

Traditional Architecture of Orchha

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Abstract - This abstract delves into India's diverse cultural identity and the imperative to preserve it. Orchha, an ancient city in Madhya Pradesh, renowned for its historical and religious significance, has maintained its original palaces and temples. Yet, modern constructions have strayed from its traditional architecture, disrupting the town's authenticity. This study aims to revive Orchha's architectural heritage by analyzing space making elements used in traditional architecture of the town. By harmonizing the distinctive designs of palaces with modern concepts, innovative spatial possibilities can emerge. Orchha's cultural roots, deeply intertwined with Bundelkhand heritage, hinge on its architectural grandeur. Examining how spaces are arranged reveals their significance and role in Orchha's architectural story, showcasing their contribution to the town's unique character. The study seeks to uncover Orchha's space-making principles and their potential application in contemporary architecture. Adapting these elements could foster culturally resonant spaces within modern structures, bridging historical and present design. In the end, this study aims to rejuvenate Orchha's architectural heritage, nurturing a deeper understanding of how traditional and contemporary architectural styles interact and influence each other.

Key Words: Traditional Architecture, Bundelkhand, Contemporary Architecture, Spatial Character, Heritage City, Zanana, Mardana.

1. INTRODUCTION

Orchha is famed for its temples and fortified complex, located in Niwari district of Madhya Pradesh. The complex is enveloped by the Betwa River, serving as both a vital water source and a protective barrier against adversaries. Within the fort complex, four prominent palaces stand, namely Raja Mahal, Jehangir Mahal, Sheesh Mahal, and Rai Praveen Mahal. Raja Mahal and Jehangir Mahal prominently contribute to Orchha's picturesque panorama, each showcasing distinct architectural styles. Raja Mahal reflects the Bundelkhand architectural influence, while Jehangir Mahal boasts a fusion of Islamic and Bundela architectural elements.

2. HISTORICAL BACKGROUND

Orchha, established in the 16th century by Bundela chief Rudra Pratap Singh, emerged as a fortified haven against Mughal pressures, evolving into a royal capital under Bharti Chand. Bir Singh Deo, a formidable Bundela king, orchestrated strategic moves, including an alliance with Mughal prince Salim and the elimination of Abu' Fazal. Despite Mughal invasions, Bir Singh Deo's legacy thrived, marked by architectural feats and regional influence. Hamir Singh's rule brought elevation to Maharaja Status, while Maharaja Pratap Singh's visionary leadership led to remarkable state development and innovative engineering. Orchha's dynamic history fostered the distinct Bundeli architectural style, influencing North India's architectural landscape.

The town was divided into two halves via river Betwa, first half is citadel where royal people lived and the other half is for the citizens of the town. Now the citadel is under UNESCO and has been used for tourism over the past decade. The citadel consists of many darwajas, four main Mahal (Raja Mahal, Sheesh Mahal, Jehangir Mahal and Rai Praveen Mahal), small temples, kothis etc.

3. CLIMATE

The climate of Orchha has excessively hot summers (April – June) while winters are cool (November-February) and pleasant. The terrain of Orchha suffer from an acute paucity of rainfall in July-September. The glare turns out to be painful and difficult during summers. However, river maintains the coolness of the town.

4. MONUMENTS OF ORCHHA

There are a number of monuments built by the Bundela and other successor rulers. Since the maharajas believed in God, the land is mostly adorned with temples. However, over time, these monuments and temples were left vacant, transforming them into attractions and significant subjects for architecture. Bir Singh constructed the Meenakshi Temple, which is now unused, yet it has become an important destination for tourists to explore and admire.

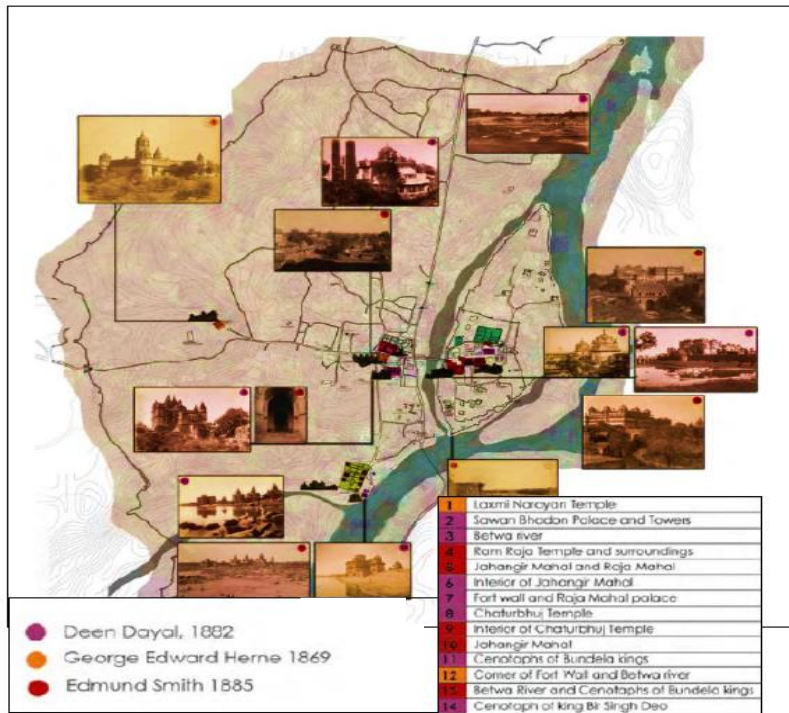


Fig -1: Monuments of Orchha

5. PALACES OF ORCHHA

The fort's palaces were constructed gradually by successive Maharajas of Orchha. Within the citadel stand four major palaces: Raja Mahal, Jehangir Mahal, Sheesh Mahal, and Rai Praveen Mahal.

- Raja Mahal, established during the reign of Rudra Pratap Singh (1531 AD), is the earliest palace.
- Sheesh Mahal, originally a guesthouse, has been converted into a hotel (16th and 17th centuries).
- Jehangir Mahal, an intriguing fusion of Bundela and Islamic styles, was built for Prince Salim (1605-1627).
- Rai Praveen Mahal, erected in 1675 by Prince Indrajit Singh, boasts three stories and was named in honor of his beloved Rai, signifying her caste, and Praveen, symbolizing her artistic excellence.

As Raja Mahal showcases predominant Bundela elements and Jehangir Mahal features a captivating blend of Bundela and Islamic styles, these two palaces significantly shape Orchha's architecture and offer insights for contemporary architectural pursuits.



Fig -2: A Comprehensive Timeline Analysis of Palaces

5.1. Ram Raja Mahal

The Raja Mahal, initiated by Raja Rudra Pratap Singh in 1531 AD and completed in 1539 under Bharti Chandra's rule, saw modifications during Madhukar Singh's reign. Positioned left of Kanteela Darwaja, it features two courtyards demarcating male (mardana bhag) and female (zenana bhag) areas. The mardana bhag holds a stage for events, with arches and jharokas connecting to zenana bhag, where an elevated platform resides. With seven rooms – one for the Raja and six for his wives – privacy was maintained through high parapet walls and varied openings on the façade. Ground floor façade retains minimal transparency to ensure privacy.

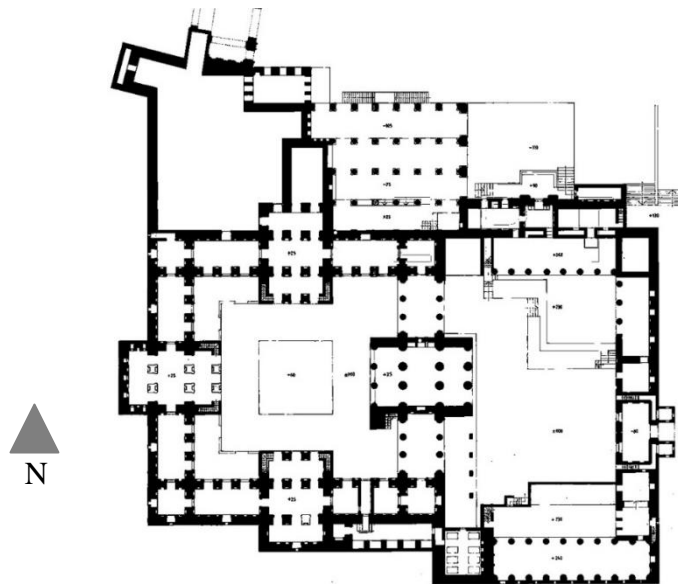


Fig -3: Ground Floor layout Plan of Ram Raja Mahal (CEPT Archives, n.d.)

5.1.1. Elevation of Ram Raja Mahal

The elevations of the Palace are characterized by protruding facades adorned with sets of arches on the ground floor, shaping its visual identity. The elevation of mahal has multifoil arches with small openings to outside, which maintains the privacy of the people of palace. At the top of palace, the parapet is embarked with chattris. There is less carving on the outer façade of the Mahal. The most detailed part of mahal includes entrance, eaves, patterns were used for jali in the windows, cornice, protruding facades with brackets.

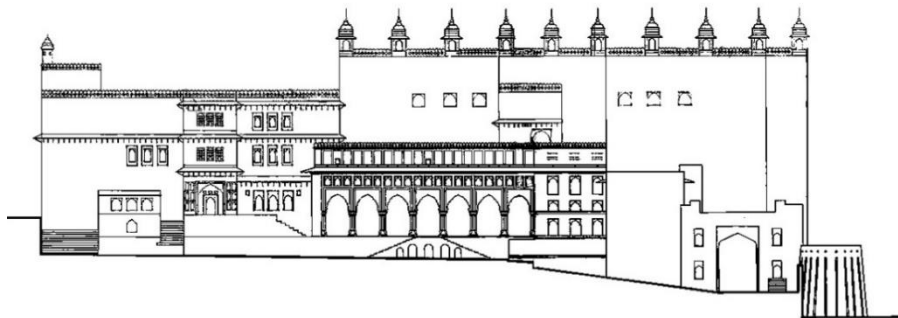


Fig -4: North Elevation of Ram Raja Mahal (CEPT Archives, n.d.)

5.1.2. Section of Ram Raja Mahal

The Mahal's Traditional architectural composition encompasses various design elements, both external and internal, incorporating a range of architectural components. This structural arrangement not only defines its formal and spatial organization but also influences the planning and construction of spaces which can be seen in the sections. Inside, the mardana area houses a stage, facilitating gatherings and events, while a connecting arcade on the ground floor and above floors serves as the passage between the mardana and zanana sections, which is visually connected to the courtyard of the mardana zone. The

section also shows reduction in mass of the built on the successive floors, which incorporate daylight and ventilation. It also provides intermediate terraces on the successive floors which introduces a sense of connectivity within the palace. Climate considerations and a desire to blend the outdoors with the interiors led to the incorporation of jalis, intricately patterned with unique geometric designs, preventing uniformity among them. Particularly, polygonal-shaped jalis were strategically employed to maintain limited visibility from the outside, adding to the Mahal's architectural nuances.

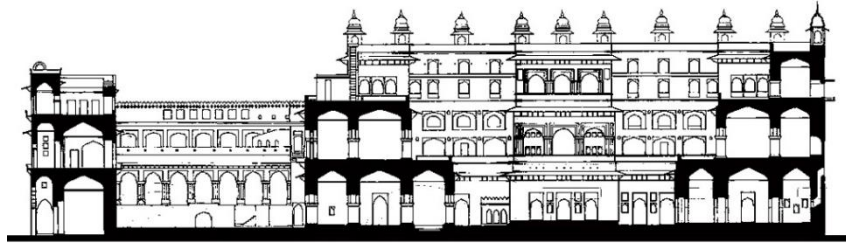


Fig -5: Section along east west, facing towards North (CEPT Archives, n.d.)

5.2. Jahangir Mahal

The Jahangir Mahal, a classic example of Indo-Islamic architecture, was erected by Maharaja Bir Singh to commemorate Mughal Emperor Jahangir's visit to Orchha from 1605 to 1627. Often referred to as the "One Night Palace" due to Jahangir's brief stay, the four-storey grandeur graces the Betwa riverbank, boasting 236 rooms, intricate balconies, domes, and exquisitely carved porches. The square courtyard hosts an elevated platform with a swimming pool and seating, fostering gathering spaces amidst its nine courtyards: eight on the first floor where light filters through abundant openings and perforations, guiding an indirect entrance for visitors. There is an absence of zanana zone. It has grid-based planning in the interior thus channelizing the cool wind in the interiors. The plan also consists of four towers at each vertex.

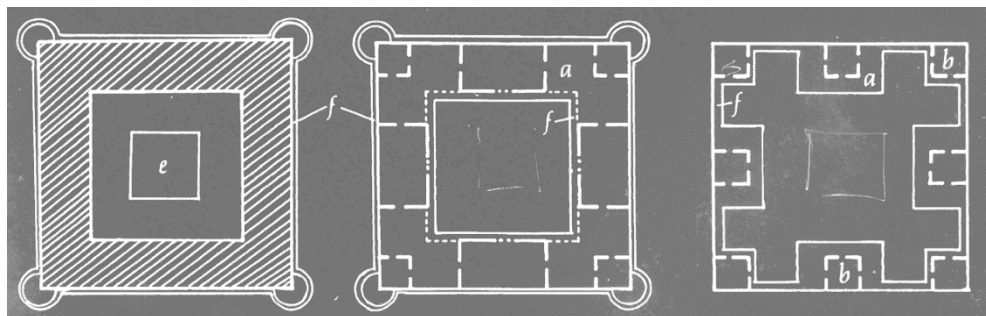


Fig -6: Floor plates of Jahangir Mahal

In the above figure, a- terrace (roof of chamber below), f- projecting balcony supported on corbels. b- Chamber surmounted by domes, e- central courtyard.

5.2.1. Elevation of Jahangir Mahal

The entrance features a lofty plinth, while the ornate gateway on the eastern side showcases captivating ornamentation and turquoise tiles. Notably, the palace showcases elephant-carved brackets and double-storey chhatris adorned with lotus motifs, casting a play of light and shadow through geometrically patterned sculptural jalis. The outer façade has false arches which is incorporated with Jalis to provide less visibility from outside.

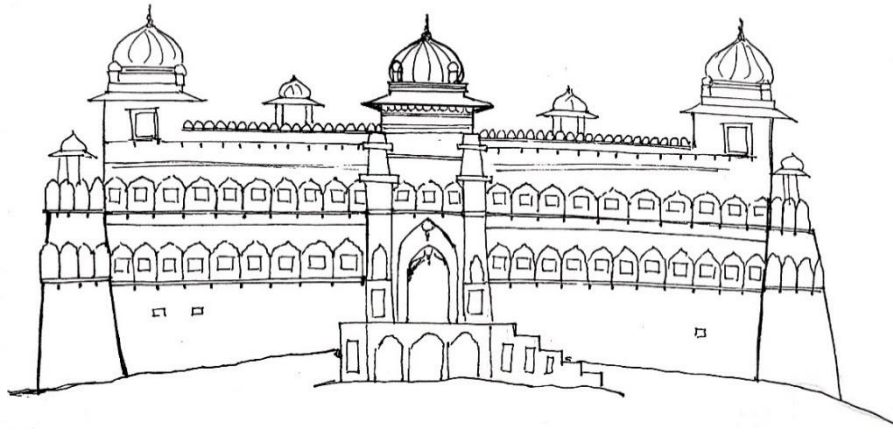


Fig -7: East Elevation of Jahangir Mahal

5.3. Parameters for analysis

The analysis of literature provided a framework of parameters derived from Yatin Pandya's "Elements of Space Making," this study delves into key architectural components—walls, floors, columns, windows, and roofs—omitting staircases and doors due to their lesser prominence in Orchha's palaces and time constraints. These parameters serve as a guide for conducting the case study analysis and formulating recommendations for further exploration. The identified parameters encompass:

1. Wall
2. Floor
3. Column
4. Window
5. Roof

The analysis would be done on these parameters by comparing two styles of traditional architecture of Orchha.




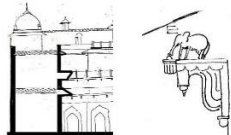
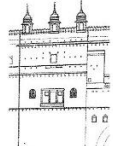

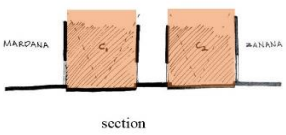
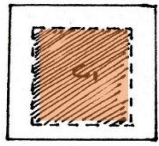
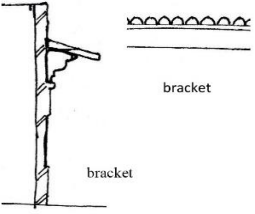
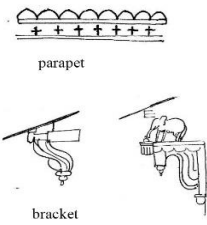

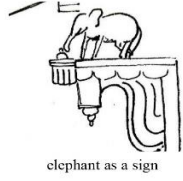
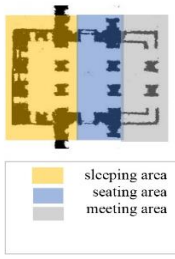
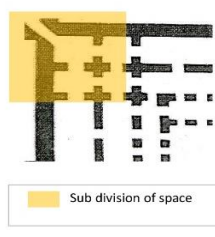
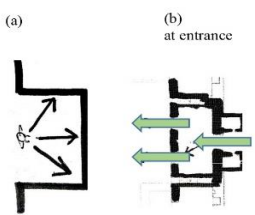
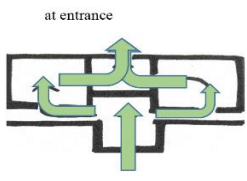
6. CASE STUDY

The objective of this chapter is to extract distinct design approaches from Orchha's traditional architecture. A comparative assessment of two contrasting architectural styles is conducted, employing parameters drawn from Yatin Pandya's scholarly work. The analysis encompasses two case studies:

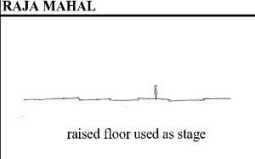
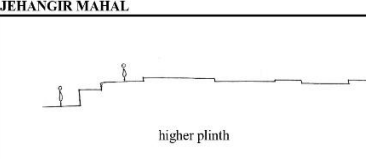
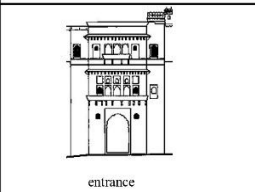
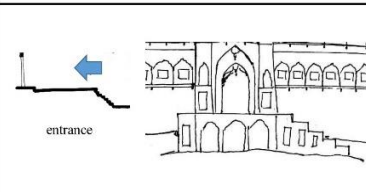
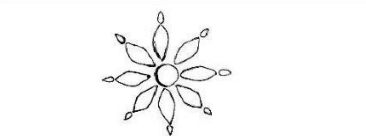
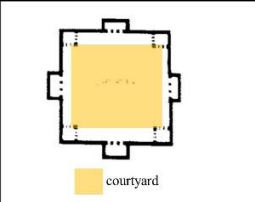
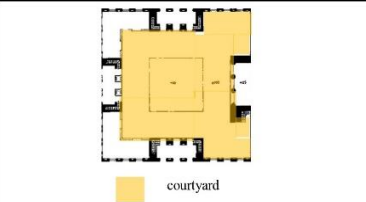
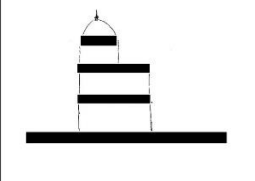
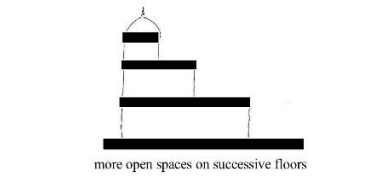
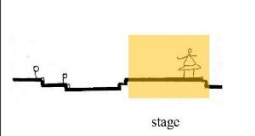
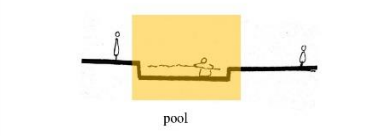
1. Ram Raja Mahal
2. Jahangir Mahal

6.1. Wall


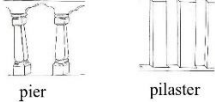






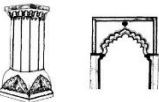

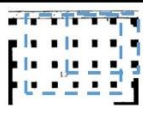

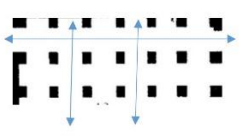
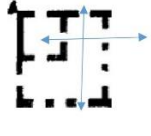
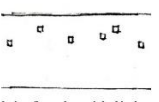

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PARAMETER	RAJA MAHAL	JEHANGIR MAHAL	OBSERVATION	ANALYSIS
TYPOLOGY			<p><u>RAJA MAHAL</u> : straight wall</p> <p><u>JEHANGIR MAHAL</u> : straight wall</p>	both palaces have straight walls with no curves or inclination.
WALL SECTION			<p><u>RAJA MAHAL</u> : have bundela elements , the wall is less modulated.</p> <p><u>JEHANGIR MAHAL</u> : Have mughal elements, wall is stepped back, modulated</p>	wall section differs in modulation.
FACADE MODULATOR			<p><u>RAJA MAHAL</u> : is plain with very little rectangular and square openings. Arch openings incorporating jali can be seen also.</p> <p><u>JEHANGIR MAHAL</u> : Has more openings and elements in wall. Arched openings incorporating jalis can also be seen</p>	Jehangir Mahal has more articulated openings compared to Raja Mahal. This happened because jahangir mahal was built much later for the salim as a gift of friendship by Raja Bir Singh. Therefore he incorporated mughal elements .
VERTICALITY	<p>MARKANA</p>  <p>section</p>	 <p>plan</p>	<p><u>RAJA MAHAL</u> : Wall segregating zanana (for female members) and mardana (for male members) with semi public area, i.e. courtyard , creating a sense of enclosure and volume .</p> <p><u>JEHANGIR MAHAL</u> : wall segregating courtyard i.e semi public with private area.</p>	Variation of spaces is more in Raja mahal as it was built as a residence for King and his six Queens. However Jehangir Mahal was a gift to Prince Jehangir ,therefore the variety of space is not much.
CHARACTER	 <p>bracket</p> <p>bracket</p>	 <p>parapet</p> <p>bracket</p>	<p><u>RAJA MAHAL</u> : in the verticality of wall , brackets and ornamentation are simple .</p> <p><u>JEHANGIR MAHAL</u> : ornamentation on walls and the elements used on mahal (e.g. chajja , brackets plinth, balcony, chattri, etc.) was under the influence of both mughal and bundela architecture.</p>	Since , both palaces depicted religious believes of two different groups, i.e. hindu and muslim, therefore the character of wall in Jehangir Mahal is much more emphasizing than Raja Mahal.
ENCODER OF MESSAGE	 <p>traditional paintings</p>	 <p>elephant as a sign</p>	<p><u>RAJA MAHAL</u> : use of pattern and paintings was depicting hindu religion.</p> <p><u>JEHANGIR MAHAL</u> : use of elements like elephant with trunk down , and geometrical patterns depicting mughal and bundela beliefs.</p>	both mahals have different architecture style therefore depiction of believes is done differently.
SUBDIVISION OF SPACE	<p>Raja's room</p>  <p> ■ sleeping area ■ seating area ■ meeting area </p>	<p>corner spaces near bastion</p>  <p> ■ Sub division of space </p>	<p><u>RAJA MAHAL</u> : room of maharaja is further subdivided via walls into meeting area, seating area and then sleeping area.</p> <p><u>JEHANGIR MAHAL</u> : wall subdivided a space into further small spaces.</p>	subdivision of a space has been done according to the usage and to break visual connectivity.
MOVEMENT GUIDE	<p>(a) (b)</p>  <p>at entrance</p>	 <p>at entrance</p>	<p><u>RAJA MAHAL</u> : direct approach to the courtyards from entrance.</p> <p><u>JEHANGIR MAHAL</u> : indirect approach to the courtyard from entrance.</p>	In Raja Mahal , the typology of building is a residence, therefore the approaches from outer to interior is direct with less openings on the outer facades. In Jehangir Mahal, the openings are wide enough on the outer façade to peek in. therefore , the entry is kept indirect to public to provide least glimpse of courtyard from outside.

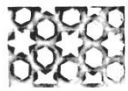
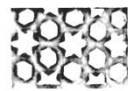
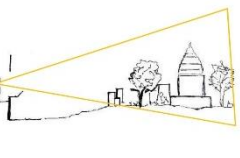
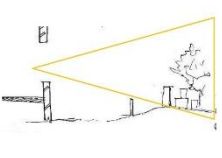
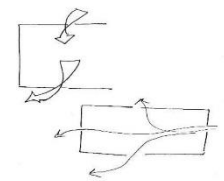
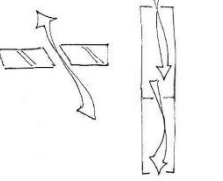

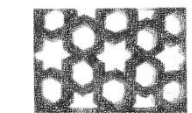

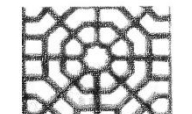
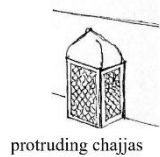
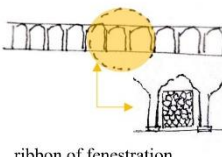
6.2. Floor

PARAMETER	RAJA MAHAL	JEHANGIR MAHAL	OBSERVATION	ANALYSIS
HORIZONTALITY	 <p>raised floor used as stage</p>	 <p>higher plinth</p>	<p>RAJA MAHAL : Floor is modulated through out the surface acting as a threshold.</p> <p>JEHANGIR MAHAL : modulated floor incorporated pool and seating in the courtyard.</p>	<p>modulation has been done to incorporate more spaces and also to break the monotony of the surface.</p>
THRESHOLD	 <p>entrance</p>	 <p>entrance</p>	<p>RAJA MAHAL : the threshold is the chaukhat at the entrance.</p> <p>JEHANGIR MAHAL : a flight of staircase has been used as a threshold.</p>	<p>In both palaces ,plinth has been provided as threshold . The plinth of Jehangir Mahal is higher than raja Mahal to demarcate Raja Bir Singh's friendship.</p>
FLOOR AS COMMUNICATOR	<p>not visible</p>		<p>RAJA MAHAL : not visible</p> <p>JEHANGIR MAHAL : after the entrance a flower is inlaid on the floor.</p>	<p>the pointed petals of flower is depicting the movement in the courtyard.</p>
MOVEMENT GUIDE	 <p>courtyard</p>	 <p>courtyard</p>	<p>RAJA MAHAL : modulation of floor gives a sense of direction. Even in courtyards the geometry provides a sense of direction.</p> <p>JEHANGIR MAHAL : the modulated floor gives a sense of direction. The square courtyard allows movement in all directions.</p>	<p>In both palaces , the movement is defined by its by modulation and levels.</p>
ELEVATED FLOORS		 <p>more open spaces on successive floors</p>	<p>RAJA MAHAL : The Raja mahal have ninecourtyards. Eight on upper floors while one on the ground floor. Therefore there is a decrease in the size of floor plate on successive floor.</p> <p>JEHANGIR MAHAL : The floor plate on each storey looks similar to each other.</p>	<p>Since Raja Mahal, have zanana ghar(female block) , the provision of courtyard is provided on successive floors. Therefore the built part in Raja Mahal is reducing on top floors and less in Jehangir Mahal.</p>
DEFINING ZONES	 <p>stage</p>	 <p>pool</p>	<p>RAJA MAHAL : the raised platform in courtyard acts as a stage .</p> <p>JEHANGIR MAHAL : the depression in courtyard gives it an identity which is a swimming pool.</p>	<p>In both palaces the zones are defined by raising or by depressing the floor.</p>

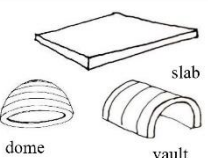
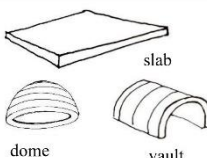
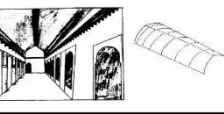

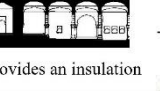
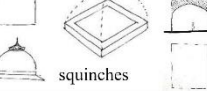
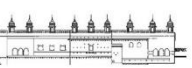

6.3. Column

PARAMETER	RAJA MAHAL	JEHANGIR MAHAL	OBSERVATION	ANALYSIS
TYPOLOGY	 pier	 pier pilaster	RAJA MAHAL : pier JEHANGIR MAHAL : pier ,pilaster	since the time period of these two are very different , therefore addition of pilaster is noticeable on the outer façade.
CHARACTER	 pier	 pilaster	RAJA MAHAL : acting as a structural members, rhythmic order. JEHANGIR MAHAL : acting as a structural member, rhythmic order.	each column is contributing into load transmission. Arches are always being used in ancient Indian architecture for the span as well as for aesthetic .
TYPES	 multifoil arch duodecagon shaft tudor arch	 multifoil arch tudor arch ogee arch	RAJA MAHAL : multifoil arch with duodecagon shaft and tudor arch. JEHANGIR MAHAL : multifoil arch, tudor arch, ogee arch.	with time and need, the addition and improvised arches has been used .
FAÇADE MODULATOR			RAJA MAHAL : column divide the façade in a rhythmic pattern. Breaks the monotony of façade. JEHANGIR MAHAL : column divide the façade in a rhythmic pattern and breaks the monotony of the façade by surface treatment.	it overall provides an essence for the continuous and unrestricted movement in indoors. It also made the scale looked grandeur .
MYTHS AND BELIEVES			RAJA MAHAL : not much ornamented capitals. JEHANGIR MAHAL : ornamentation is added to depict belief of islam.	time is an important factor . Since the believes of these palaces are different and also Jehangir Mahal was a gift to Salim, therefore more intriguing works had been done .
SUBDIVISION OF SPACE			RAJA MAHAL : subdivision of space further into open, semi open and closed space. JEHANGIR MAHAL : same as above.	subdivision of a space has been done according to the usage and to break direct visual connectivity.
MOVEMENT GUIDE			RAJA MAHAL : direct approach to the courtyards from entrance. JEHANGIR MAHAL : indirect approach to the courtyard from entrance.	In Raja Mahal , the typology of building is a residence, therefore the approaches from outer to interior is direct with less openings on the outer facade. In Jehangir Mahal, the openings are wide enough on the outer façade to peek in. therefore , the entry is kept indirect to public to provide least glimpse of courtyard from outside.
PILASTERS	 plain facade with little fenestrations	 pilasters on outer facade	RAJA MAHAL : plain façade with no pilasters. JEHANGIR MAHAL : pilasters can be seen on facades.	pilasters were provided for structural purpose . Each jali on outer façade in Jahangir mahal is separated by a pilaster.

6.4. Window

PARAMETER	RAJA MAHAL	JEHANGIR MAHAL	OBSERVATION	ANALYSIS
TPOLOGY			<p><u>RAJA MAHAL</u> : perforation</p> <p><u>JEHANGIR MAHAL</u> : perforation</p>	perforated screens offer controlled visual connection and light without affecting ventilation.also these devices make effective use of venturi effect , thus making the air cooler.
CHARACTER			<p><u>RAJA MAHAL</u> : window here acting as a communicator with temple built for religious purpose.</p> <p><u>JEHANGIR MAHAL</u> : the window provides a view of whole orchha fort complex and the river running on the periphery of the complex.</p>	<p>the time and beliefs were two important factors. Raja mahal more focussed on hindu dieties and therefore the built temple was in the vista.</p> <p>However , Jehangir Mahal was built on islamic values , therefore windows had a view of larger fields of orchha. and also to incorporate more light in interiors.</p>
PASSAGE OF AIR			<p><u>RAJA MAHAL</u> : use of slant windows, each bay in the corners have a perforation on the outer wall.</p> <p><u>JEHANGIR MAHAL</u> : same as above.</p>	the jalis in the end bays channelises the wind in through interior spaces making the interior cool. Also direct wind is not taking in as the velocity of the wind is much higher , therefore the passage of wind makes the velocity moderate and more cool. however, slant windows in bedrooms are provided to hinder the view from outside.
JALI PATTERN			<p><u>RAJA MAHAL</u> : different types jali pattern were used on a single facade.</p> <p><u>JEHANGIR MAHAL</u> : same as above.</p>	tracery work in jali gave an identity to the space ,partly connenting with the temples and river out.
MYTHS AND BELIEFS			<p><u>RAJA MAHAL</u> : use of pattern and paintings was depicting hindu religion.</p> <p><u>JEHANGIR MAHAL</u> : use of elements like elephant with trunk down , and geometrical patterns depicting mughal and bundela believes.</p>	both mahals have different architecture style therefore depiction of believes is done differently.
FACADE MODULATOR	 protruding chajjas	 ribbon of fenestration	<p><u>RAJA MAHAL</u> : protruding window with jali.</p> <p><u>JEHANGIR MAHAL</u> : each façade have protruding sill and a ribbon of jali from one edge to other. It also provides certain sculptural quality to the palace.</p>	with time the evolution in palaces can be seen by one such element 'jali'. Jali was used to play with light and for more ventilated interiors. It gives an identity to the façade.

6.5. Roof

PARAMETER	RAJA MAHAL	JEHANGIR MAHAL	OBSERVATION	ANALYSIS
TPOLOGY	 slab dome vault	 slab dome vault	<p><u>RAJA MAHAL</u> : slab, dome , vault.</p> <p><u>JEHANGIR MAHAL</u> : slab,dome, vault.</p>	due to less rainfall , slab is provided. Vault and dome modulated the interior volume and the heirarchy of the form.
SPANNING			<p><u>RAJA MAHAL</u> : roof didn't evolve with spanning .</p> <p><u>JEHANGIR MAHAL</u> : same as above.</p>	due to less rainfall, slab was not further modulated, also the terrace is available in flat roof
VOLUME	 provides an insulation	 squinches	<p><u>RAJA MAHAL</u> : volume is affected by shape and size of bay.</p> <p><u>JEHANGIR MAHAL</u> : same as above.</p>	due to the span , vault has been used . Therefore the vault provides character to such volumes..
IMAGE MAKER			<p><u>RAJA MAHAL</u> : have provided kiosk on the periphery wall.</p> <p><u>JEHANGIR MAHAL</u> : along with small kiosk on periphery , chhatris had been provided. Use of double storey chattri also incorporated in the palace.</p>	since the jehangir mahal was a gift to Salim, therefore incorporation of chattris with dome and adorned with lotus shaped shikhara. However the kiosk were smaller to chhatris and has pointed shikhara.

7. CONCLUSION

The essence of Orchha's spatial character rests upon the interplay of fundamental space-making elements that impart movement and enclosure. Elements like chhajas, chhatris, jalis, and arches emanate from these foundational components, shaping both tangible and intangible aspects of space. The arrangement of these elements conveys the essence of space, resonating across diverse architectural styles found in Orchha. From antiquity to contemporary, these elements chart the evolution of spaces. Their harmonious arrangement yields captivating and stable architecture, fostering innovative spatial exploration.

The traditional architecture of Orchha presents an exceptional showcase of using traditional spatial elements to craft contemporary and aesthetically pleasing structures that reflect the culture, identity, and architectural harmony of the Town. Preserving and promoting Orchha's traditional architecture is vital for safeguarding the town's cultural heritage and identity.

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