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ALLUSIONS TO MUGHAL URBAN FORMS IN THE MONUMENTALITY OF CHANDIGARH'S CAPITOL COMPLEX

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Abstract. The formative influence of the Mughal gardens on the urban spaces of the Capitol Complex, Chandigarh is discussed as part of Le Corbusier's vision in realising new urban symbols to represent an independent India. Corbusier had not only "regionalised" Modernist elements of architectural design but had "modernised" past urban forms by artfully rejecting the traditional gridded patterns and urban traditions such as the Mughal gardens, and transforming them into a dynamic restructuring and interplay of urban forms and spaces. To disassociate the new capital from its Colonial past and to create a new sense of spatial drama symbolising the nation's hopes for the future, Fatehpur Sikri's renowned orthogonal and gridded urban plazas with its interconnected courtyards and cloisters, became part of Corbusier's arsenal of precedents, and these were abstracted and reworked into a new orchestration of urban spaces; and integrated with Modernised concrete architectural forms. The garden archetype and recurring traditional Mughal devices such as the "chattri" and the trabeated terraces allusions were simplified and synthesised with overlapping "spaces-between-buildings" such as bodies of water, platforms and a series of roofscapes. The influence of the Mughal gardens is again seen in a subsequent project in later years by Corbusier i.e. the unbuilt proposal for the Venice Hospital, whose layout and planning carry similar overtones of overlapping courtyards but fused into a series of outdoor-indoor spaces due to the need to be cognizant of, and sensitive to, the historical fabric and tissue of an existing city.

Keywords: urban form, Mughal gardens, Chandigarh, formative ideas, regionalism, modernism, urban vocabulary.

Introduction

Throughout history, urban and architectural forms have evolved from archetypical ideas and patterns of the past. These have conventionally, been reworked and transformed into new forms in the perennial search to construct symbols representative of a new phase in the development of a nation or region. Archetypes can be found in recurring patterns that originate from, or are linked to, a particular cultural context or geographical region. Across eras and regions as nations achieve independence, they have evolved into new forms as they become regionally differentiated after undergoing successive refinements. In order to represent meaningful interpretations according to a time or place, architects and urban designers constantly search for permanent artefacts, archetypes and patterns; and these become the basis of abstraction, transformations and distillations. Past traditions and cultural archetypes have often acted as sources of inspiration and constantly find their way into the imagination and thought processes of architects and urban designers. Such processes can either be discussed as a "regionalisation" of Modern forms- in which localization strategies are used to regionalize normative patterns or forms, whether of buildings, masterplans and complexes; or the "modernisation" of traditional or past forms, in which past Classical "rationalist" forms are subjected to more expressive and dynamic forces of transformation. It is argued that as progress and changes occur at a rapid rate in the context of Asia, both processes can occur at the same time and in the same development. Processes, predispositions and tendencies found within the stylistic eras in the history of architecture and urbanism that recall the "swings of the pendulum" – as design tendencies tend to swing from one "pole" or polar opposite to the next – can be found within an architect's large and complex effort in a huge development. The position of functionalism and

rationalism may represent one "pole" ; an approach on one end of the design spectrum; and a Modern architect might swing towards the other opposite end of the spectrum, and embraced the emotive, "organic" and "free-form" position in order to create symbolic and novel forms during a crucial time for a nation. These swings of stylistic tendencies are conventionally seen as successive movements throughout historical eras in architectural design. Yet a Modernist architect can embrace positions and approaches that seem to swing, diverge and converge between the polar opposites; as they seek to create new forms that characterize the evolution of a nation's history. In developing countries for example, trends of architecture and urbanism can occur within short spans of time. Similarly in the case of urban forms, past traditions characterized by a persistent preoccupation towards the "rational grid" and a structurally-based order; tend to be followed by propensities that embrace a more emotive approach to form. Each stylistic or ideological position can be defined as a position between the two polar extremes. A master architect then arduously attempts to merge the two positions and to fuse and balance between these two opposite "poles" of expressive "form". Le Corbusier represents one such architect – perhaps a rare example of a unique negotiation between the two opposing tendencies in architecture and urban design.

The aim of this paper is to analyze the formative ideas, processes and *parti* behind the Capitol complex in Chandigarh, India by Le Corbusier. It is argued that while its key buildings may express a regionalized language comprising of localized Modernist vocabulary, urban plaza and its composition is perhaps where the greatest dynamics and tensions of his designs are found. Constant (1987) in her analysis of the Chandigarh, singled the "Governor's palace" and plaza as the focus of perhaps the most dynamic of such processes. In this case, a past archetypical "rationally-ordered" form – such as the Mughal garden – had become the basis of transformation – through a series of dramatic and creative processes recalling characteristic preoccupations of Modernist signature architects. Though Chandigarh consist of a large masterplan with key institutions and conceptual planning, it is within the key buildings and monuments of the Capitol that some of the key's gestures in Corb's ideas and visions are played out. The urban outdoor plaza of the Capitol constituted a unique instance of a transformation process that result in specific formal outcomes that are significant to the future. A greater appreciation of Corbusier's idealisations and thoughts in terms of the urban spaces is thus needed. This paper attempts to highlight such thoughts, framework and processes, which in a nutshell, represented the unique intersection of Mughal "rationally-ordered" gardens, and Corb's Modernist line of thought and transformation – all of which arose during the architect's relentless search of a dramatic solution to represent the Zeitgeist of the times; with the overall goal of embodying the spirit of a nation in the midst of an important phase in its history and a critical threshold towards its future.

"Rational" urban forms and the Mughal Tradition

Petruccioli (1998) has aptly termed the Mughal Garden as an "*aesthetic distillate of an agricultural civilisation*". By this, he meant that the garden's "rational structure" and gridded organisation had naturally evolved from the linear outlines, patterns and forms of its agricultural irrigation system of water channels which were so crucial to the economy and development of the Mughal civilization in India. In the Classical 16th and 17th period of the Mughal era, such "aesthetic distillates" underwent further refinement. Just as how Modern architecture matured from a formal language into a kind of symbolic monumentality, so did the Mughal gardens; which became instruments of symbolic purpose, reaching its peak of symbolic articulation and formalization during the 16th and 17th centuries. The Mughal garden became a complex series of urban plazas integrated into an interconnected network of spaces, structures within architectural complexes during this era. These gardens were not only retreats and administrative spaces, but are centers of Mughal power. They were built as part and parcel of their symbolic capacity and as part of the Mughal's territorial practices, whether as a reflection of social hierarchy, or as a symbolization of central power. The use of architecture and urban design symbolism became crucial to the continuity of the Mughal empire and its dynasties. The "rationally-based" archetypical form of the Mughal gardens, had evolved from the concept of the "Charbagh" which had originated from the rationally-ordered straight "lines" of water forms including elements such as channels and irrigation systems. These had evolved into complexes comprising of "*palaces and structures punctuated or highlighted as meeting points between an endless sequence of square and rectangular elements*" (Petruccioli 1998). During later periods, the *Charbagh* archetype – based on the four quadrant garden with four canals – became a symbol of power and *"through the repeated transformation of use and significance of its original centripetal symmetry into more complex forms or enlarged summation of the original module through the use of additional equal modules.."* (Petruccioli 1984), in which the use of the "grid", the "square" and the "court" became integrated with symbols which were incorporated into these gardens. Figure 1 il-

lustrates, in a series of simplified diagrams the variations and evolution of the archetype into a series of gardens and complexes.

As a symbolic means of asserting Mughal territoriality, the overall flow of spaces, terraces and elements of the gardens became an urban strategy through which monumentality was consciously asserted. At the height of its civilization, Mughal complexes and its gardens, became the "rational" language of urban forms and instruments of control. These idealized and integrated spatial systems were intended not only for leisure, comfort and the private domain of rulers, but were monuments through which the rulers had asserted their presence and "rule" over the chaos of nature (Meisami, 1985). During the 16th century, the refinement of such gardens had developed alongside Mughal arts and architecture and had reached a kind of apotheosis in the time of Akbar, during which monuments and urbanist principles had fused into a symbolic unity. By the 17th century, the Mughal garden had become a refined symbol, reaching a peak in its monumental role and expression.

Rationally-ordered plazas and gardens were official representations of control, order and power. Later under British rule, the same urban forms were subverted and rescaled through the use of planning strategies such as superimposing axes and nodes ; into powerful urban instruments to elevate and enhance the existing status quo. The use of scenography in monumental urban design is maximized through the symbolic language of urban spaces. The rationally structured forms became again, inherently a mark of control – in which the "conquerer" would stamp their domain and their ability to triumph over the "chaotic", untamed and uncontrolled lands. Such gardens were also used as an imprint of the Colonialist, who had also sought to stamp their presence against the organic grain of urban morphological patterns. The use of axis and vistas or common "nodes" – including rationally-ordered pools of water or pavilions – became part and parcel of the urban vocabulary of British architects such as the highly acclaimed Edwin Lutyens; including his urban planning of the British Imperial Complex in New Delhi. Hence in both medieval and modern eras, the "rational" urban forms and patterns were instruments used to represent a symbolic "order" within the surrounding "disorder" or perceived chaos of settlements; besides being utilized to fuse different functions and spaces and thus bring a unity into the planning and composition of complexes and cities. The gardens of Lutyens were also symbols of authority through alluding to the square patterns and courtyards of the Mughal-Persian Charbagh, which were organized according to shifting axis and central nodes.

The Capitol, Chandigarh

Chandigarh was modelled based on the vision of India's then Prime Minister Nehru, i.e. towards "… *a new town, symbolic of the freedom of India, unfettered by the traditions of the past*". A masterplan was conceived and a city was to be constructed on a vast plain against the dramatic backdrop of the Himalayan mountains. Its basic masterplan consisted of separated zones or sectors of a functional city which was to be "capped" by its "head", the Capitol, a planned conglomeration of key

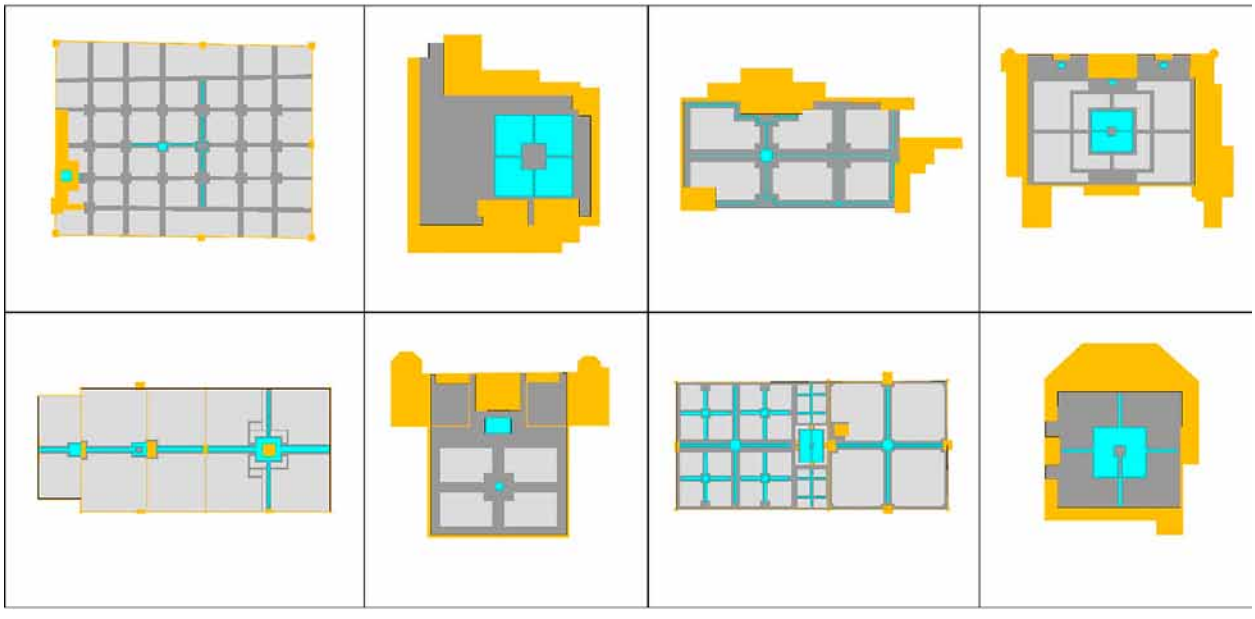

Fig. 1. Variation of urban forms and plazas of the Mughal gardens evolving from the *Charbagh* archetype (Abdul Latip *et al.* 2016)

government buildings. This central district or the Capitol comprised essentially of four key structures: the High Court, the Legislative Assembly, the Secretariat and the Governor's Palace – or now known as the Museum of Knowledge – arranged in a park-like plaza. The Prime Minister's vision was that a new city for India would not only be a symbol of independence, but a visible and persuasive instrument of national economic and social development. Le Corbusier was commissioned to design both the masterplan and the Capitol Complex; and he had envisioned a new form of urban development which would arise from a vision of a liberated and democratic society. The layout of the Capitol was basically organized "….. *around an invisible geometry of three interlocking squares, their corners and intersection-points marked by "Obelisks. The northern and western edges of the larger 800m-side square define the boundaries of the Capitol, while the two smaller, 400m-side squares determine relative placing of the four "Edifices" and proportions of the spaces in between…...*" (UNESCO 2006). An uninterrupted pedestrian link was designed to link these key buildings; and pathways were designed to traverse over gardens and pools of water in between the buildings. The whole orchestration of surface, form, and water was envisioned by Le Corbusier as an extension of his ideas that emerge from the scale of structure and architecture onto that of a large masterplan and urban space at city scale.

References and key patterns drawn from the Mughal gardens are evident in the architect's explorations during the early formative days of design. Traditional forms became a means of crafting symbols that could potentially exude a hold on the collective psyche of the population. The Capitol was envisioned as a series of monuments and plazas whose form and urban patterns would allude to, but never directly express, existing devices and patterns founded from India's traditions. Corbusier's predilection for the abstract and the dynamic in terms of composition would come into play and such forms of the past, would become suggest to a new expression and give birth to a new vocabulary. The city was envisioned as a language of extended portico elements, extensive shading, deep recesses and light-washed walls. More significantly, it contained forms that were articulated towards a monumentality that represented a new India. Corbusier envisioned that such forms and symbols would then overthrow existing preconceptions and forge new icons from the collective past and be ingrained into the subconscious of the people. In siting, articulating and detailing parts of the complex, Corbusier had mustered elements of the past and these wer e reworked into a powerful image of an independent India. In the Capitol particularly, almost nothing was left to chance by Corbusier, and almost every line and form drawn was inherently a fusion between Modernist leanings and traditional forms distilled from the context. The architect's own expression and his affinity with the artistic streams of Modernism would play its role in ensuring that form would synthesise into an entirely new sense of "order". These would be reworked and "syncretised" into a spatial "fluidity" and a three –dimensional spatial drama characteristic of the Modern Movement. As Curtis (1996) summates in his observation of the evolution of Corbusier's creative work and the significance of Mughal traditions (Fig. 2a and 2b) in Chandigarh:

"Much of Le Corbusier's attention over the subsequent years would be devoted to the Capitol Complex, in which he allowed his ideas on monumental expression

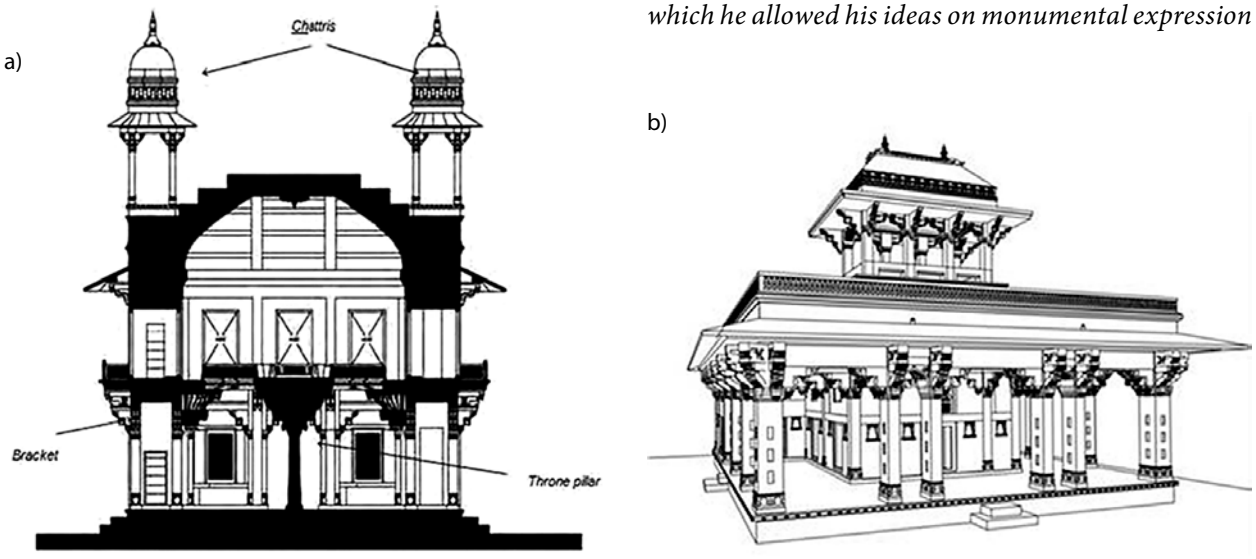

Fig. 2. (a) The parasol-like Chattri of Diwani Khas, and (b) the overhanging pavillion of the Maryam house of Fatehpur Sikri. In both structures, the "overhanging" and parasol-like elements served to harmonize with the proportions of overall structure and also help these buildings to be seen from afar (Shaukat *et al.* 2014)

free rein. Like Lutyens, he learned his lessons from the Moghul tradition, with its generous provisions of deep loggias, romantic roofscapes and water. Indeed the genesis of Le Corbusier's monumental vocabulary seems to have involved a prodigious feat of abstraction, in which devices from the classical tradition - the grand order, the portico; were fused with its own general system of forms in concrete and in turn cross bred with Indian devices like the "Chattri" (a dome of slender supports), the trabeated terraces, balconies and loggias of Fatehpur Sikri".

In his earlier book entitiled "Corbusier: Form and Ideas", Curtis (1994) had observed similar references to the past (page 129) and he describes succintly :

"*The Governor's Palace portrayed at the end of its pathways and pools, silhouetted dramatically against the sky, experienced both frontally and in torsion with its surroundings, recaptures something of the spirit of the Diwani Khas of Fatehpur Sikri, a site that the architect had seen and admired. … The "Chattris" or domical variants on the parasol were lifted at the four corners of the roofline on slender supports through which the sky could be seen.*"

Frampton (1992) also observed similar references:

"*Unlike Lutyens, who had exploited only the secondary elements of Moghul architecture, Le Corbusier appropriated the traditional parasol concept of Fatehpur Sikri as a monumental coding device to be varied from one structure to the next. …The evident intent was to represent a modern Indian society that would be free from any association with its colonial past.*"

Fatehpur Sikri, India

Fatehpur Sikri, Agra is a 16th century complex enclosed by an 11 kilometer-long fortification wall and is located in Agra India. The city has numerous gateways and has been described as having unique vistas and a constantly changing experience of urban spaces unique amongst Islamic medieval cities. All parts of the building are interconnected by the courtyards and cloisters which are aligned on a mathematically formulated grid pattern, parallel to the main mosque (Fig. 3a). As Jaswant (1993) has described:

"*the overall planning was organized based on a system of five axes and four horizontal axes, which identified the position of meeting points and volumes. The entire territory is divided into eight super squares; each was split further into nine smaller squares, with sides measuring 300 of the above units. …Together with a network of super squares, a grid of nine 29 squares (applied both horizontally and vertically) had established the form of the city.*"

Basically the complex itself is clustered at the top of the ridge and included halls, palaces, gardens, resorts, hammam (baths), mosque and tombs, apart from the remains of the quarters for noblemen. Interestingly, just like the Capitol, this complex is also broadly divided in to three parts: the Administrative Buildings (Imperial Palace Complex/Daulat Khana), the Emperor's Private Quarters (Imperial Harem/Haram Sara) and the Sacred Complex (Dargah Complex). The planning of the complex is based on a form of concentric rings which had placed the most private areas such as Queen's palaces in the center, surrounded by semi-private areas. The outermost spaces and buildings were meant for service functions and public activities. As the ridge did not have an even level, terraces were constructed on receding levels that were made for each of the three main complexes (Fig. 3b).

In Sikri, the Diwani Khas has been described as a structure representative of a conception of the sovereign, Akbar; symbolizing a kind of "cosmic" center and rule. Adjacent to this structure, are two "gardens" that recall variations of the *Charbagh* and can be argued as representing "water-solid" inversions of each other. Adjacent to one side is the Turkish Sultana garden (Fig. 4) is a *Charbagh* form in its full fruition, while its inverted counterpart is located close to it in the form of the Anup Talao pool (Fig. 5). The *Charbagh* – which literally means "4-gardens" – is a garden form typically divided into four quadrants by water channels. Instead of a garden crossed over by narrow and shallow channels of water filled to their brim to divide a garden, the Anup Talao was "inverted" into an island pavilion, which also environmentally function as a thermal comfort modifier. Crossed over by 4 causeways or gangways, the Anup Talao's square pool is unique for its central platform interconnected by the gangways on each cardinal side. These gangways are so narrow such that a visitor would feel apprehensive threading on them. The proven purpose of the Anup Talao is still unknown till today but it is believed that musicians such as the famous Tansen – one of the "nine jewels" of Akbar's court – used to sit in the central platform to sing and perform his music to a royal audience (Shaukat *et al.* 2014). In terms of form and geometry, the Anup Talao is thus the epitome of an "urbanised" *Charbagh* where a square structure and platform with stone bridges spanning from the center to each side of the platform became a symbolic structure, in addition to its function. Another name for the Anup Talao, is the "Char-Chamad," which refers to its four bridges.

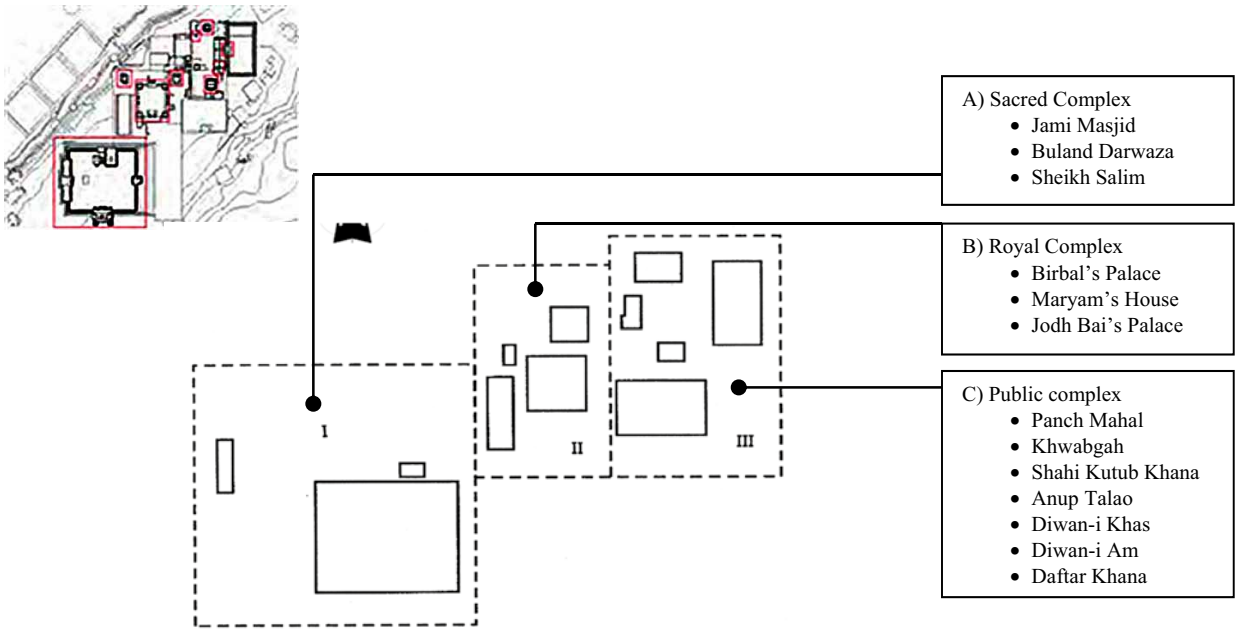

Fig. 3a. The urban layout of Fatehpur Sikri demonstrating the overlapping orthogonal spaces and "order" of its urban layout with a thumbnail showing key overlapping spaces with key monuments located on key points on intersections of the squares (Shaukat et *al.* 2014)

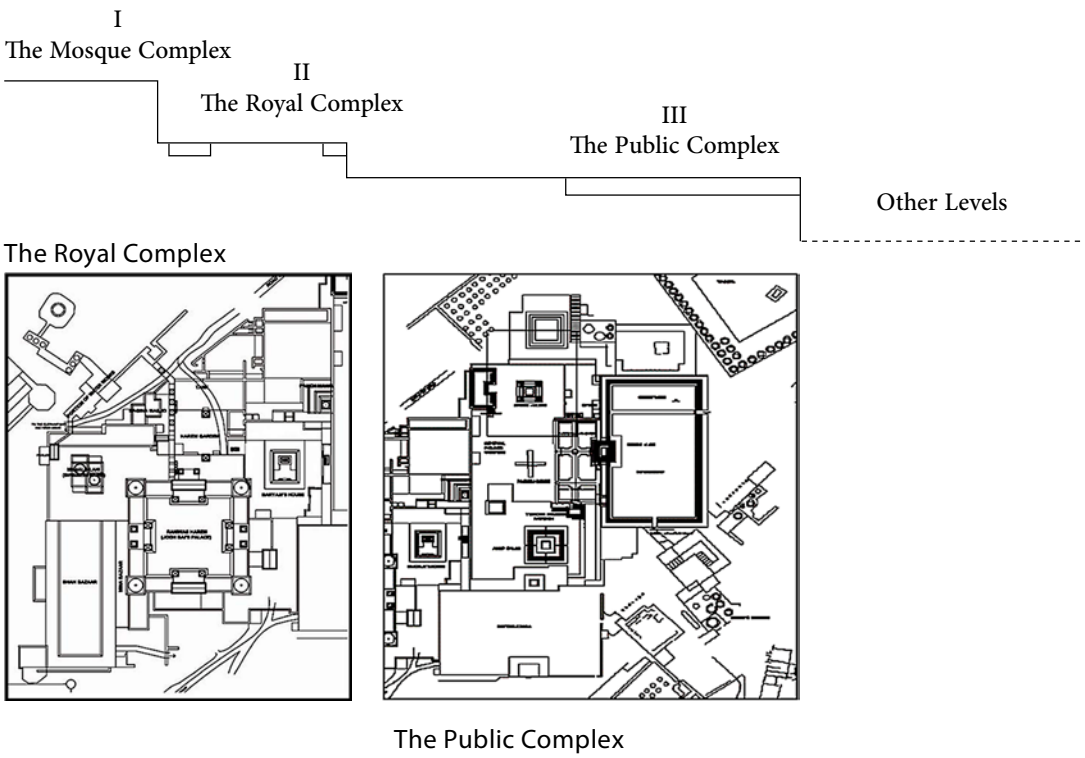

Fig. 3b. The terraced layout and planning of Fatehpur Sikri with its cloistered and overlapping spaces of the Royal and Public Complex, with key buildings located at points of adjacency, centrality or intersection (according to Shaukat *et al.* 2014)

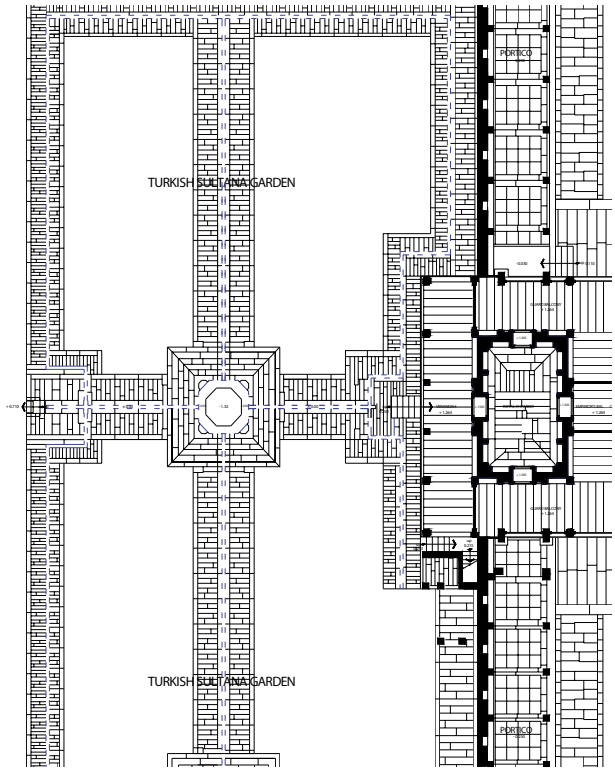

Fig. 4. The Turkish Sultana Gardens are garden adjacent to the Turkish Sultana House and a variant of the Charbagh with its classical four quadrants. The above is a measured drawing showing (a) the water tank with four narrow channels intersection, (b) cooling devices in front of Imperial Pavilion, and (c) plan indicating water channels (KAED IIUM Heritage Centre 2005)

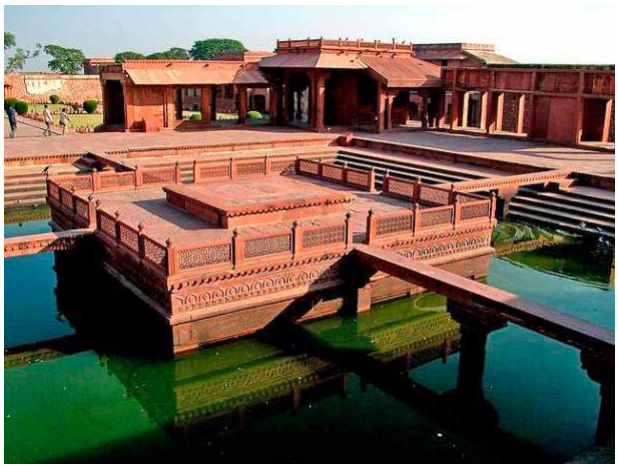

Fig. 5. The Anup Talao, Fatehpur Sikri (Petrucioli 2007)

Discussion

The formative processes of the Capitol's urban design

To highlight the poles of the highly rational and the highly emotive which typically characterized by Le Corbusier's formative processes, the strategies used to appropriate past forms is discussed. As Colquhoun (2002) insightfully describes – "Corb was "*a seer uniquely gifted with the power of discerning the spirit of the age and its symbolic forms*". To create a unified style that would reflect that a particular time and nation, past forms were subjected to processes akin to Modernism's characteristic spatial strategies. Although Modernism had ultimately evolved into the language of the International Style and as a set of aesthetic principles, its earlier themes were centered on the need to reconcile rationality and the dynamics of space (Gideon 1941). In such cases, space and form are inherently outcomes of opposing tendencies and push-and-pull forces that struggled for dominance in the evolving design processes. As early as 1900s, Modern Masters such as Mies Van Der Rohe had pursued forms that combined vertical and horizontal planes including their pinwheel free-form principles (Fig. 6). In his seminal Country House, Mies had based his layout and composition on a "grid" and a plan that involved centering: the multiple orientation of architectural space was organized based on a dynamic pinwheel layout. The composition of walls and planes are centred on the pivotal point of a pinwheel, which became the composition's axis of rotation. This strategy of articulating the experience of space and the "limitless" extension of freed "space" is characterized by another Modern master across the Atlantic, with a similar underlying *parti*. Studies by Etlin (1994) and Curtis (1996) on Frank Lloyd Wright recall the similarities. Comparing the two masters – Le Corbusier and Frank Lloyd Wright, i.e. interm of the compositional strategies between the two, Etlin (1994) found Corbusier's compositional style to be similar but associated with a more tightly bound articulation of form and space.

A comparison between processes and outcomes observed in Frank Lloyd Wright's Robie House and Corbusier's Villa Savoye is a case in point. In terms of external form, the Robie House demonstrated the interplay of wide, extended roof planes with low-hanging eaves which would later become part of Wright's signature "Prairie" house's language and vocabulary. He is known to use the fireplace as a central organizing principle as it was the heart of a residential space and hence can act as its central axis and hub or node. Space, vistas and rooms would "flow" out from this central anchoring element, akin to the four cardinal points of a compass. This principle would give rise to a signature trait of the house and its propensity which arise from the stylistic massing of the house. This would become a principle that had eventually diffused into many of his works and later matured into a stylistic principle. Wright became known for a recurring exciting spatial quality of his houses and the interior-exterior strategy that would give the owner or occupant of the house, a constantly changing kaleidoscope of views to the

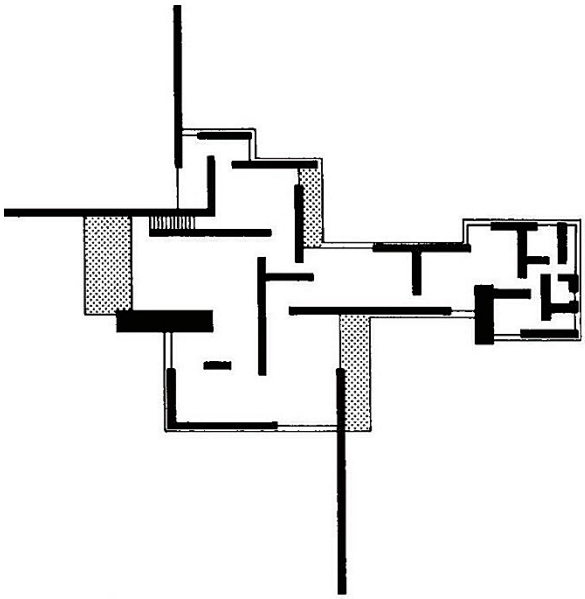

Fig. 6. Mies van der Rohe, Plan of Brick Country House, 1924, Neubabelsberg, Germany (from Colquhoun, 2002)

outside. As summarized by Curtis (1996), the spatial principle is:

".... A kind of "pinwheel" rotation, experienced in three dimensions as a spatial tension which varies as one moves through the interior spaces... To Wright this dynamism was perhaps equivalent to the life force that he sensed in nature; it gave his dwellings something of the quality of a spatial music in which, rhythm movement, repetition, and variation of similar elements achieved moods and emotions of different pitch and intensity."

Etlin (1994) observed that similar strategies would realize similar spatial qualities. Wright's Robie House (1909) was built along the same "drama" of space – the expansion and extension of the horizontal line from a central anchoring node. Lines seem to be stretched from this center through the main living room and towards the outdoors, thus becoming and denoting, one linear space extended. In his lesser known Willits house, space and form similarly expanded outward from the central chimney into four wings that had accommodated separated functions. Inspired by Japanese traditions, the design had celebrated the use the exterior wood frame elements, patterns of dark stained wooden members contrasted with the whiteness of the stucco walls. Basically it was a culmination of a style founded upon the fusion of local and outside influences; with spatial organization centered on the unifying role of the central fireplace. This would mature into the Prairie style in which mass and form tended to expand along orthogonal axes crossing a central "heartland" reaching out into the surrounding landscape. Almost like extensions, emerging lines, and linear dimensions which extend into the surrounding horizon, spaces in the Prairie houses seem to extend outwards, yet organizationally they act as if in unison; guided by a centripetal "pinwheel" movement.

One can almost detect that the surrounding lawns, pergolas and connecting spaces of Wright's house as a kind of abstract organic pinwheel pattern and movement (Fig. 7). His talent and ability, was inherently his ability to balance the organic and expressive nature of the centripetal planning with the rationality of the spatial functions of the house . He achieves this by the ability to weave the 3-dimensionality of such spaces into the physical structure of a house with the natural disposition of its grounds – into a single flowing and

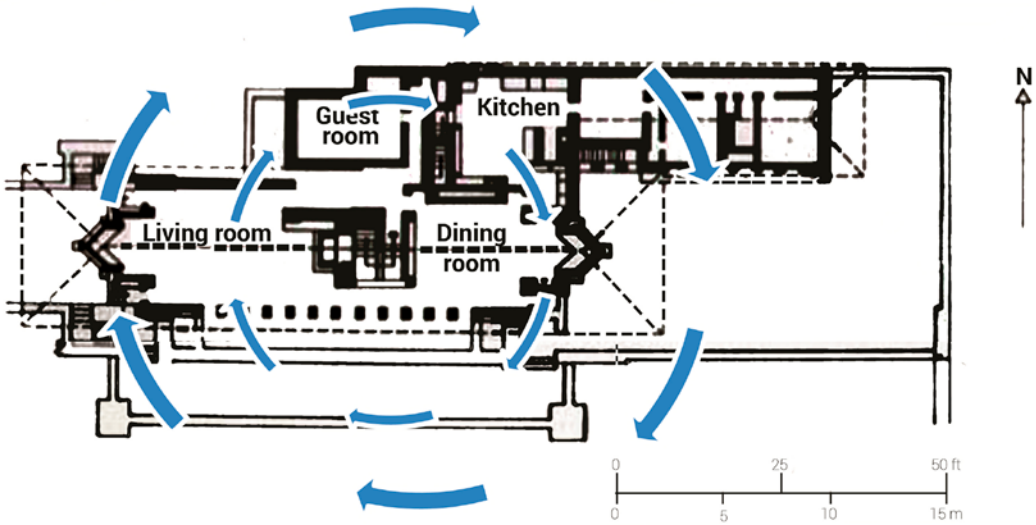

Fig. 7. The central pinwheel configuration of spaces – Robie House, Chicago 1909 (Etlin 1994). Arrows inserted by the authors

interpenetrating pattern. The same principles would lie behind all of the disparate houses he had designed, and those which had the resemblances with the Prairie Houses, including the fusion of the principle of its hearth, the protecting roof, the base or plinth and the screen walls.

The Villa Savoye by Corbusier evoke similar underpinnings and spatial dynamics, but expressed within a more tightly bound massing and structure. Curtis (1996) observed the strategies in the Villa, in which Corbusier; *... clearly exploits the ideas of variable viewpoints and simultaneous perceptions of multiple layers and levels... At the Villa Savoye, nature is celebrated as dramatically as the idea of the house as a "machine a habiter", views of trees and grasses are carefully orchestrated and framed*". The artful use of centripetal forces seem to conflate with centrifugal ones; the intent is of spatial movement, which seems to end into dynamic curves at the top of the house. Curtis (1996) further summarized:

"In fact, the design also contains an implied rotational movement, while the actual transition from floor to floor allows one to link together inner vistas and events with outer ones. The Villa Savoye might be understood as an analogue to the flux and relativity of the modern experience."

Colquhoun (2002) also condenses the overall approach:

"One could describe as the enclosure of function in a generalized cubic container not committed to any particular set of concrete functions – a tendency partly derived from his early allegiance to Neo-Classicism, The other was the articulation of the building in response to the fluidity of life."

In their analysis of design strategies by a range of renowned architects, Clark and Pause (2012) had observed such strategies as recurring patterns and themes in various Modern works and their architects that impact upon their layering and "organisation" of space. These often represent a series of formative principles that underline particular spatial and formal compositions, including what they term as the principle of "rotational shift and overlap". As they describe:

"...Rotation is the conceptual process of moving a part of parts about the center. This center rotation may be, but is not necessarily the same for all the parts. Rotational movement naturally changes the orientation of the part involved";

"...When the manipulation by shifting occurs, the parts move, but unlike rotation, the orientation other parts remains the same";

"...The geometric configurations of radial, pinwheel and spiral share the common attribute of originating from a center... Spirals move away from a center at a constant rate of change and in a rotational direction. Pinwheels consist of offset linear elements that are connected to a common core or abut to form an implied core... Spinning is the implied dynamic of a pinwheel configuration".

Similar principles were at work in Corbusier's Capitol complex. The ground level plaza consists of a central organization of urban elements which were compositionally laid before the Governor's palace. The palace itself is situated at the end of a large but enclosed plaza or zone. Multi-level gardens and pools were then crafted into the overall planning of the plaza and were envisioned to be reminiscent of ancient forecourts of traditional complexes with giant ramps, stairs, and obelisks rising from the waters.

Yet within this orchestration, the 4-square normative form of the *Mughal – Charbagh* garden became an active principle of design and were particularly recalled within the formative processes of urban form. By manipulating a rationally- organized element with dynamic manipulation, a totally new form of plaza was expressed. The dynamic strategies of rotation, movement and shifting were the forces at play as a new urban form was created. This strategy of "distorting" rationally-bound element can be argued as an expressionist evolution of the "normative" Mughal-based form. Innovation arise from offsetting of these patterns into a "more dynamic" urban form. Rationally-ordered elements and spaces were subjected to outgoing centrifugal forces. Gorlin (1980) insightfully describes the outcome of play of elements of the Capitol's ground level plaza:

"*... the ramp of the Monument to the Martyrs is in front, two levels of gardens and water pools face the palace, pedestrians enter along the shifting series of squares....*".

Gorlin (1980) further concludes – through Corbusier's sketches – that:

"*The original sketches show a static, symmetrical approach to the palace, while in the final design the axis is broken, creating a shifting series of plazas before the palace. The garden is framed in plan by two interlocking L's, a form derived from the rotation of the arms of a spiral.*"

The dynamic form is inherently a spatial deformity. It represent a Modernist reinvention of a traditional archetypical form (Figs 7 and 8). Curtis (1996) has similarly observed how the urban forms and elements of Fatehpur Sikri were used as a basis and reworked into a new set of language and urban landscape that became the final composition – particularly the ground level of the plaza and gardens in the Governors Palace. Here allusions to forms of the past find their most evocative ground. The water and landscape elements to some

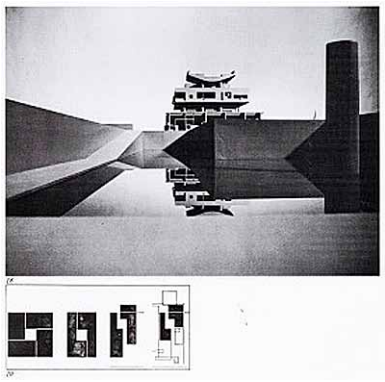

Fig. 8a. Configuration of final form plaza of Government Palace Chandigarh (Gorlin 1980).

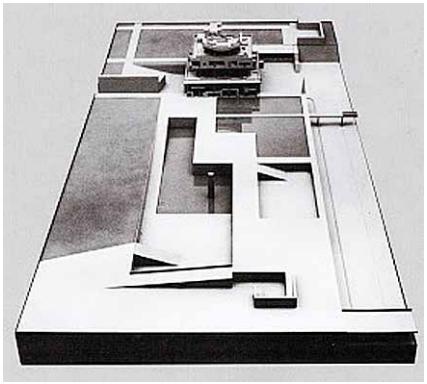

Fig. 8b. Governors Palace, development of garden and plaza form (Gorlin 1980).

extent, evoked the Charbagh composition of the Anup Talao, in Sikri. Yet these were differentiated from the traditional rationally-organised forms by subjecting them to an expressive transformation through similar fluid and centripetal forces. These recall the same spatial dynamism and drama as found in the Villa Savoye, in which the dynamic nature of the flowing spaces and its viewpoints became elements that essentially pierce the boundary walls of house and infuse them with dynamic vistas and viewpoints extending towards nature. The intended experience is from the human- eye level perspective and at body level, a visitor traverses the spatial experience of the "architectural promenade" through a series of ramps.

Resonating the *parti* of the Savoye, its centrifugal and rotational strategies became animated forces - used to transform these forms extracted from the past. The rationally ordered forms reminiscent of the Mughal gardens are subjected to the "push and pull" magnitude of emotive forces. The momentum of a centrifugal movement can be read as spaces encountered outward forces that result in tangentially pulling the squares away from the center. As these were deformed and distorted, they seem to emerge and elongate from the center. Hence the forms of the Mughal gardens still resonate and prevail as the overlapping squares derived from the traditional Mughal gardens and the squares of Corbusier's own Modular systems seem to mirror one another (Fig. 8b). Both are subject to the dynamics of a centripetal and centrifugal force. To Corb, these embodied the spatial representation of rapid changes that symbolised the speed of modern life. As Gorlin (1980) usefully elucidates (Fig. 8a) :

"*The original sketches show a static, symmetrical approach to the palace, while in the final design the axis is broken, creating a shifting series of plazas before the palace. The garden is framed in plan by two interlocking L's, a form derived from the rotation of the arms of a spiral. The pedestrian ascends the Martyr's Ramp to find the distant palace visually thrust forward. The garden levels fall away in shearing blocks as the reflecting pools double their height, creating a foreground and plinth for the palace, which enforces the image of a temple on an acropolis. Descending the spiral ramp, a counter-spiral activates the procession to the palace. The collapsed arms of the spiral compress its centripetal force into a dynamic push pull effected by the pressing forward of the pools against their static frames. As the three plazas shift to the left, the palace oscillates between two obelisks, a cylinder, and a pyramid, shifting the eye to the mountains and the Open Hand monument.*"

On a more philosophical note, the resultant plaza and gardens have been described as evoking the sacred landscape of an Egyptian temple complex, as the stepped contours of the palace resembles a pyramid, symbolizing the axis of the universe and the cosmic mountain linking heaven and the earth. Yet as discussed earlier, the spirit of the Governor's palace and its park reflects its more immediate heritage – the 16th and the 17th century Mughal gardens of India. Events in 1951 also strengthened this view as it was known that Corbusier visited two of these gardens, the 17th century Pinjore Gardens near Chandigarh (Fig. 9), and the Baradari Gardens in Patiala. From the roof terrace of the Ahmedabad Museum (1951–1956) he created an abstracted version of the Mughal garden, using a geometric arrangement of flowers, shrubs and reflecting pools. For the Governors's Palace, the intention was to evoke the essence of the Mughal garden rather than reiterate its form; while retaining the traditional iconographic elements of the *Charbagh*: the terraced levels, water courses, against the cosmic backdrop of skies and mountains.

Curtis observes the parallels and comparisons between Sikri and the Capitol:

"As with Fatehpur Sikri, the Capitol itself was a diagram of institutional hierarchies. With the Governors Palace at its head, the high court and the parliament facing one another over down... to the one side of the

Fig. 9. Le Corbusier's sketch of Pinjore Gardens, India (Spectrum 2014)

Fig. 10. Le Corbusier's sketches in India (extracted from Curtis, William J. 1994)

Governor's place, there as a modern version of the Mogul garden. While the High Court was consonant with the other primeval forms used at Chandigarh, it also seem to distil some of Corb's easy observations and sketches of Roman ruins and involve a characteristic transformation of the relevant Indian type: the Diwani Am, or the public audience hall, with its open sides and overhanging roofs."

Le Corbusier had envisioned a new form of urban development. The new city and urban form would no longer refer to nor recall former reminders and symbols of powers or of subjugation through foreign domination, nor would they have any references to any past caste system or any feudal connotations. It was known that Corbusier's Indian sketchbooks were filled with his preoccupation and observations of simple and ancient tools and artefacts of the Indian peasantry (Fig. 10). Repeated primitive forms were engaging to him as these represented the land's humble traditions including all forms of sketches of the Indian bull-carts. The harmony of people, nature, animals and climatic forces must have moved him. Corbusier was known to be entranced with the primitivism of nature, whether in the rocky outcrop of the Acropolis or from the simple animals that supported the peasantry. He found that all major civilisations have a basic foundation in their pantheism of cosmic references. The myths of the Greeks parallel the Indian cultural and belief systems and hence they should be the natural foundation of a new dawn of architecture and new urban monumentality.

Corbusier's formative sketches of the Capitol buildings were also preoccupied with expressing and responding to, climatic principles in order to ameliorate the country's monsoonal impact and its extreme heat. Sketches held at Foundation Corbusier (Von Moos 2007) show Corbusier's keen interest in vernacular structures, colonnaded verandas, loggias of the Mughal pavilions and shaded walkways of the Hindu temples and their precincts. Amongst his earliest sketches were those of the 18th century garden at Pinjore where terraces of water were fused and synthesised with elements of the natural landscape (Fig. 9). References to the past and from Sikri's urban monumentality are similarly evoked in the High Court Building of Chandigarh which recalls the stately columnar and ceremonial character of the Diwani Am of Fatehpur Sikri (Fig. 11). It could be argued it was a Mughal pavilion stripped to its more austere expression with a completely neutral stance. During the Mughal era, the Diwani Am (Fig. 11) was a complex for the public representation, and represented a meeting halls between the ruler and ordinary members of the population. The Highcourt building of the Capitol (Fig. 12) resonate similar rows of regular columns interspersed with arches reminiscent of the gentle trabeated arches of the Diwani Am.

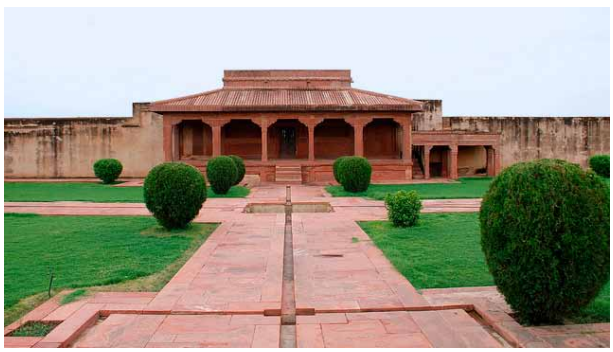

Fig. 11. The Diwani Am, Fatehpur Sikri (from Petruccioli 2007)

Fig. 12. The High Court, Chandigarh (Scheidegger 2010)

Corbusier had also studied Lutyens' Viceroy House in New Delhi. Though he had highly praised Lutyen's refined urban strategies, Corbusier was determined to create new forms that would reflect India's independence from British rule. He strove to depart from the rational patterns of Lutyen's urban forms (Fig. 13), yet he used Colonial urban patterns as pivotal points and a springboard in design towards finding new ideas to mark India's independent status. Von Moos (2007) highlights how, in Corb's singular aim of creating a completely new urban language for a new government, he strove to reject the Classical "rational" order (Fig. 13) represented by the gardens of the Delhi complex . Yet Corb's sketches attest how he based his forms on the elements of the Mughal gardens which were used and alluded to. The aim was ultimately, towards "appropriating" them through a kind of displacement processes including rotational dynamics that could eventually break the formal compositions from the normative and the Classical. Scheidegger (2010) had also remarked on the differences and similarities between the two: the rationality of Lutyens' gardens (Fig. 14) and the overlapping order of the Capitol's more dynamic urban patterns and forms (Fig. 13).

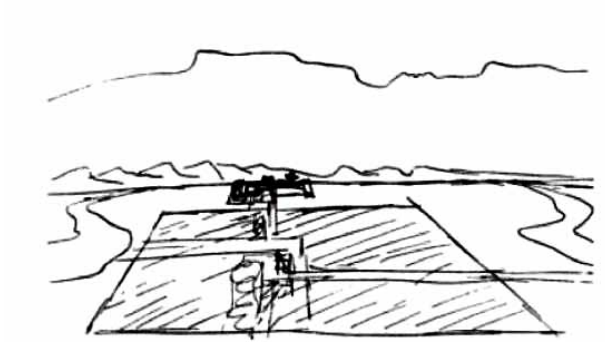

Fig. 13. Le Corbusier sketch of urban ideas of Chandigarh with Capitol as its "head" – observe the deformity of the urban planning and order (Von Moos 2007)

Fig. 14. Lutyens' rational urbanism – the order of urban forms in the Delhi complex (Von Moos 2007)

Rather than capping with the conventional Mughal dome as a symbolic element surmounting a key structure, Le Corbusier replaced this with an almost "counter-shape" and an echo of the "Open Hand" monument. On the palace structure, located on the opposite end of the Capitol's Vista, was crafted as a symbol of peace; an abstract gesture to mark the vision of transcending of politics, caste, religion and race. The two forms, the Governor Palace's upturned roof and the "Open Hand" became "dual" elements that spoke to one another and yet which were also "counter-reactions" to, and abstractions of, the traditional forms of *Mughal chattris*, domes and complexes (Fig. 15, also refer to Fig. 2).

Hence the principles and processes of the Capitol urban forms and its configurations are essentially a transformation and a testimony of a nation's hope. The fertile, bold yet creative thought processes of Corbusier reworked the overlapping patterns of the past into a new form of urban statement with a vibrant interpretation. Several years later, the same principles and processes are seen again in another proposal by Corb. To recall its influence, the same garden patterns can be discerned in a urban (unbuilt) proposal by Corbusier which came immediately after the completion of the Chandigarh. In 1956, Corbusier undertook a commission to produce a conceptual and schematic design for a Venice hospital (Fig. 16). Corb's layout carried the same overtones of overlapping squares and interconnected courtyards as of the Mughal forms. Corbusier, according to Von Moos (2007) had envisioned the hospital as a low sprawling structure which would be an extension of the urban fabric and extend the city's roads and canal networks, while simultaneously turning in on itself in order to create flexible, quasi-urban interior environments in the form of endlessly repeating courtyards.

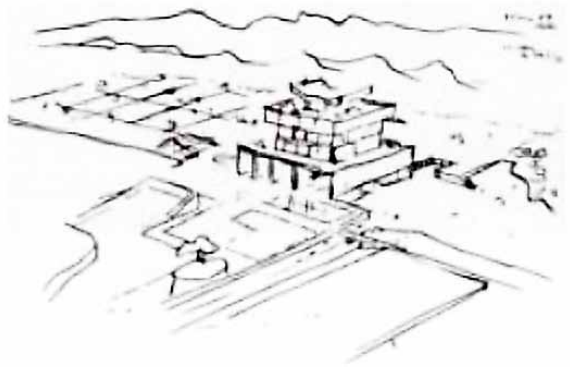

Fig. 15. Corbusier's vision of the Governor Plaza in his sketch including the plaza which is "shifted" and recalls a pinwheel form. The heightened curved structure crowning the palace seem to recall the elevated yet "inverted" forms of the chattri (Von Moos 2007)

Fig. 16. Venice Hospital – Layout Plan and Urban Form (Von Moos 2007)

The aim was to integrate the new complex into an old city fabric and hence, the use of the overlapping rational forms of the Mughal gardens became a tool to ingratiate in a gentle and gradual insertion, a public complex into the growth logic and urban patterns of the city of Venice. The spatial configuration of the urban proposal had reflected these principles through a distinct system of squares separated by channels and connected by bridges.

Conclusions

Colquhoun (2002) usefully observed how forms of the past have always played a role in creative processes and had become a part of the underlying evolution of Modern idealisations. Its capability of expressingnew forms of urban and spatial expression can be seen in the Capitol, Chandigarh, in which such formative influences are activated to the maximum to express such formal and spatial outcomes. Forms of the past were subjected to and through a transformative process of appropriation and inflection. As insightfully observed by Von Moos (2007):

"Corbusier was always searching and rejecting traditional forms of political representation and this has been one of the key themes of his institutional architecture. The charge of monumental expression that was previously inverted into the Classical order is displaced towards the biotechnical functionality".

Thus the basic themes of the Capitol complex seem to echo the need to evoke yet innovate the traditional urban patterns of the past . The basic patterns of space, courtyards, fusion of water, light and darkness, heat and coolness became the vocabulary and essential arbiter of modern ideas. The Modern movement was an era of optimism. Developments in society and advancement in technology constituted a range of impetus towards creating a fertile ground of ideas, exploring new forms of thinking, building and making. Modernism had always championed the notion of the avant-garde in order to rationalize and justify its general propensity towards the dynamics of form-giving. It is a position that had always celebrated the drama and dynamics of spatial manipulation. Its slogans are rational yet its eventual works are somehow reflective of a more emotive basis and return to symbolic sources – at times, inspired by a country's traditions including the artefacts of localities and cultures. As a source of expression, these forms of past urban civilisations and its cultural traditions becomes potent seeds that seem to fill the role of finding new forms and symbolic language of urban design or monumental form. The uniqueness of the Capitol, Chandigarh lies in its attempt to create an entirely new vocabulary from older architectural and urbanistic metaphors while rejecting forms that are linked to known powers and patterns of rule. In a way, the complex captures the essence of Corbusier's *parti*. Its principles reflect his innate ability to find a common ground between two contrasting cultures and two different times. Conflations seem to occur seamlessly between the old, and the new, the ancient and the timeless; and between the sacred and the mundane. The Capitol is perhaps a dynamic fusion between the higher realm of visions and dreams into the lower material realities and everyday struggles of life. Forces of the rational and the emotive are two powerful cerebral capability in design that recall the duality of man i.e. his "spirit" and his physical make-up. These tensions lie at the heart of the spatial and formal compositions of Modern architecture and urban design. Such archetypes are once again celebrated as potent forces able to engage with new ideas to generate new forms. In the case of Corbusier, his architecture must always be seen as a larger piece within a larger universal whole. He sees it only as one element in a cosmic interplay of elements of nature and the everyday orchestration of earthly and universal forces. To Corbusier, the physical or material is still part of the spiritual. There is always a merging of the cycles and dynamism of cosmic forces. The building is never seen as an autonomous entity but is located in relation to the drama of the universe and of its context. Le Corbusier is always positioning himself against the context; within which a building is only a part of its existence, whether the context is a cultural one or a temporal one or a fusion of the two.

A work of architecture is a specific insertion in a specific time and in a specific place. One recalls how Gideon (1941) had memorably described Corbusier's works; by referring to them as "*the space-time nature of architecture and its modern conceptions*". The Capitol is essentially such a representation – an epitome of the ability of its architect to capture the past and the future

to into an urban form which is still arguable in terms of its physical form; yet it cannot be denied that it represents the dreams of a nation and its people at a certain point in time, and in a certain place in the world. In the end, Chandigarh is witness to a continuous transcendent struggle that will always be inscribed in architecture – the struggle to mediate between contrasting circumstances, conflicting forces and its eventual conflation and reconciliation – between man and nature; and between the past, the present and the future.

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