

BASICS OF DESIGN: LESSONS FROM WALLED CITY OF JAIPUR

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ABSTRACT:

A fine example of city planning and architecture, Jaipur became the cornerstone for understanding and teaching of design principles at Aayojan school of architecture which is located near the old city. This relationship has evolved into a document that exemplifies the statement “spirit of place and its contribution to design education”. Can architecture be used to initiate a paradigm shift in the social fabric of an evolving city? Jaipur did that by opening up its doors to traders, makers and service providers rather than focusing on closed doors for security. The paper has four sections. First part deals with site planning, implementation of various planning strategies Section two describes principles of design section three talks about elements of design with examples from the city and section four presents a framework to explore a similar relationship between spirit of the place and design education that can be applied to other places.

Keywords: Basics of Design, Socio-cultural aspects of planning, Design for social impact

INTRODUCTION

Jaipur is considered one of the most prolific examples of a planned city, it exemplifies approaches to city planning, sustainability and spatial manifestation of the social fabric through architecture. “spirit of place and its contribution to design education” can be witnessed by understanding the dynamic relationship between this two century old city and a school of architecture that draws from its essence. This project is an attempt at understanding the envisioning of Jaipur city in early eighteenth century. (Meyer; William Stevenson; Sir, n.d.)

The lessons that can be learned by understanding this place are deep rooted in its context and are beautiful. Each place has lessons that can teach us about the importance of foresight, planning and mindful use of resources. An effort should be made to make it an inherent part of education and moreover an integral part of design education. We make a case for the same. The decisions taken by founders in 1700's have led to a thriving economy and Jaipur has become a socio-cultural hub for the region.

1. HISTORICAL CONTEXT AND PLANNING STRATEGIES

In the early nineteenth century, the north western parts of India were going through a lot of changes. Delhi was the seat of power for Mughals who were struggling to maintain control while

dealing with the growing British influence. (Meyer; William Stevenson; Sir, n.d.) The change in political landscape was especially true for the royal states of Rajasthan.

The Rajput dynasty started ruling Rajasthan beginning 950 AD and their influence spread to major parts of north India. The cities built by these rulers were aimed at providing security from invasions. These were agriculture based societies. In case of an invasion, the citizens would move inside forts that were usually built hilltops for maximum security. It was a philosophy that served the rulers as well as the population for centuries but fast changing economic and social landscape necessitated a paradigm shift. A society, which till that point could self sustain its existence had to, suddenly, deal with a new model of overseas trade. The supply and demand equation had changed and one ruler in particular looked at these changes not as a threat to his supremacy but as an opportunity to cement his place in history, through design. He was sawai Jai Singh, visionary founder of Jaipur.

Jai Singh, envisioned Jaipur as a city that would focus on openness rather than security. A prosperous society thriving in a city designed to encourage trade, manufacturing and services. His vision of an open, more accessible city started with the following characteristics:

- The site chosen was not on top of a mountain but was in a valley that lied at the intersection of three trade routes in those days.
- Travelers coming from Delhi in north and going to west would go through these plains.
- Traders from Agra in the east would also pass through the site on the way to the west
- The traders coming in from Afghanistan through Jaisalmer going towards Delhi or Agra would pass through these plains.
- For a city designed for trade and services, this valley that lied at the intersection of the three trade routes made perfect sense.

This one decision about the selection and orientation of the layout of Jaipur created a hotbed of opportunities for traders, makers and people who provided services. The foundation for Jaipur was laid in 1727 and the important public buildings and services were constructed in the next eight years. There are different opinions about exactly how long it took to complete the construction, but the authors feel that the construction is still going on as the city continues to evolve.

The futuristic and inclusive vision that laid the philosophical foundation of this city was evident by a vibrant society within a century of its existence. During an exhibition in 1883 about the arts and crafts from various regions in India, it was noted that majority of visitors were locals who were involved in making of these world class artifacts (Tillotson, 2004). This was a society that embraced change and made use of opportunities which undoubtedly was aided by the thoughtful planning and architecture of the city.

There is another aspect of civil society that needs to be mentioned here, which is gender sensitivity. The government had an active role in supporting a more equitable environment for females in the city as mentioned in an article by (Rashid, 2012) about resolution of disputes and not depending on caste councils.

1.1 THEORETICAL BASIS FOR THIS STUDY

This paper proposes an educational model where design and planning principles are explained and taught by using historical examples, not through literature but through immersion in the built environment. Augmenting the theoretical discussions with interaction with experts in a particular area will certainly improve the quality of design education while strengthening our connection with the place where we live, work and thrive.

Before we discuss Jaipur, it is imperative to understand planning theories which will create a platform for understanding planning strategies employed in this city.

1.2 HISTORY OF URBAN PLANNING

Concept of planning started as early in seventeenth century. During the pre-classical era the origins of planning was inspired by nature as water became an important criteria for planning, one example is Indus valley civilization. (Smith, 2005)

Then there was the beginning of the classical period and medieval Europe, which led to the foundation of the roman city planning based on grid and orthogonal plans. Florence was a prolific example of a new approach and the city was planned in a star formation, it was laid according to the functions of the city, and depicted the military, communal and spiritual power of this flourishing city. 20th century brought a significant change in the planning strategies and living conditions of the inhabitants and factory workers. The beginning of garden city movement, added two very important features to the list i.e. environment friendly planning and generalizing proportionate zones of residences, agriculture and industries.

After the spread of modernism, blueprint planning came against rational planning movement in which all the specialized professionals were thought to be best to design and identify. The first school of planning was setup at the end of 1950s. Many planners later on diverged to transactive planning which encouraged participation as the central aim. This led to other styles aimed at discard public involvement in the planning process. A communicative approach was later created providing importance and relationship between public and management, making them service providers.

It is interesting to note here that the first established text, that laid the groundwork for future planning theorists in west did not appear till 1935 in the publication of Karl Mannheim's *Man and Society in an Age of Reconstruction*. It will be interesting to compare it with what was implemented by Jai Singh II in 1727.

1.3 PLANNING STRATEGIES USED IN JAIPUR

The present state of Rajasthan, in India was earlier known as Rajputana and is renowned for its varied culture and rich architecture of Havelis, palaces and forts, built in mughal and Rajput style. The capital city, Jaipur falls in the Dhundhar region ruled by Kachhwaha Rajputs. The then ruler Sawai Jai Singh II moved the capital from Amber to Jaipur because of the topographical constraints of expanding the city as Amber was mainly a citadel town and secondly to protect it from invasions.

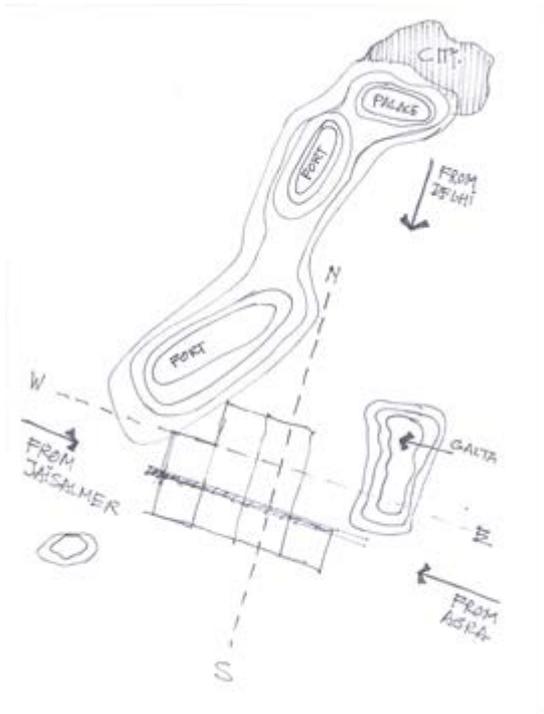


Figure 1: Site location with respect to the surrounding regional features

The city was initially divided into two portions by one long road, running east to west i.e. from Surajpole gate to Chandpole gate, respectively. On the south of these roads, there are five rectangular blocks of irregular dimensions, while on the north there is one square, a block containing the City Palace and another block called Purani basti. Sawai Jai Singh and his ministers planned the city keeping in view the topography of the area and the existing Jai Niwas Garden, which is axially connected to the old capital Amber.

Some scholars have argued that the planning of Jaipur is inspired by the Mughal garden arrangement scheme and that it was an extension of a garden that pre-existed. The authors wish to state that the origins of the planning scheme are beyond the scope of this paper rather we wish to discuss the merits. (Rashid, 2012)

At the same time an argument can be made about the influence of ancient Indian architecture principles on the layout of Jaipur as sawai Jai Singh was a big believer in astrology and in fact he constructed there naked eye observatories to calculate the location of celestial bodies. One was built right next to his living quarters.

The city planning extended to the socio-cultural domains which is what is reflected in the eight residential Chowkris (blocks) for the ease of administration. These residential neighbourhoods were demarcated by the main market streets namely, 1. Kishanpole Bazaar, 2. Chaura Rasta, 3. Jauhari Bazaar, 4. Chandpole Bazaar, 5. Tripolia Bazaar, 6. Gangauri Bazaar, 7. Sireh Deori Bazaar, 8. and 9. Each cluster had a hierarchical placement of dwelling units with the havelis or houses of the courtiers, and/ or merchants lining the first layer of the bazaars regularly punctuated by temples approached by a staircase flanked by shops. These market streets were connected with the interior neighbourhood through subsidiary streets called as Raastas which were named after the associated trade or some important person or community residing in the same vicinity. For

example, Maniharon ka Rasta in Chowkri Modi khana (Jain community), which is primarily meant for lacquers. Likewise there are some twenty five to thirty arts and crafts of Jaipur, which were systematically manifested in the built form and is thriving till today. (Tillotson, 2004)

The original plan of the city of Jaipur was probably prepared by Sawai Jai Singh II himself with the assistance of his ministers, though, the merit of design and execution of the city is assigned to Vidyadhar Bhattacharya. (Ashim Kumar Roy 2006) He was thus, the chief architect and engineer for the buildings, both state and private.

1.4 SITE CHARACTERISTICS

A glance at the present map of the walled city of Jaipur will show that its shape is not a regular geometrical figure but it responds to the topological and climatic characteristics of the region.

The paramount topographical constraint was that of the hills on the northern and eastern sides, the reason why the north-west block was shifted to the south-east corner of the city. Another constraint was the lack of any perennial source of water in the proximity due to which an elaborate water harvesting system inclusive of dams, step wells, water tanks and manmade lakes, was laid. These structures also acted as community places for interaction such as Bawadis (Step well) at city square recognised as Badi Chaupar and Chhoti Chaupar, which now act as major traffic nodes.

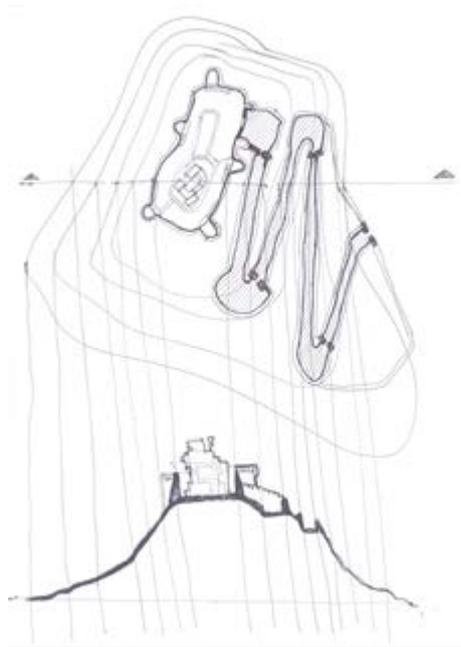


Figure 2: Diagrammatic representation of a fortified city

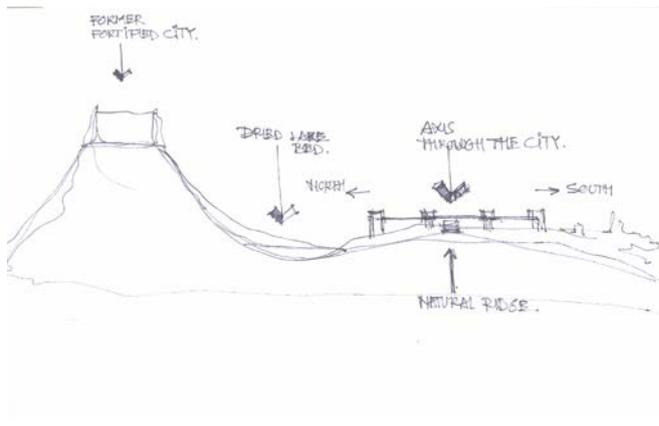


Figure 3: Diagrammatic representation of a fortified city

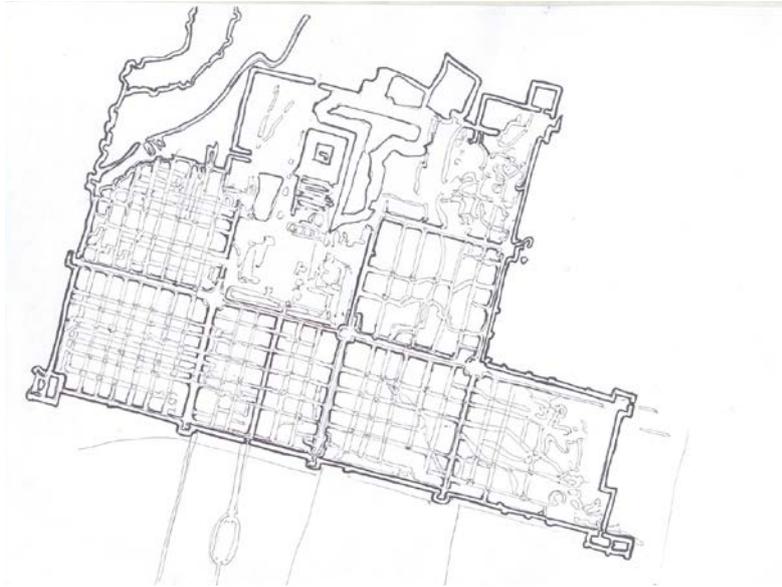


Figure 4: Diagrammatic representation of a fortified city

2. PRINCIPLES OF DESIGN WITH EXAMPLES FROM THE CITY

The main markets, havelis and temples on the main streets in Jaipur were constructed by the state earlier, thus ensuring a uniform street façade is maintained. The widths of roads were predetermined. Typical architectural features of the bazaar streets are use of chhajjas (sunshades) resulting in strong horizontal lines, projecting vertical blocks on brackets, a modular system of arches filled with delicate latticed screens to cut direct sun and glare of reflected sun in the street. Façades of Jaipur and surroundings typically have gokhdas (sitting spaces) on either side of the entrance. The openings are often characterized by the use of cusped, trefoil or pointed arches with rectangular or chhatri (vaulted dome) type framing, flanked with lotus columns. Stylistically, the bangaldar (curvilinear) roof became prevalent in stone chhatris and chhajjas (sunshades) and was later used in other areas of Rajasthan too.

2.1 ORGANIZATION

An organization scheme that allows individual elements to retain their personality while creating a composition that aspires to attain a higher purpose is an effective composition. Jaipur has

countless examples of such organizational schemes that create habitable built environments at city, community and family level.



Figure 5: Ajabghar ka rasta - Kishanpole Bazar, Jaipur

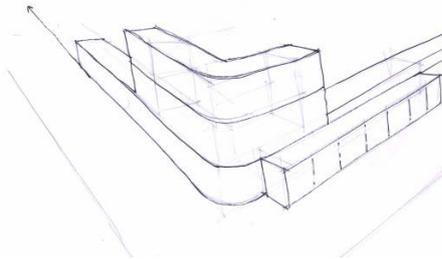


Figure 6: 3D Block view

Where ever two important streets cross, the spaces around it reflect the importance of that interaction. It has been achieved by increasing the height of buildings at that junction. It is not a public square like in other instances but at the same time a feeling of enclosure has been created by taller buildings on two sides and a magnificent gateway on the other.

2.2 BALANCE

Balance is the arrangement of different elements such as weight, height, color, etc. it remains steady and upright & doesn't overpower each other. The layout and building structure on the main streets create balance by no one side dominating the other but creating cohesive whole.



Figure 7: Ghaat ki ghuni, Jaipur

2.3 DYNAMIC SYMMETRY

A structure is said to express dynamic symmetric when different elements are in proportion and complement each other creating harmony while arranged in a heterogeneous and asymmetric manner.



Figure 8: Shop - Chaura Rasta, Jaipur

A cylindrical extrusion from the building is balanced by making a difference in the windows of the second floor. This makes the overall structure balanced.

2.4 ORDER

An Order in architecture is a certain assemblage of parts subject to uniform established proportions, regulated by the function that each part has to perform. This sets the tone for the expectation that a person might develop as they interact with the built form. Jaipur has a certain sense of a specific ordering system for different elements and it works across different scales of built form like public buildings of monumental scale, smaller community buildings and residential units.



Figure 9: Ghat ki ghuni - Jaipur

The welcoming entrance of the city shows a glimpse of the Jaipur, the capital of the maharajas which was full of such examples of order, sequence, rhythm, etc. Various chattris, jharokes and

windows were placed in a certain spacing and sequence, forming an order and unity with the pathways in between.

2.5 DIRECTED VISION

The principle of design which directs us to the function of the place, in the overall structure, and gives us the focal point to visit and experience that space.

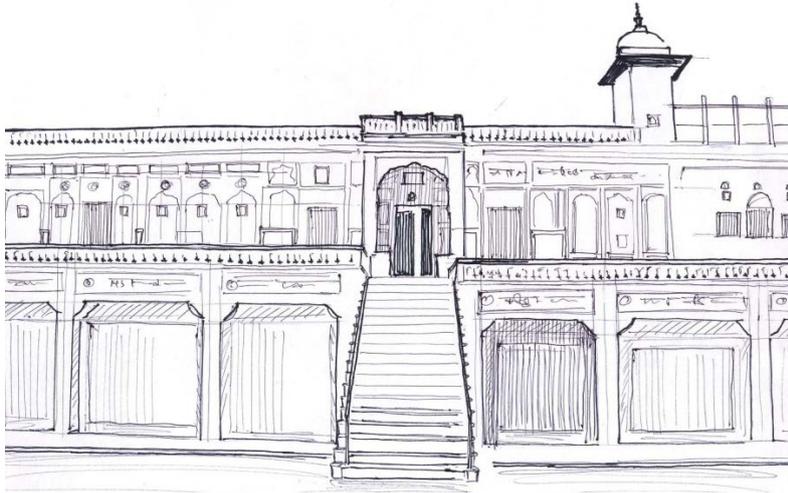


Figure 10: Residence - Chandpole bazar, Jaipur

2.6 RHYTHM

Just like in music, rhythm in design is about generating patterns of repetition and contrast to produce visual interest. It can be accomplished through repetition, alternation, and progression.



Figure 11: Ghaat ki guni - Walled city entrance

What a fascinating example of street facade that stops you in your tracks, it forces you to take a pause from your daily humdrum and soak in the beauty that welcomes visitors coming into the city. The arrangement of different elements like jharokha, chattari, jaali and khidki has been done to create a rhythm that plays with your heart and lets you smile for the sake of it.

2.7 SEQUENCE

Architectural sequence is the linear spatial progression usually dictated by the material being used. Jaipur has a very clear spatial sequence which is based on the stone slabs that were used for spanning walls. This dimensions is roughly 8 to 10 feet. Once this restriction is understood, every other facade treatment can be related to the sequencing pattern that originated from this.

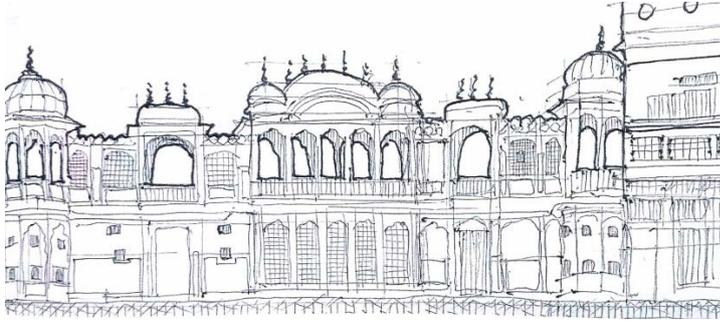


Figure 12: Hawa mahal road,Jaipur

Chattri of different dimensions and jharokas are being built in particular spans and width providing sequence. Hawa mahal road is a natural ridge in the Jaipur city but still the facades are so beautifully sequenced that one walking on the road never gets down the ridge.

2.8 CIRCULATION

In architectural terms circulation refers to the way people interact and move through buildings. The circulation patterns in the walled city of Jaipur not only facilitate interaction with buildings but also dictate the quality of interactions that take place. Can you imagine walking by hawamahal or tripolia gate and not stop to soak in the view or standing in the courtyard of a haveli and marveling at the moving clouds in the sky. Circulation in the walled city cannot be expressed in words alone, one has to spend time walking through different alleys and peek into courtyards. The exciting part is the way this interaction, facilitated by the circulation patterns is dramatically different at different times of the day.

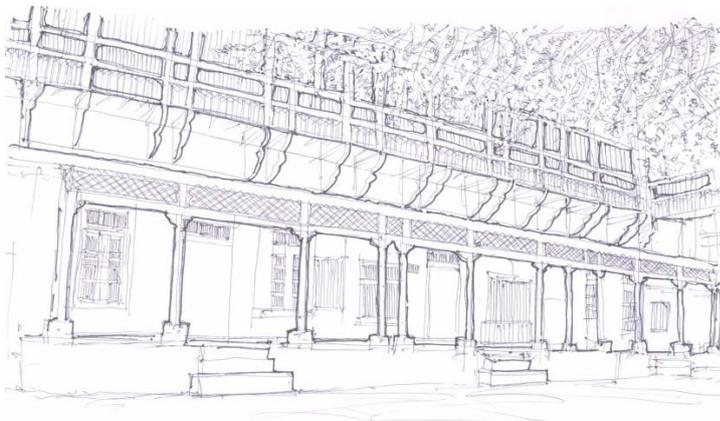


Figure 13: Palace School - City Palace,Jaipur

Horizontal circulation provides a continuous space to interact with the whole building as well with the outside environment, by providing continuous arches. It forms a part of the courtyard and thus acts as a transition space between them.

3. DESIGN ELEMENTS

Entrances - An entrance is not just an opening or a place to access built environment. It is a space in itself that not only

3.1 ENTRANCES

An entrance is not just an opening or a place to access built environment. It is a space in itself that not only provides access but also presents an opportunity to take a pause. It allows us to either cement or decision or re-consider it. It potentially prepares you for an exhilarating experience of a built form that one is about to experience.



Figure 14: Shop entrance - Chaura Rasta, Jaipur

3.2 TRANSITION SPACES

Transition by definition allows the passage from one state to another whether spatially or psychologically. These spaces are designed to reduce the shock of entering a different state. Architecturally speaking, these have their own identity but at the same time provide symbolic connection to the two spaces they are trying to bring together.



Figure 15: Acharya ka rasta - kishanpole bazar, Jaipur

This space acts as connected space between the public space on one side and opens to a private space on other side or in other words we can say a transition space between the wider street on the outside for trading and the narrow street which is the home of the manufacturers and their residences on the upper level.

3.3 FUNCTIONAL ORNAMENTATION

The structures have been built in a manner to play an equal part in the fenestration as well as the aesthetics. They are used to enhance the building by not only adding visual texture but also fulfilling their designated function.

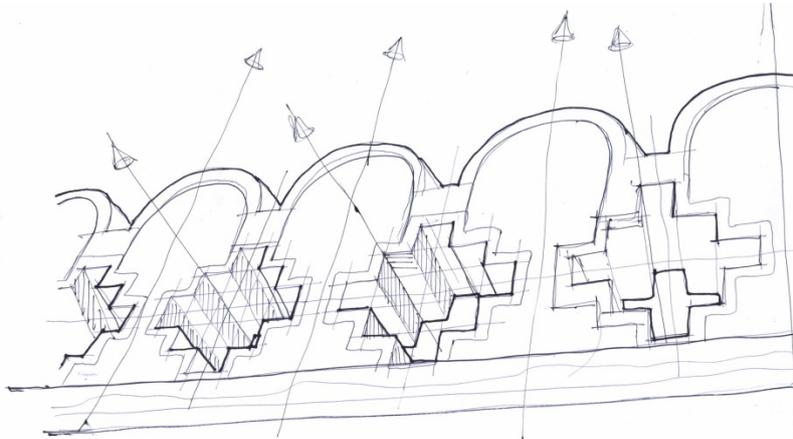


Figure 16: Kangoore - parapet detail

Kangoore is the main element that contributes to the walled city architecture. The parapets are lined with countless kangoore which allows wind to flow. This element acts as a final horizontal line that has been broken into smaller segments. This allows for an interesting culmination of the built form imparting it an interesting character. It is quite a noticeable feature implemented at different scales based on the size and function of the built form.

3.4 CONSTRUCTION DETAILS

In case of Jaipur, the construction details cannot be understood without looking at the building material, the construction process and the expertise of different groups of people engaged in the construction process. The availability of stone masons, painters who understood the intricacies of Fresco Uno as well as metal and wood workers. The construction details are exceptional for seamlessly integrating different materials and creating construction sequences that have outlasted the test of time. These are great examples where the whole is greater than the sum of individual components.

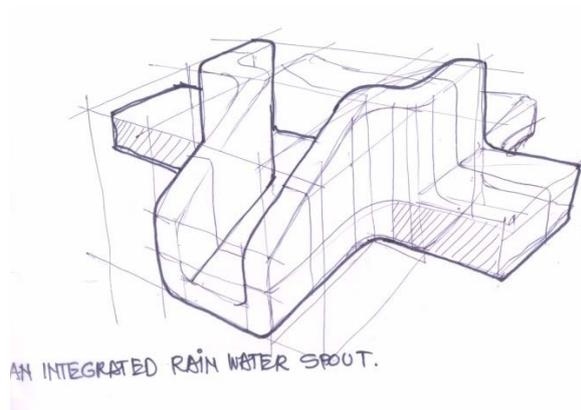


Figure 16: Carved stone water spout - Jaipur

Small elements like rain water spout were treated with the same care and given the respect as an important architectural element. A single piece of stone that has been carved to create the shape of the spout fits neatly as part of the random rubble masonry.

4. CONCLUSIONS

One can go into the theoretical aspects of applying a similar methodology to teach principles of design through hands on, engaged and immersive experience with and into a place but the same can be understood, in a much more direct manner by getting a glimpse of the participating students' experience. Following is a summary of what the students felt as part of this study.

Jaipur, walking through the walled city, one can experience that the place encompasses various cultures, traditions, colors and smell of those old building expressing themselves that they all are part of a strong historical background.

As a student of architecture being in close proximity to such heritage full of design studies and solutions, it has been a very intensive experience. How can one think of so much, from creating a rhythmic entrance that welcome the travelers, before even entering the main city or the small detail of a door handle or water spouts, each of these elements come with their own function and essence.

It is amazing to see the proportions and scale so beautifully designed to not only enhance the function but also provide an identity to the place. Integrating the public interactive areas (the

chaupars) with the roads, making it look not just a path, but to create a spatial pause and a place to share experiences.

The excitement of looking at similar buildings and still finding them different, by incorporating basic elements, encouraged us to think about architecture not just from a functional point of view but also to create spaces that can conquer time. Definitely a study like this can contribute a lot to the education and also can help in building a good framework for other cities (yet to be built). In the modern architecture education, we consider these examples outstanding triumphs of human spirit, but then we must ask ourselves, what is it that architects and visionaries had in 1827 that we do not have access to now. It makes one wonder, should we have simply continued to build along those lines? One look at the so called modern development in places like India, we sincerely wish, we should have just stayed on that path.

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