. Although only the remains of four stories now exist, the mass of debris that until recently lay within its walls, proves fairly conclusively that at one time it was a much higher building. It is square in plan, having a diameter of one hundred and fifteen feet, and has an entrance in the middle of each side, with balconied windows at regular intervals relieving

that stand today are *tomb of Nizamuddin's family, Badal Mahal gateway, Jami Masjid and Shazadi-Ka Rauza*. An accurate date of the construction of these monuments is not known. One of the epigraphs found in Chanderi refers to a construction of a mosque during the reign of Muhammad Shah, which was later completed by Ismail, son of Abdul-Salam<sup>37</sup>. Two other monuments of the 14<sup>th</sup> century are the tomb of Shah Kamal and a small mosque which is adjacent to the tomb<sup>38</sup>.

Medieval Malwa also included the city of Raisin. In January 1528 after having captured Chanderi, Babur moved to capture Raisin, Bhilsa and Sarangpur<sup>39</sup>. Sher Shah Suri too laid a siege on the fort of Raisin<sup>40</sup>. The suba of Malwa during Akbar's reign comprised of sarkar Raisin too<sup>41</sup>. Under Aurangzeb Raisin sarkars of Malwa Suba comprised of 38 mahals<sup>42</sup>. Another Sarkar which was included in the Subha of Malwa mentioned by Abul Fazl was *Mandsor*, an ancient town which was previously called Dashapura. Badauni refers to Mandsor as a dependency of Malwa<sup>43</sup>. In 1534 Humayun fought a battle against Sultan Bahadur of Gujarat at Mandsor which resulted in the latter's defeat<sup>44</sup>. Further, Abul Fazl refers to *Hasilpur*, included in Malwa subha, as one where vine was

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the otherwise plain surface of its exterior walls. The arrangements of the interior are unusual. Two arched passages crossing at right angles are the dominating features, thus dividing the whole into four quadrants within which are accommodated the palace halls. These halls rise up story upon story, each opening out on to the tall arched passages inside, with light admitted through the balconied windows on the outside. It is a simple scheme but singularly effective, the architectural treatment showing the Malwa style at its most vigorous stage; the reflex curves of the arches are strong and spirited, the accessories, skillfully distributed and contrasting with the ample plain surfaces emphasize their elegant shapes, while the masonry of the whole is of a high standard. There is throughout this building a sense of vitality, implying the initial phase of a movement bringing with it fresh inscription.

<sup>37</sup> Ramsingh Saksena, 'Persian Inscriptions in the Gwalior State' in *The Indian Historical Quarterly* Vol I, Delhi, 1925, p 654.

<sup>38</sup> S.A.Rahim, A Unique Inscription of Malwa Prince Qadr Khan from Chanderi, in *Epigraphia Indica Arabic and Persian Supplement*, Ed.by. Z.A.Desai, New Delhi, 1980, p 48. This inscription is a record of the early 15<sup>th</sup> century pertaining to the Ghori period of the Malwa Sultanate. The epigraphical tablet measuring 103 by 27 cm is built up in the west wall of Tomb of Shah Kamal situated near the Bus station. The tomb is a beautiful building of modest dimensions. Adjacent to it is a small mosque which has on its central mihrab an inscription in Arabic character which is unfortunately far too obliterated to admit of any decipherment.

<sup>39</sup> Babur, *Baburnama Vol II*, p 598. Also see *Archaeological Survey of India four reports made during the years 1862-63-64-65 Vol II*, Govt Central Press, Simla, 1871, p 410.

<sup>40</sup> Abbas Khan Sherwani, *Tarikh-i-Sher shahi*, Eng.Tr. by Elliot and Dowson in *The History of India as Told by Its Own Historians Vol IV*, Trubner & Co, London, 1872, p 397.

<sup>41</sup> Abul Fazl, *Ain-i-Akbari Vol II*, p 199.

<sup>42</sup> Sarkar, *op.cit*, pp 141-142.

<sup>43</sup> Al-Badauni, *The Muntakhabu- 'rukhs Vol I*, p 454.

<sup>44</sup> Gulbadan Begum, *Humayun-nama*, p131.

grown twice in the year and the betel leaves of this city were of fine quality<sup>45</sup>. One of the sarkars mentioned by Abul Fazl in the subha of Malwa was *Hindiah* which was known for its wild elephants. Within the sarkars of Hindiah lay, a town named *Nazarbar* or *Nadarbar* from where grapes and melons of fine quality were obtained. Hindia as a sarkars was included in Malwa subha under Aurangzeb<sup>46</sup>. *Garha*, the ancient capital of Gond dynasty is recalled by Abul Fazl as when which had numerous wild elephants and that its produce was sufficient to supply for both Gujarat & Deccan. A monument styled *Madan Mahal* was constructed here<sup>47</sup>.

Jadunath Sarkar has provided the division of subha of Malwa of Akbar's reign, Jahangir's reign and that of Aurangzeb's. The Malwa Subha of 1594 and 1695 comprised of 12 sarkars while the one of 1665 comprised of only 9 sarkars. However the number of sarkars reduced to 11 between 1700 and 1720<sup>48</sup>. The medieval monuments in these other cities of Malwa require further research and explanation for historical records. They all carry evidence of medieval technology and can be sound witness of past knowledge and tradition.

<sup>45</sup> Abul Fazl, *Ain-i-Akbari Vol II*, p 195.

<sup>46</sup> Sarkar, *op.cit*, p142.

<sup>47</sup> Abul Fazl, *Ain-i-Akbari*, p 196 footnote.

<sup>48</sup> Irfan Habib, *An Atlas of Mughal Empire: Political And Economic maps with detailed Notes, Bibliography and Index*, Oxford University Press, Delhi, 1982, pp 33-35 (9A). Also see Sarkar, *op.cit*,lix.

The Province was made up of the following divisions –

1594	12 Sarkars, 301 parganas		
1665	9 Sarkars, 190 parganas		
1695	12 sarkars, 309 mahals		
1700	11 Sarkars, 117 mahals		
1720	11 Sarkars, 259 mahals.		
Sarkars	(1594)	(1695)	(1720)
Ujjain	10m	first 9 sarkars of Abul Fazl	13
Raisin	35	Are repeated, but the other	38
Chanderi	61	3 are not named	49
Sarangpur	24		24
Mandu	16		23
Hindia	23		13
Gagron	12		12
Kotri Paraya	10		9
Bijagarh	29		
Kanauj	57	Garh	55
Mandesor	17		16
Nandurbar	7	Shahabad	7





Al- Badaoni

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## Plates



Plate 1 – Taweli Mahal



Plate 2 – Jahaz Mahal (eastern view)



Plate 3 – Jahaz Mahal (western view- taken in March 2014)



Taken in October 2014



Plate 4 – Suraj Kund



Taken in October 2014



Other view of Suraj Kund



Plate 5 – western wall of the double hall of Jahaz Mahal



Plate 6 – the ceiling of the double hall of Jahaz Mahal



Plate 7 – Diya Tank



Plate 8 –Colonnade



Plate 9- southern pavilion of the Jahaz Mahal terrace



Plate 10



Plate 11 – Lotus Tank on the terrace of Jahaz Mahal



Plate 12 – Eastern view of Kapoor Talao



Plate 13 – South-Eastern pavilion of Jahaz Mahal



Plate 14



Plate 15



Plate 16



Plate 17



Plate 18 – Hindola Mahal



Plate 19 – Southern wall of Hindola Mahal



Plate 20 - Western wall of transverse projection facing south

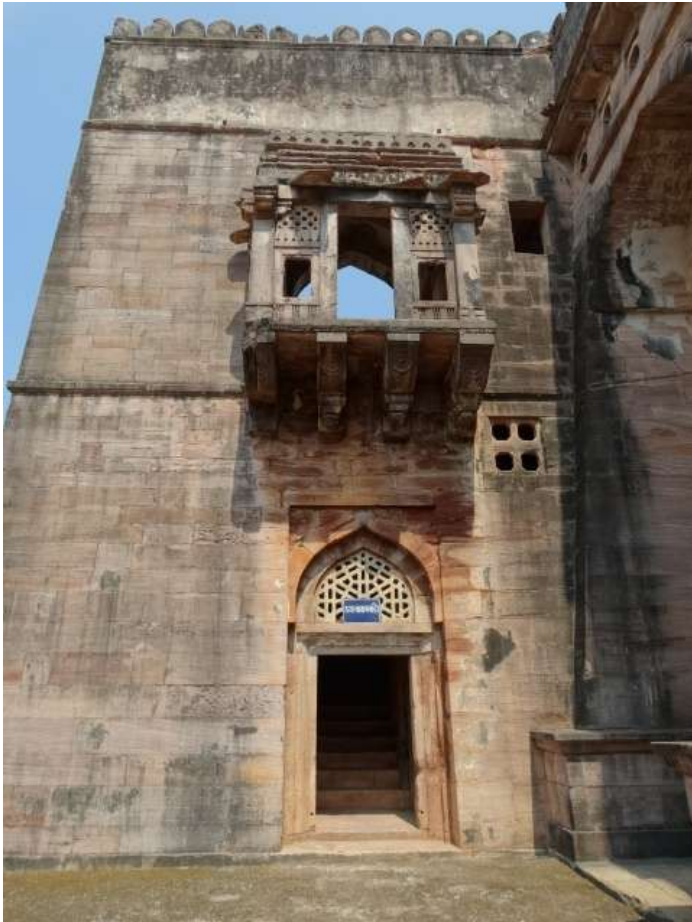


Plate 21



Plate 22



Plate 23



Plate 24 – Hathi Charao



Plate 25



Plate 26 – ruins between Jahaz Mahal and Hindola Mahal



Plate 27 – Archaeological Survey report 1903



Hindola Mahal in March 2014



Plate 28



Plate 29 – Dilawar Khan's mosque



Plate 30 – Western wall of Dilawar Khan's mosque



Plate 31 – Opera



Plate 32 – closed Hammam



Plate 33 – western wall of the closed hammam from inside



Plate 34 – bath tub kind of structure behind the closed hammam



Plate 35 – Royal palace



Plate 36- Champa Baoli



Plate 37 – Taikhana of Champa Baoli



Plate 38



Plate 39 – upper part of Champa Baoli



Plate 40 – Jal Mahal



Southern view of Jal Mahal – taken in October 2014



Southern view of Jal Mahal - Taken in March 2016



Plate 41



Plate 42- floral tank in Jal Mahal compound



Rectangular tanks in Jal Mahal compound



Another Floral tank in Jal Mahal Compound



Plate 43 – Aqueduct behind Jal Mahal



Plate 44 – room on the 1<sup>st</sup> ground floor of Jal Mahal



Plate 45- Hathi Pol Gate



Plate 46- Pavilion on the southern edge of Ujali baoli



Plate 47 – Ujali Baoli





Plate 48



Plate 49 – Paintings in the room on the 1<sup>st</sup> floor of private structure (Gada Shah's house)



Plate 50 – Public Structure (Gada Shah’s shop)





Plate 51 – inscription on the entrance of Baz Bahadur Palace



Plate 52 – Rewa Kund



Plate 53- north eastern wall of Rewa Kund





Plate 54- Steps leading to Baz Bahadur palace



Plate 55- entrance leading to covered passage



Plate 56 – chambers on either sides of the above passage



Plate 57- courtyard beyond the main entrance leading to the outer section of the palace



Plate 58 – steps to the extreme right in the photograph leading to terrace of the main entrance.



Plate 59- Tank within the court of Baz Bahadur palace



Plate 60 – colonnade to the north of the tank



Plate 61 – arched gallery to the north of Baz Bahadur palace

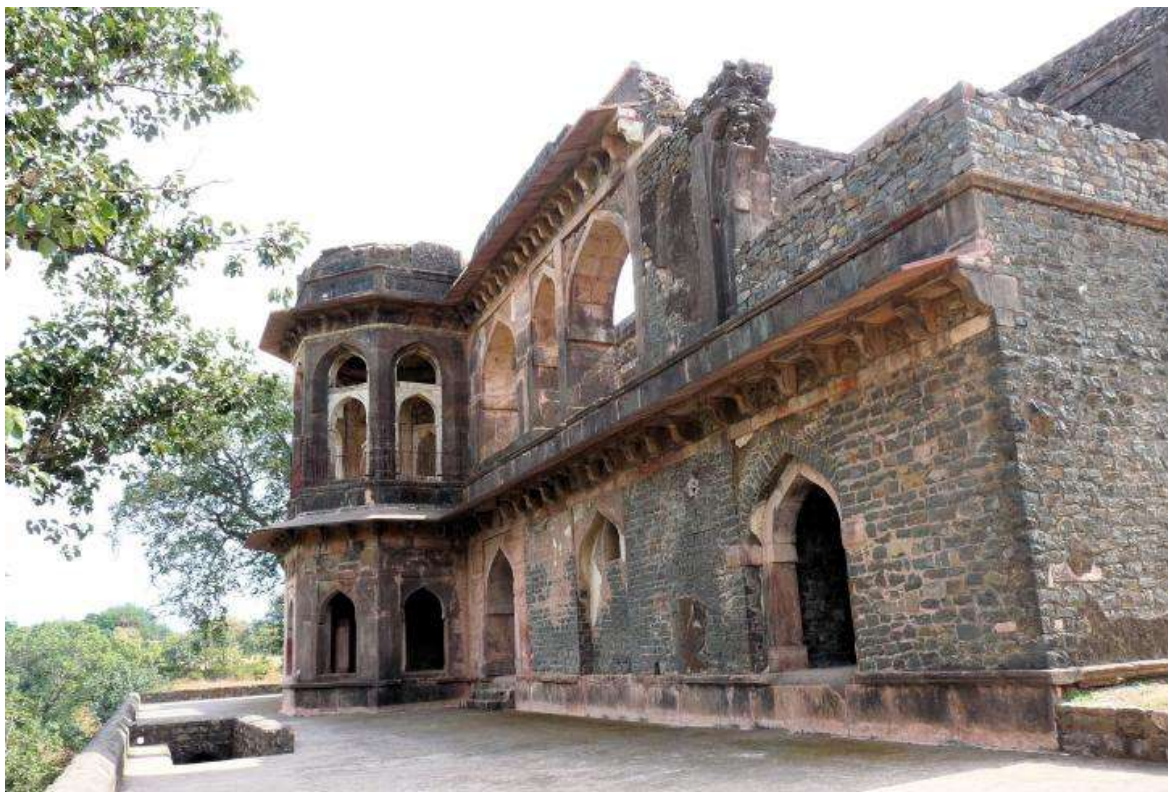


Plate 62 – Basement of the Baz Bahadur palace



Plate 63 –passage to the southern part of the court of Baz Bahadur palace



Plate 64 – window of the rooms on either sides of the passage



Plate 65 – southern part of the court and the pavilions on the terrace





Plate 66- View of Rupmati Pavilion from Baz Bahadur palace



Plate 67 – Curved road leading to the Rupmati Pavilion



Plate 68 – garden behind the Rupmati Pavilion



Plate 69– western view of Rupmati Pavilion



Plate 70 – the hall of the first floor



Plate 71 – basement



Plate 72 – the western extension of Rupmati pavilion



Plate 73- the smaller tank to which are connected the pipes that carry water from the terrace



Plate 74- Inner view of this western extension of Rupmati Pavilion



Photo taken in March 2016



Eastern wall of the tank which is connected to the smaller tank



Plate 75 – chhatris of Rupmati pavilion



Plate 76 – smaller tank between Rewa Kund and Baz Bahadur Palace



Plate 77 – water carrying channels



Plate 78



Plate 79 – water carrying channels along the southern wall of the courtyard of Baz Bahadur palace.



Plate 80 – inbuilt water carrying channels



Plate 81 – passage behind the tank of the western extension of Rupmati Pavilion



Plate 82 – Alamgir Darwaza



Plate 83 – inscription on the south-western wall of Alamgir Darwaza



Plate 84 – inner part of the passage of Alamgir Darwaza



Plate 85 – Bhangi Darwaza





Plate 86 – Kamani Darwaza



Plate 87 – Delhi Darwaza



Plate 88 – effigies on the western wall of the Delhi gate



Plate 89- Inscription on the inner gate of Tarapur gateway



Plate 90- inscription on the outer gate of Tarapur gateway



Plate 91 – Tarapur Darwaza



Plate 92- Lower gate of Tarapur gateway



Plate 93 – Songarh gate



Plate 94 – Malik Mughith's mosque



Plate 95



Plate 96- inscription on the entrance of Malik Mughith's mosque



Plate 97 – southern section of inner part of Malik Mughith's mosque



Plate 98-Eastern wall of the Malik Mughith's mosque



Plate 99 – western wall of Malik Mughith's mosque



Plate 100



Plate 101

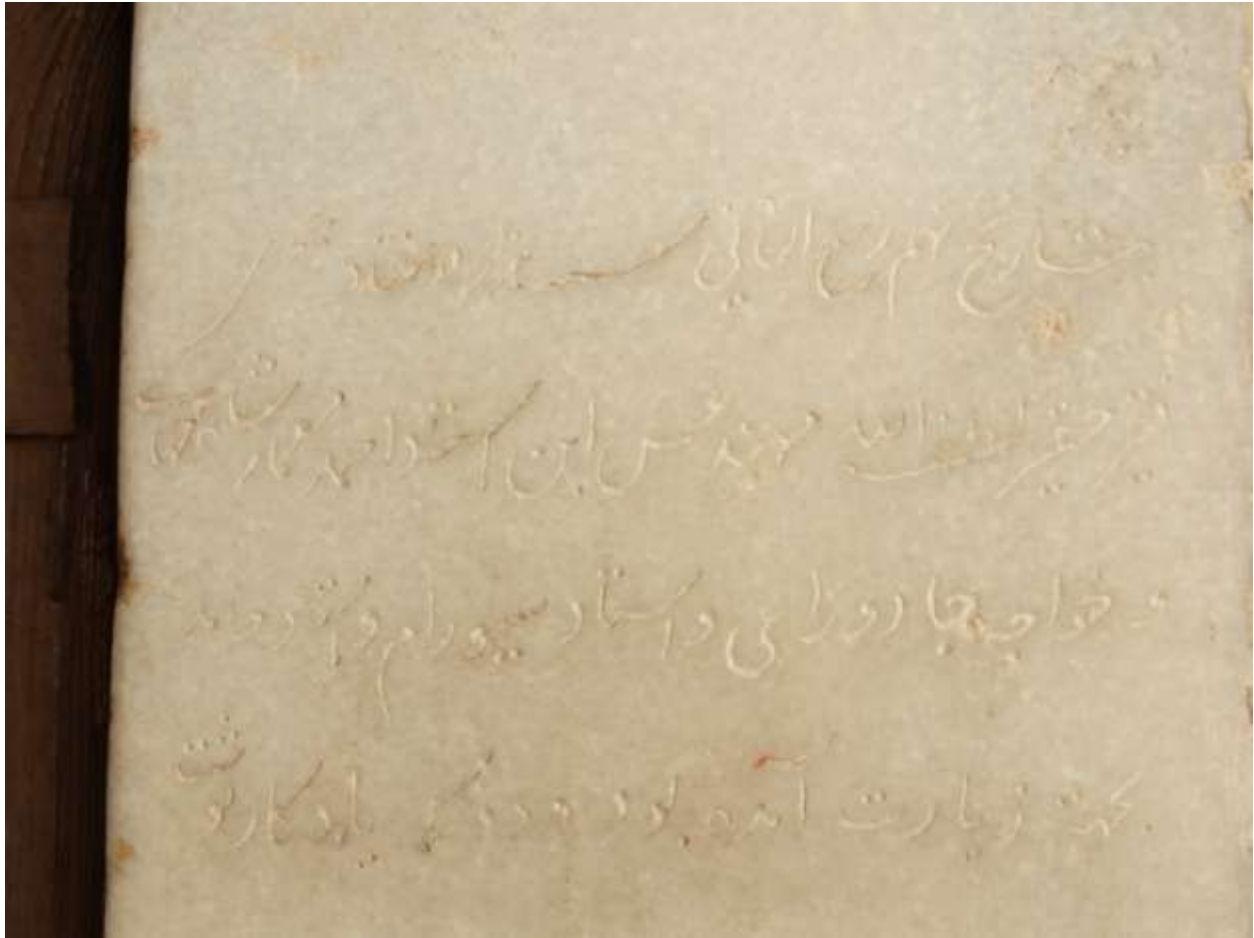


Plate 102- inscription on the right pillar of the doorway of Hoshang Shah's tomb.



Plate 103 – interiors of the porch of Hoshang Shah's tomb



Plate 104 – Dharmasala within Hoshang Shah’s tomb





Plate 105- vaulted hall in Dharmasala



Plate 106 – Main tomb of Hoshang Shah



Plate 107- the interiors of the tomb





Plate 108 – interiors of the Hoshang Shah's tomb



Plate 109- inscription on the main entrance of Jami Masjid.





Plate 110 – interiors of the Jami Masjid Porch



Plate 111 – main entrance of Jami Masjid





Plate 112 – Western wall of Jami Masjid



Southern side of Jami Masjid



Plate 113



Plate 114



Plate 115



Plate 116 – pulpit and the platform within Jami Masjid



Plate 117 – passage leading to the northern porch of Jami Masjid



Plate 118 – Mosque near the present Delhi Gate



Plate 119 – inscription on the main entrance of the mosque to the west of Delhi Darwaza



Plate 120 – interiors of the mosque



Plate 121 – Ashrafi Mahal's northern wall



Plate 122 – the ground floor of Victory tower



Plate 123 – remains of one of the towers



Plate 124 – possible remains of the octagonal tower on the first floor



Plate 125- Eastern wall of ground floor of Ashrafi Mahal





Plate 126 – northern wall of the tower with steps leading to top floor



Plate 127



Plate 128 – ceiling of the porch of 1<sup>st</sup> floor of Ashrafi Mahal



Plate 129 – the roof of the porch



Plate 130 – calligraphic text on the northern window



Plate 131



Plate 132- Darya Khan group of monument





Darya Khan's mosque



Plate 133.



Plate 134 – un-named tomb in the compound of Darya Khan group of monuments



Plate 135



Plate 136



Plate 137 – western wall of Darya Khan’s tomb



Plate 138- northern wall of Darya Khan’s tomb



Plate 139



Plate 140



Plate 141



Plate 142





Plate143



Plate 144



Plate 145 – ceiling of the Darya Khan's tomb.



Plate 146



Plate 147 – Nilkanth Palace



Plate 148- inscription on the eastern wall of Nilkanth Palace



Inscription on the central arch of Southern wall of Nilkanth palace



Inscription on the western wall of Nilkanth palace



Plate 149-



Plate 150



Plate 151 – octagonal tank in the rectangular room along the southern wall



Plate 152



Plate 153 – rectangular tank in the court



Plate 154- Suraj Kund of Jahaz Mahal Complex Oct 2014



Plate 155 –Suraj Kund in March 2016



Plate 156 – Dai Ka Mahal





Plate 157





Plate 158 – western wall of Dai Ka Mahal





Plate 159



Plate 160- Dai Ki Chhotti Behan Ka Mahal



Plate 161





Water body opposite to Lal Bagh





Plate 162 – Lal Bagh



Plate 163 – ruins opposite to Lal Bagh



Plate 164 – Echo point



Plate 165- western view of Echo Point



Sagar Talao – View from the Malwa Resort – March 2014



Plate 166 – Sagar Talao – March 2016



Plate 167 – southern section of Chisti Khan's palace



Plate 168



Plate 169 – passage to basement of Chisti Khan's palace



Plate 170



Plate 171 – Northern section of Chisti Khan's palace



Plate 172



Plate 173 – entrance to Caravan Sarai



Plate 174 – Eastern and Southern sides of Caravan Sarai



Plate 175 – northern wall of Caravan Sarai



Plate 176



Plate 177



Plate 178- water tank in compound of Lal Bangla



Plate 179- water carrying channels in Lal Bangla compound



Plate 180 – Ek Khamba



Plate 181 – Jali Mahal (before Alamgir Darwaza)



Plate 182 – Andha Ka Mahal And Andhi Ka Mahal



Plate 183 – masonry well before Andha Ka Mahal



Andha Ka Mahal





Bridge connecting Andha Ka Mahal and Andhi Ka Mahal





Andhi Ka Mahal



Plate 184 – Sopi Tank and Sopi mosque



Plate 185 – steps leading to the basement



Plate 186 – unnamed monument close to Tarapur gate



Plate 187



Plate 188



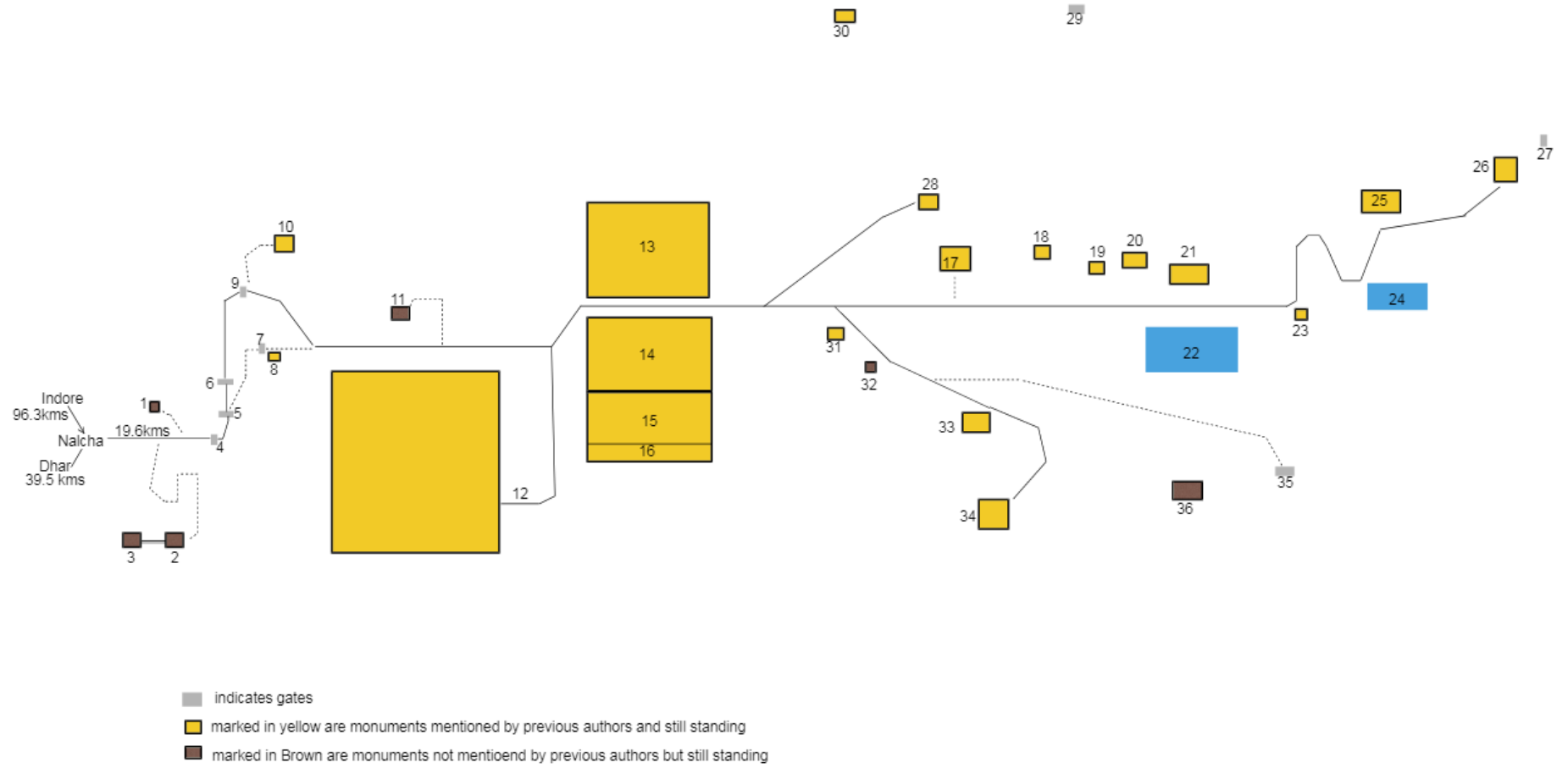
Plate 189



Plate 190- interface close to Baz Bahadur palace

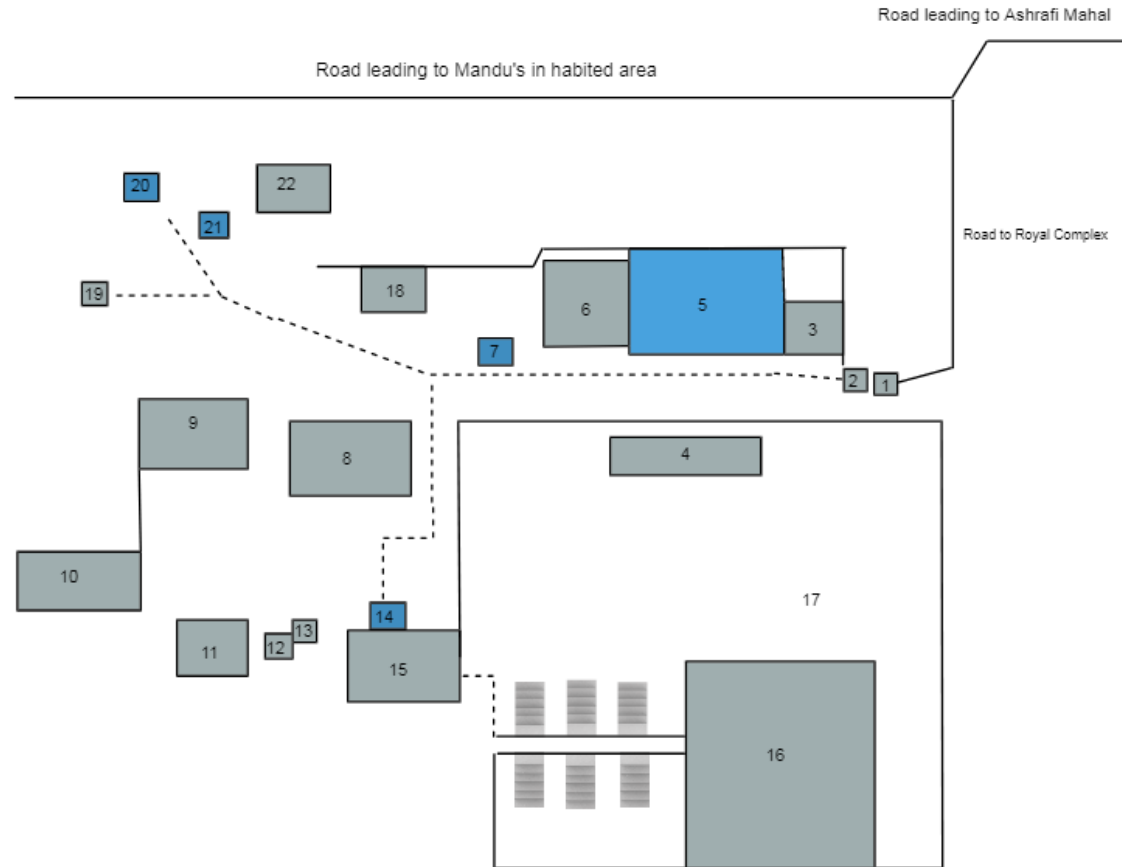
## Figures

Figure 1



1. Jali Mahal
2. Andha ka Mahal
3. Andhi Ka Mahal
4. Alamgir Darwaza
5. Bhangi Darwaza
6. Kamani Darwaza
7. Delhi Darwaza
8. Mosque near Delhi Darwaza
9. Gadi Darwaza
10. Chisti Khan's palace
11. Sopi Tank and mosque
12. Royal Complex
13. Ashrafi Mahal
14. Jami Masjid
15. Hoshang Shah's tomb
16. Dharmasala
17. Darya Khan group of monuments
18. Hathi Mahal
19. Malik Mughith's mosque
20. Caravan Sarai
21. Dai Ki Mahal group of monuments
22. Sagar Talao
23. Jali Mahal
24. Rewa Kund
25. Baz Bahadur Palace
26. Rupmati Pavilion
27. Bhagwaniya Darwaza
28. Lal Bhag
29. Jahangirpura Darwaza
30. Saath Sau Sidi
31. Chappan Mahal
32. Ek Khamba
33. Nilkanth Palace
34. Songarh Fort
35. Tarapur gate
36. Unnamed Mosque.

Figure 2 –



Following are the names of the monuments according to their numbering in the above figure -

- |                  |                          |                      |
|------------------|--------------------------|----------------------|
| 1.Entrance       | 10.Dilawar Khan's mosque | 19. Hathi Pol Gate   |
| 2.Main entrance  | 11.Open Auditorium       | 20. Ujali Baoli      |
| 3.Taweli Mahal   | 12. Bath tub             | 21. Andheri Baoli    |
| 4.Jahaz Mahal    | 13.Hammam                | 22. Public Structure |
| 5.Kapoor Talao   | 14. Champa Baoli         |                      |
| 6.Hammam         | 15.Royal Palace          |                      |
| 7.Ancient Baoli  | 16. Jal Mahal            |                      |
| 8.Hindola Mahal  | 17. Munj Talao           |                      |
| 9. Nahar Jharoka | 18.Private structure     |                      |

Figure 3 – the entrance of the Royal complex must have been ahead of what it is today.

