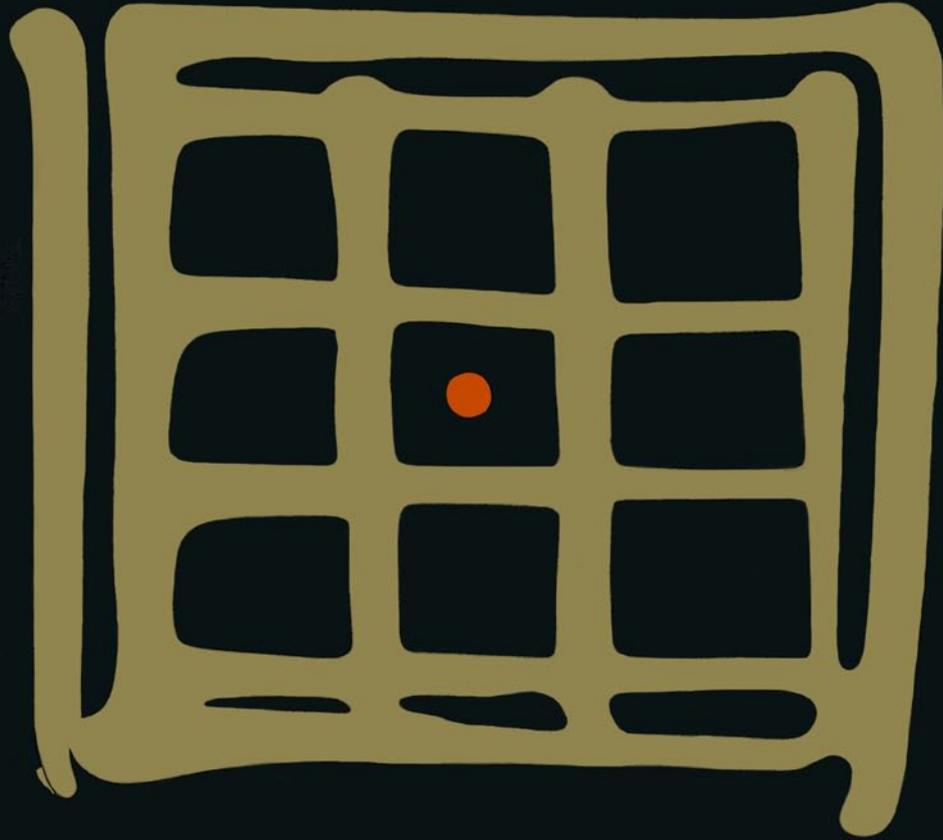


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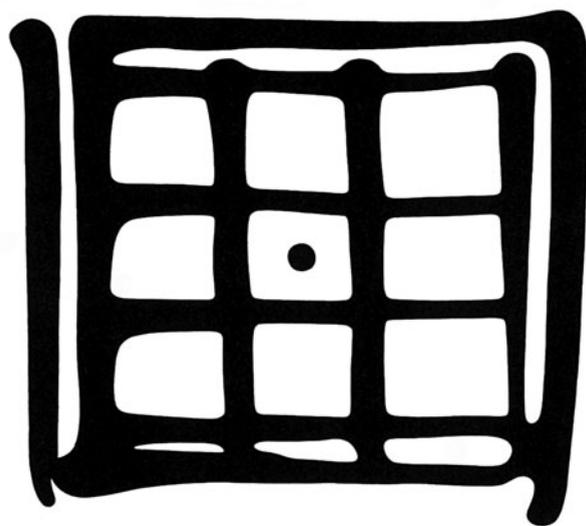


**VISTĀRA**

THE ARCHITECTURE OF INDIA



**VISTĀRA**



# विस्तार

## THE ARCHITECTURE OF INDIA

CATALOGUE OF THE EXHIBITION

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# Introduction

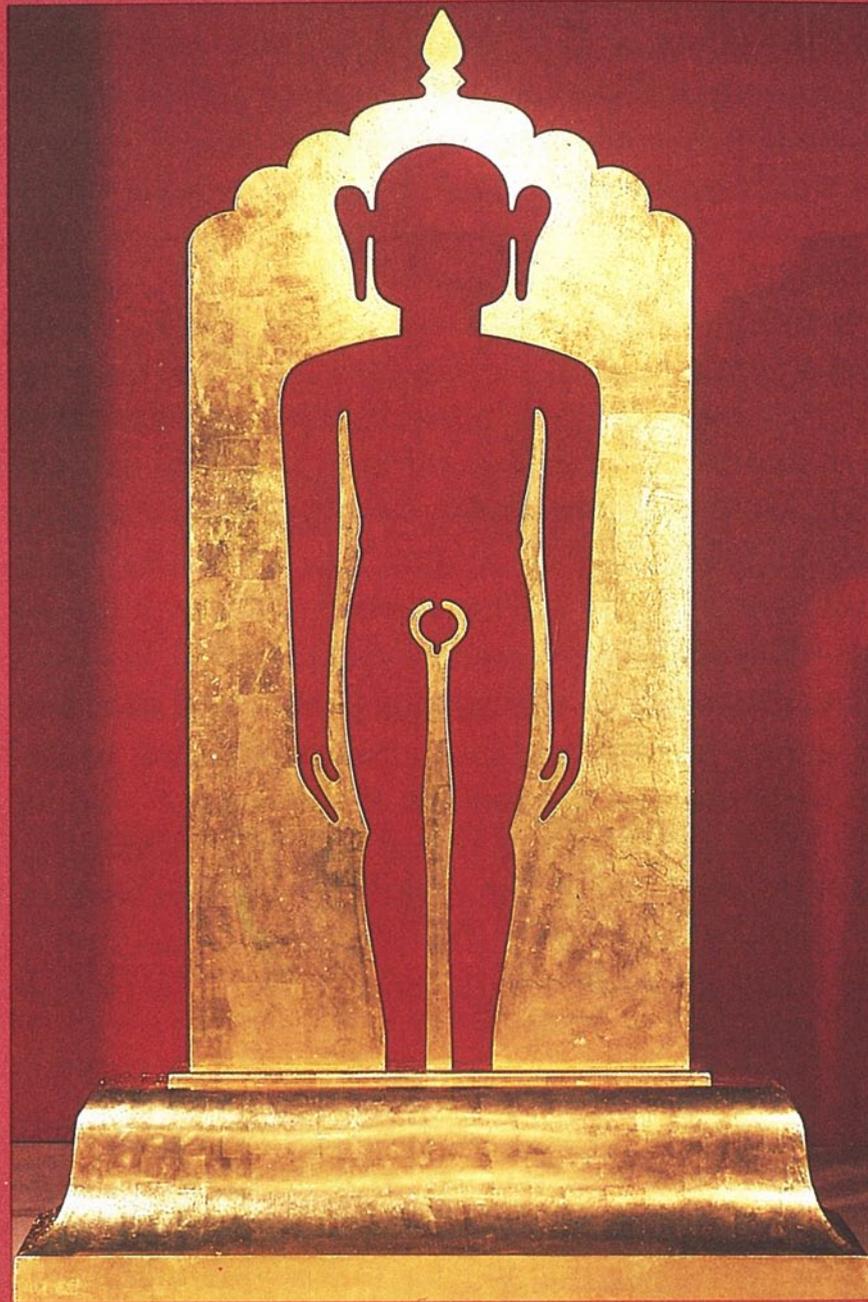
We live in a world of manifest phenomena. Yet, ever since the beginning of time, man has intuitively sensed the existence of another world: a non-manifest world whose presence underlies – and makes endurable – the one we experience every day.

The principal vehicles through which we explore and communicate our notions of this non-manifest world are religion, philosophy and the arts. Like these, architecture too is myth-based, expressing the presence of a reality more profound than the manifest world in which it exists.

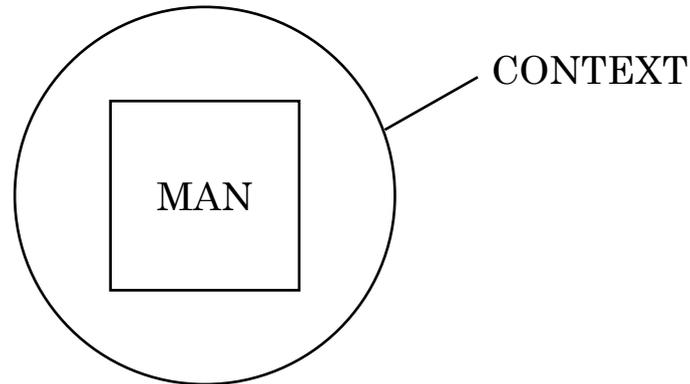
As the centuries progress, the myths change. New ones come into being, are absorbed, ingested, internalised – and finally transformed into a new architecture. Each time this metamorphosis occurs, a new era – a *vistāra* – opens up to our sensibilities. To classical Indian musicians, singers and dancers, the expansion outward into space is also, simultaneously, a journey inward into our own selves. Experiencing these expansions, these *vistāras*, heightens our consciousness.

The history of Indian architecture has been an extraordinary progression of such *vistāras*.

Central to all these *vistāras* – and to our exhibition – stands Purusha, a large-scale replica of an ancient Jain icon representing man in his two principal aspects: human and cosmic. For this is how, thousands of years ago, man perceived himself and his context.



Down the centuries (and perhaps across the globe as well) man does not change. But the context in which he perceives himself to exist varies considerably. The figure of Purusha here is thus being used to represent not only man human and cosmic, but the more generalised condition of man and his context (i.e. the encompassing circle).



In Vedic times, that circle is the cosmos itself – and man’s central concern is to define himself and his actions in relation to it. Thus even the buildings he constructs are models of the cosmos – no less. They are generated by magic diagrams called Vastu-Purusha Mandalas. These represent energy-fields, the centre of which is simultaneously both *shunya* (nothing) and *bindu* (the source of all energy) – a truly mind-blowing concept, astonishingly similar to the black holes of contemporary physics.

With the coming of Islam, the circle changes: man’s context is seen to be in part a judgemental relationship with an all-powerful Divinity, and in part a social contract (as in the Christian precept: Love thy neighbour). The central mythic images underlying architecture change too – as one can see by comparing the metaphysical landscape of a Jain cosmograph with the sensuous delights of the *char-bagh* of Islam.

Later, with the arrival of Europeans, the context changes yet again. The circle becomes the Age of Reason – and its concomitants: Rationality, Science, Technology. Perhaps today, as we reach the end of the 20th century, the circle is changing once more. In the West, the myths of technology and progress are being replaced by a concern for environment, for ecology. Man's thoughts, actions – and architecture – will change to reflect this, and a new *vistāra* will open up.

In each successive metamorphosis, the human aspect of Purusha seems to stay constant. This is vividly exemplified in the habitat which he builds for himself, using a vocabulary and a syntax that seems immutable. Thus we have the mud houses of Banni, simultaneously both only a few years old – and a few thousand as well. In these building processes, as natural and organic as birds building nests, the mythic values seem implicit in human nature itself – hence the generic title Manusha (i.e., of man) for this section of the exhibition. Here we find examples ranging from the fortress town of Jaisalmer to the squatter colonies of Bombay.

But even in these squatter colonies, generated by the brutal economic forces rampant on our urban scene today, we find all of a sudden a gesture, an image – the *rangoli* before a front door, the *butti* on a sari, the *bindu* on a forehead – that makes us realise these patterns have been generated by an age-old deep-structure of more explicit myths: the *yantra*, the *mandala*, the *char-bagh*.

With time, of course the myths change – sometimes through outside interventions, sometimes re-surfacing from our own past. The resulting conflict, tension, churning, that then takes place, we have called Manthana. In this churning, it is crucial that we distinguish between a process as basic and structural as a Transformation, and one as superficial as a mere Transfer. Transformation involves as absorption,



an internalisation – and ultimately a re-invention – of the myth. Hence Diwan-i-khas in Fatehpur-Sikri, where Akbar is sitting in the centre of a *mandala* on a column which clearly represents the mythic axis of the universe. Akbar has not only created an extraordinary piece of architecture, but also an incredibly powerful political statement. He is using the old myths to tell us that a new order has arrived. Compare this transformation with what Lutyens did three centuries later in New Delhi: a mere transfer of some imagery from Buddhist architecture without any care whatsoever for the profound mythic values from which it sprang.

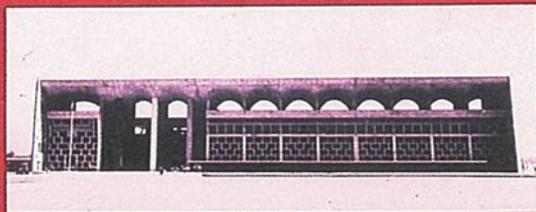
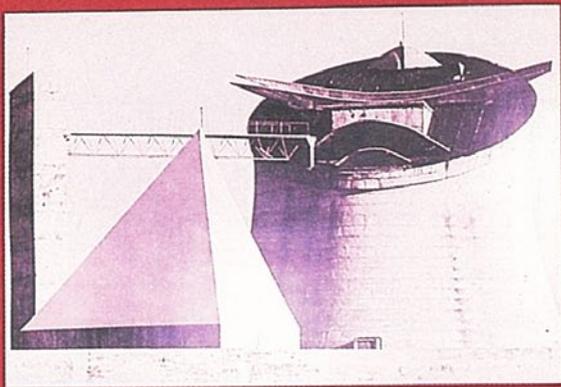
What are the myths of today? It is difficult for us to see the forces that move us in our own lives. But when we come across a glass skyscraper in some new city of the Arabian Gulf, it is possible to perceive how insidious (and lethal) are the myths of downtown America. Look around India today. How much of our lives does not also involve this kind of superficial transfer? Tragic, indeed, for this to happen in a land that once conceived of architecture as a model of the cosmos. Tragic, indeed, that students today are not told about these concepts in architectural schools – not even in the history classes. And certainly not in the design studios – where they rightfully belong.

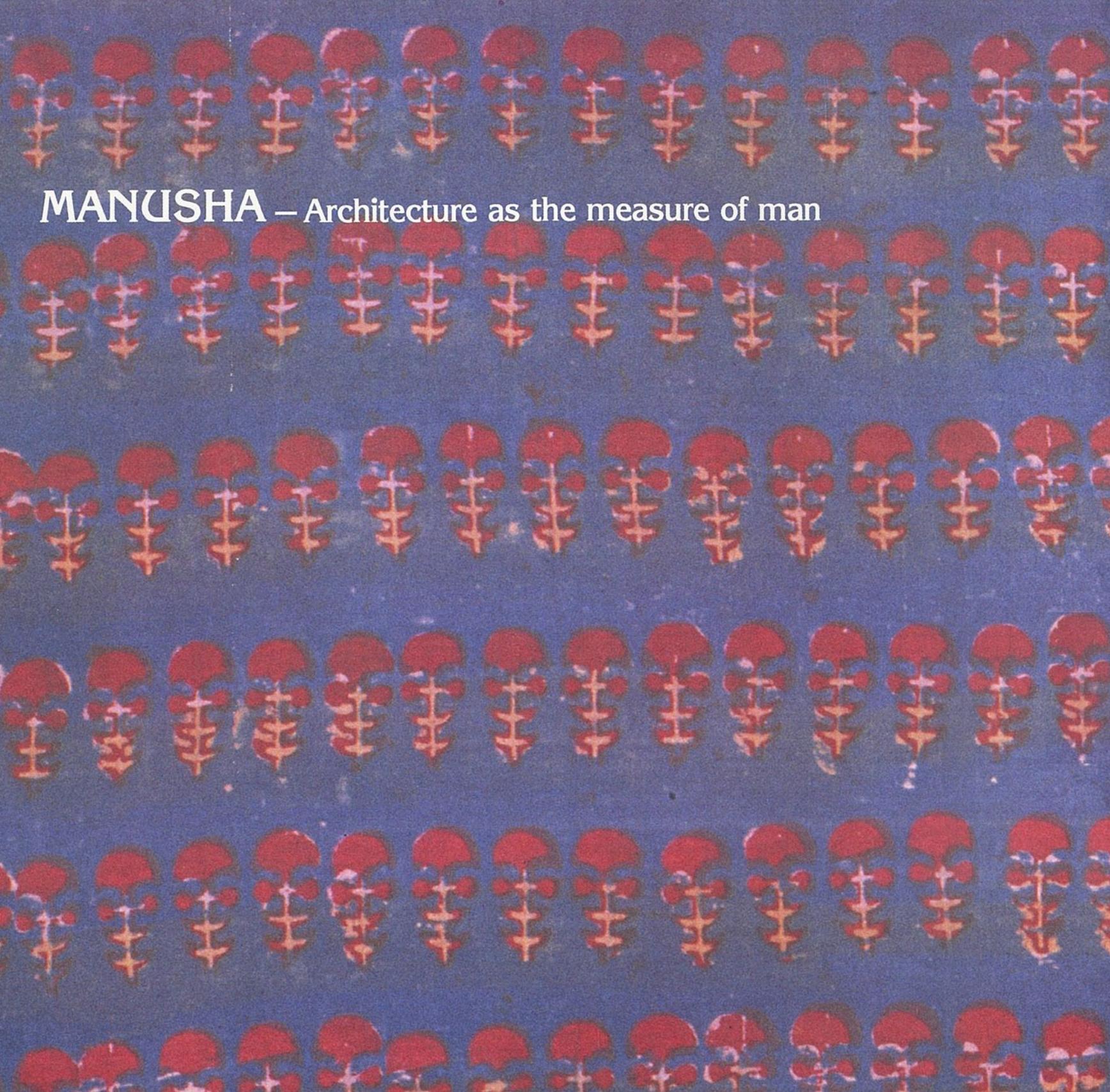
For architecture is not created in a vacuum. It is the compulsive expression of beliefs (implicit or explicit) central to our lives. When we look at the architectural heritage of India, we find an incredibly rich reservoir of mythic images and beliefs – all co-existing in an easy and natural pluralism. Each is like a transparent overlay – starting with the models of the cosmos, right down to this century. And it is their continuing presence in our lives that creates the pluralistic society of India today.

This then has been the purpose of this exhibition: to make explicit these overlays and their relationships, one to the other. For the architectural masterpieces from our past are not just wondrous pebbles which we as savages have found on our sea-shore. On the contrary. Each one is a crucial and decisive step in the successive *vistāras* that constitute our history.

A handwritten signature in black ink, appearing to read 'C Correa', with a stylized, flowing script.

Charles Correa



The image features a dense, repeating pattern of stylized human figures. Each figure is rendered in a vibrant red color with gold-colored accents, set against a deep blue background. The figures are arranged in a grid-like fashion, with each figure having a rounded head, a torso with a central vertical line, and two arms extending outwards. The overall effect is a rhythmic and textured visual field.

**MANUSHA** – Architecture as the measure of man

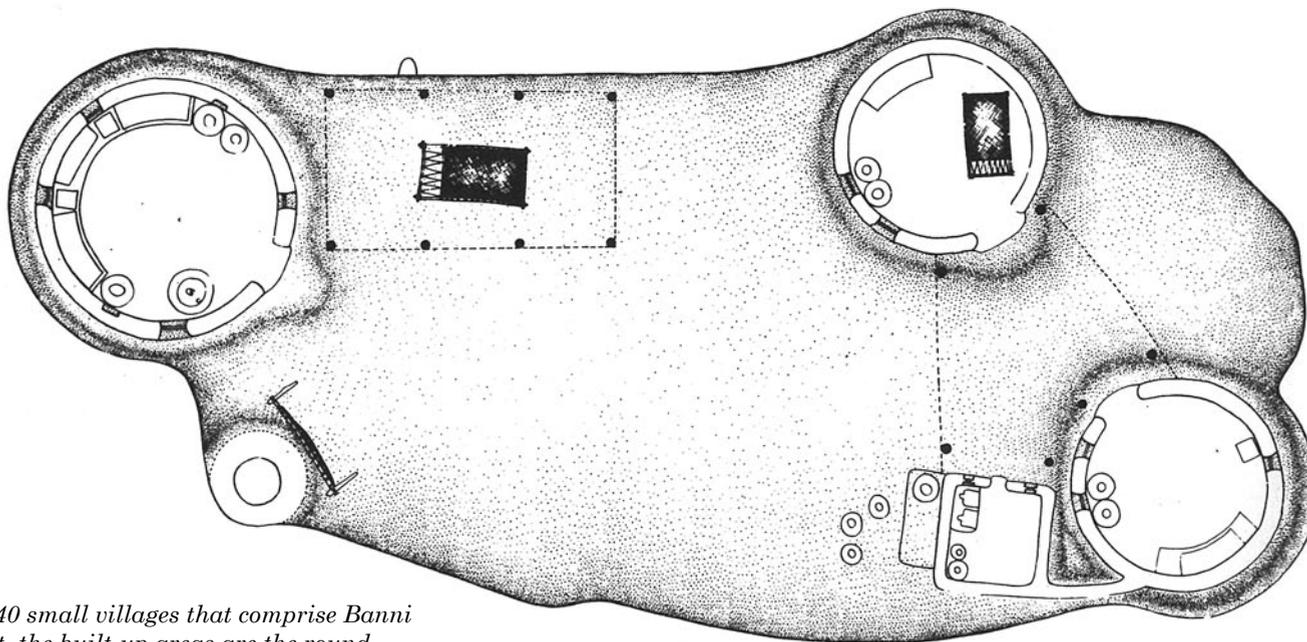
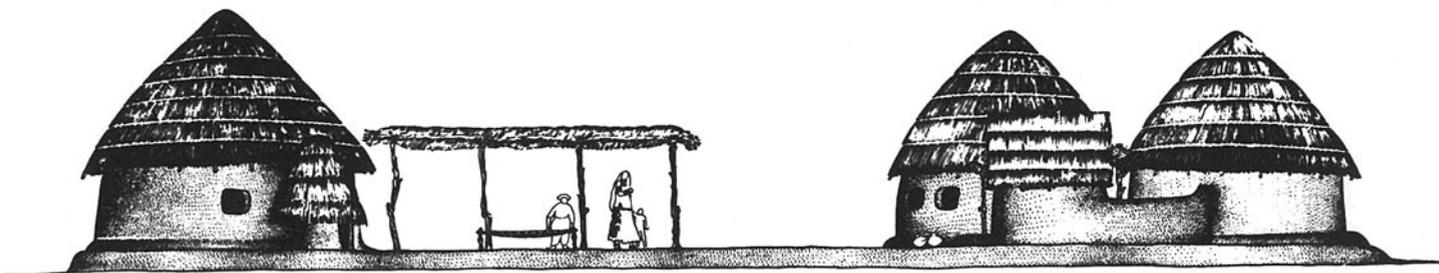


The need for shelter is basic to man. But transcending this is a set of overriding values, intrinsic to the human condition: a concern for life, for community, for beauty.

Through the centuries, man has created his habitat through an intuitive and instinctive process. In looking at the examples shown in this section (the villages of Banni in Kutch, a *pol* in Ahmedabad, the desert city of Jaisalmer, bamboo housing in the Assam region and a squatter colony in Bombay) we must try to understand not only the buildings and the community spaces that lie between them, but also the underlying deep-structure that has generated this habitat.

## Banni, Kutch

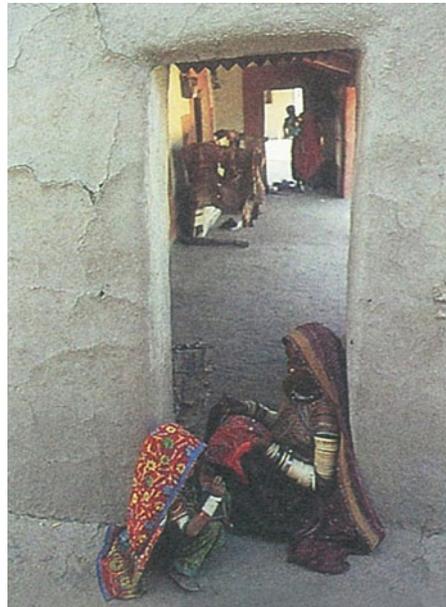
The villagers of Banni build circular houses of mud, roofed with thatch – materials eminently suited to their hostile desert environment. The clustering of huts and the arrangement of open spaces reflect their life-styles and social structure. Faintly discernible – in many many different ways, from painted wall decorations to jewellery designs – is an underpinning of other aspirations, intimations of deeper and more primordial myths and images. For like thousands of other Indian villages, Banni represents both time present as well as time past.



*In the 40 small villages that comprise Banni District, the built-up areas are the round bhunga and the rectangular choki, connected by a raised platform.*

*Right: Patterned white clay frames little girl's face, as she peers in through the window of a bhunga. Note thickness of wall, constructed with sun-dried mud blocks.*

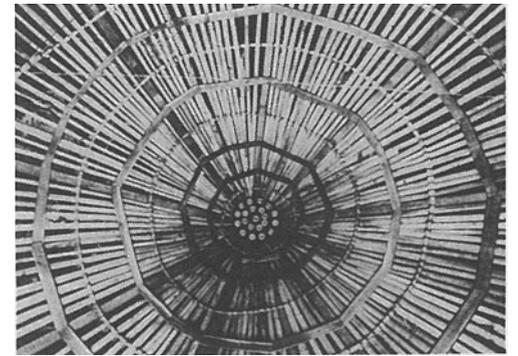
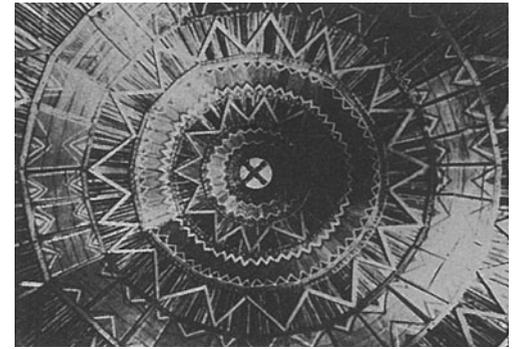
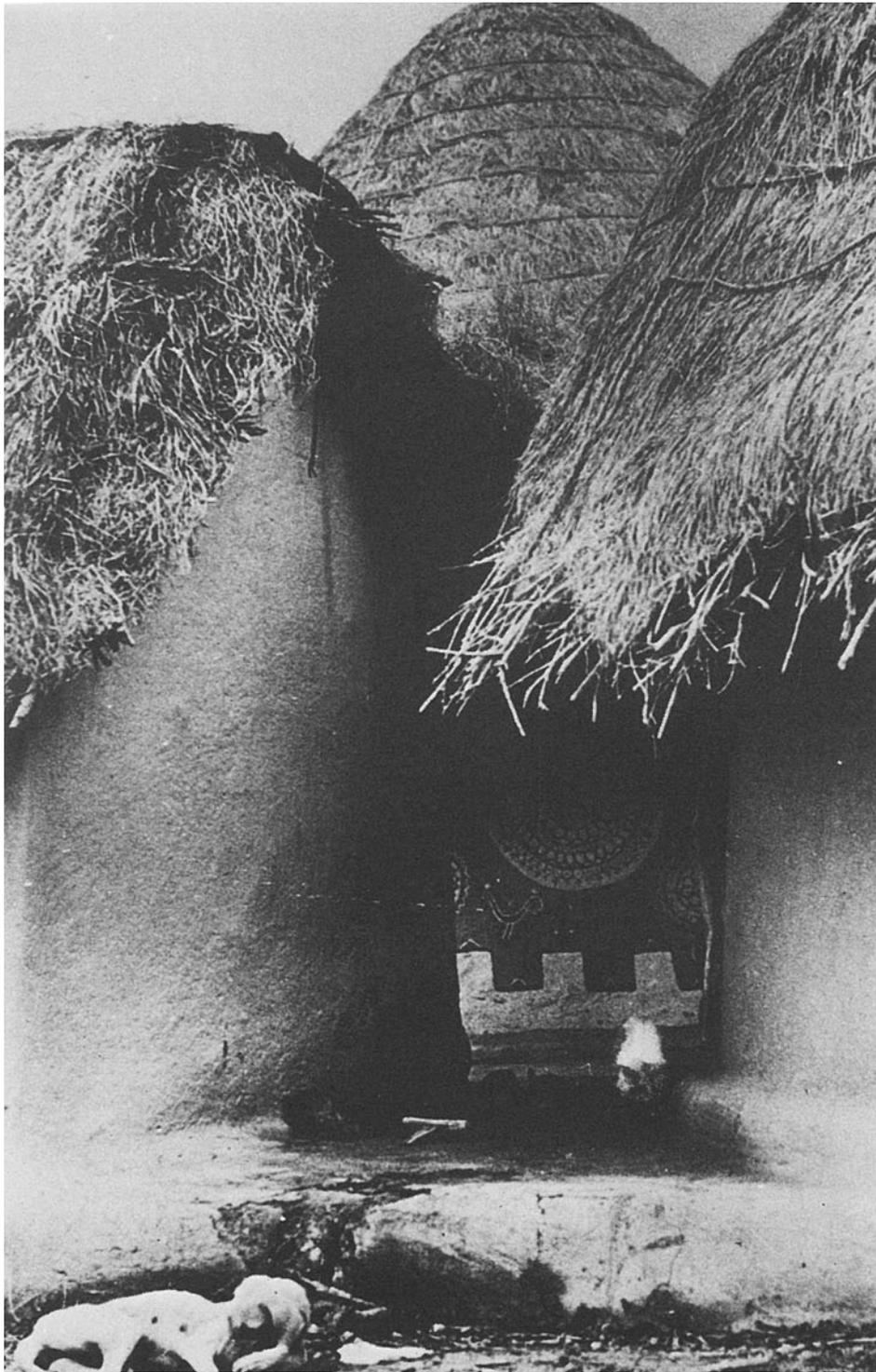




*Mirror-studded clay decoration, embroidered cloths and painted earthenware contribute to the rich ambience of a Banni interior.*

*Far left: Though essentially unchanged, a few homes have tiled roofs instead of thatch. Platform drains off water which gathers because of the impervious soil, even though the rainfall is extremely meagre.*

*Left: The vistāra through a Banni doorway. Woman sewing in foreground typifies the area's strong crafts tradition, especially noted for its fine and delicate embroidery.*



*Cluster of huts shows walls painted with elemental shapes in muted earth colours. These bhungas, three to five metres in diameter, form the main living space, and the rectangular choki is used for cooking, storage and washing. Bhungas work well in the desert's climatic extremes.*

*Above: Roof construction ranges from the simple to the very ornate.*

## The 'Pols' of Ahmedabad

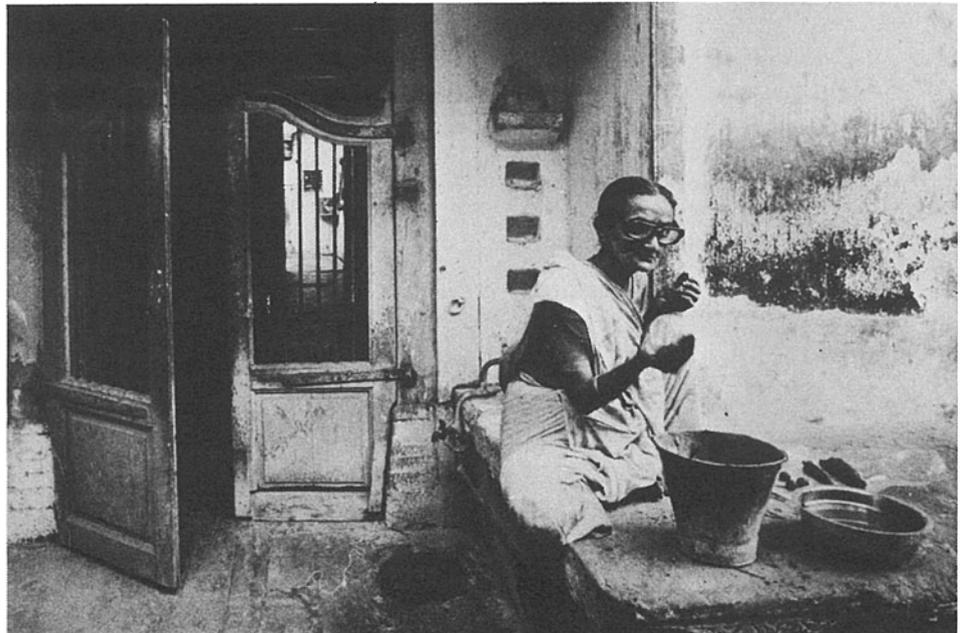
In the most crowded areas of the old textile city of Ahmedabad, we find these *pols*. They are a legacy of Gujarat's history of successive invasions. To ensure security, the point of entry to each *pol* is through restricted gates. Within the *pol*, the tightly-packed conglomeration of houses is articulated by a complex system of open spaces – sensitively reflecting the cultural and religious needs of the community.



*Opposite page: Aerial view shows long dark areas which constitute the pols. Very high population densities prevail here, with 10,000 people in Mandvi Pol alone.*

*Street scenes in the pols: a ruminative cow (right) and a hawker peddling his wares (below). The lanes in the pols are too narrow for vehicular traffic.*

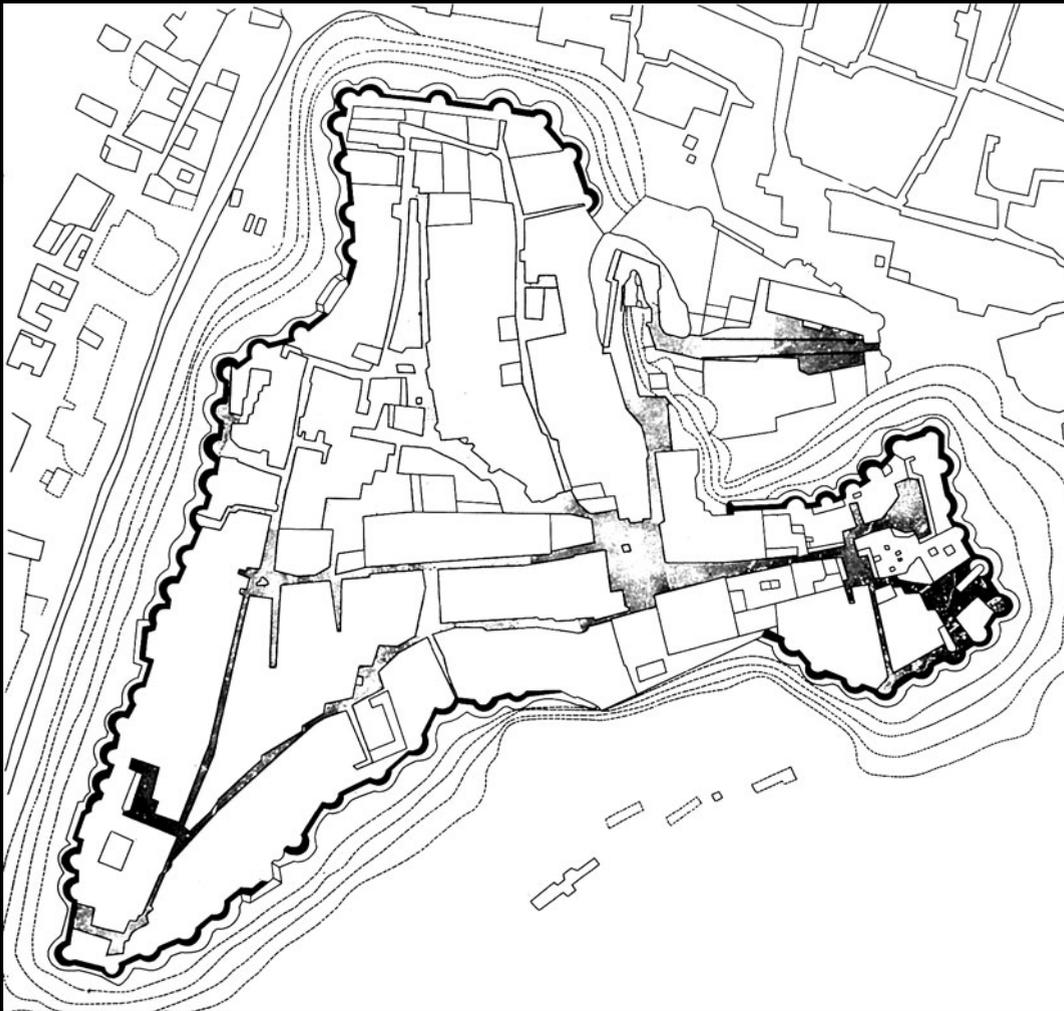
*Far right: Within the pols, some houses are very large and comfortable, as this interior courtyard demonstrates.*



*Right: A woman performs her household chores outdoors. From the pol's main street, a number of cul-de-sacs lead off and most residents regard these lanes as extensions of their houses.*

## Jaisalmer, Rajasthan

Founded in 1156, the city of Jaisalmer rises like an ocean liner from the sands of the desert. It was one of the great trading posts along the camel caravan routes, and its rich merchant community created for itself an environment of extraordinary architectural value. Within its buttressed walls, tall houses cling together, their facades a collage of intricately-carved *jharookhas*, eaves and terraces. Even the smallest detail seems to have received as much attention as the overall conceptual plan.



*Plan of the triangular hill which forms the upper section and focus of Jaisalmer town, showing arrangement of streets and squares.*

*Facing page: Semi-circular bastions of fort once guarded Jaisalmer against enemy attack, now shield its citizens from sandstorms.*

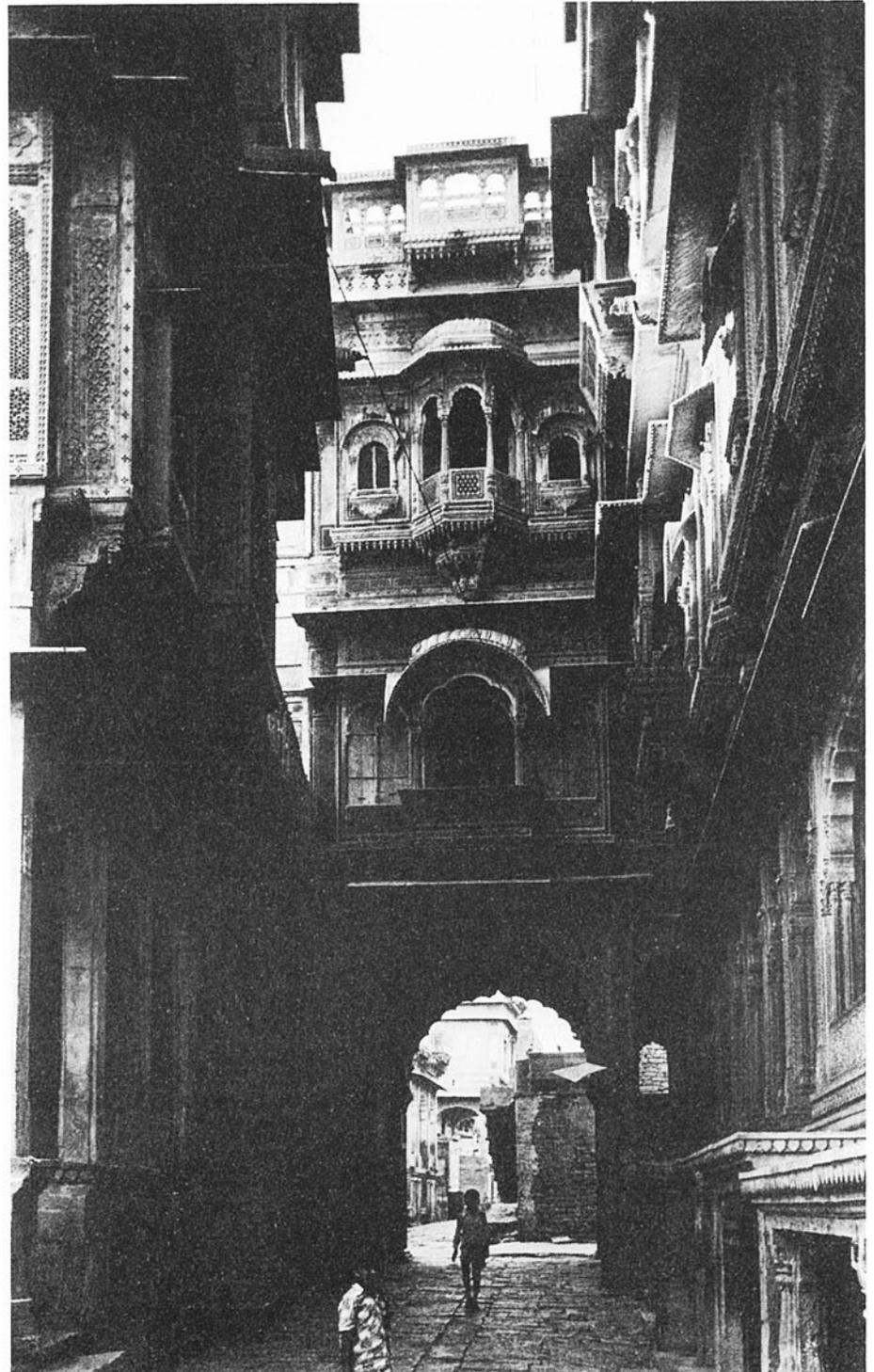


Jaisalmer's splendid stone mansions (or *havelis*) are organised around a central courtyard to shut out the harsh desert light and heat. This court, focus of the *haveli*, is surrounded by interior rooms and passageways which lead via the *otla* in front of each house to the neighbourhood street – the whole forming a seamless continuum from private to public realms.



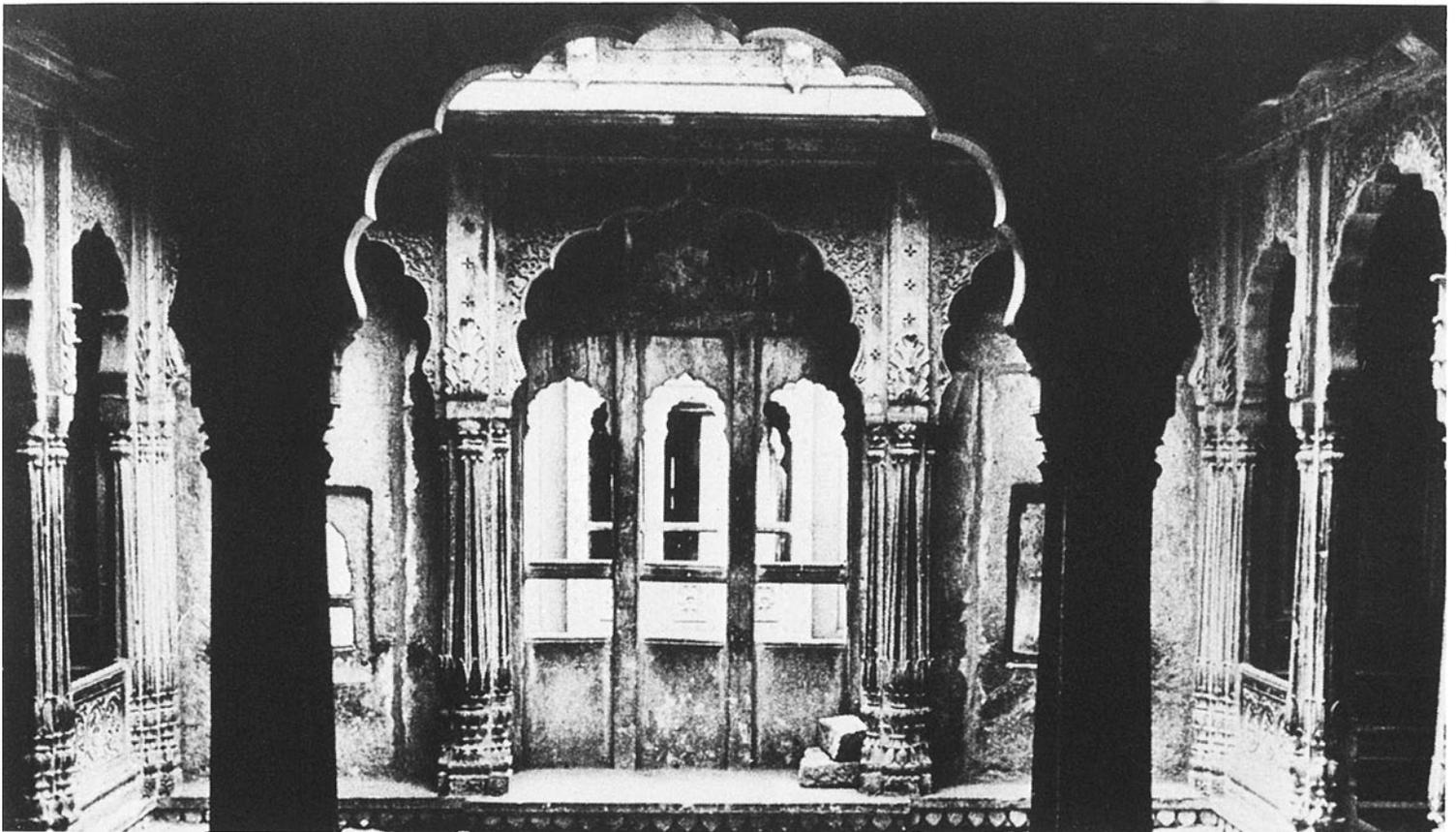
*Above: Nostalgic reminder of the great caravan trade routes, the camel is still the principal means of transport.*

*Exquisitely-carved elements of golden stone make up the facades of houses. Despite consistency of material and character, there is much variation in detail.*



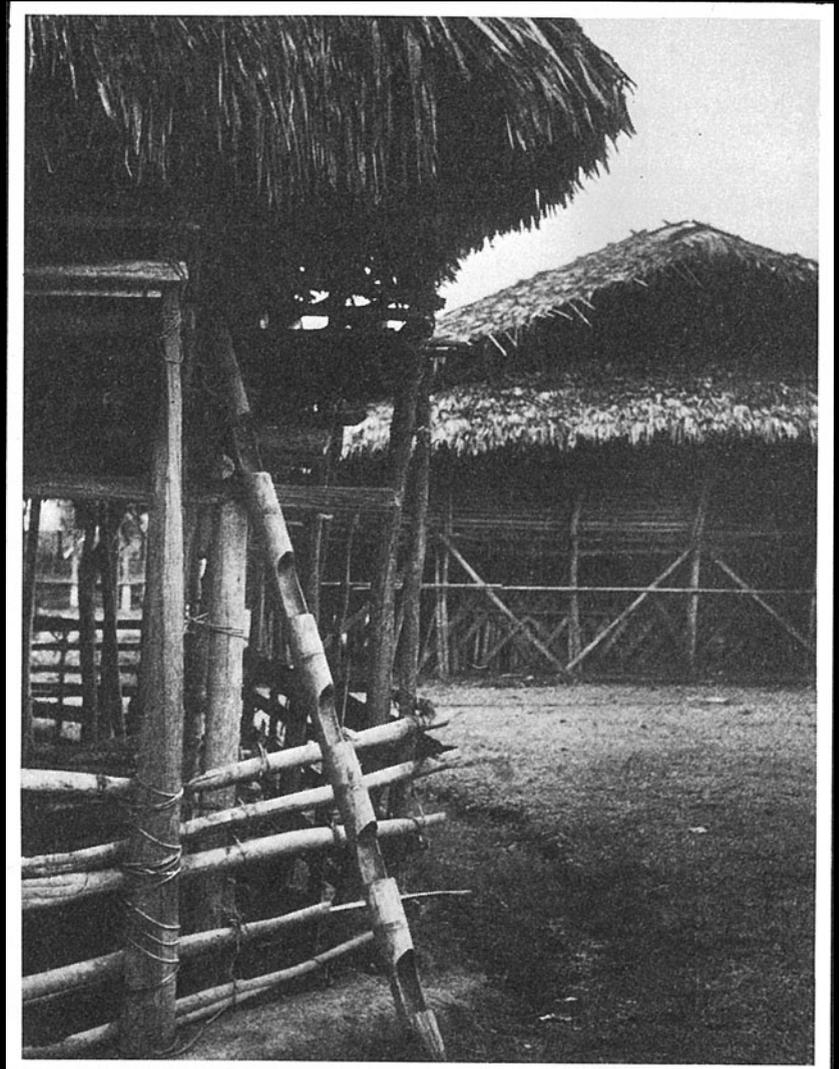
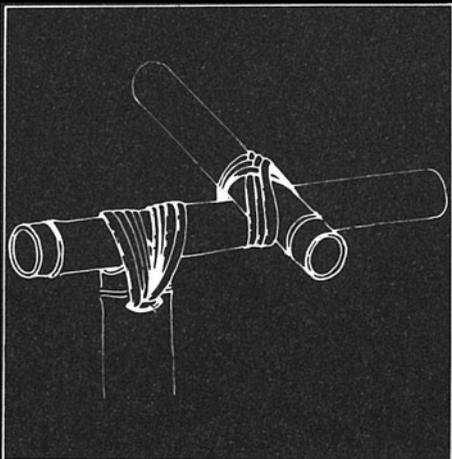
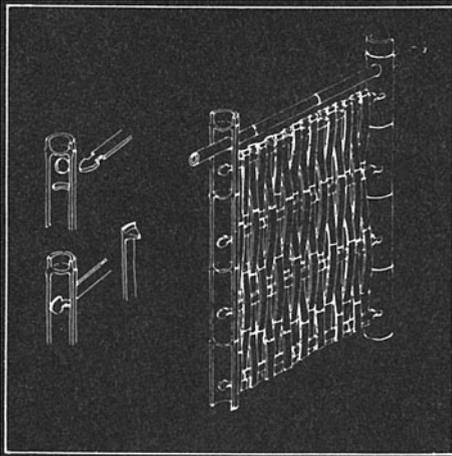
*Right: Section of a haveli.*

*Below: Looking across the courtyard of a haveli at an upper level. Like the facade, elaborate carving adorns this secluded domain of the dwelling.*



## Bamboo Structures of the Assam Region

In the lush tropical jungles of the Northeast, the basic resource of the people is bamboo and cane. From these simple materials a sophisticated technology has evolved – to build bridges high over raging torrents, to construct durable houses, to make innumerable aids for everyday living. In the hilly areas, houses are propped up on bamboo stilts. Sliding doors and windows, fully exploiting the properties of bamboo, are of matting, imparting the quality of woven architecture.



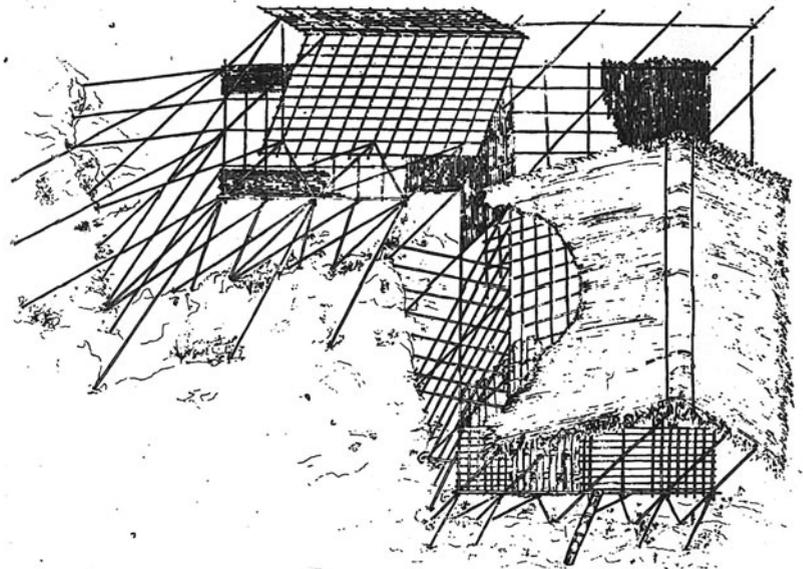


*Left: Typical hill house is built on stilts. Bamboo is used with great ingenuity – single notched pole serves as a ladder.*

*Far left: Ingenious Mizo sliding window shutter. Note the use of structural joinery and sprung strip verticals. Hammer-head joint eliminates the need for binding. Variation of the T-joint used in construction.*

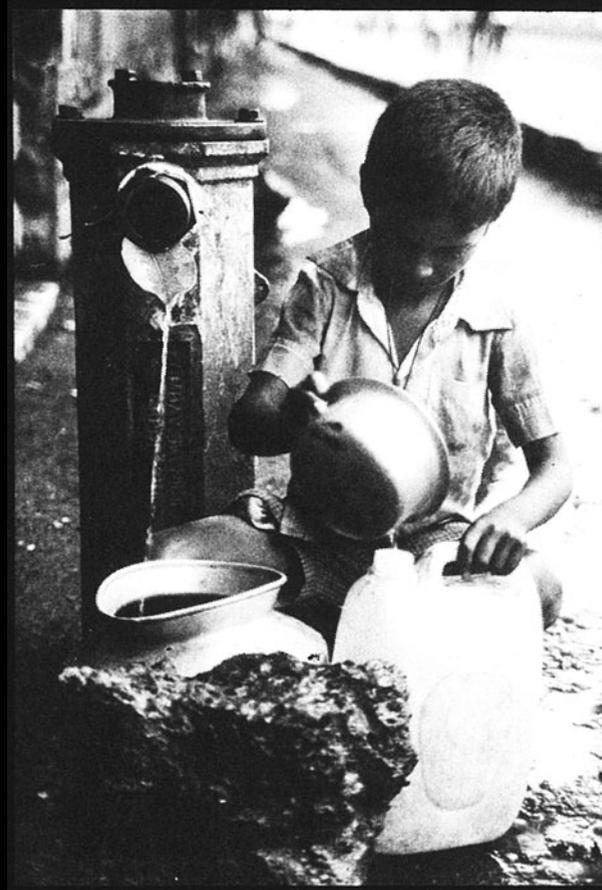
*The numerous tribes of the Northeast have their own distinctive building techniques. Thus the Adi Gallongs construct suspension bridges (above), often more than 200 metres long, made up of a series of cane hoops.*

*Right: Axonometric view of a hill dwelling built by the Riang tribe.*



## A Squatter Settlement, Bombay

The decisive phenomenon of the urban scene over the last two decades has been the growth of the *zhopadpattis*, caused by distress migration from the villages. The squatters live a wretched existence, in niches and crevices all over the city, building with whatever materials come to hand. Yet even in this elemental struggle for survival, surface two opposing sets of mythic images. The first: the expression of age-old symbols – the *tulsi* plant, the wayside shrine. The second: a new set of images reflecting new aspirations – the T. V. set, the transistor, the plastic buckets, the nylon shirts.





*Opposite: Water is always a scarce commodity in the slums. This boy fills his plastic container from a fire hydrant.*

*Above: Woman waves happily from her hutment of corrugated iron – favourite building material of squatters.*

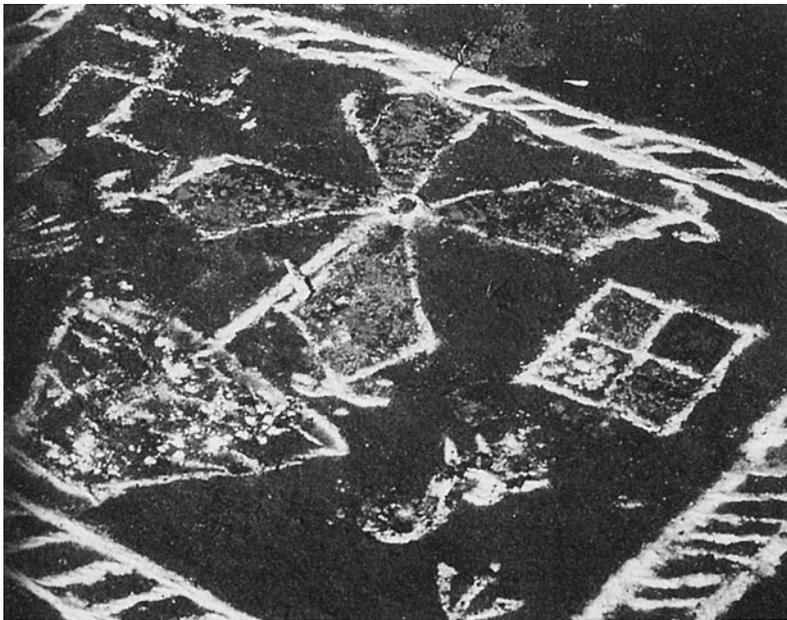
*Though she lives in the heart of a teeming metropolis, the woman at right retains her old traditional life-style, surrounded as she is by the household gods, rustic cradle, potter's wheel and auspicious symbols painted on the walls.*





*Ingenuity is to the fore in the grim battle for living space, as even unused water pipes provide shelter for many of the city's migrants.*

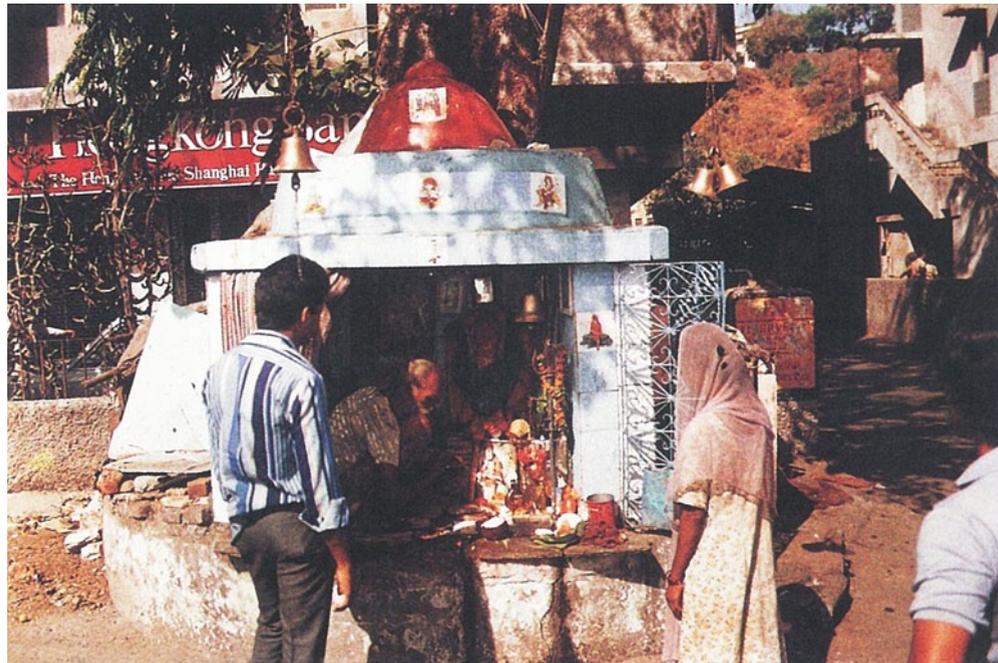
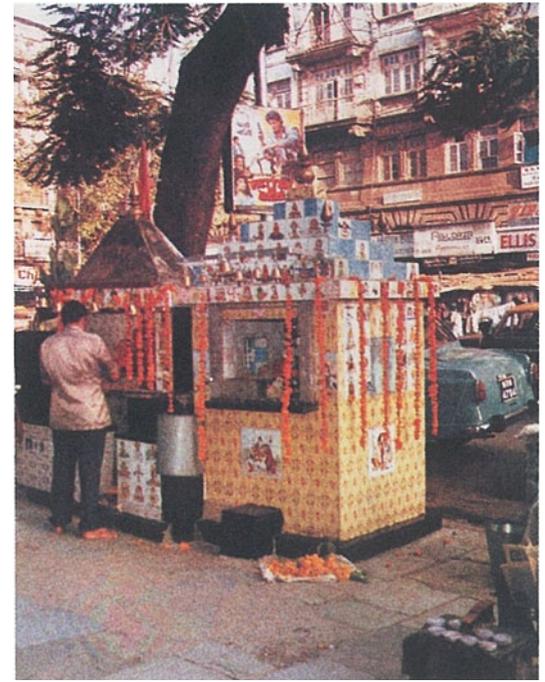
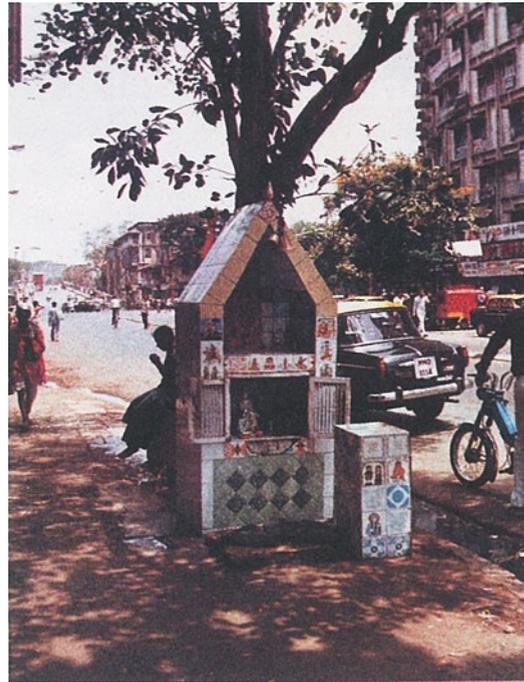
*Throughout rural India, homes – the threshold, the walls – are decorated with auspicious signs and symbols. Painted most often with rice paste or powder, these range from child-like drawings to diagrams of esoteric significance. And the tradition persists, even amid the squalor of the big city.*



## Urban Shrines

Brightly coloured wayside shrines – vestiges of mythic images and symbols – can be found on the busiest city thoroughfares.

*As is evident from the pictures on this page, many city shrines are built of glazed tiles. The shrines are always located under a tree – that ancient symbol of life, knowledge and wish-fulfilment.*



**MANDALA** – Architecture as a model of the cosmos





What is this deep-structure that surfaces time and time again?

For us in India, the answer goes back thousands of years. To the Vedic seers, the *manifest* world was only a part of their existence; there was also the world of the *non-manifest*. The forms and events of the perceived world are significant only to the extent that they help us understand the non-manifest layers that lie beneath. Magic diagrams, called *yantras*, explain the nature of the cosmos. Of these, the Vastu-Purusha Mandala forms the basis of architecture. It has the potential for infinite applications and adaptations in the making of houses, palaces, temples and even cities.

# Sri Yantra

(Gujarat, copper plate, contemporary)

*Yantras* are geometric depictions of cosmic order. They are used as aids to meditation. Sri Yantra, considered the greatest of all *yantras*, is formed by the interpenetration of nine triangles, four facing upward and five downward. Together they symbolise

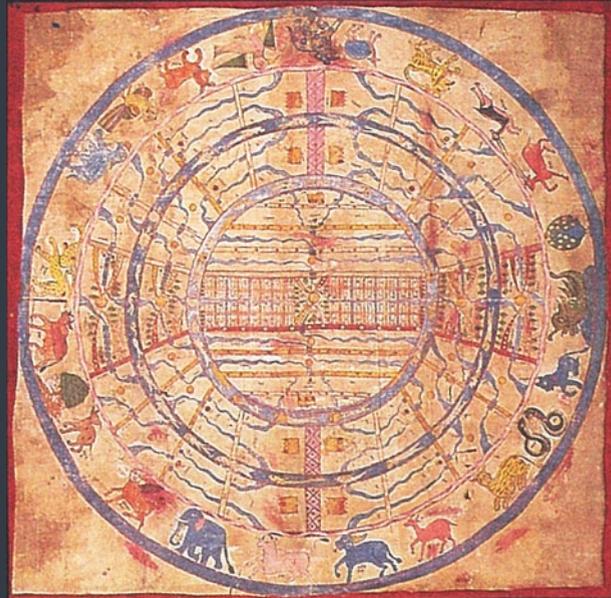


the union of Shiva and Shakti, representing the creative energy which caused the manifest world. In the centre is the *bindu*, reservoir of the infinite.

## Jain Cosmograph

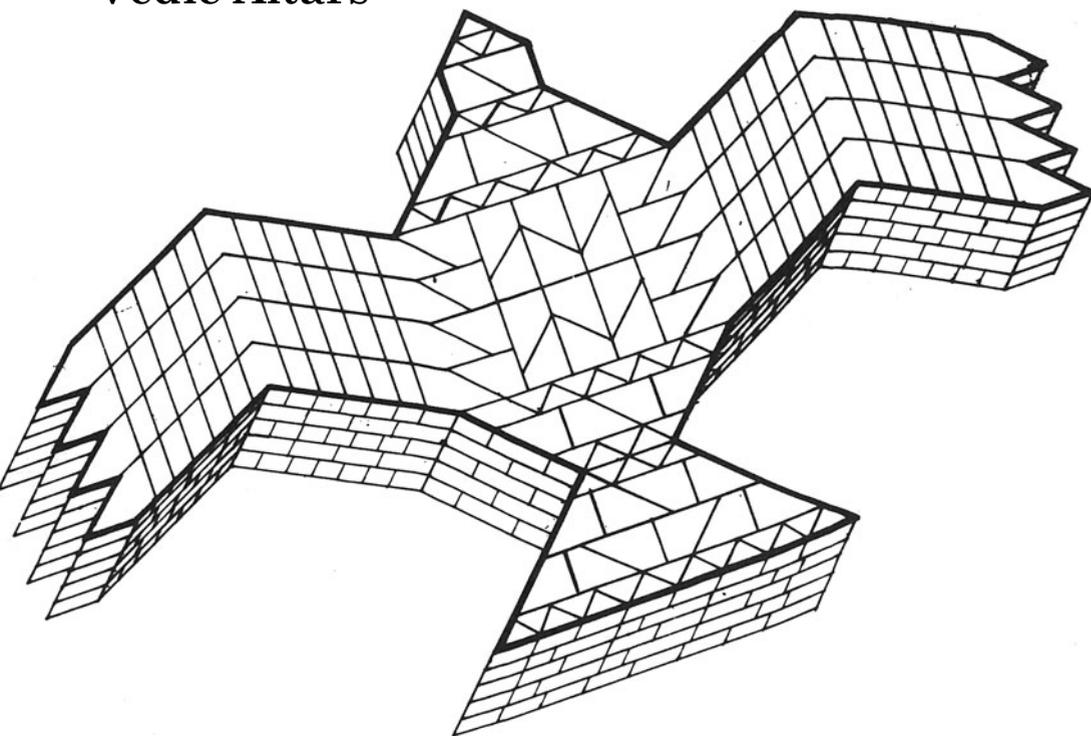
(Early 19th century gouache painting,  
Rajasthan)

In Jain cosmology, there are three worlds – the upper (*urdhva-loka*), middle (*madhya-loka*) and lower (*adho-loka*). This cosmograph is a depiction of part of the middle world, from which the soul is



capable of gaining release. Specifically it represents Adhai-dvipa, the two and a half continents inhabited by man. The central circle is Jambu-dvipa (continent of the rose-apple tree), traversed by long rivers and encircled by the waters of Lavana-samudra, with Mount Meru in the middle. Each continent has its own particular species of animals, graphically portrayed here by the artist. The cosmograph is a metaphysical landscape, setting forth the ordering principles that are central to Jainism.

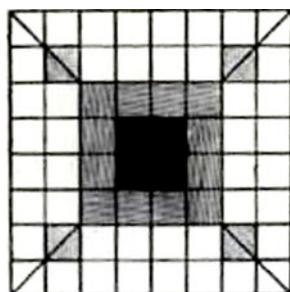
## Vedic Altars



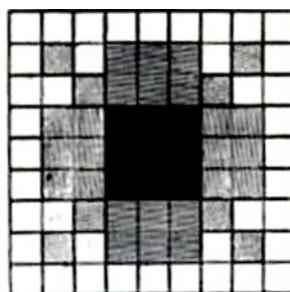
More than three thousand years ago, the earliest form of worship was carried out on Vedic altars. To these also must be traced the roots of Indian architecture. The three fire altars – the *ahavaniya*, the *garhapatya* and the *dakshinagni* – have cosmic

correspondences, representing celestial space, the terrestrial world and the world of air. Each is constructed of five layers of bricks which signify:

The five elements  
The five mental states  
The five sheaths of the soul



64-square mandala



81-square mandala

## Vastu-Purusha Mandala

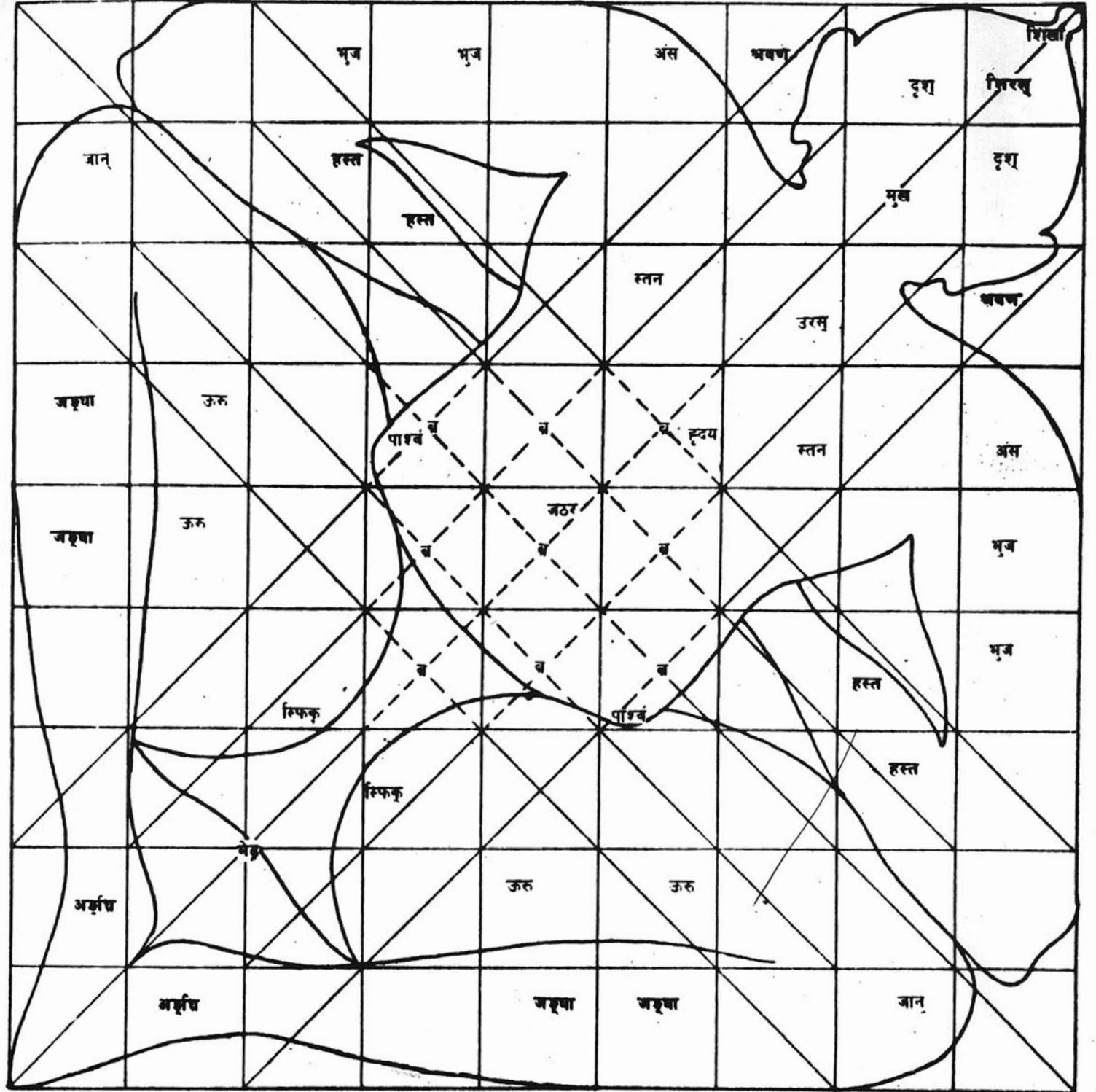
Like the *yantras*, Vastu-Purusha Mandalas are models of the cosmos. Used as the generating order for both sacred and secular buildings, each is a perfect square, sub-divided into identical squares, creating a series which starts from 1, 4, 9, 16, 25 ..... upto 1024. In temple architecture, the most commonly used *mandalas* are those of 64 and 81 squares, with the various deities allocated places in accordance with their importance and with the qualities inherent to the diagram. While the temple is an analogue of the cosmos, it is also modelled on Purusha, Cosmic Man, outlined in the *mandala* at right.

The *mandala* is not a plan; it represents an energy field. And, as in the case of the black holes of outer space, at the dead centre of the vortex is Nothing . . . which is Everything. It is both *shunya* (the Absolute Void) and *bindu* (the world seed and the source of all energy). In all *mandalas*, at this centre is located Brahman, the Supreme Principle.

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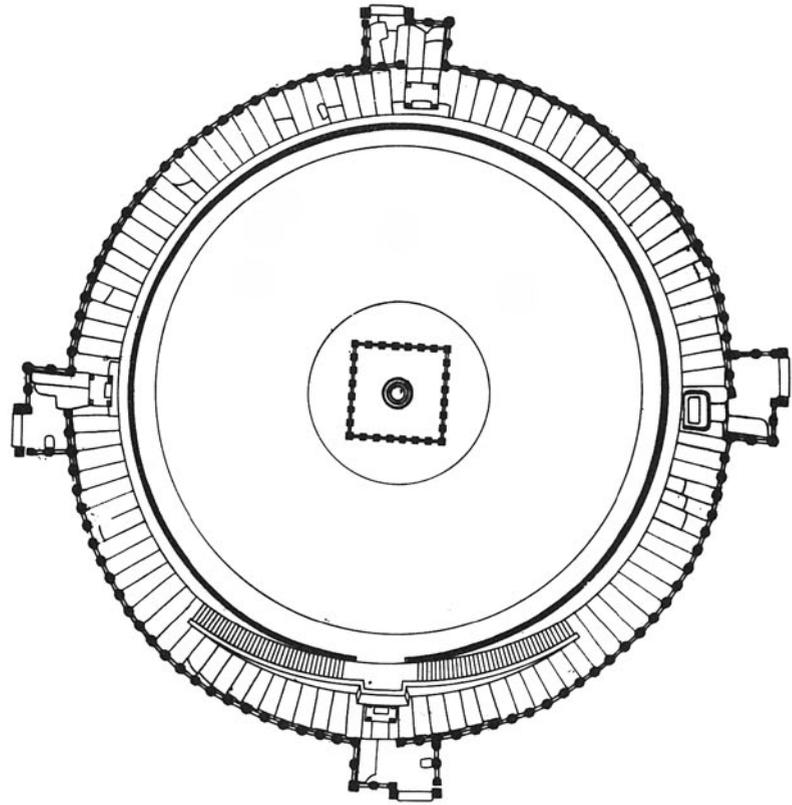
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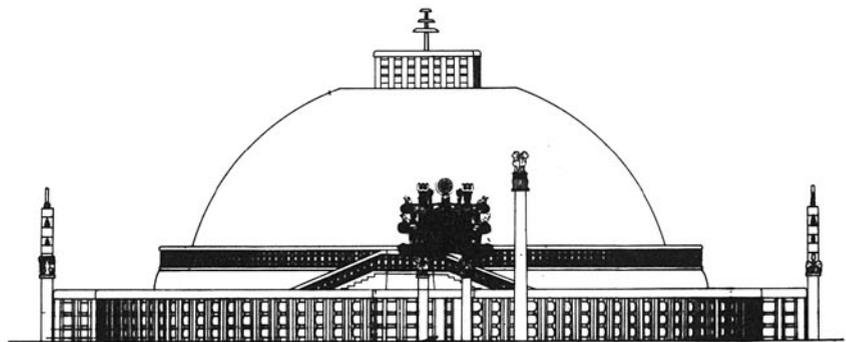
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## Sanchi, Madhya Pradesh (2nd century B.C.)

The *stupa* at Sanchi is one of the most perfect examples extant in Indian architecture as a model of the cosmos. Its very form symbolises Mount Meru, the sacred mountain. The central wooden post buried within the masonry is *yupa*, the *axis mundi*, i.e., the column that passes through the centre of the universe. This incredibly potent concept is expressed on the exterior by the *harmika* (heavenly abode) which contains three superimposed umbrellas.



*Plan and elevation of the Great Stupa.*

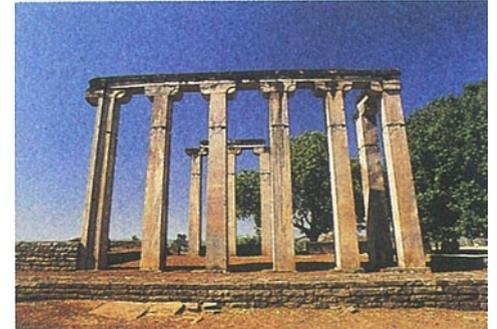
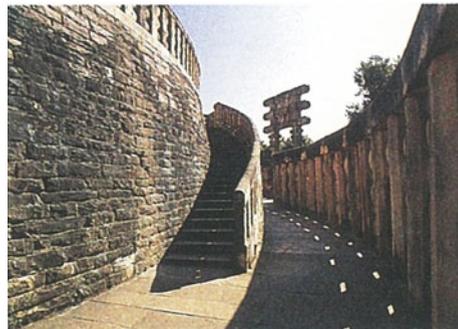
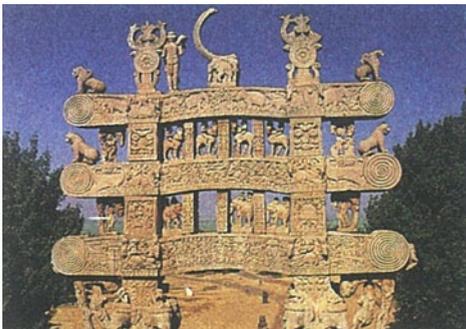




*The Great Stupa at Sanchi, with its railing and one of its four toranas or gateways. Characteristic of Buddhist art, the railing was an emblem of protection, encircling the sanctuary, fencing the sacred Bodhi tree.*

*Below left: Carvings on the toranas depict events from the life of Buddha. Horizontal panels ending in tight spirals are believed to represent partly-unrolled picture scrolls. Below centre: The pradakshina-patha, the*

*sacred circumambulatory pathway, through which the pilgrim becomes one with the cosmos that the stupa represents. Below: Ruins scatter the Sanchi hill – many of the structures remained unfinished.*



## Nalanda, Bihar (6th-8th century)

Nalanda is one of the oldest universities and monasteries in India. Because of the serene and monumental simplicity of its forms, there is a timeless power to its architecture – it is clearly both a centre of learning as well as one of meditation (built at a time and in a context when both these were one indivisible entity).

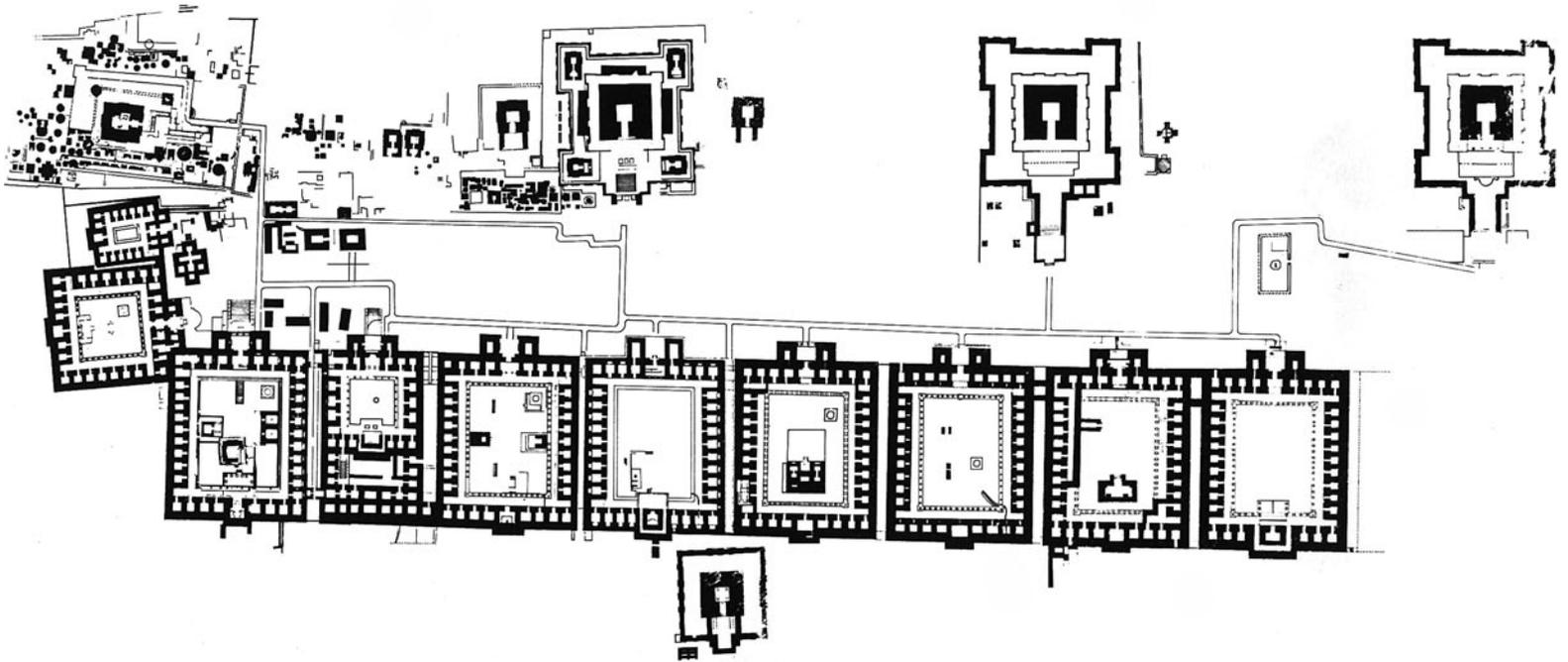
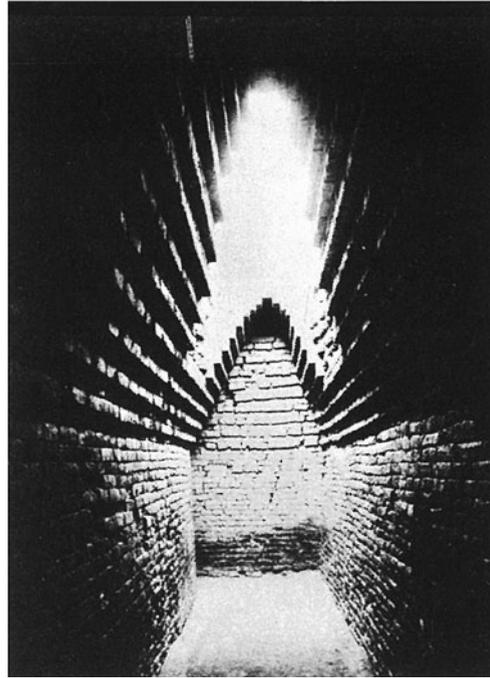


*Opposite page: View of temple amid ruins, with votive stupas offered by devotees.*

*Right: Corbelled brick roof construction in the rooms of the Nalanda viharas.*

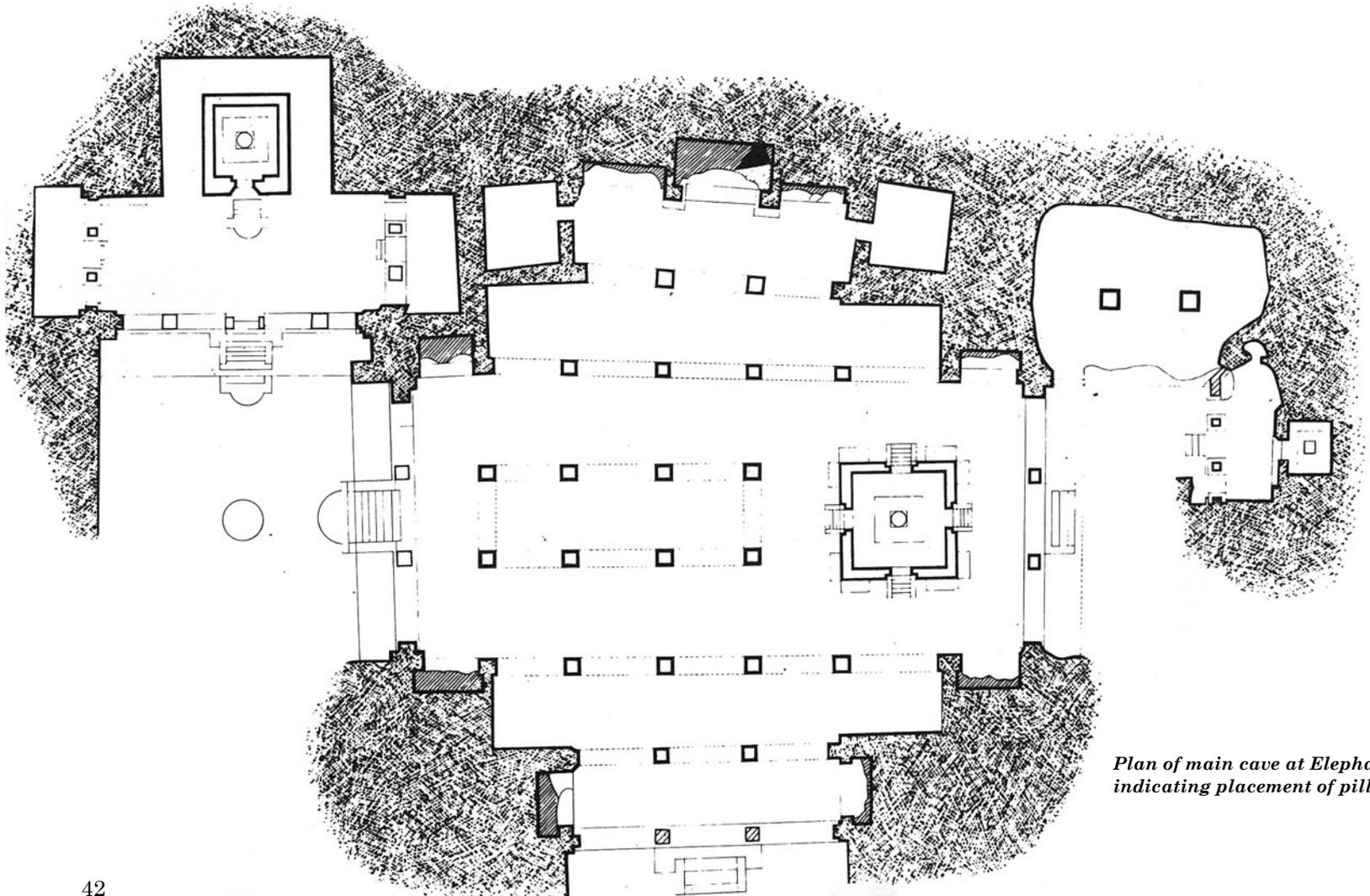
*Far right: Monks ascend steps to the temple.*

*Below: Plan of Nalanda is organised around a central spine, with temples on one side and eight viharas or monasteries on the other. Each of these has a square plan with cells surrounding a central courtyard used for community gatherings.*

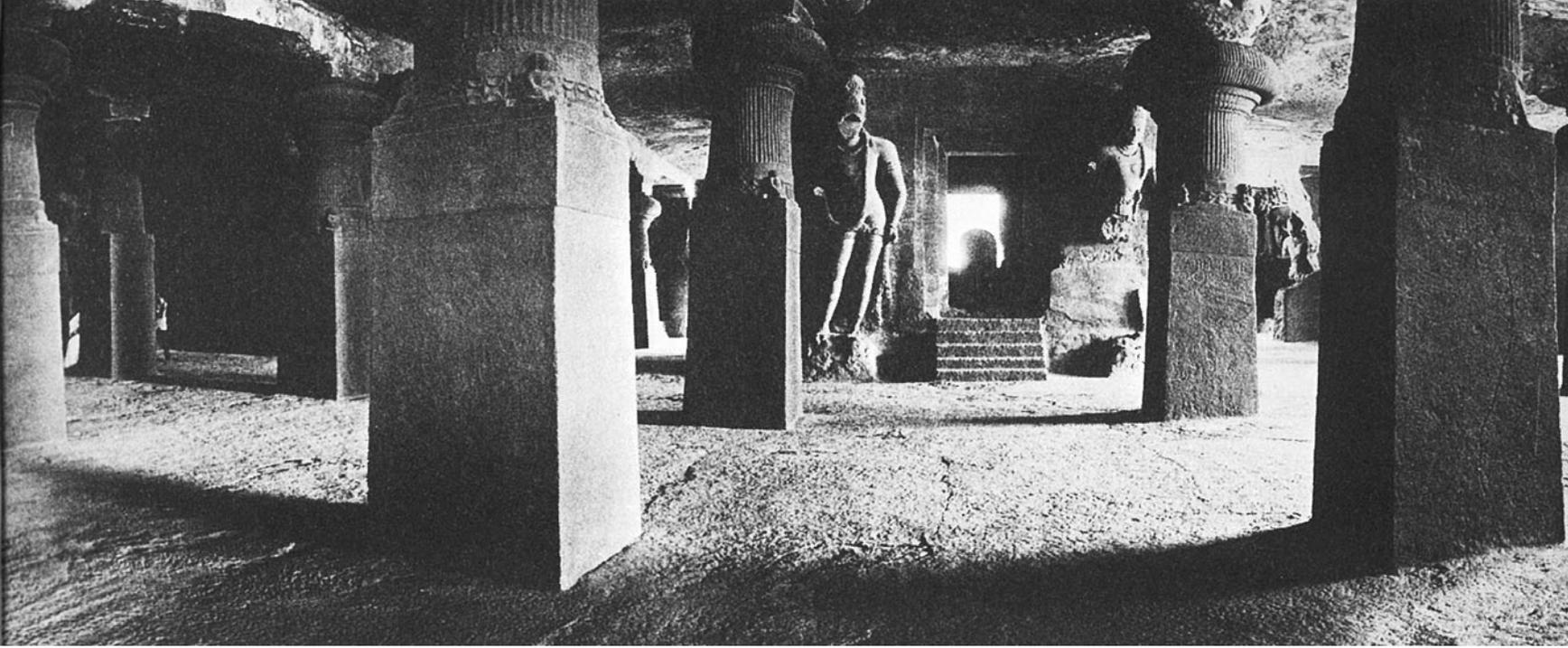


## Elephanta, Off Bombay (6th century)

Set in the middle of Bombay harbour is an umbilical cord that goes back more than a thousand years: the caves of Elephanta. The unending intricacy of light and shade which pervades this rock-cut island temple throws into relief one or the other of nine colossal sculptures of Shiva. These sculptures reflect opposites and contrasting forms – for example, Ardanarishvara, Shiva as half-man, half-woman, stressing the togetherness of Shiva and Parvati, faced by a panel depicting Shiva receiving Ganga, emphasising his separateness from Parvati. Elsewhere, the peaceful panel of Yogishvara (Lord of yogis) is faced by Nataraja (dancer and destroyer). Dominating the main entrance is the most celebrated sculpture of them all, the main image of Shiva with three faces. Variouslly interpreted over the years, it is now generally referred to as Sadashiva – Eternal Shiva.



*Plan of main cave at Elephanta, indicating placement of pillars.*



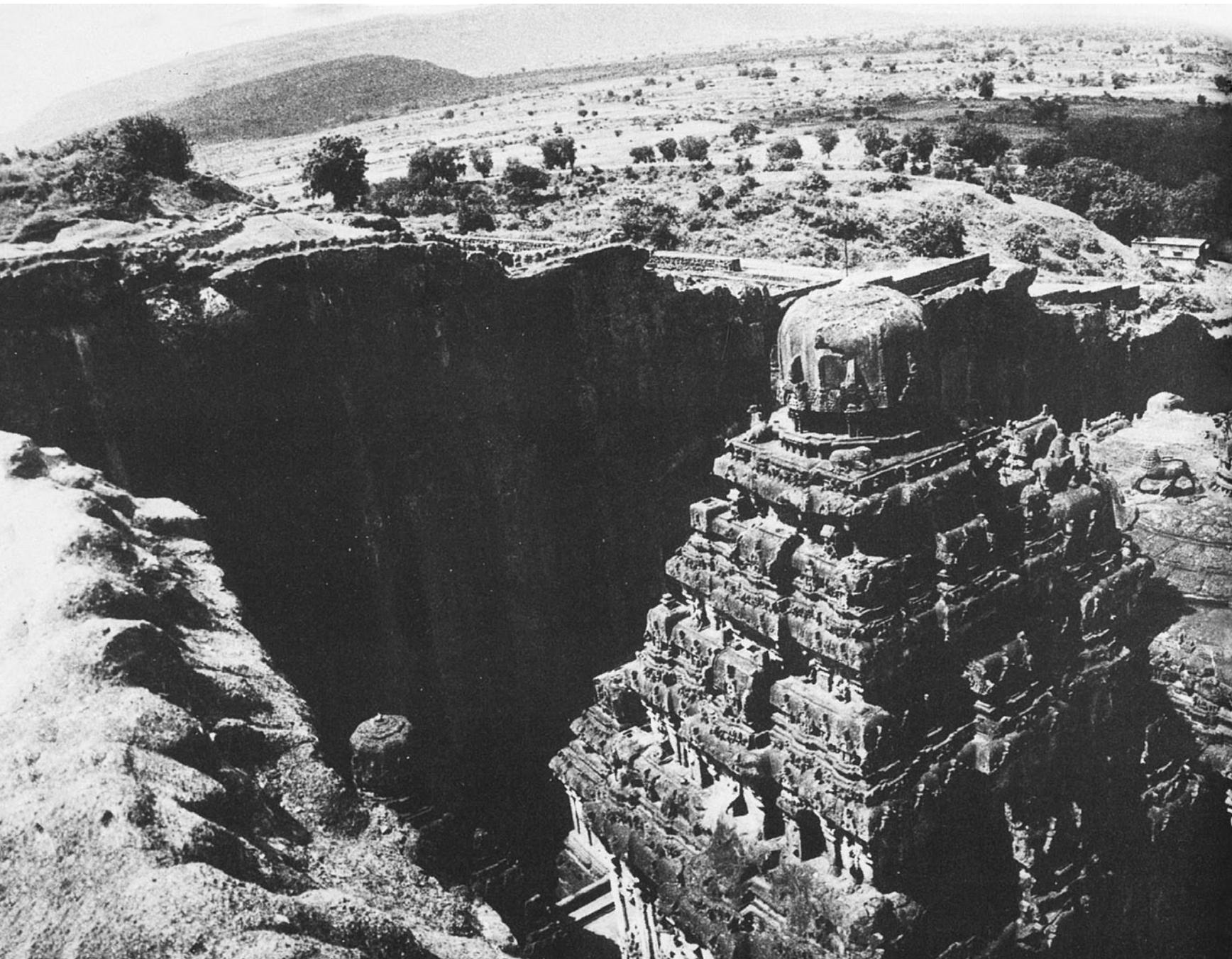
*Top: Dramatic interplay of shadows within the Elephanta cave. In the background, flanked by dvarapalas or guardians, is the inner shrine with its lingam.*

*Left: The three faces of Shiva, Elephanta's most famous sculpture, now generally identified as Sadashiva – Eternal Shiva.*

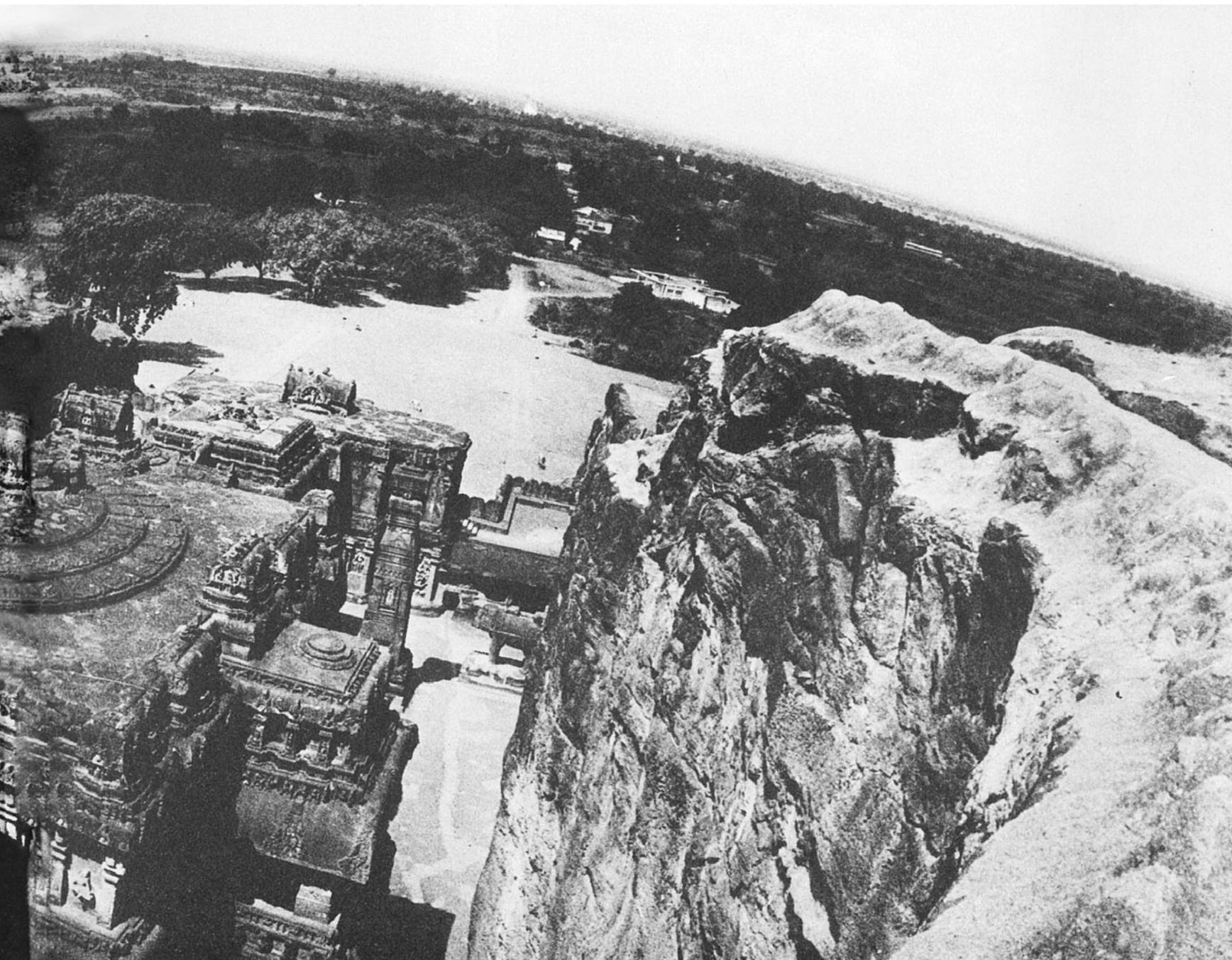
*Above: Corridors meeting at right angles afford a view of gigantic sculptures.*

## **Kailasa, Ellora** (8th century)

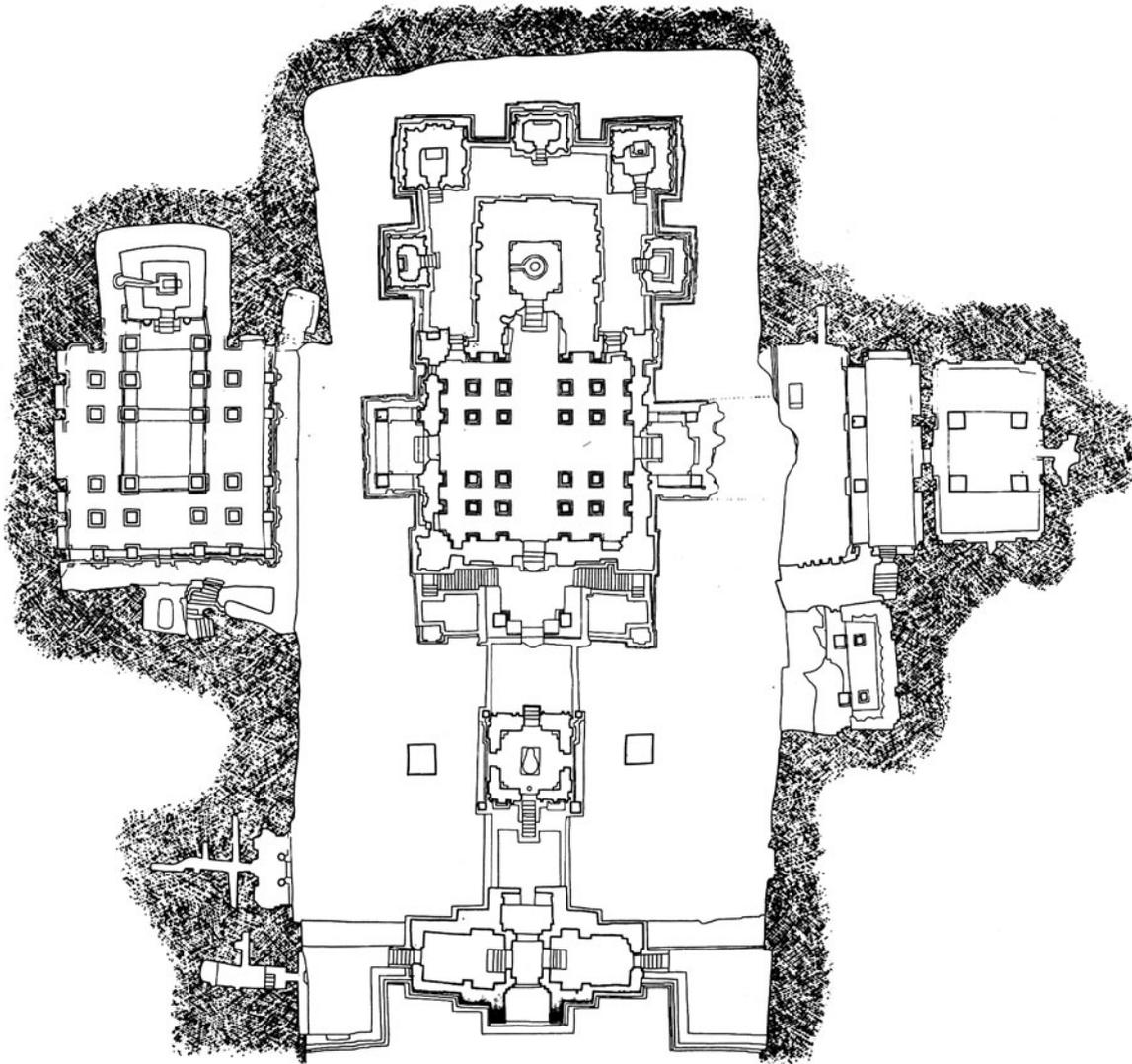
Kailasa represents a unique conjunction of the two dominant themes of temple architecture: the cave (i.e., the ancient residence of the gods), and the sacred mountain (in this case, Mount Kailasa, the eternal abode of Shiva).



Hollowed out literally from the hillside, it is an enormous monolithic rock carving in architectural form. The main temple has a pillared *mandapa*, on top of which is a *mandala* pattern of lions within concentric circles. Around these are five subsidiary shrines, cells surrounding the courtyard and two massive columns, all hewn directly out of the stone.



*Plan of Kailasa showing mandapa and main temple surrounded by five subsidiary shrines. On either side are a series of rock-cut caves.*

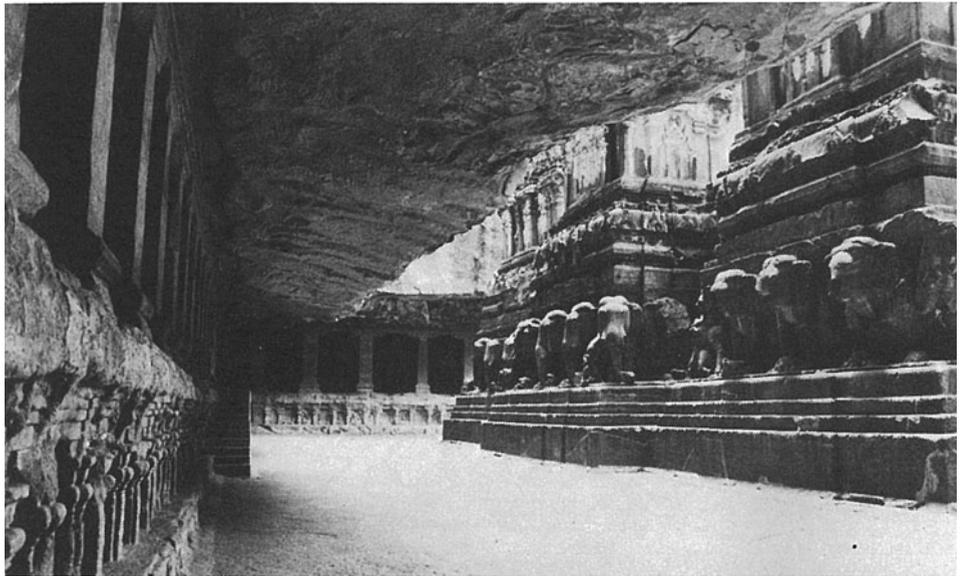




*The carvings in Kailasa are in the form of deep reliefs, giving the effect of free-standing sculpture. The one above shows Ravana shaking Mount Kailasa, on which Shiva and Parvati are seated.*

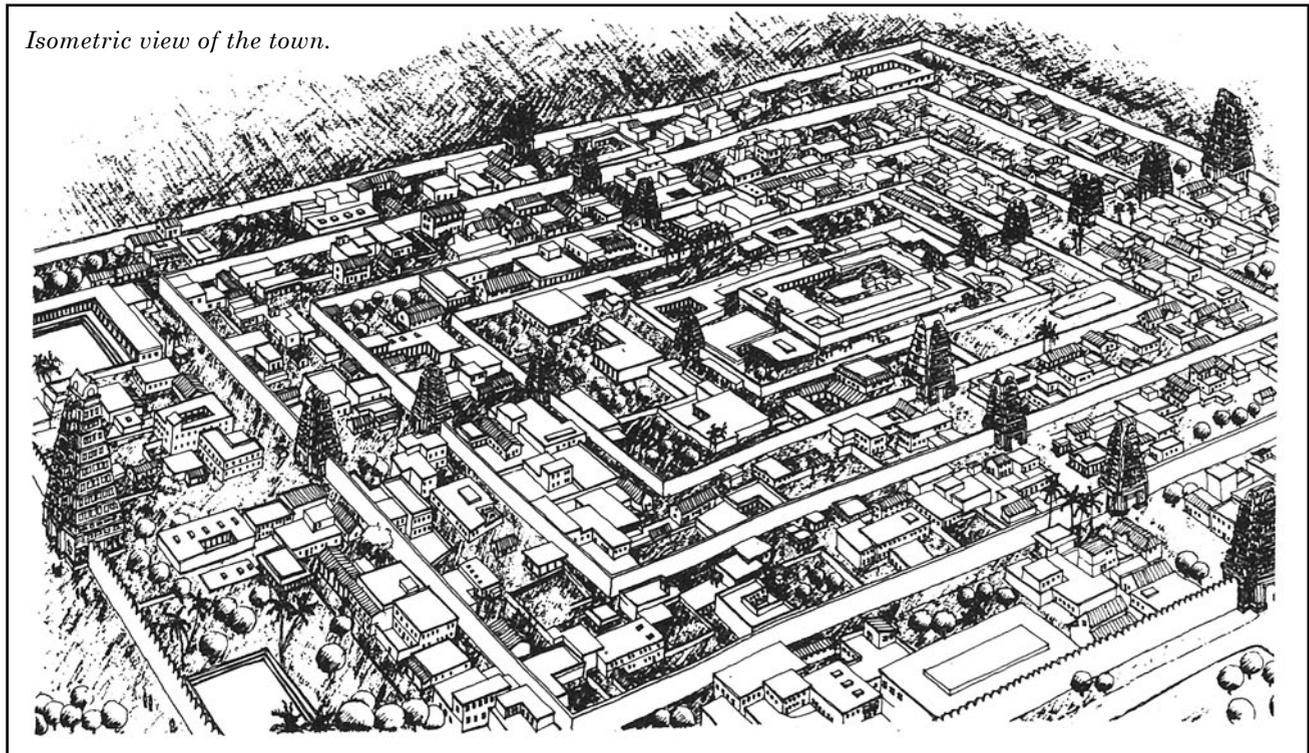
*Above right: Overhanging rock dramatises the excavation feat achieved at Ellora. It is for this reason that the temple has been called "the most stupendous work of art executed in India."*

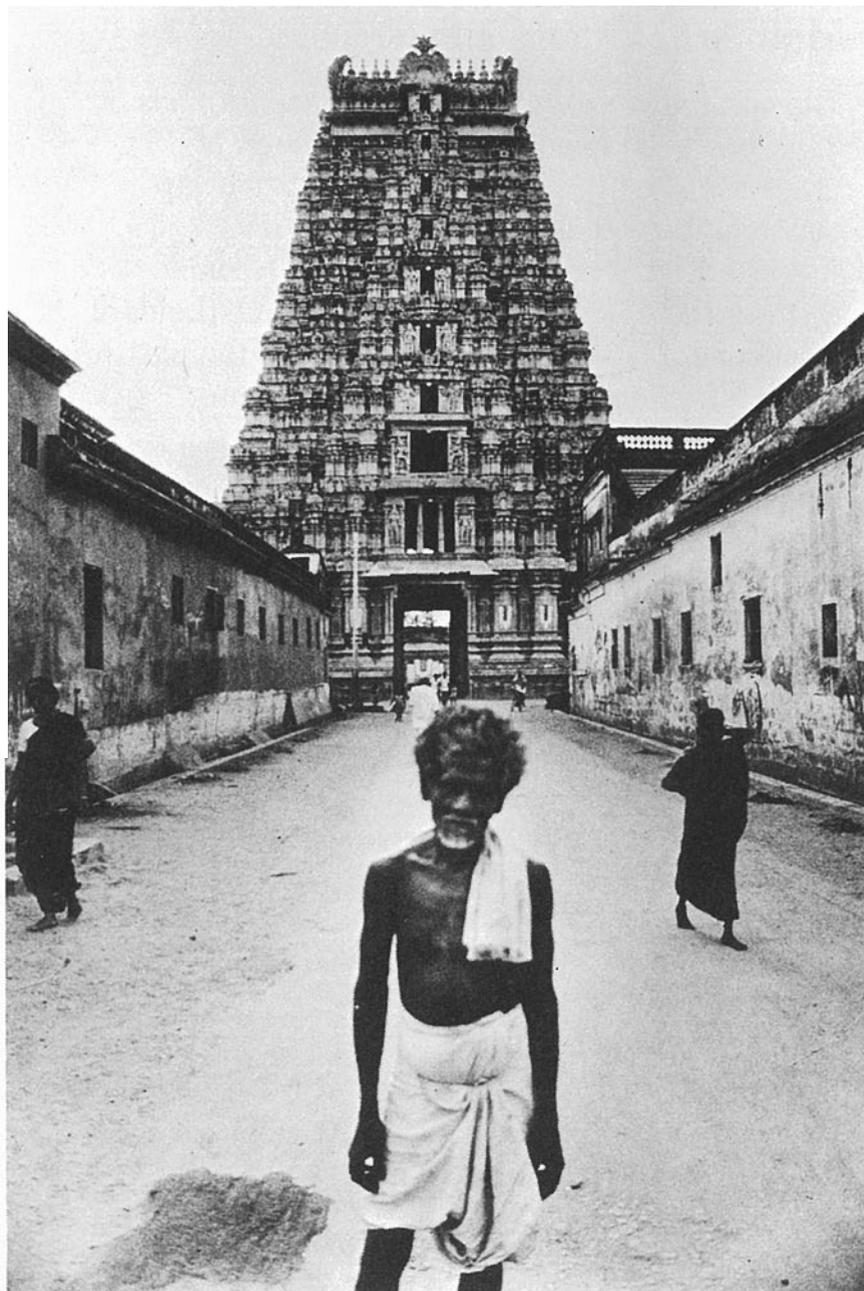
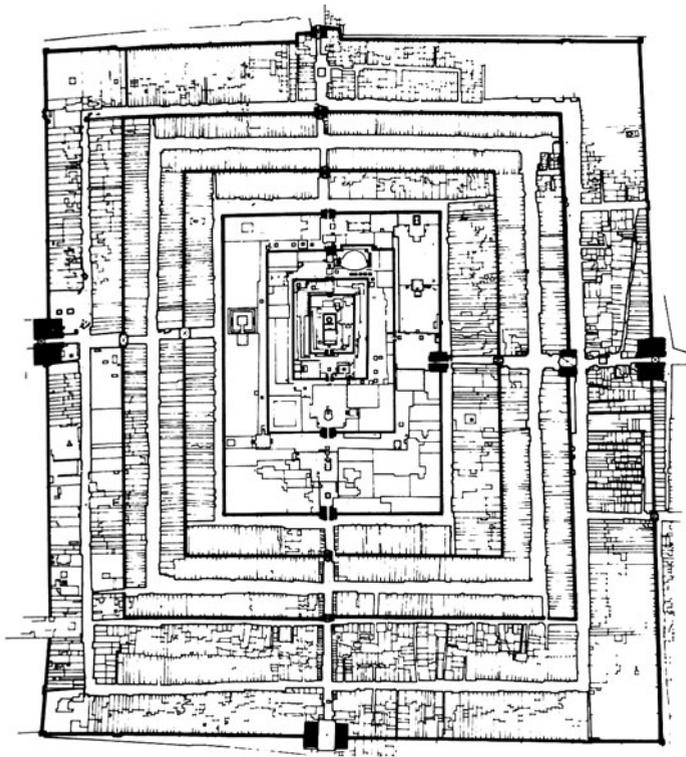
*Right: Images of Ellora that remain engraved in the memory include the two 16-metre-high pillars and colossal elephant that stand in the courtyard.*



## Srirangam, Tamil Nadu (14th century)

In Srirangam, the entire city was conceived as the cosmic *mandala*. Located on an island in the middle of the Kaveri river, it comprises seven concentric wall enclosures, each with a *gopuram* of receding size. Of these, the inner four are the temple proper, while the outer three are shops and residential quarters. The latter is marked by strict caste divisions, and an elaborate system of rituals and rules determines the direction of circumambulation during festivals and funerals. At Srirangam, all motion is directed inward. And the geometry becomes more and more precise as one gets closer to the sacred centre.





*Top: Plan of Srirangam, indicating the seven concentric wall enclosures.*

*Above: Elephant silhouetted at end of colonnade.*

*Devotee pauses before one of the many gopurams that mark the entrance to the town. The enclosure – either a wall or a continuous series of cells – is an essential part of the South Indian temple in its fully-evolved form.*

## Modhera, Gujarat (11th century)

The sun temple of Modhera with its enormous *kund* has been cited as a representation of fire-water biunity. The symbiotic relationship between the temple and the *kund*, it is suggested, may be an allusion to the Vedic myth of the emergence of the sun from “the dark inert” or primordial ocean. Thus if the temple is the fire altar, then the *kund* is the water altar.

Nowhere else has this biunity found more powerful architectural expression than at Modhera. Not only are the two elements, temple and *kund*, on axis, but the central steps of the *kund* cascade down in the form of an inverted triangle, mirroring exactly the upward-pointing triangle of the *shikhara*. The biunity is further reinforced when the moving sun plays upon faceted walls and multi-layered steps – creating unforgettable patterns of light and shade.





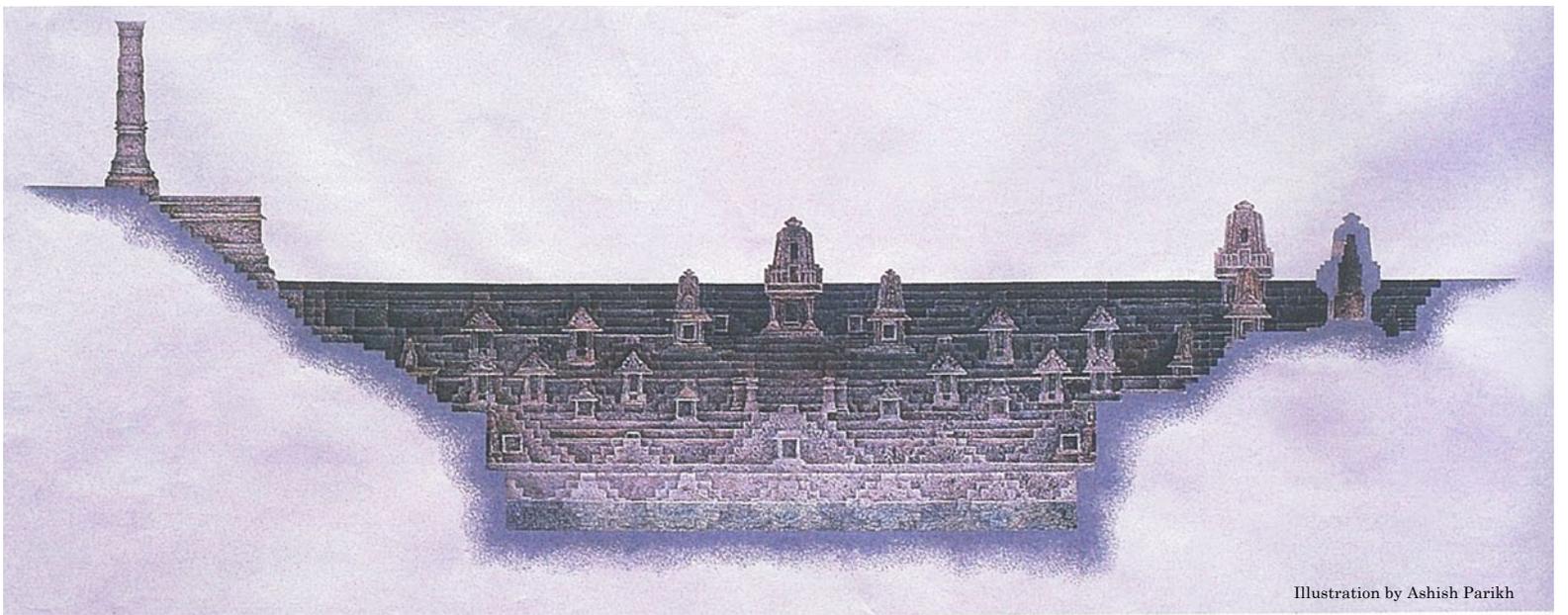
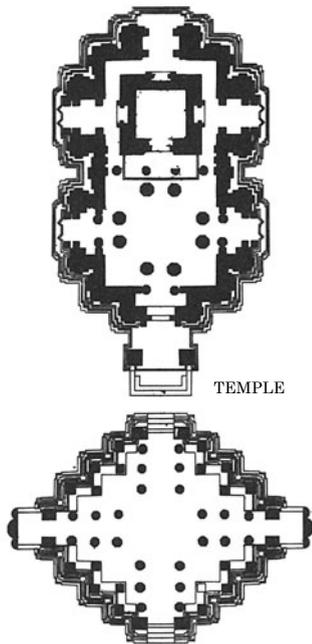
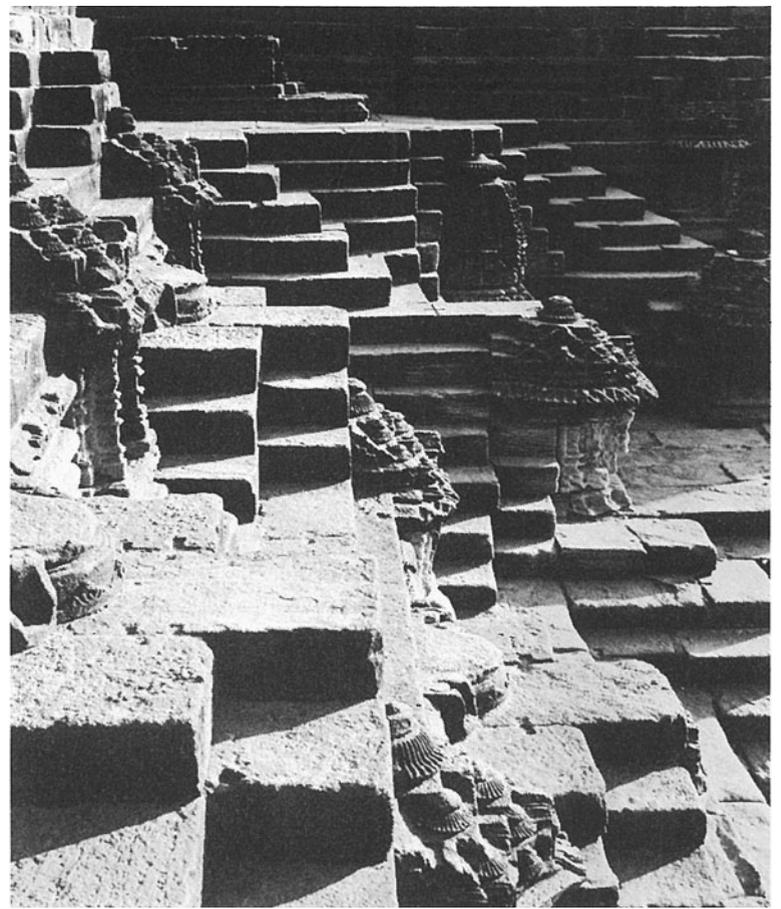


Illustration by Ashish Parikh





TEMPLE

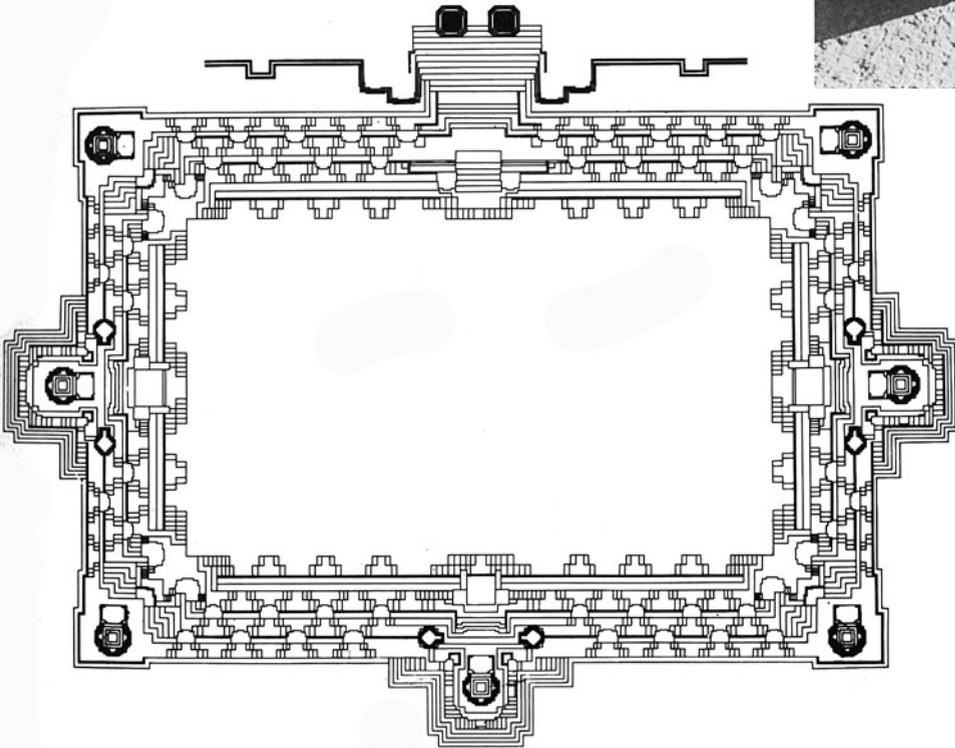


*Opposite, top: Pointillist illustration of kund section shows column from which temple starts, with shrine on the other side.*

*Opposite, below: Probably the most beautiful tank anywhere, the kund at Modhera has a jewel-like quality, inset as it is with niches and studded with shrines to some 60 gods.*

*Left: Plan of kund and temple.*

*Close-up of steps emphasises the high contrast of light and dark, interrupted by carved protrusions of the shrines.*



**KUND-VAPI – Subterranean architecture**



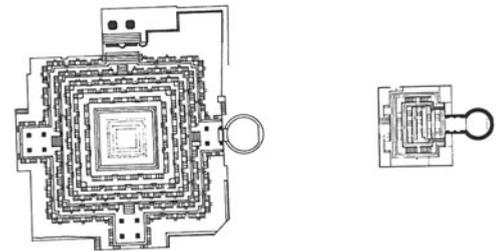


# SUBTERRANEAN STRUCTURES

As we have just seen in the example of the *kund* at Modhera, the non-manifest could also be modelled by subterranean architecture, i.e., builtform within the earth's surface.

This is a concept with the most profound metaphysical connotation. For water is the giver of life as well as its dreadful taker. And wells, being among the prime sources of water, were particularly significant. They became elaborate architectural constructs, and the path down to the water level a ritualistic pilgrimage.

Descending into the earth was analogous to other crucial areas of existence: as for instance, the furrowing of the fields for the planting of seed. And so going down into the well becomes analogous to submersion in water, i.e., to rebirth. It is similar to the dissolving of the germinating seed into nothingness, into the world of unformed matter, before it reappears in the form of a plant. If the temple is a model of the cosmos, then could this subterranean architecture be a model of the dissolution of the cosmos?

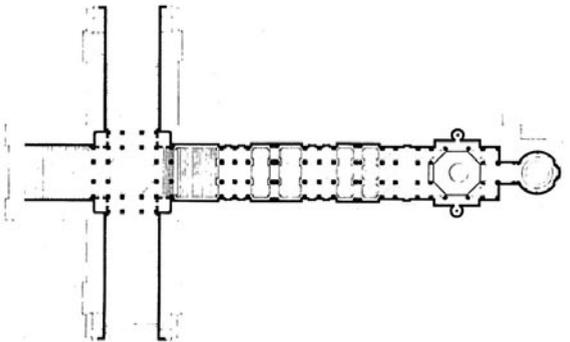
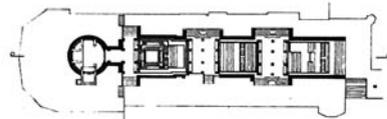
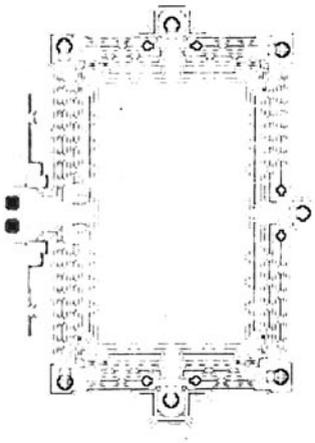


## A Cross-section of Step-wells (7th-16th centuries)

The earliest subterranean structures date from the 7th century and are mostly found in Saurashtra. As the form developed, the rituals grew and the richness of the architectural expression increased: the ingenious use of bridges and landings to act as bracing elements between the parallel retaining walls, the complex play of light and shadow as one descends into the depths of the earth, the silent stillness of the water reflecting back the sky.

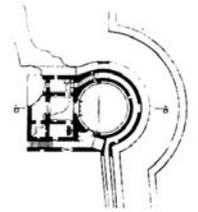
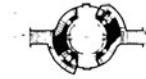
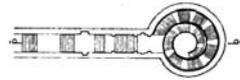
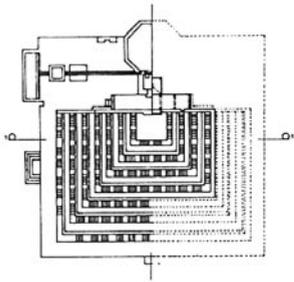
In this drawing we see a number of step-wells, all drawn to the same scale. Starting at the left is Kapadvanj Kund, a 10th-century Hindu structure with a square plan. The next three, Umata Kund-vav, Modhera Kund, and Matar Bhavani are from the 11th century and are also Hindu in origin.

Later, with the coming of the Muslim sultans of the 14th century, the form undergoes a metamorphosis. The symbolic value of water continues, but the ritualistic passages give way to pleasure rooms, delightfully cool in the



summer heat. For as we shall see in the next section, Islam brought its own mythic values. Thus our fifth example, Adalaj, built in the 16th century, shows the typology in transition. Although the form remains essentially unchanged, the Islamic influence is apparent in the lack of ornamentation, the absence of icons, and in the abstract quality of the sculpture. The sixth example, the Sabali Kund-vav, goes much further towards Islam. Here the fourth side of the *kund-vav* has been transformed into a pleasure pavilion and the whole structure inset into a garden.

The last four examples are all from the 16th century and are of particular interest because of their extraordinary spatial configurations. Bhatpur has spiral steps which narrow down as they descend. Vasad has eleven rooms below the ground level. Halisa has double-spiral steps, with niches in the wall for icon worship. Lastly we have the incomparable Doshi No Kanthalo, which is part of a fort wall – a military bastion strategically located at the confluence of the rivers Vatrak and Majham.

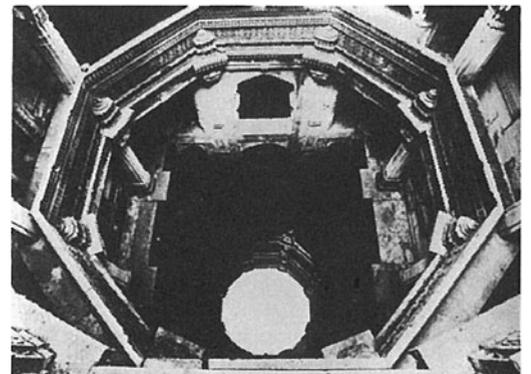






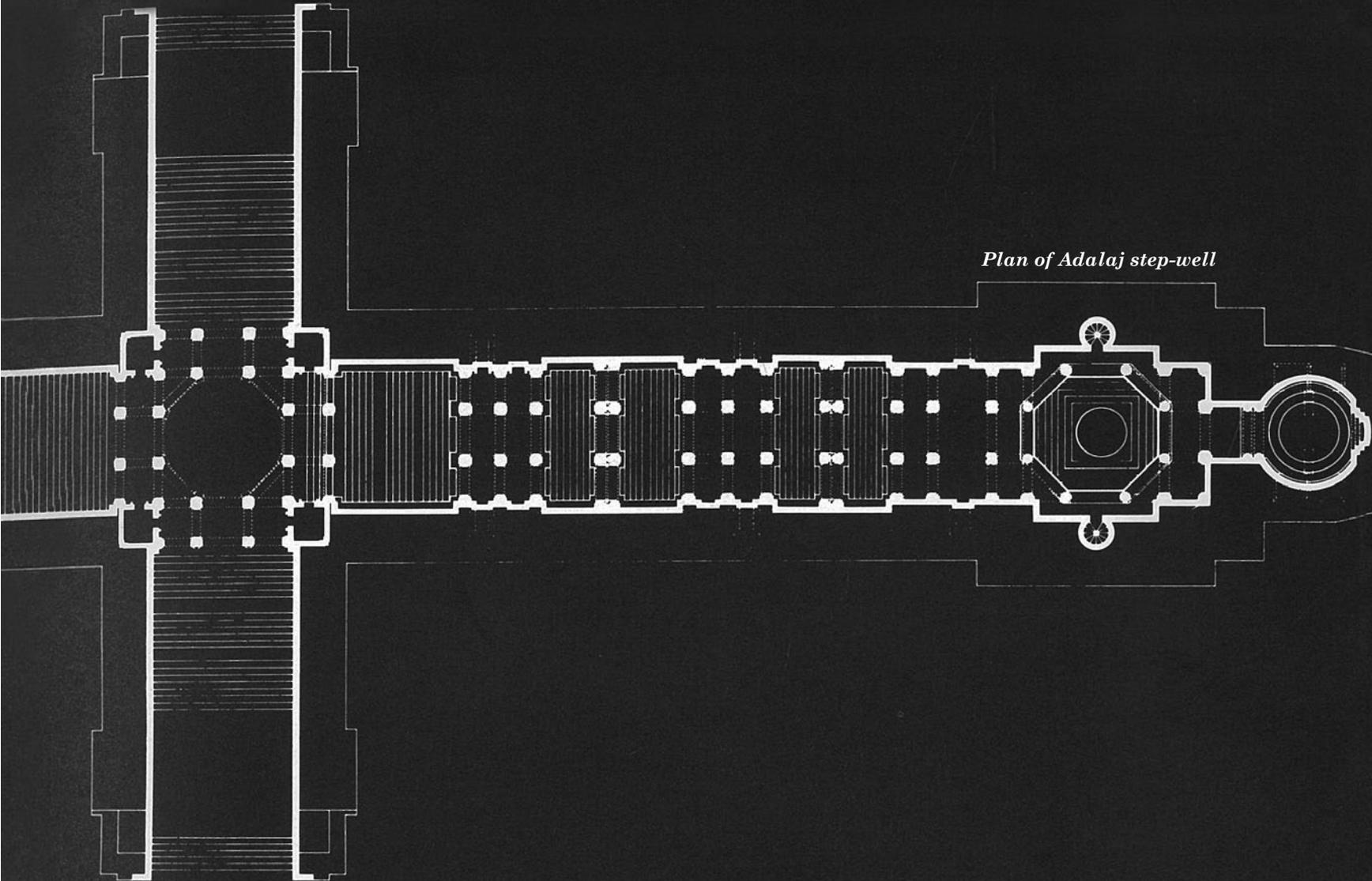
## Adalaj Step-Well (15th century)

Just north of Ahmedabad is the step-well of Adalaj, built by Ruda, wife of the Vaghela chief Virasimha. It has three entrances which meet in a huge square platform, from which a stepped corridor descends, interrupted at intervals by four pavilion-towers. This step-well has an octagonal shaft, terminating in a square pond used for bathing. Beyond this is the round shaft of the well proper, decorated with carved ornamental bands and niches. Adalaj is noted for the quality of its sculptural ornamentation, ranging from floral relief panels to shrines to the various deities.

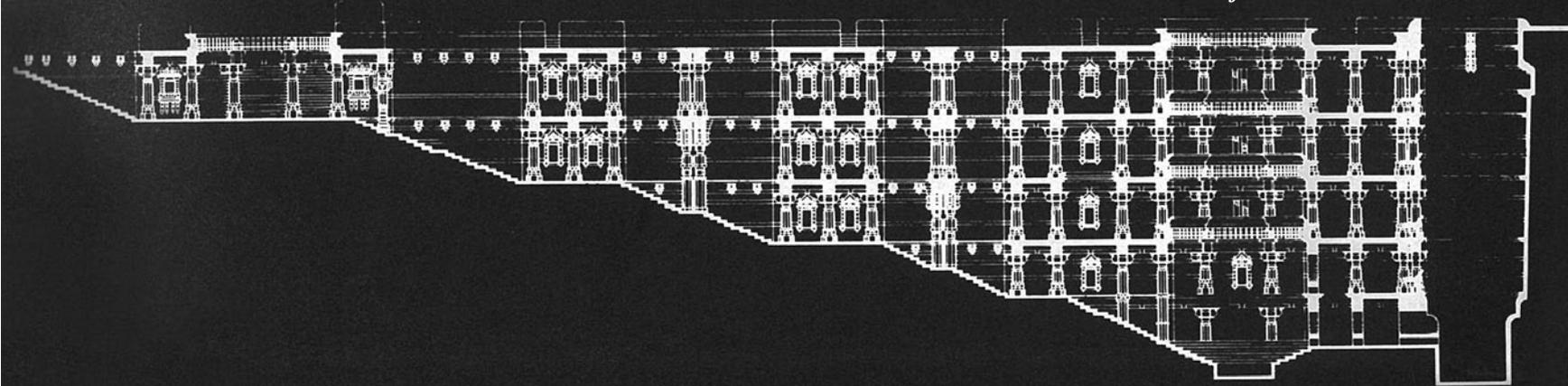


*Left: Stepped corridors of Adalaj, framed by pavilions, with intricately-carved columns, brackets and beams.*

*Above: At Adalaj, an octagonal courtyard is used for bathing. Looking down the well shaft, the waters reflect the sky.*



*Plan of Adalaj step-well*



*Adalaj section*

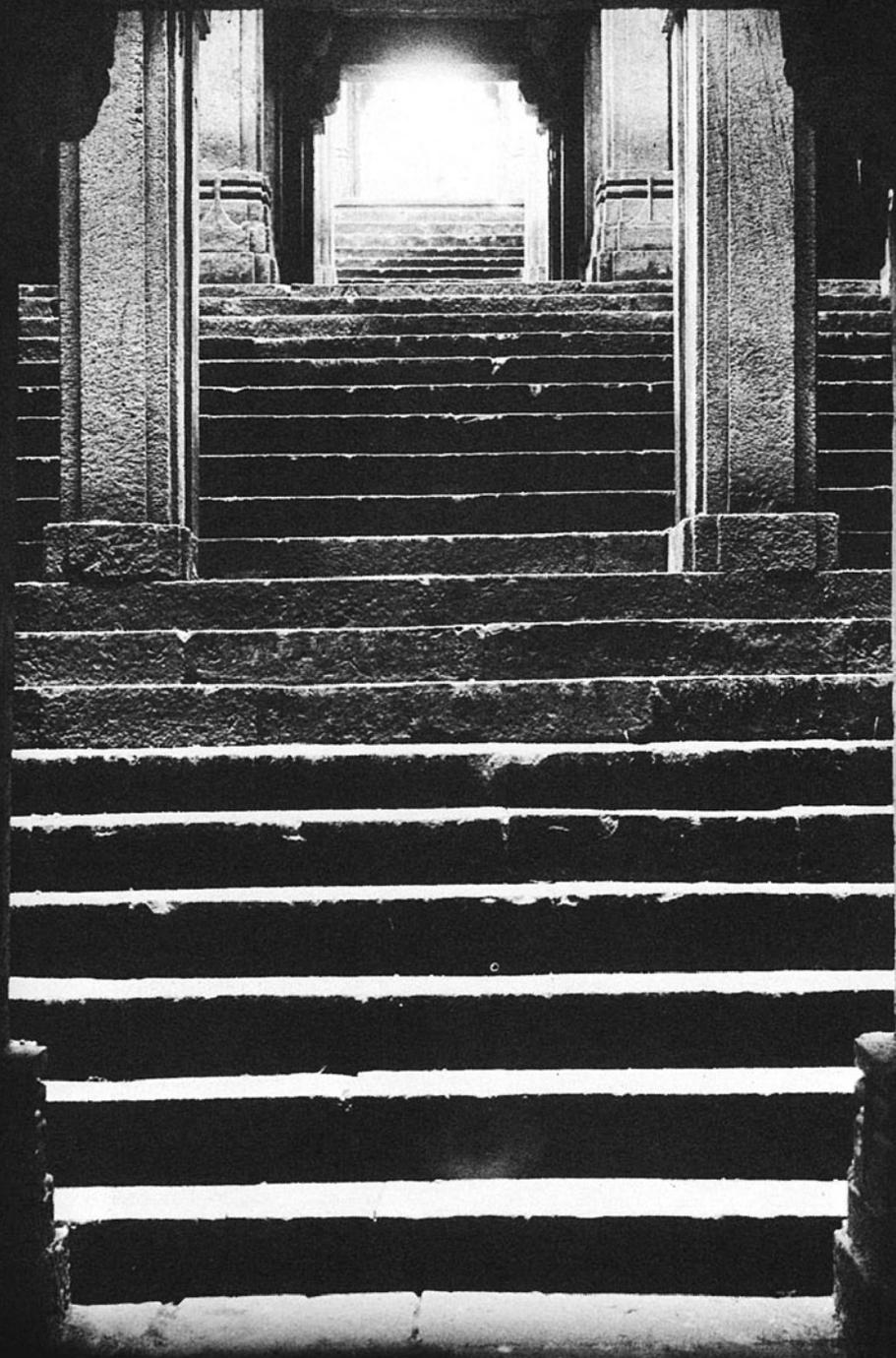
## Dai Harir, Ahmedabad (15th-16th century)

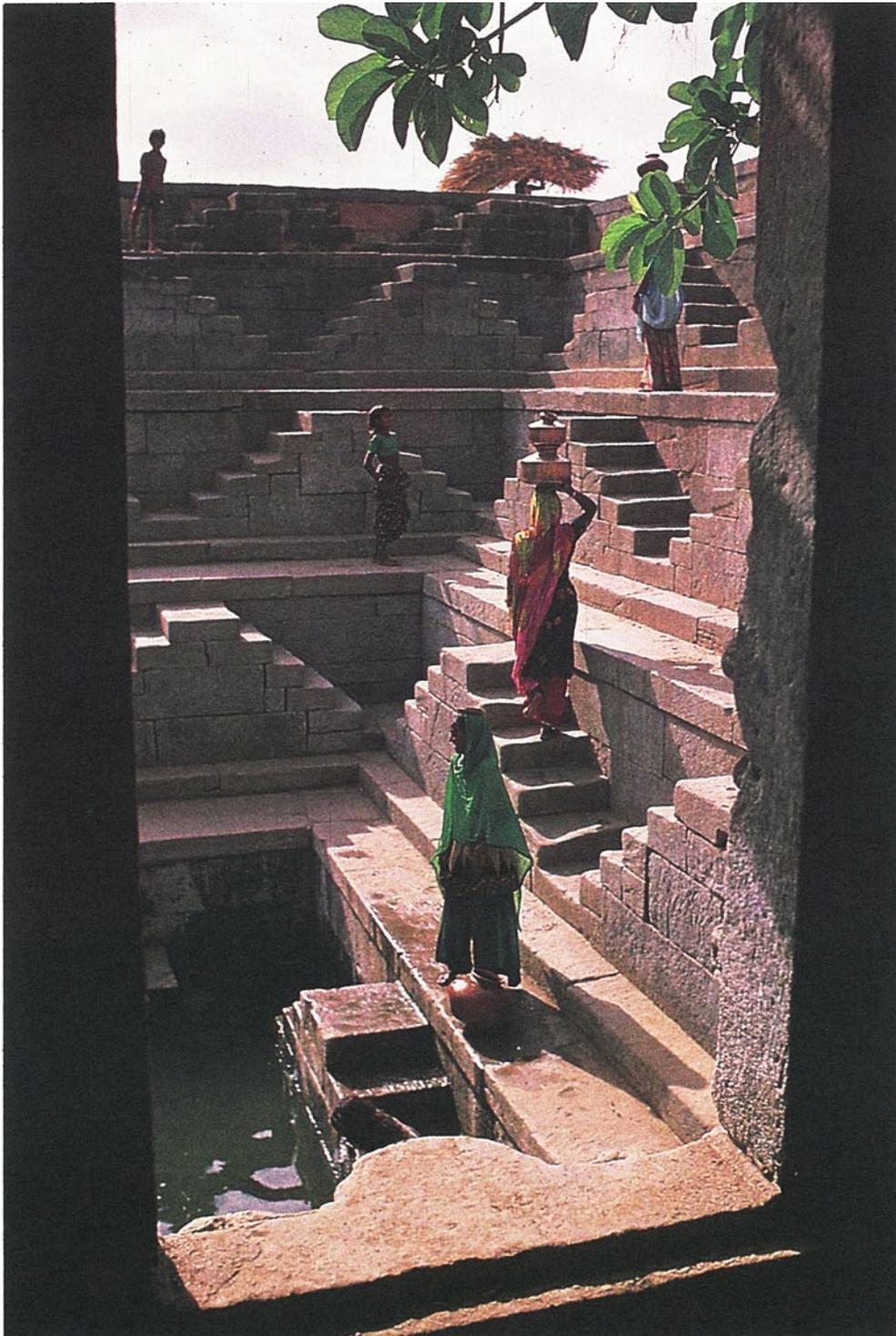
This step-well was built during Mahmud Begada's rule, probably by his foster-mother Harir (who also was responsible for the mosque and tomb nearby). Dai Harir represents an important transitional step between the Hindu and Muslim ethos. While the main elements are of a Hindu step-well, the carving follows the Islamic traditions of being totally abstract and devoid of iconography. The central niche, which normally has an icon of Ganesha or a mother goddess, bears the image of a lotus with a chain – a motif developed during the Sultanate era.

*Right: Within Dai Harir, the darkness of the lower steps progressing towards brightness is comparable to the worshipper's journey to enlightenment.*

*Left: The sight that greets the visitor from the steps is a discontinuous colonnade, a series of receding frames vanishing into the void of the shaft.*





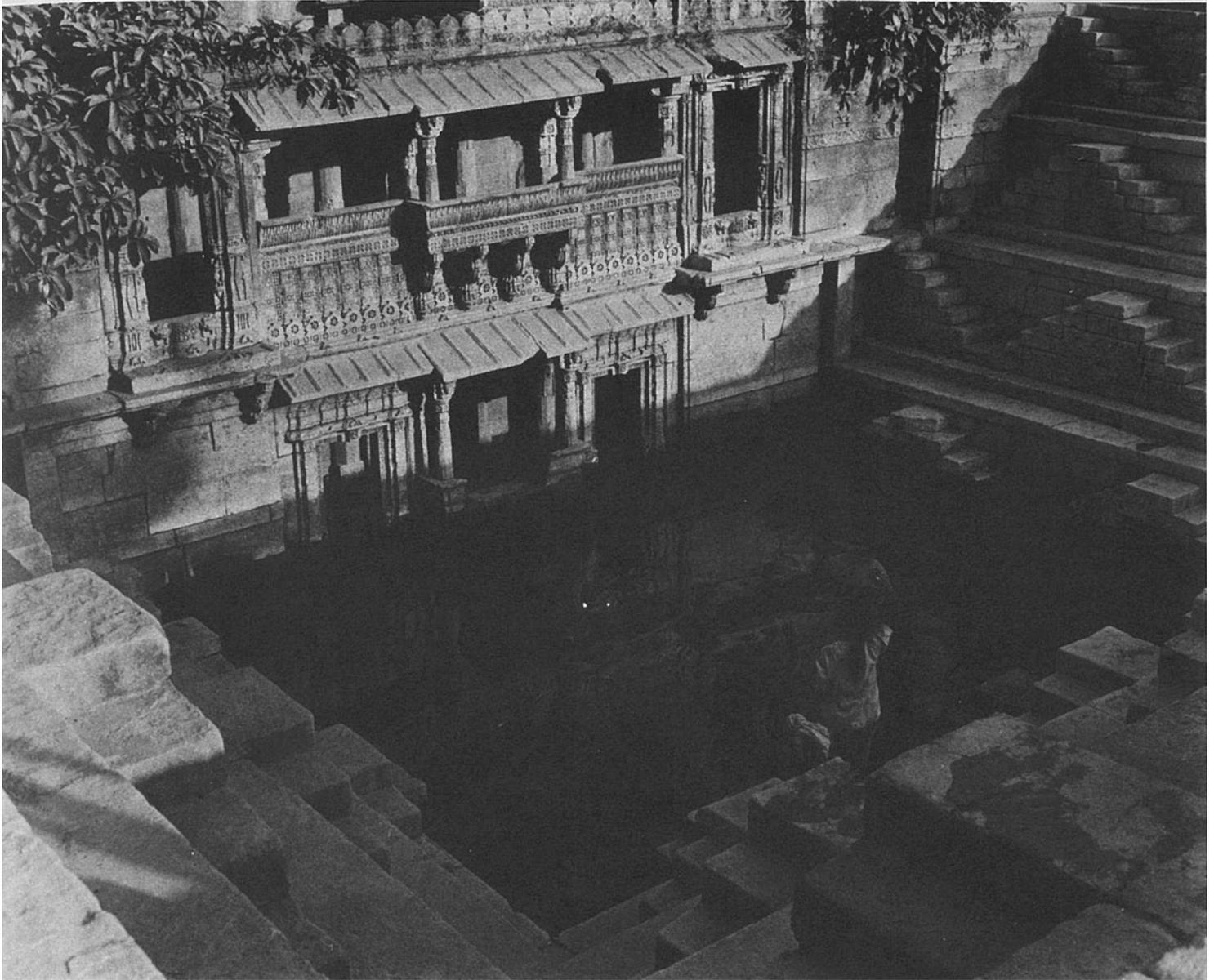


## Sabali Kund-vav (16th century)

Built by Raja Bharmal in 1526, in memory of his queen Jivini, this *kund-vav* represents a further evolution in subterranean structures, marking a shift not only toward the religious aspects of Islam, but also to its more secular functions.

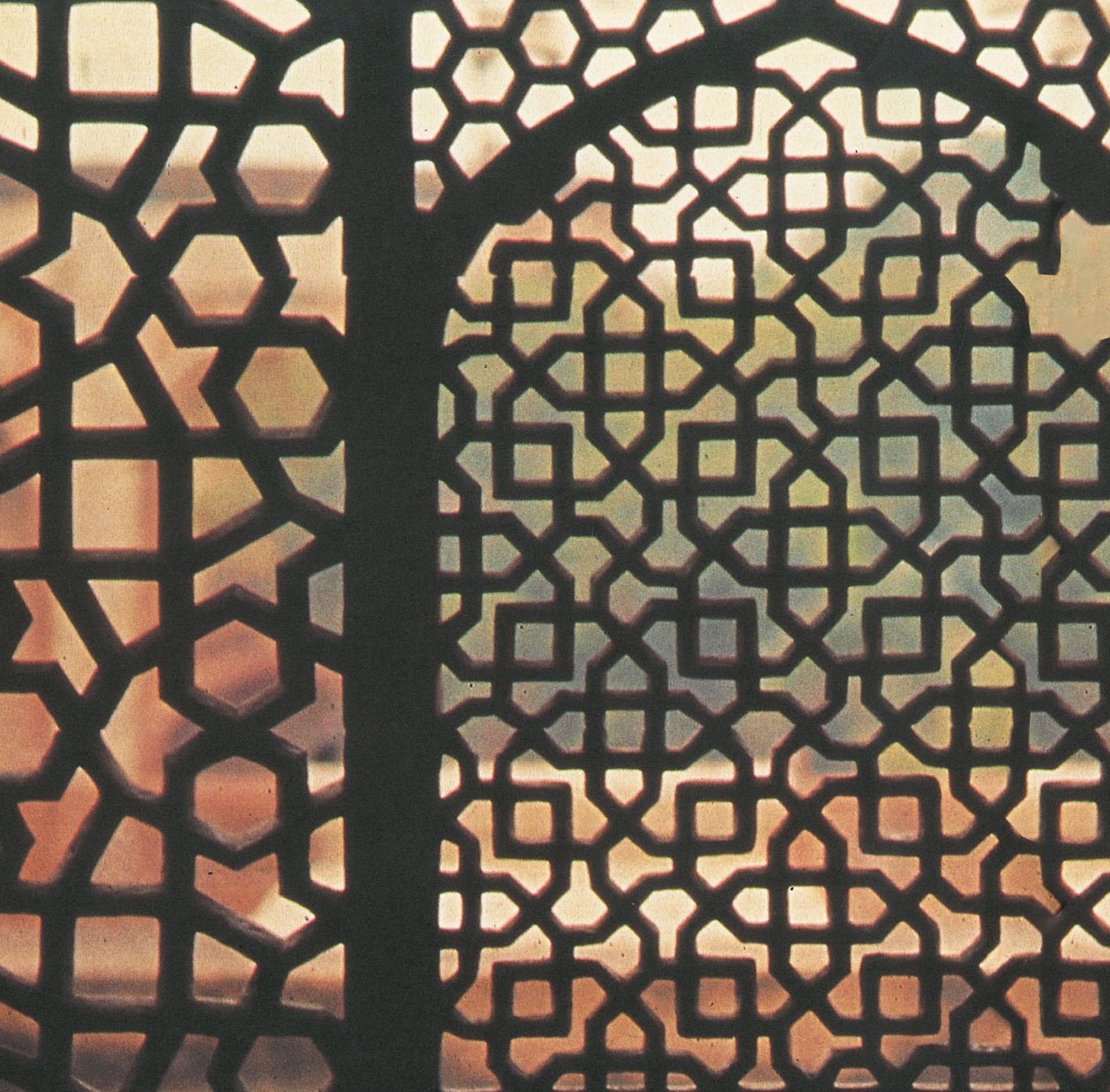
The form is an ingenious adaptation of a *kund-vav*. The steps descend on three sides only: the fourth is a multi-storeyed wall of rooms at different levels, opening onto the *kund*. These rooms must have been a deliciously cool retreat in the heat of summer, and a wonderful place to while away the hot afternoons and evenings with poetry and music.

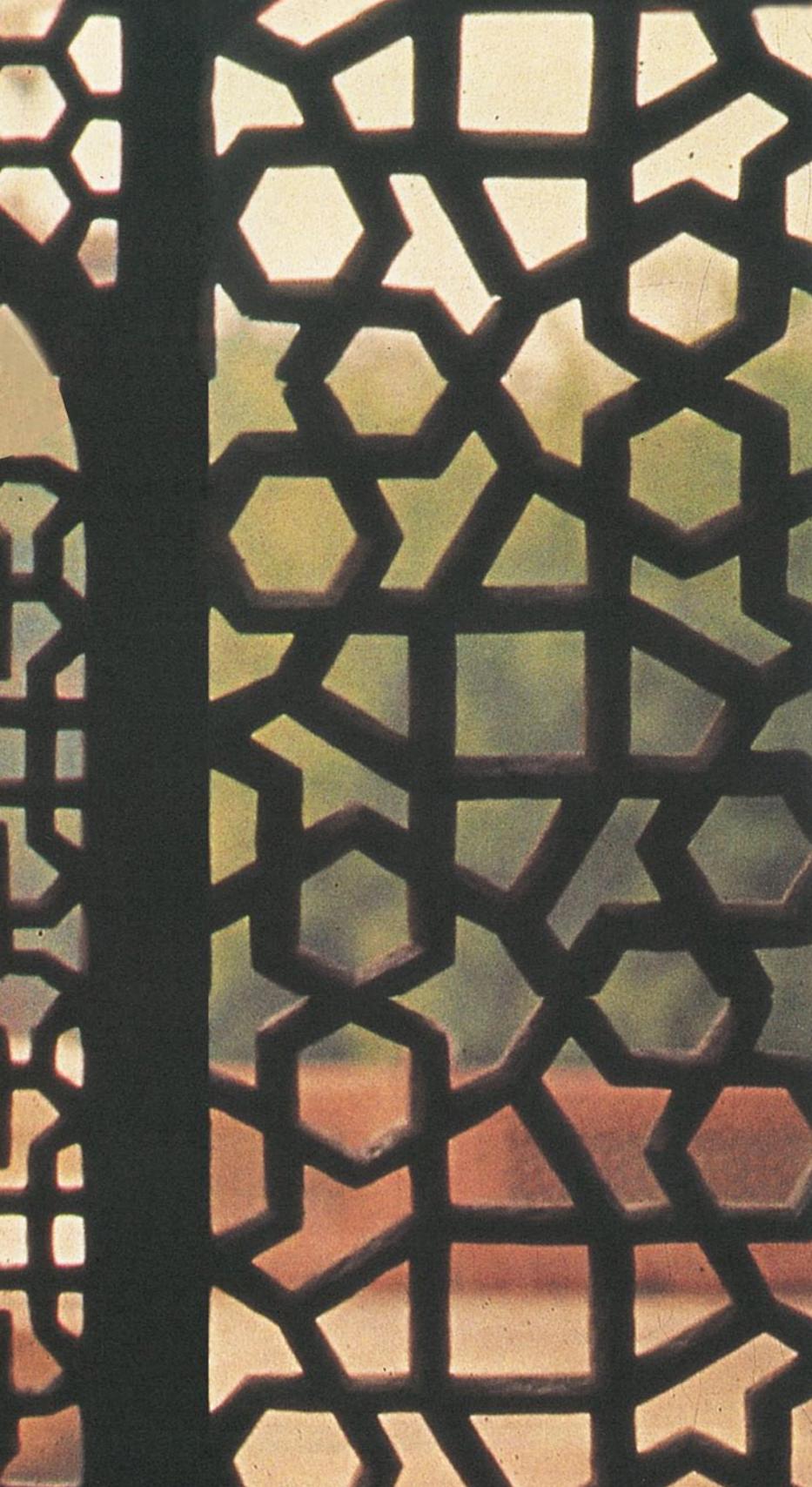
The water channels indicate that this structure was probably part of a much larger complex set in a pleasure garden. To the west is a small *mihrab*, probably used for praying. Thus the Sabali Kund-vav represents the synthesis of the sacred and secular aspects of life that Islam values so equitably.



*Left: Brightly-clad women contrast with grey symmetry of steps. Giving scale to the structure is the height of the landings which corresponds to the height of the women. After filling water, the women place the pot on the landing from where it is easily transferred to the head.*

*The waters of Sabali Kund throw back reflections of carved facade of rooms.*





## ISLAM - The Garden of Paradise

In the last section we have seen how with the coming of the Sultanates, there was a metamorphosis in architecture. For Islam brought with it new mythic values and images. Principal among these was the concept of the Paradise Garden (which we will discuss further on) based on the double-axis symmetry and the four quadrants of the *char-bagh*:

The Mughals, who came from Central Asia, brought with them an architecture (so stunningly evident in the great masterpieces at Samarkhand and Bokhara) based on this double-axis symmetry. Thus when they came to India, the symmetrical *mandala* diagrams they encountered not only reinforced their sense of architectural order, but furthermore presented to them the exciting possibility of perceiving builtform as an analogue of another reality. This led to an extraordinary – and perhaps unique – new *vistara*.

## The Paradise Garden

The concept of the Paradise Garden goes far back into history and is an enduring feature of Persian art and architecture. Linked with a love of trees and flowers, gardens reflect the harmony between man and nature.

The Paradise Garden is not a uniquely Persian idea; however, it developed more fully there than anywhere else. In fact, the very word “paradise” is derived from *pairidaeza* which means “enclosure” or “park” in Avestan (the old language predating Persian). The Greeks adapted *paradeisos* from the Persian, and the word eventually referred not only to the sublimity of the Persian garden but also to the supreme bliss of Eden.

The gardens established throughout the Islamic world had a threefold attraction: the idea of paradise as a reward for the faithful, based on references in the Quran; the secular tradition of the royal pleasure garden, which predated the Islamic era, and the response to the dryness and heat of the desert.





In the *char-bagh* garden, the main axis is a water course (symbolically and physically, water is the source of life), crossed at right angles by one or more secondary axes. The four water channels symbolise the four water rivers of life. Furthermore, for a Muslim, their interaction also represents the meeting of man and God.

*Reproduction of a Paradise Garden carpet from Persia (17th-18th century). It depicts the four rivers of life meeting in the centre, with a cartouche in place of the central pavilion. Cypress trees and fruit trees symbolise immortality and rebirth.*

*Colour recreation by Ashish Parikh*

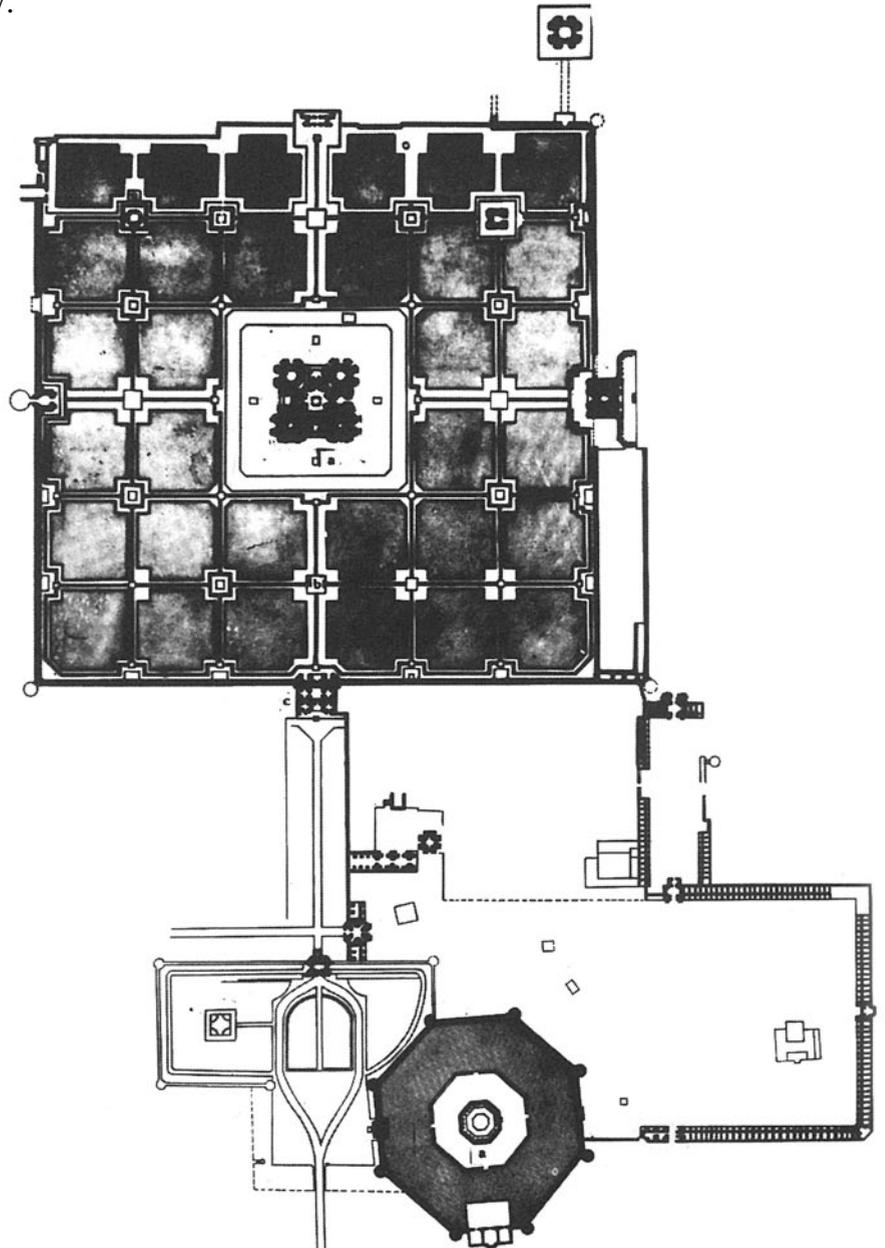
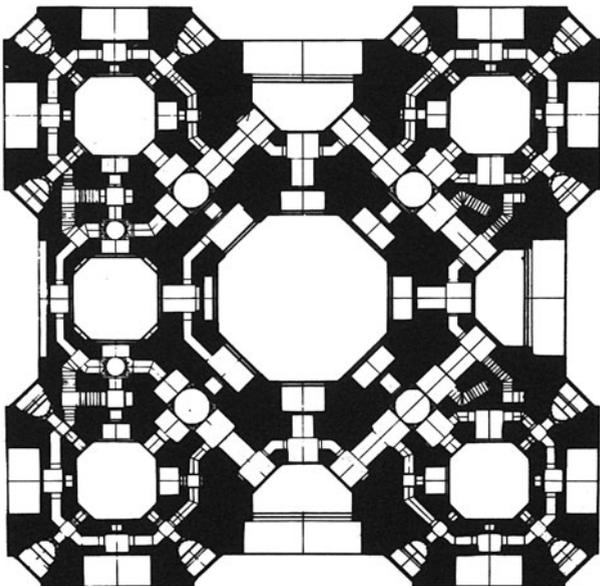
## Humayun's Tomb (16th century)

A peerless example of the *char-bagh* as architecture is Humayun's Tomb, built in memory of the Emperor Akbar's father. Constructed of red sandstone with dressings of white marble, it was the first substantial example of Mughal architecture – an austere tour-de-force. Here the *char-bagh* motif has been enlarged and repeated in intricate patterns, generating a whole new world of architectonic concepts, and making this a work of seminal importance to the other great masterpieces of Mughal architecture which were to follow.

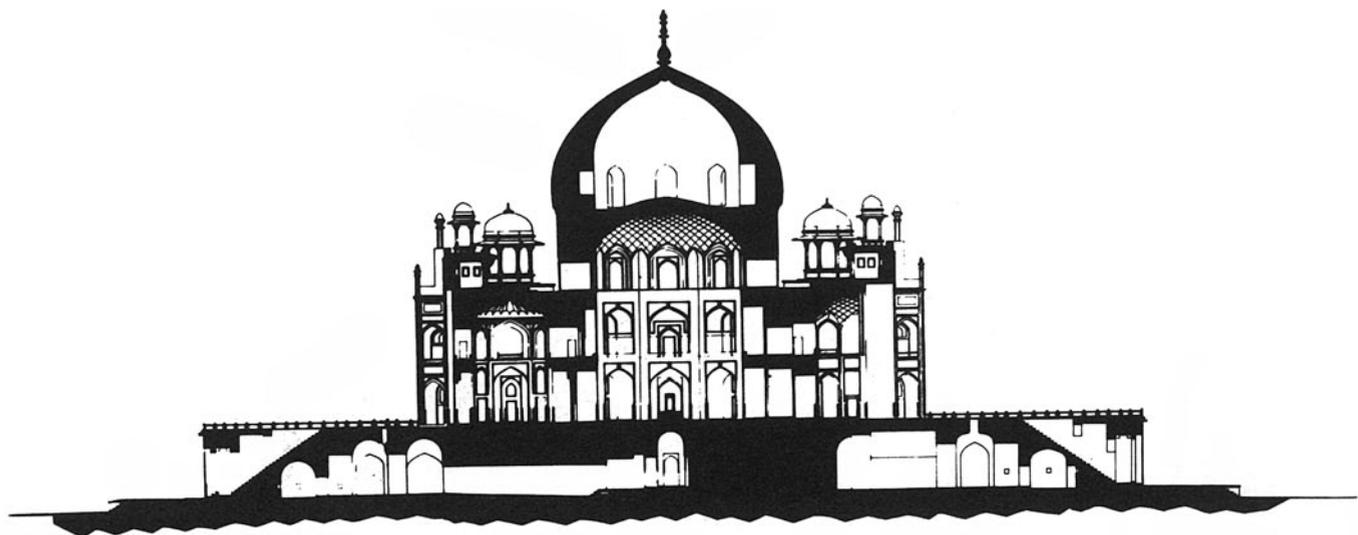
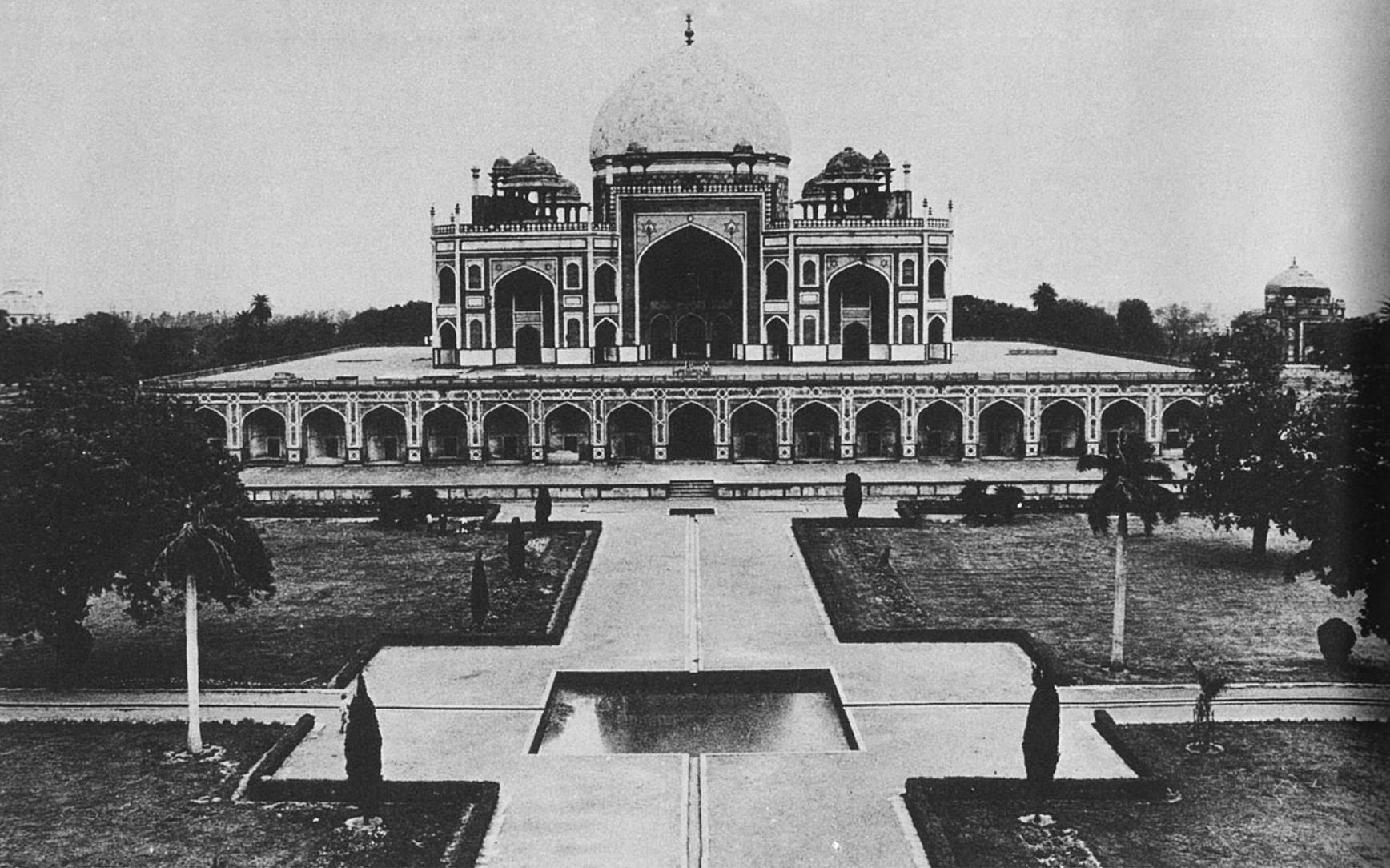
*Below: Plan of the tomb.*

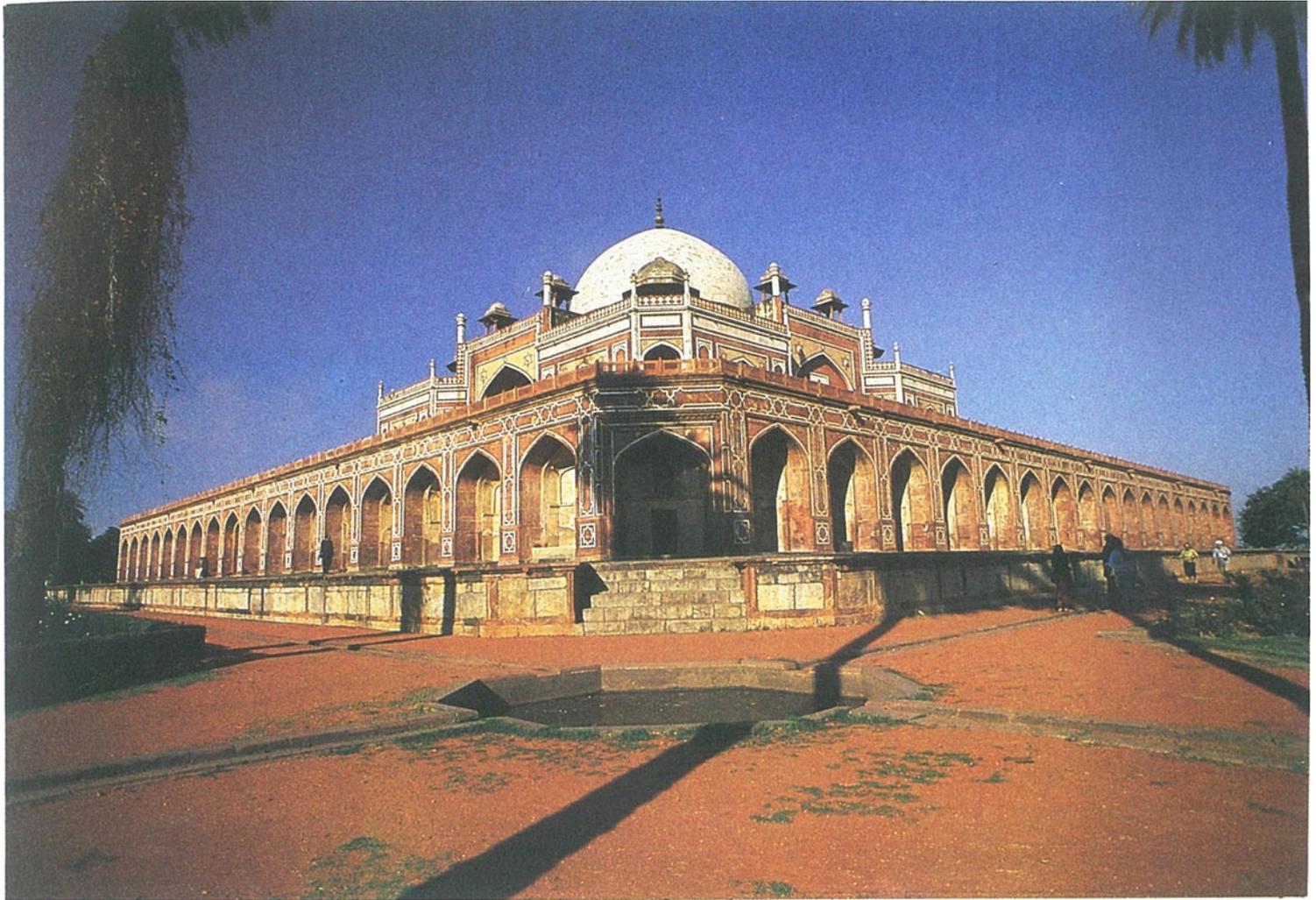
*Right: Plan of garden with tomb in centre.*

*Opposite page: Humayun's Tomb, as seen from entrance to the garden enclosure.*









*Left, above: Generally considered to be prototype of the Taj Mahal, the tomb stands on an enormous podium, seven metres high, with ornamental arches running along it.*

*Left: Section of Humayun's Tomb makes apparent the construction of its double dome, composed of two separate shells.*

*Above: Diagonal shot of tomb enhances the perfection of its proportions. Under the dome is an octagonal chamber, and in the foreground is an octagonal pool.*

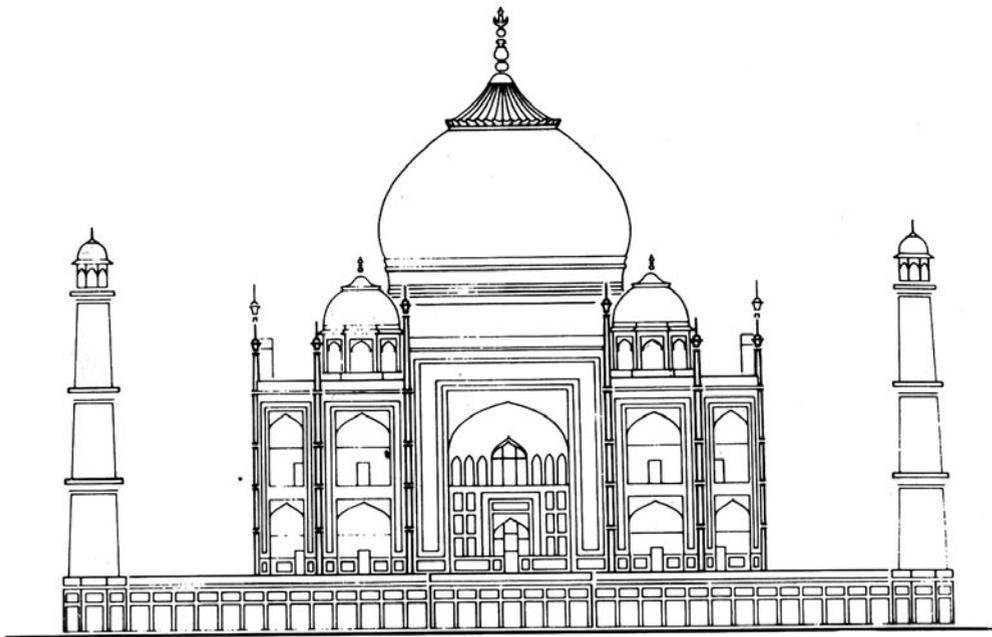
*Right: Detail of ornamental post on the roof.*



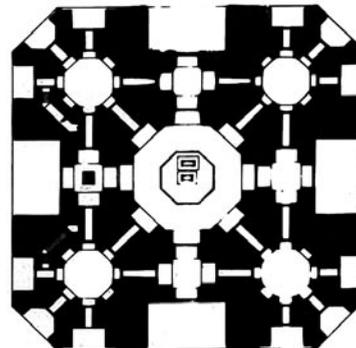
## The Taj Mahal (17th century)

The concept of the Paradise Garden reaches a state of calm perfection in the gardens of the Taj Mahal. Based on the classical *char-bagh* pattern, it has one major difference: the monument is placed not at the centre, but at the end of the garden, as though to climax the whole design.

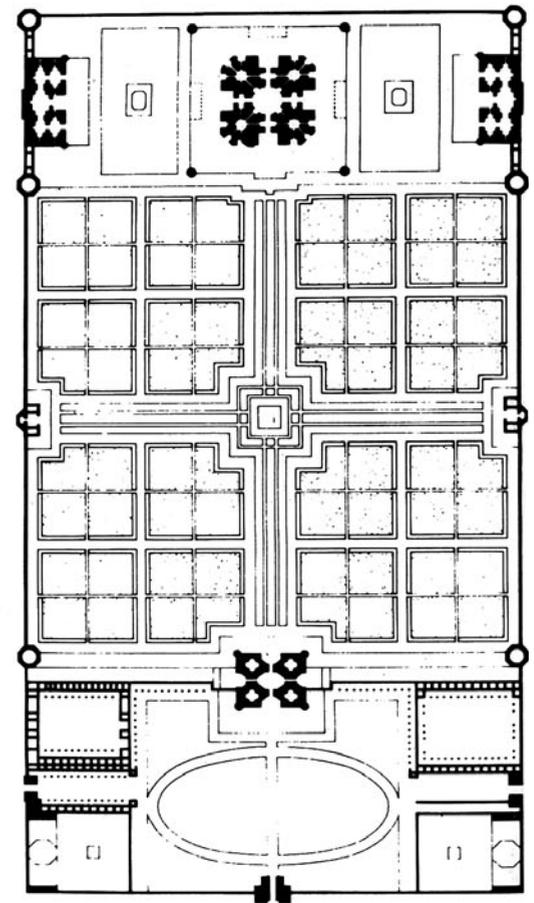
Although for decades it was popularly believed that the Taj Mahal was built by Emperor Shah Jahan in memory of his wife, more recent scholarship (based, among other things, on an accurate reading of the calligraphy on the walls and ceiling of the edifice) postulates that he may have been attempting something very different – something which only the hubris of a great Mughal Emperor and his encounter with the Vastu-Purusha Mandalas may have precipitated. He may have been attempting to model no less than the Throne of God.



*Section of Taj.*



*Plan of tomb.*

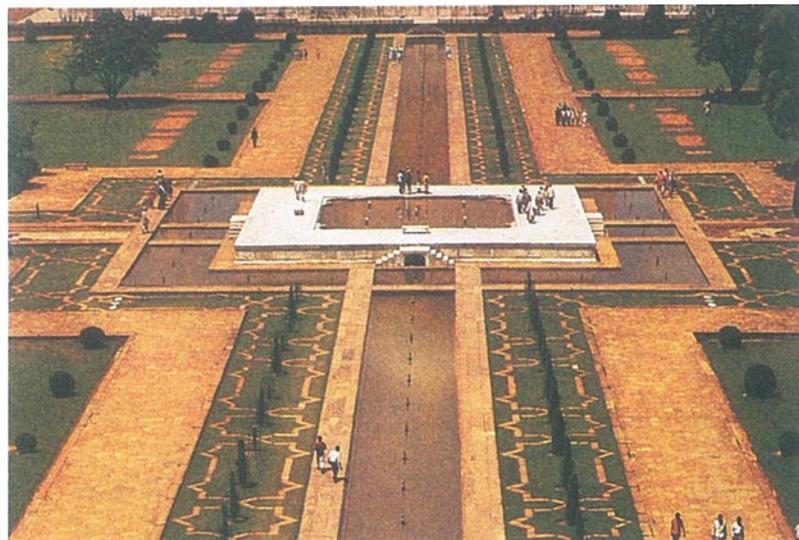


*Plan of gardens with tomb at one end and the four quadrants.*



*The dazzling white marble of the Taj Mahal seems as well preserved today as when it was built. Unlike the cathedrals of Europe, which soften and mellow with time, the Taj demands to be seen in all its pristine purity. Within, the Taj is unsurpassed for the quality of its marble ornamentation – low-relief carving, lace-like jaalis and exquisite inlay.*

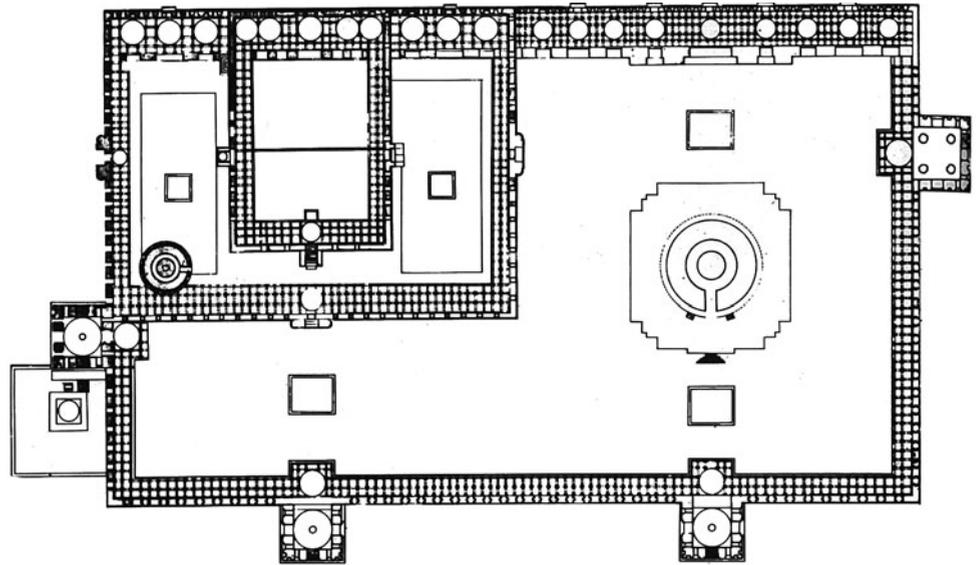
*Right: The central pool of the char-bagh, where the four water courses meet. Here the narrow rills of Humayun's Tomb have broadened into channels almost six metres wide, bisected by a row of fountains.*



## The Qutb Minar (12th-13th century)

The Qutb Minar was built to commemorate the entry of Islam into India. Its four fluted storeys are overlaid with calligraphic inscriptions and girdled with balconies. Essentially a victory tower, the Qutb is regarded as the pivot of justice – coinciding with the Hindu-Buddhist concept of the world axis – and as such signifying stability, absolute and immutable.

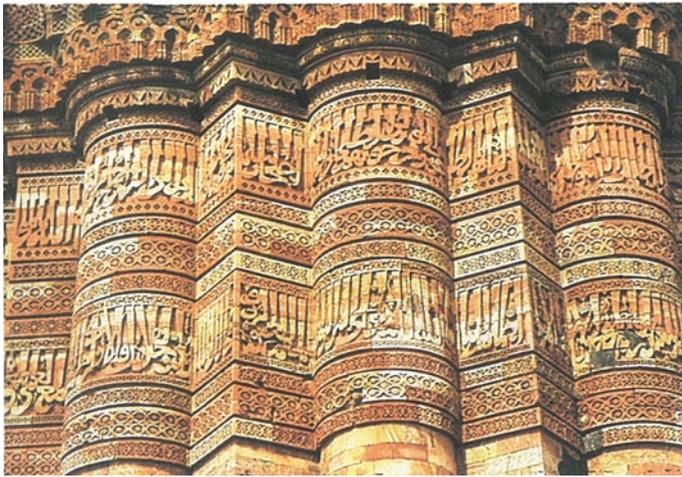
The Quwwat-ul-Islam (might of Islam) mosque nearby was constructed largely from pillars taken from Hindu temples. Enlarged in two stages, the mosque has a huge courtyard with a colonnaded corridor at one end.



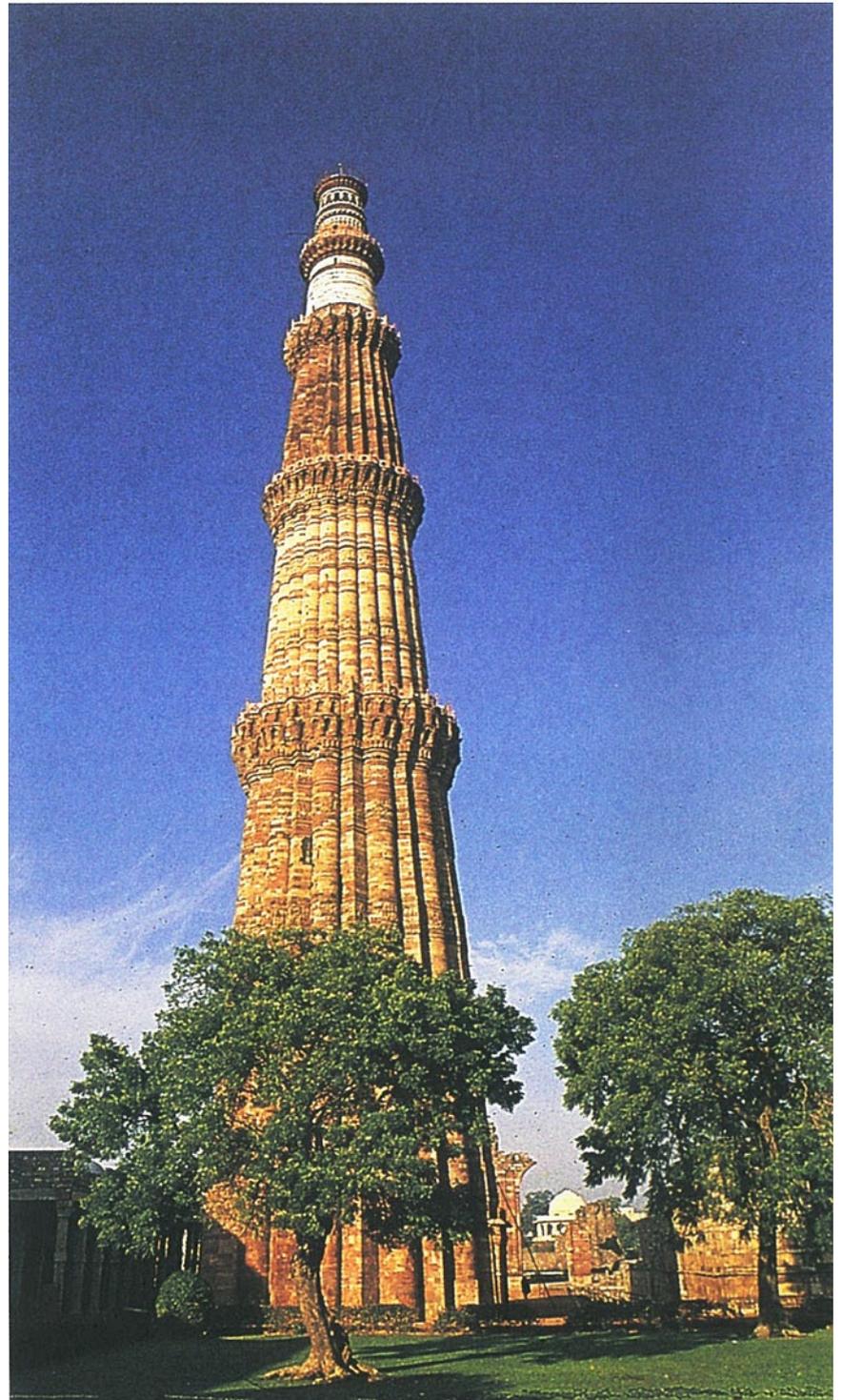
*Opposite, far left: Colonnade of the mosque.*

*Plan of Qutb and Quwwat-ul-Islam mosque.*

*The imposing tiered structure of the Qutb, ribbed and of red sandstone, rises some 77 metres into the sky. In the 14th century, the Moorish traveller Ibn Battuta said that it had “no equal in all Islam”, and James Fergusson, writing 500 years later, spoke glowingly of its “poetry of design and exquisite finish of detail.”*



*Above: Detail of calligraphic band around the Qutb. A major element of Islamic art and architecture, calligraphy assures the omnipresence of the Prophet's word.*

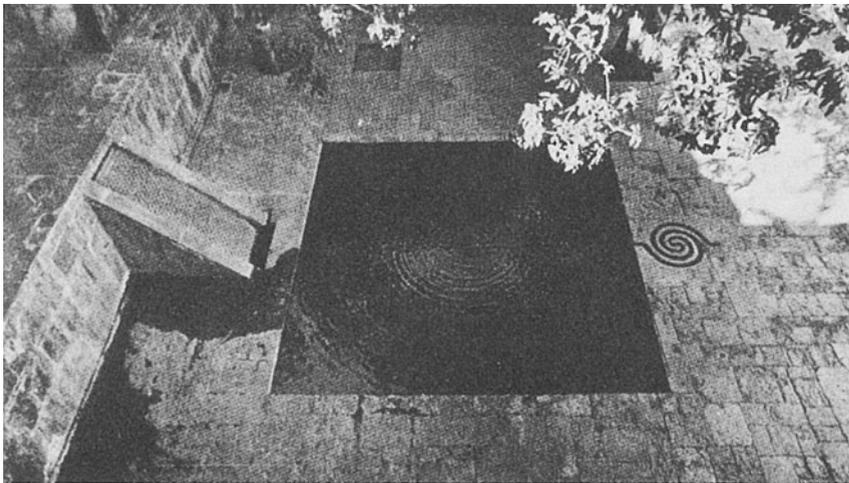


## Materials, Craftsmanship and Finesse

Islam started in the oasis towns of the Arabian desert. As it spread eastward, it encountered more and more varied building materials and technologies. These it absorbed, internalised, transformed. When it arrived in India, it found a veritable embarrassment of riches: on one hand, the finest marbles, metals and gems; on the other the most skilful and dedicated of craftsmen.

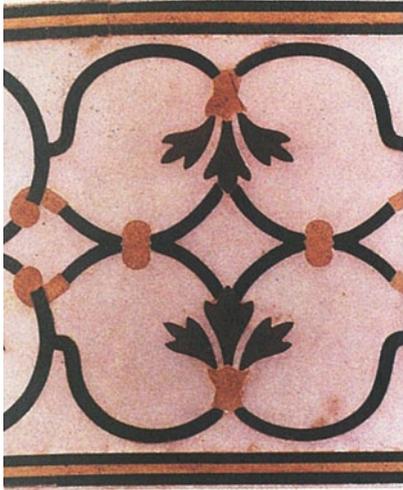
Both sides gained by the encounter. Islam nurtured in India elements that have enriched our architectural vocabulary for centuries; the arch, the *jaali*, the dome. Our craftsmen, in turn, honed their skills to a degree of precision and finesse that has never been surpassed, making architecture into a thing of rich and sensuous beauty.

Consider, for instance, the superb use of water in the pavilion near Nilkanta temple at Mandu (15th century). A crystal-clear spring spouting from the rock-face crosses in an inlaid channel the marble floor of a pavilion and cascades down the side of the podium before it comes to a perfect stillness in a square pool. Then the incredible exit: via the delicate spiral (an ancient symbol of movement). Has water ever been displayed in so many variations, in such a small distances, and with such great finesse?

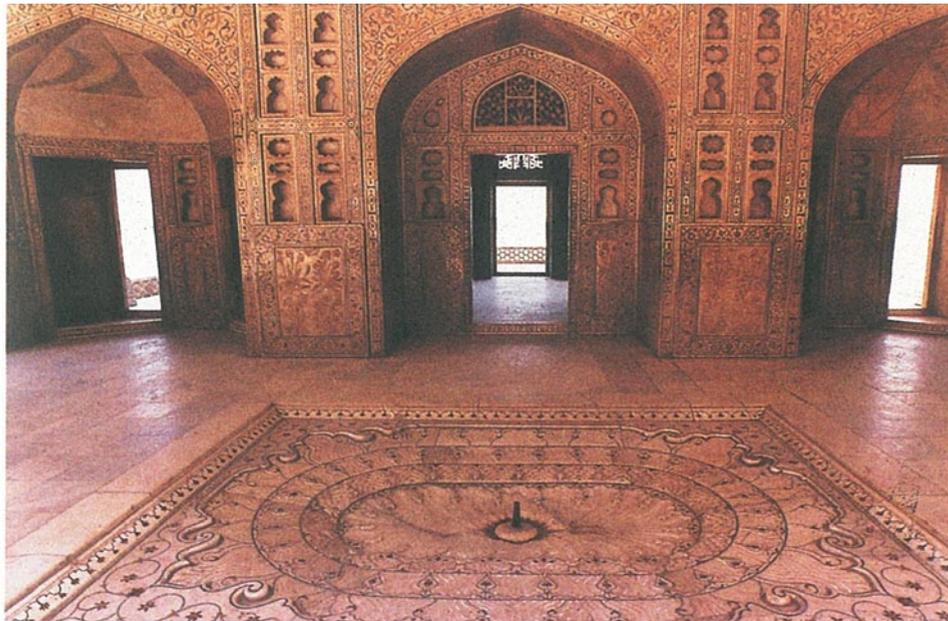
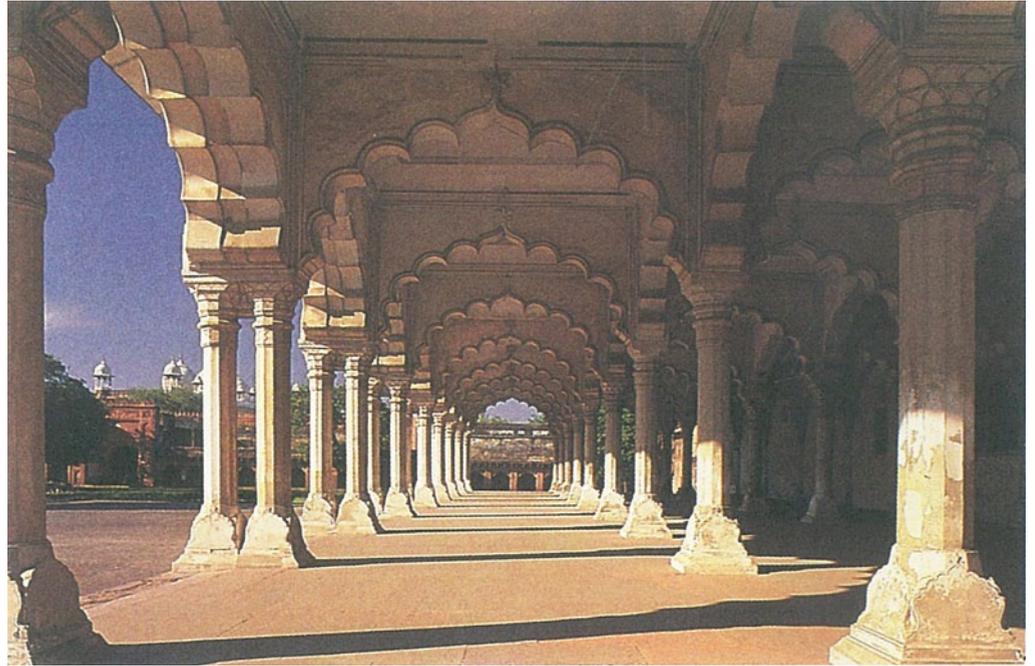


*The pool in the Nilkanta pavilion, built by one of Akbar's generals.*



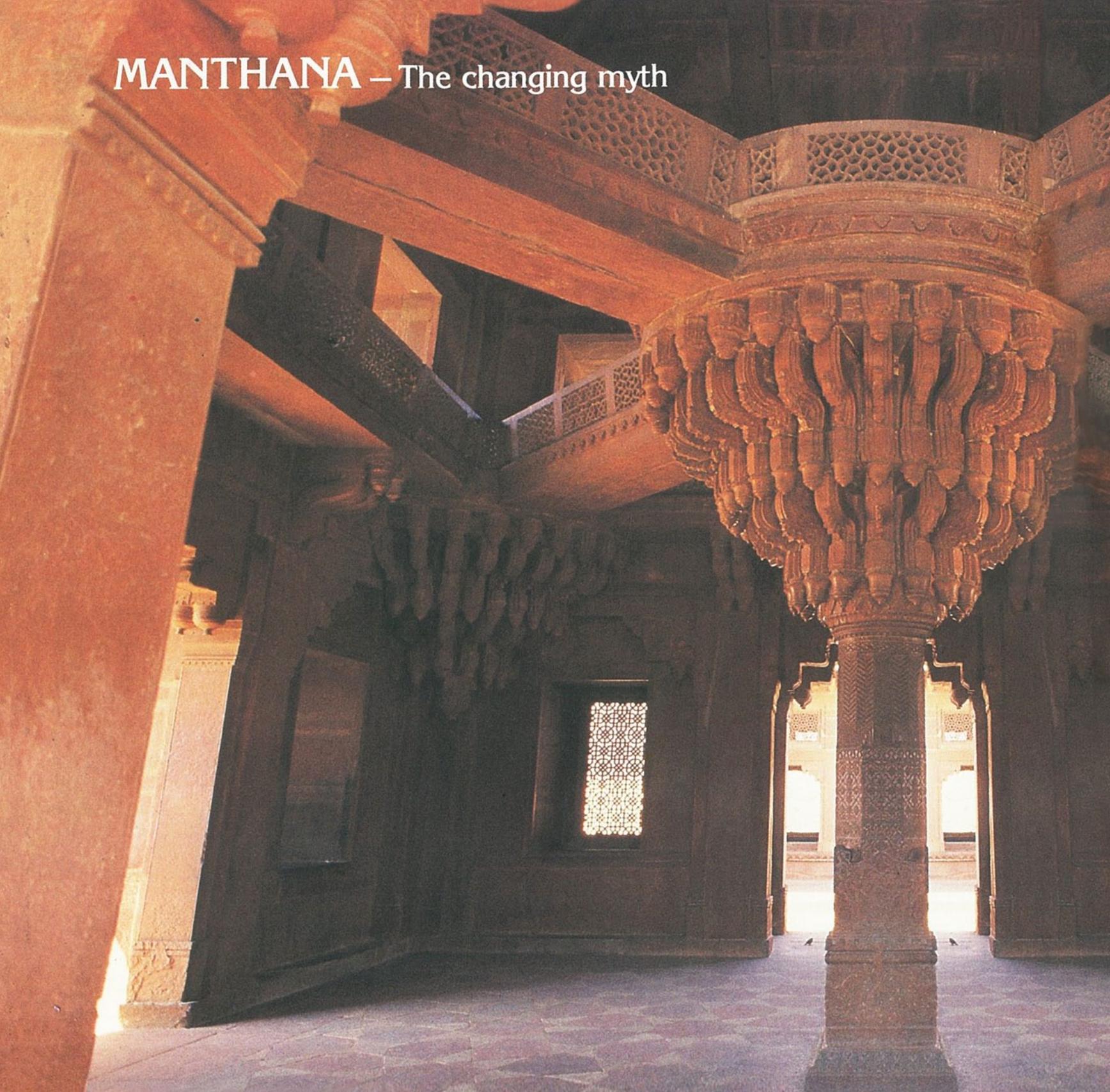


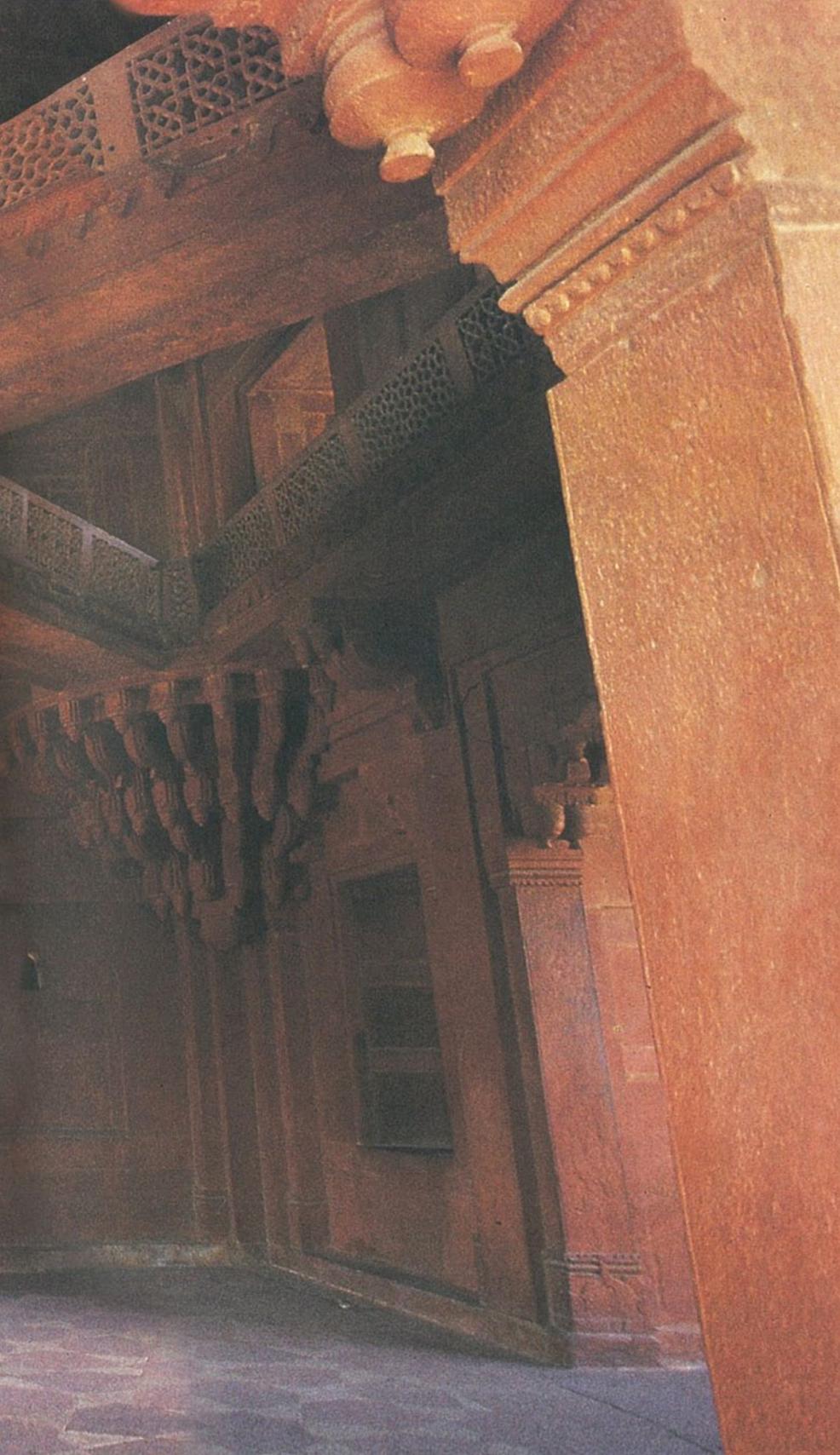
*A vista of ornamental arches in the Diwan-i-Am, Agra Fort (right). The Mughals elaborated and refined the arch to new heights of perfection. Details of inlay work from the Taj (above).*



*The tombs of Shah Jahan and Mumtaz Mahal (above), inlaid with semi-precious stones; and a delicate fountain in the Diwan-i-Khas, Agra Fort.*

# MANTHANA – The changing myth

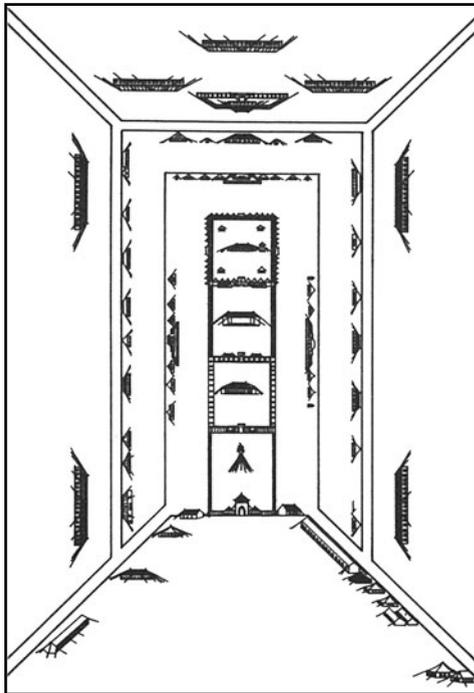




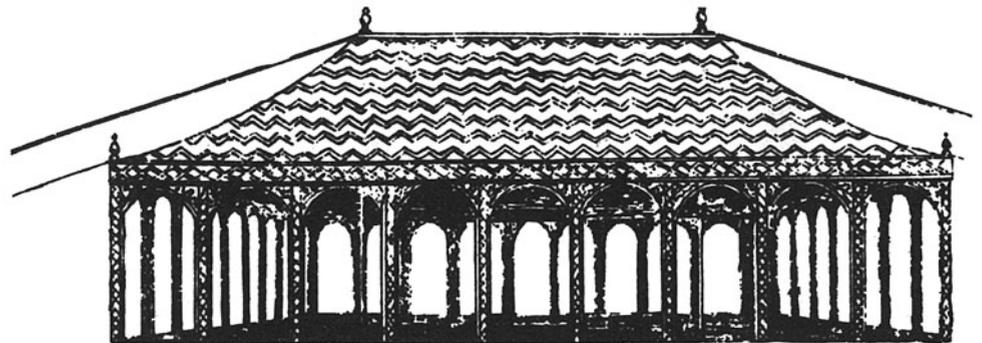
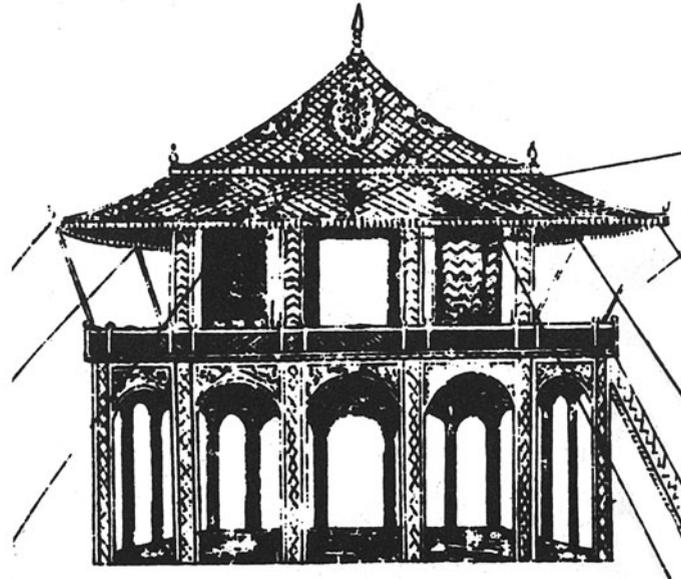
Throughout her history, India has shown a singular capacity to interact with outside influences, assimilating and transforming them through a process akin to osmosis. Hence the title of this section – *manthana*, which means churning. Here, we find five crucial examples of this phenomenon: the Diwan-i-Khas in Fatehpur Sikri, the castle of Datia near Gwalior, the Jain temple at Ranakpur, the Padmanabhapuram Palace in Trivandrum and the city plan of Jaipur in Rajasthan.

## Diwan-i-Khas at Fatehpur Sikri (16th century)

When they were in Central Asia, and later during their sojourn in Kabul, the forebears of the Mughals had lived a semi-nomadic life in tents. These ranged from the simplest canvas awnings to the most elaborate and elegant structures. After the skirmish of the hunt or the turmoil of the battlefield, the setting up of the tents became one of the most important rituals. It gave order and stability to their nomadic life-style. The Emperor himself was in the centre; three concentric rectangles (gold, silver and red) defined the relative positions of the other members of the court.



When Akbar started to build Fatehpur Sikri on a ridge 50 kilometres from Agra, he constructed in stone and marble analogues of these tents. Set on a podium of red sandstone, the free-standing pavilions recall the semi-nomadic patterns of earlier desert existence.



*Left: Plan of tents, showing how the emperor's camp was arranged. There were many different kinds of tents – the double-storeyed one at top, for instance, is where the emperor appeared before his court each morning. And all tents were made of sumptuous materials – brocades, velvets, embroideries, with elaborate awnings.*

Perhaps the most interesting of all the structures in Fatehpur Sikri is the Diwan-i-Khas, possibly designed by Akbar himself. It consists of a small cube, 9m x 9m x 7m. In the centre is an elaborate column, connected to the corners of the cube by four bridges. It is generally believed that Akbar used this structure for special audiences. Akbar sat on top of the column with his principal advisers at

the far end of each of the bridges. The visitor came in at the lower level and explained the problem he faced or the favour he requested. Akbar could then summon any one of his advisers for conference (without the others intriguing with each other). If, as Corbusier said, a house is “a machine for living”, then the Diwan-i-Khas is truly an extraordinary invention: a machine for governing.

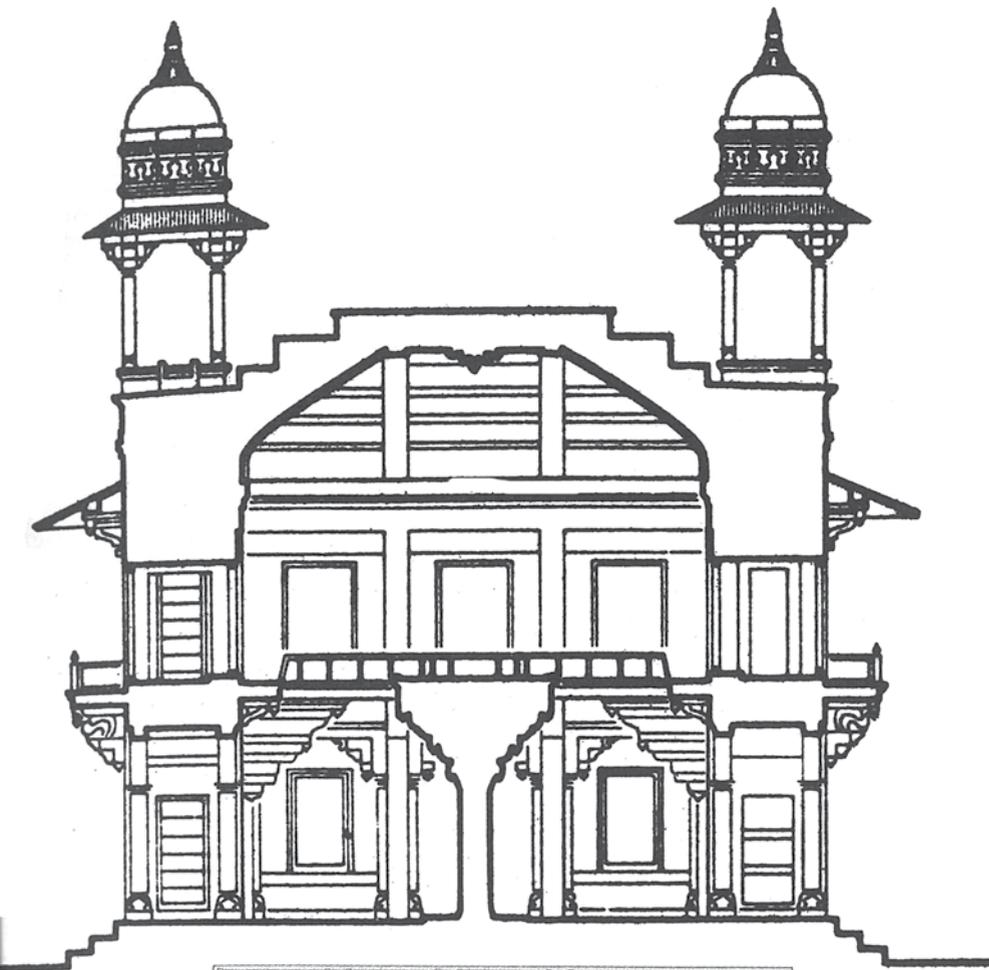


*The single-chambered Diwan-i-Khas.*

But it is more than this. For though the square plan came with Akbar from Central Asia, to the Hindu craftsmen constructing the building it would represent a *mandala*, i.e., a model of the cosmos. Thus the importance of the central column becomes devastating. For in the centre of the *mandala*, instead of the *bindu*, the source of all energy, there is the Emperor Akbar. Furthermore the column he is sitting on is clearly Buddhist/Hindu in form, and as such, as we have seen, represents the *axis mundi*, i.e., the centre of the universe.

We perceive then that the Diwan-i-Khas is a statement of staggering political and metaphysical impact. For Akbar has taken the myths of Hinduism and Buddhism and transformed them for his own purposes. Yet he has done this not in a gigantic intimidating structure, but in a small humanly-scaled edifice. It is done with great finesse, and almost with love – as though Akbar wanted to heal the differences that separate (as he tried to do with the creation of his new religion, Din-i-Ilahi).

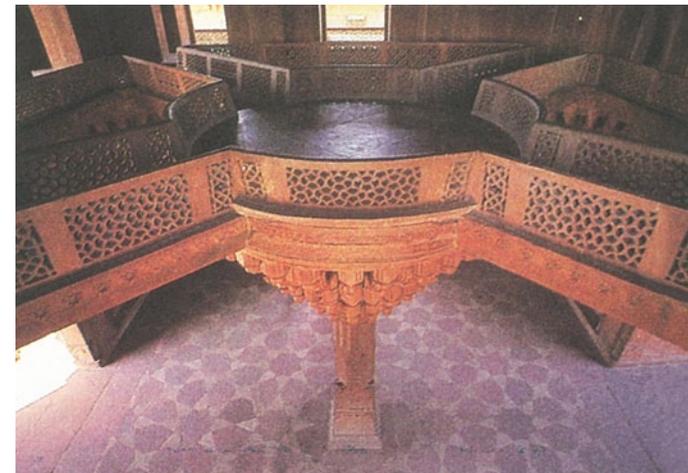
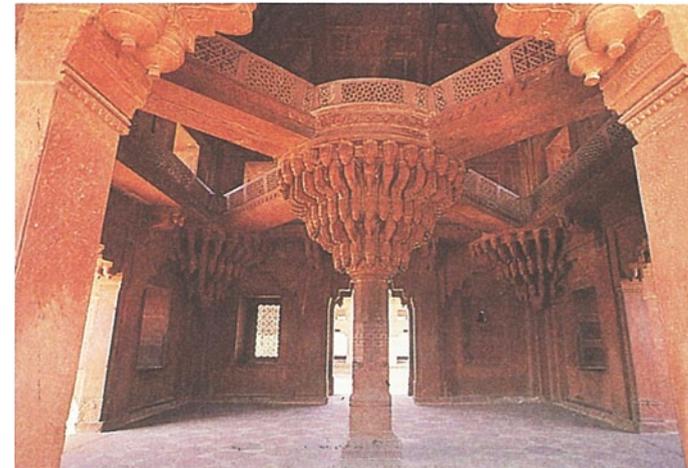
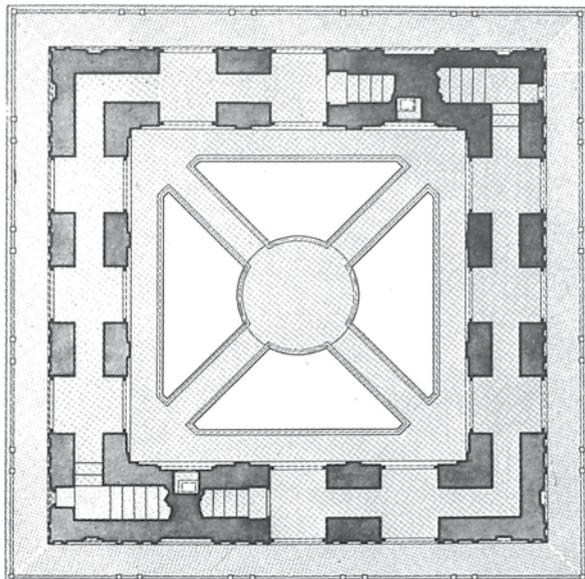




*Left: Section of Diwan-i-Khas.*

*Left, below: Plan of Diwan-i-Khas.*

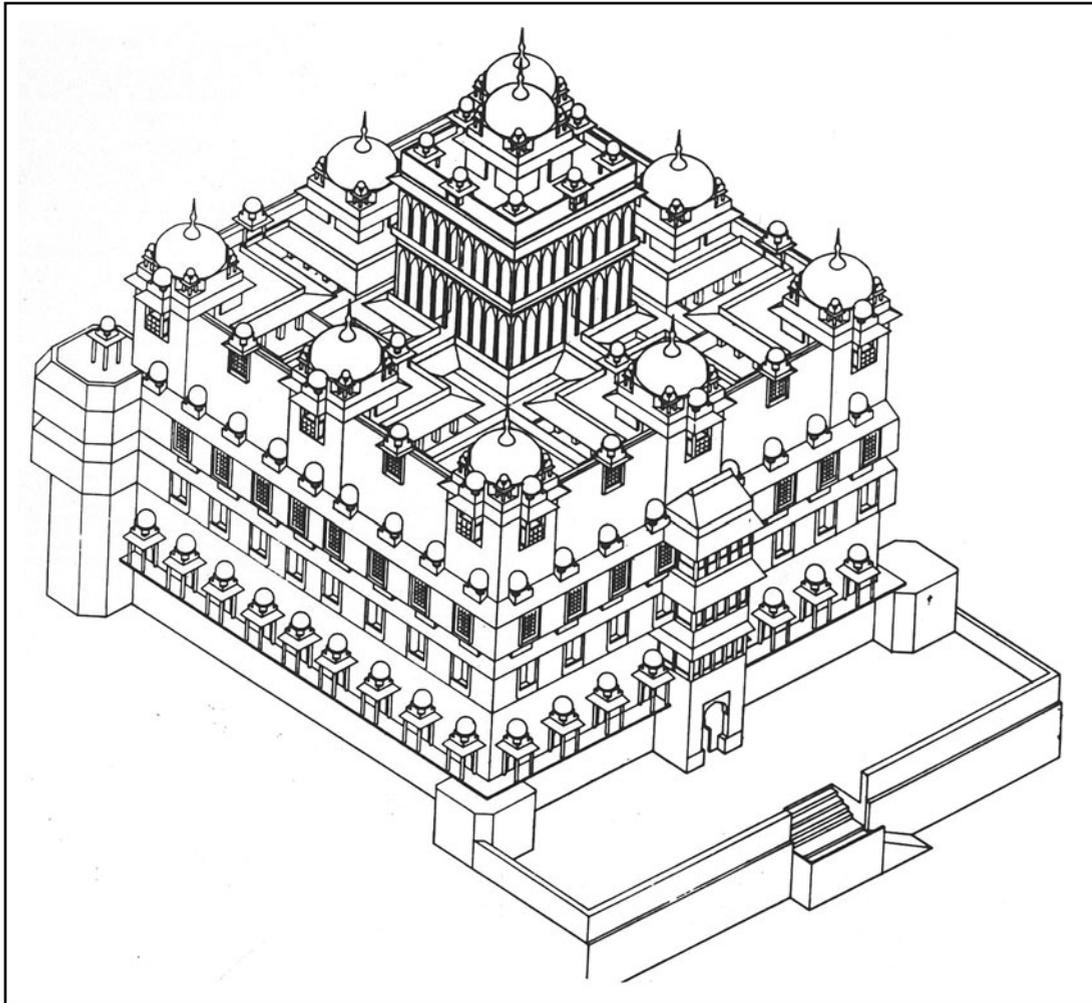
*Below: The circular stone platform on which Akbar sat, with bridges radiating along the four diagonals. The central column branches out into 36 voluted and pendulous brackets.*



## Datia Castle, Madhya Pradesh

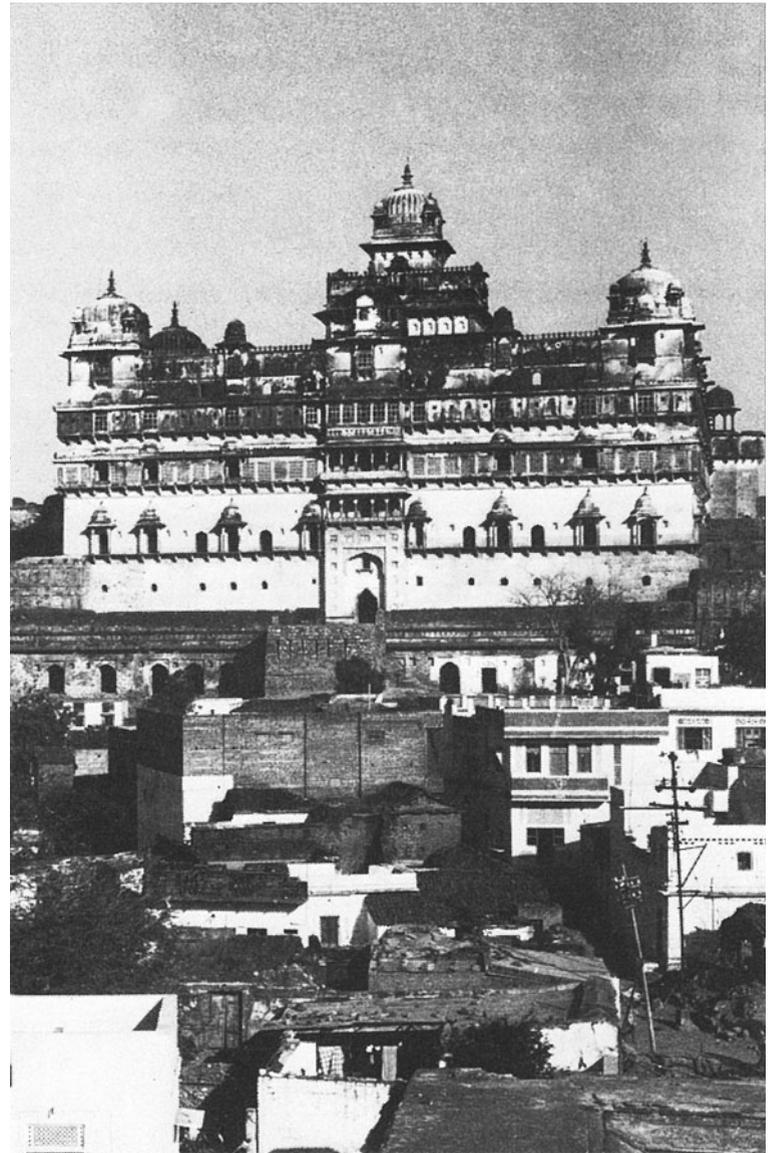
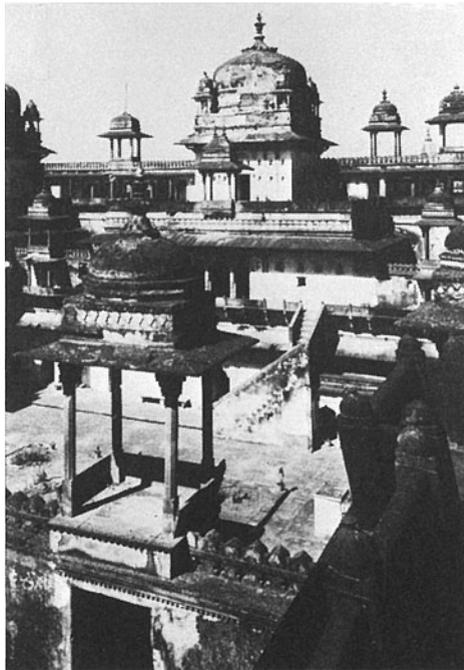
An extraordinary creation – politically, the mirror image of Diwan-i-Khas. For here a powerful Rajput king uses the architectural syntax of Islam (the domes, the colonnades, the structural clarity) to reinforce the classic *mandala* plan of Hindu mythology.

And this transformation works on another level as well. For the *mandala* is used to represent not a spiritual order, but a very temporal (and materialistic) one instead. In the centre of the plan, dominating the entire complex, is the palace of the king himself. Yet all this is done with great inventiveness and exuberance – a masterful interaction of rooms and cascading terraces, forming a kaleidoscope of voids and solids.



*Isometric view of Datia Palace.*

*Below: Enclosed within an enormous courtyard, the palace complex is built on several levels, with bridges connecting the suites of apartments. There is even a series of underground halls to which the Raja retreated during the summer months.*



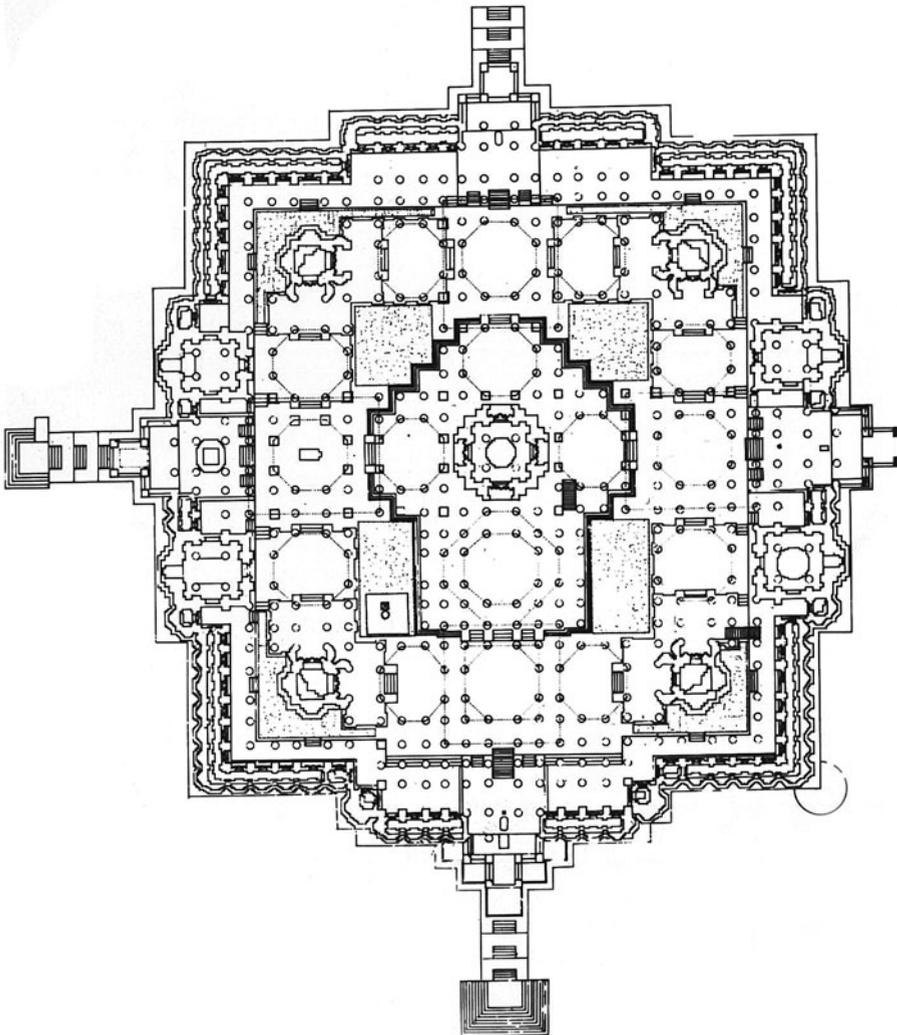
*The five-storeyed Datia Palace is sited on a massive rock and is one of the tallest structure of 16th century India. The central dome rises to a height of some 40 metres.*

*Left: As one moves up, the proportion of open space increases, until the topmost floor features only chhatris and ribbed domes.*

## Ranakpur, Rajasthan (15th century)

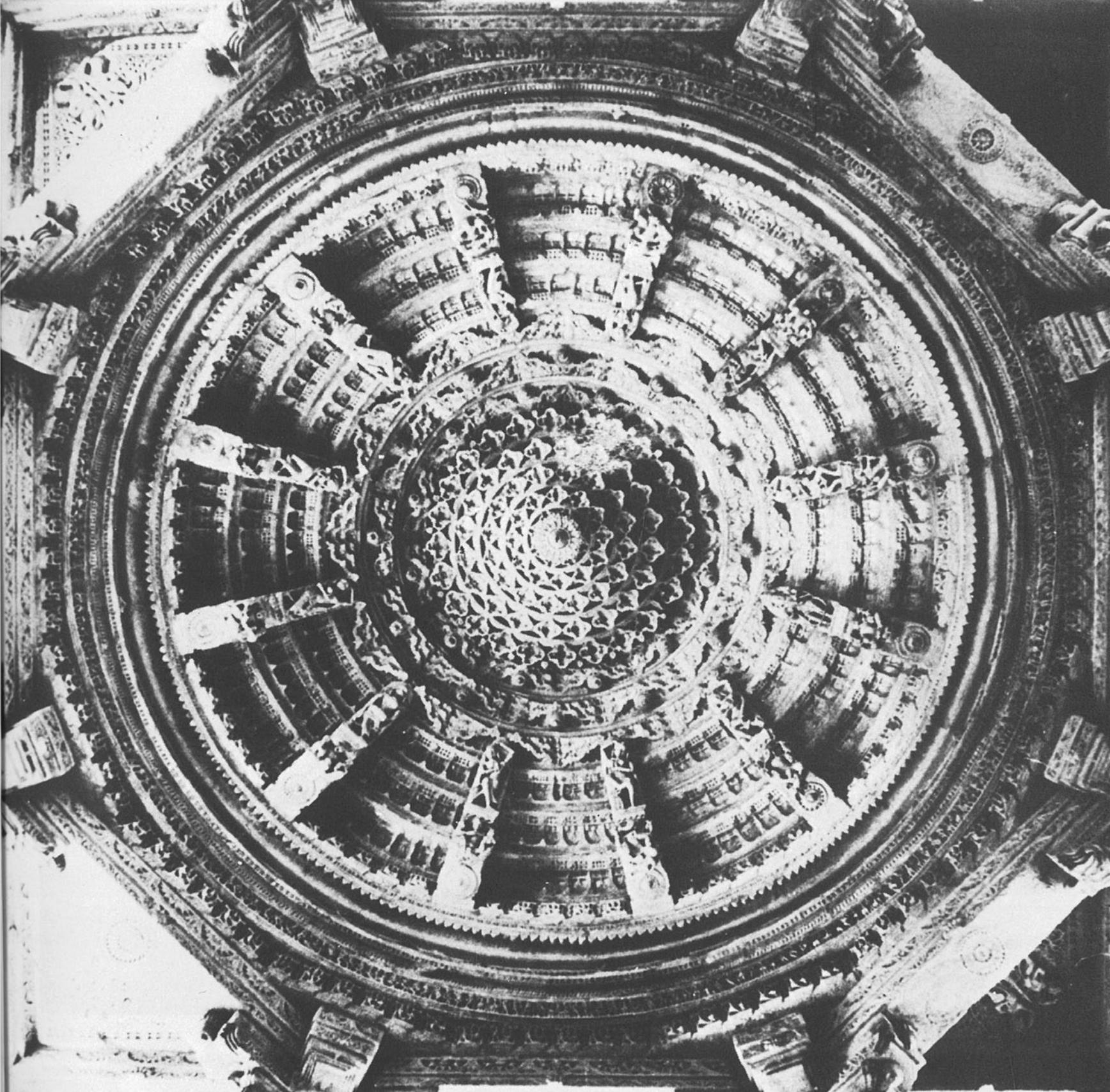
The Jain temple of Ranakpur in Rajasthan is renowned for the profusion of its marble carving and for its *chaturmukha* plan – with entrances from the four cardinal directions. Although generated by its Vastu-Purusha Mandala origins, Ranakpur also transforms brilliantly Islamic influences – in the massed cupolas of its dome and in the pillars of its western *mandapa*, devoid of figural representation.

The temple is built on a high *jagati* (terrace), with each entrance articulated by a *rangamandapa* (dancing hall), the whole encompassed by a row of 84 chaplets which seem to fortify the structure. A remarkable quality of the interior is the extraordinary articulation of light in the *rangamandapa*: the sun's rays stream through the clerestoreys, bouncing off the white marble floors and columns to produce a diffused magical glow.



Chaturmukha plan of Ranakpur temple, with entrances from the four directions.

Opposite page: Amid all the general opulence of its carving, the ceilings at Ranakpur stand out. Many are enormous circles with a huge pendant padmashila at the centre.



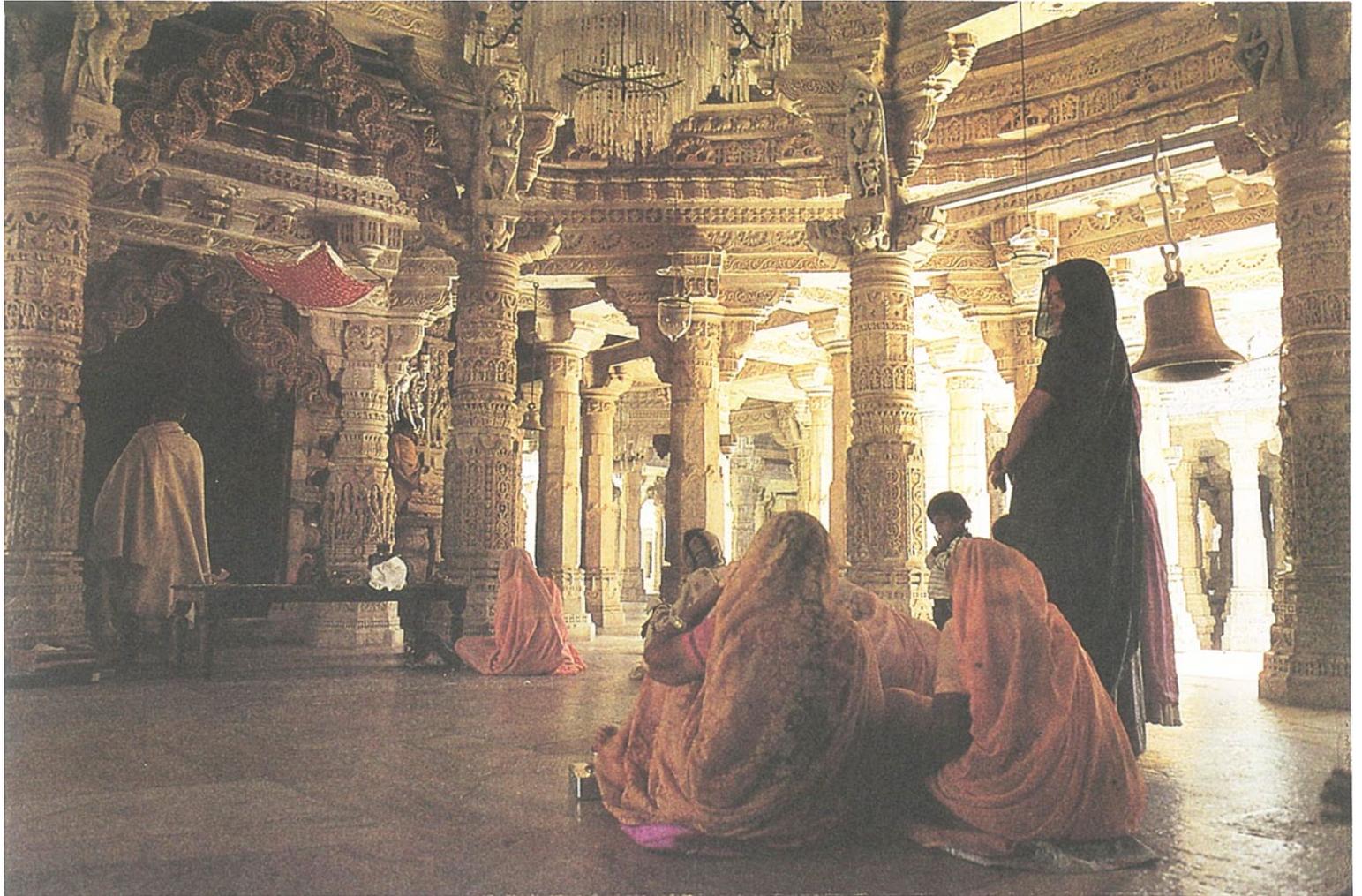


*Above: Distant view of Ranakpur clearly shows Islamic influences in the domes which accord oddly with its soaring shikharas. The temple represents a marked departure from accepted architectural canons.*

*Right: Built on a westerly hillslope, the Ranakpur temple has an exceptionally high plinth.*

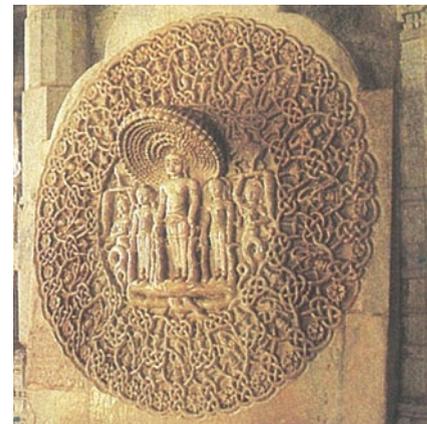
*Far right: The shikharas have several interesting features – leaning half-spires, complex minor turrets and superimposed balconies.*





*Ranakpur achieves a unique quality of light through a variety of architectural devices and the translucence of its choice Sonana marble.*

*Right: Detail of carving.*

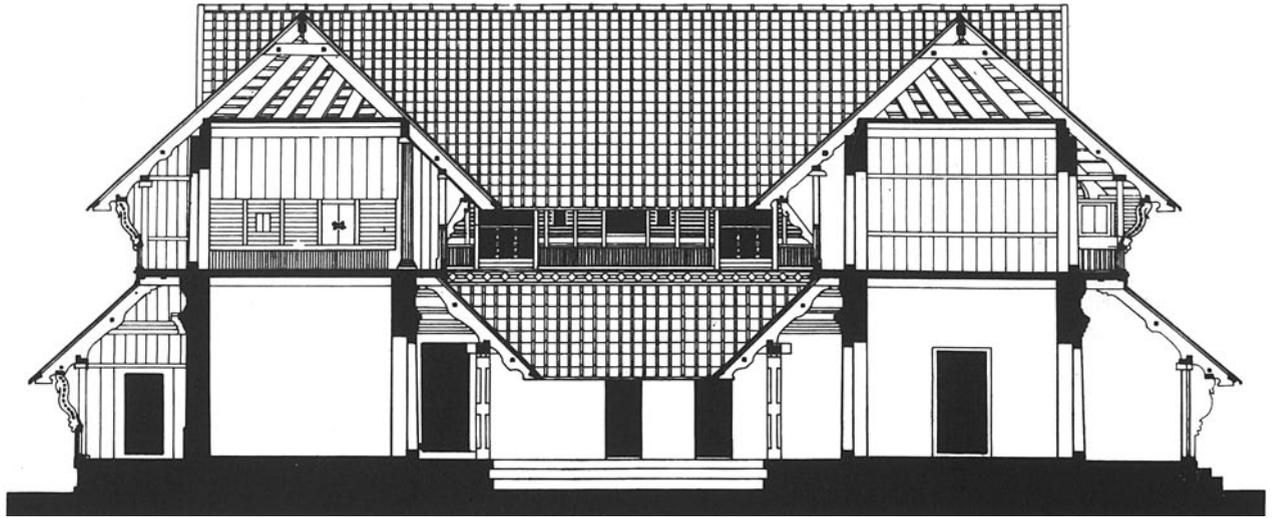


## Padmanabhapuram, Kerala (15th-18th centuries)

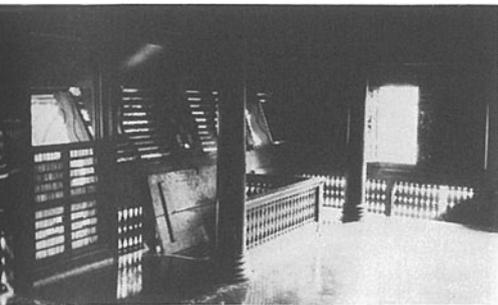
At the southern tip of India, just 50 kilometres south of Trivandrum, are some of the oldest wooden buildings in India: the Padmanabhapuram Palace complex in Kerala. Stemming clearly from Hindu roots, Padmanabhapuram nevertheless reveals a transformation of many influences – Colonial as well as Far Eastern. The buildings of the palace are ideally suited to Kerala's humid climate – the rain sliding off the sweeping tile roofs and cool breezes wafting through the *jaalis* of its windows. Significant features include the intricate joinery of the woodwork and the lustre of the black floors, so bright as to mirror the surroundings.

The central pivot of Padmanabhapuram is the Thai Kottaram (Mother Palace) which stands near the *brahmasthana*, the point where the main axes cut each other, which corresponds to the sacred centre of the Vastu-Purusha Mandala. It is around this point that the entire palace complex derives its architectural orientation and cohesion.





*Above: Section of the thai kottaram or Mother Palace, the core of the complex, and the sacred centre of the Vastu-Purusha Mandala, on which the entire plan is based.*



*Left: The steep tiled roofs of Padmanabhapuram form multi-layered triangular patterns, and deal admirably with the fury of Kerala's monsoon. Courtyards are used as a breathing device to bring light and air into the palace.*

*Right: Padmanabhapuram is noted for the excellence of its woodwork, its fine proportions and perfect jointing. Nails are hardly ever used in the construction.*

*Far right: Carved overhanging window on elaborate brackets provides relief from stark white walls.*

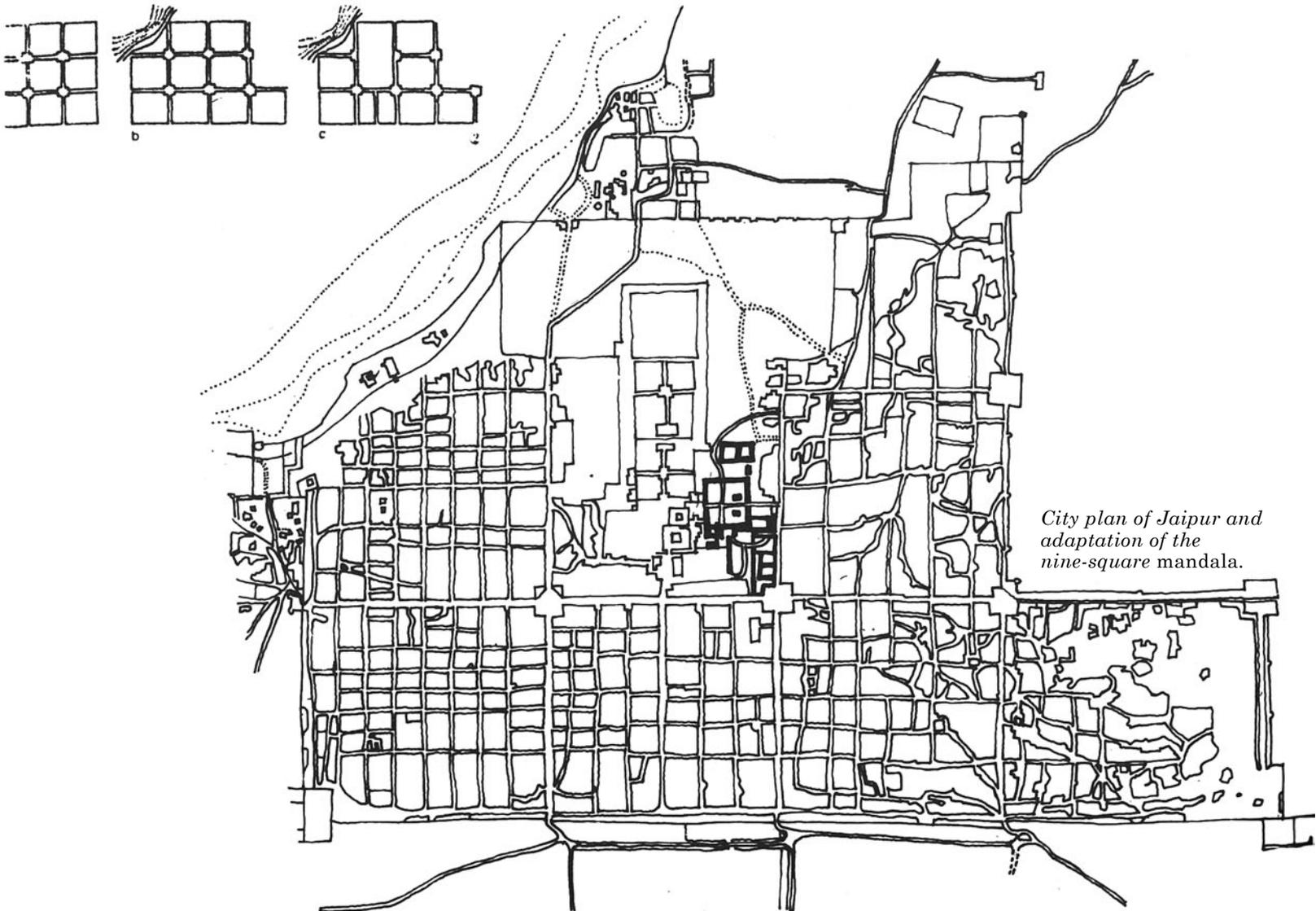
*Above: Interior woodwork takes on dark, glowing quality.*



## Jaipur (18th century)

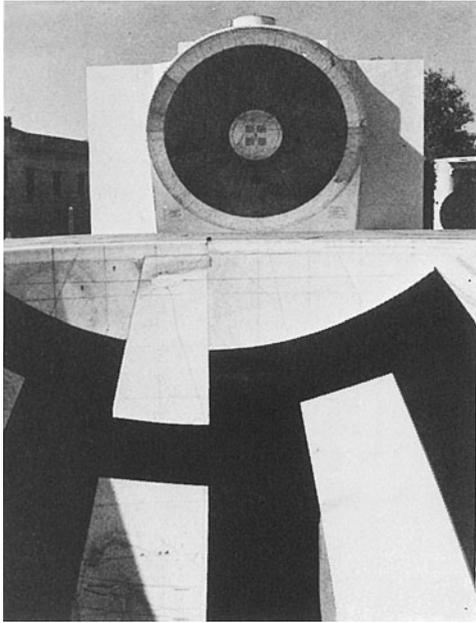
Jaipur represents a transformation of another kind, one which is of crucial relevance to us today. For the master plan of the city attempts to combine the most ancient and sacred beliefs with the tenets of modern science.

Maharaja Jai Singh who founded the city, was also the renowned astronomer who built the five Jantar Mantars (observatories) at Delhi, Jaipur, Ujjain, Banaras, and Allahabad. In the plan of Jaipur he generated a truly extraordinary concept. The basic plan of the city is the nine-square *mandala* corresponding to the *navgraha* or nine planets. The void in the central square was used for the palace garden. Because of the presence of a hill, a corner



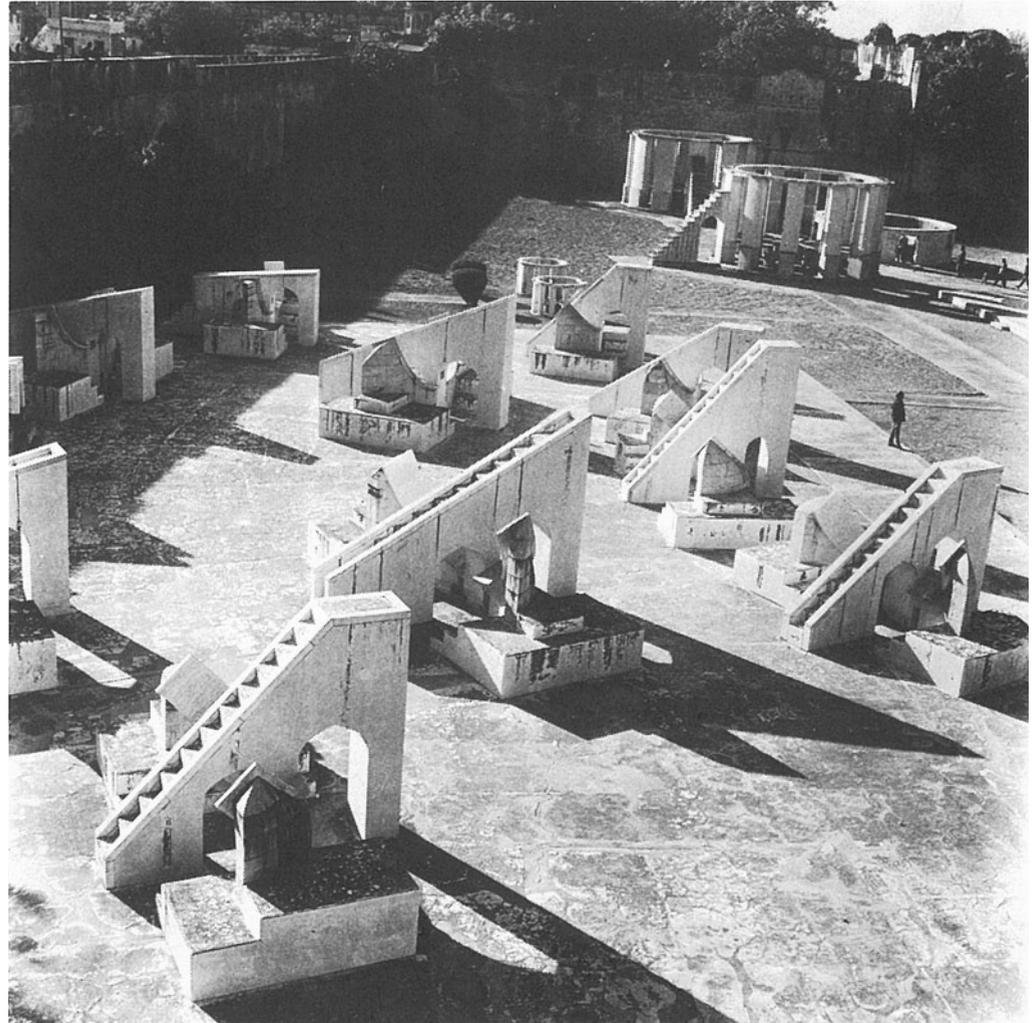
square was moved diagonally across. Other minor modifications were made to accommodate Jai Singh's own palace and its axial approach roads.

Jaipur's plan is worthy of admiration and emulation: the clarity of its main arteries, the positioning of its principal buildings, the efficiency of its water management system, the understanding of essential socio-economic patterns, and above all, the startling relevance to us today of the transformation between past and future, between the material and metaphysical worlds, between the macro and micro scales, that Maharaja Jai Singh sought to synthesise.



*Above: Among the massive masonry structures in Jaipur's Jantar Mantar are Jaiprakash Yantra, which consists of two hemispherical cavities partially sunk in the ground. It is used for marking the position of the stars. In background is the sundial Narivalayas Yantra.*

*Right: Rashivalayas Yantra, a collection of 12 instruments, each corresponding to a sign of the zodiac. The instruments are used to make observations of celestial bodies.*



# COLONIAL – Architecture and the Raj



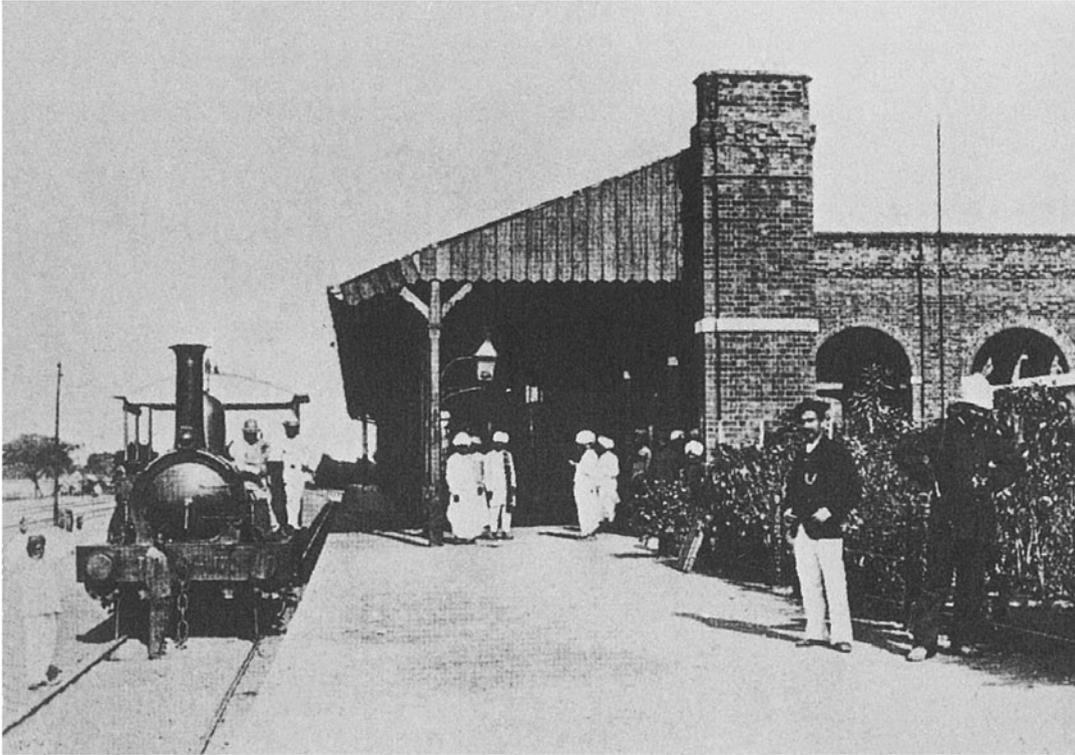


With the arrival of the European colonists, came new mythic values: rationality, industrialisation, modernity. The Age of Reason had transformed Europe of the 17th century. Life thereafter was never the same. Great strides were made in the sciences. Reason was venerated as man's highest faculty.

The presence of the British affected India in many ways. Perhaps the most important change of all was the establishment of the Indian Railways in the 1850s. Soon, distant parts of the Indian sub-continent were linked together with ties of steel. For though the English, like the Dutch and Portuguese, first came as traders, as the decades passed the scattered trading posts of the East India Company began to assume the dimensions of the greatest colonial empire the world has ever seen. And India came to be known, with good reason, as the Jewel in the Crown.

## Science and Technology

Scientific advances in the West inevitably had repercussions on India. Travel was accelerated, with trains, motor cars – even the bicycle! The pioneering work of Louis Pasteur, improvements in instruments like the sextant, used to measure the altitude of the sun, and globes to chart planetary paths – all these contributed to the development of the scientific temper.

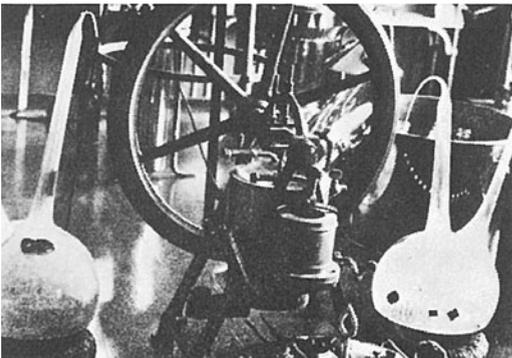


*Travel speeds up with the steam engine...*

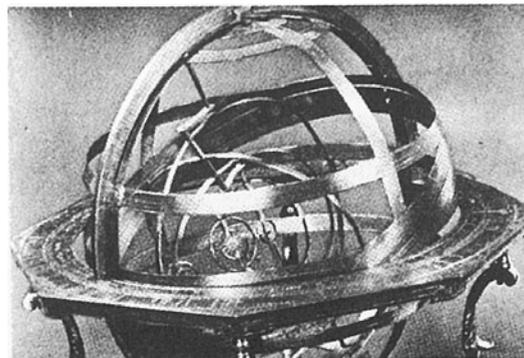
*the automobile...*



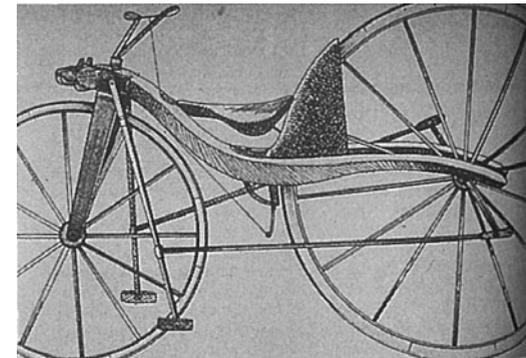
*the bicycle.*



*Louis Pasteur's laboratory.*



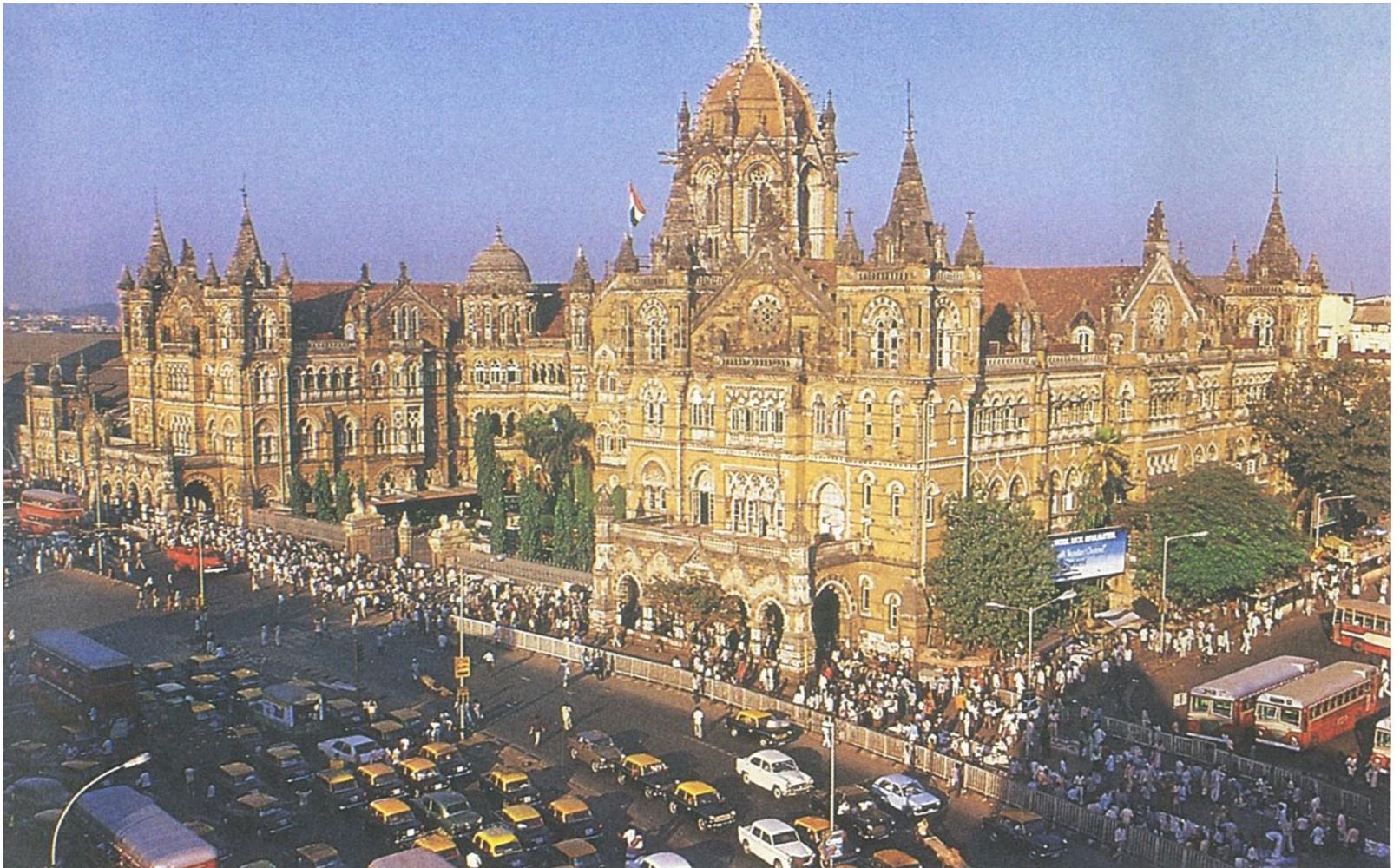
*Astronomical instrument.*



**Victoria Terminus (1878)** Designed by F. W. Stephens, Victoria Terminus is generally considered the finest Victorian Gothic building in India. For many decades thereafter, it continued to be the largest covered railway station in the world. Both the exterior of the building as well as the interior have surface ornament of an extraordinarily high standard, designed by the Bombay School of Art, directed by Lockwood Kipling, the father of Rudyard, in conjunction with Stephens. A work of

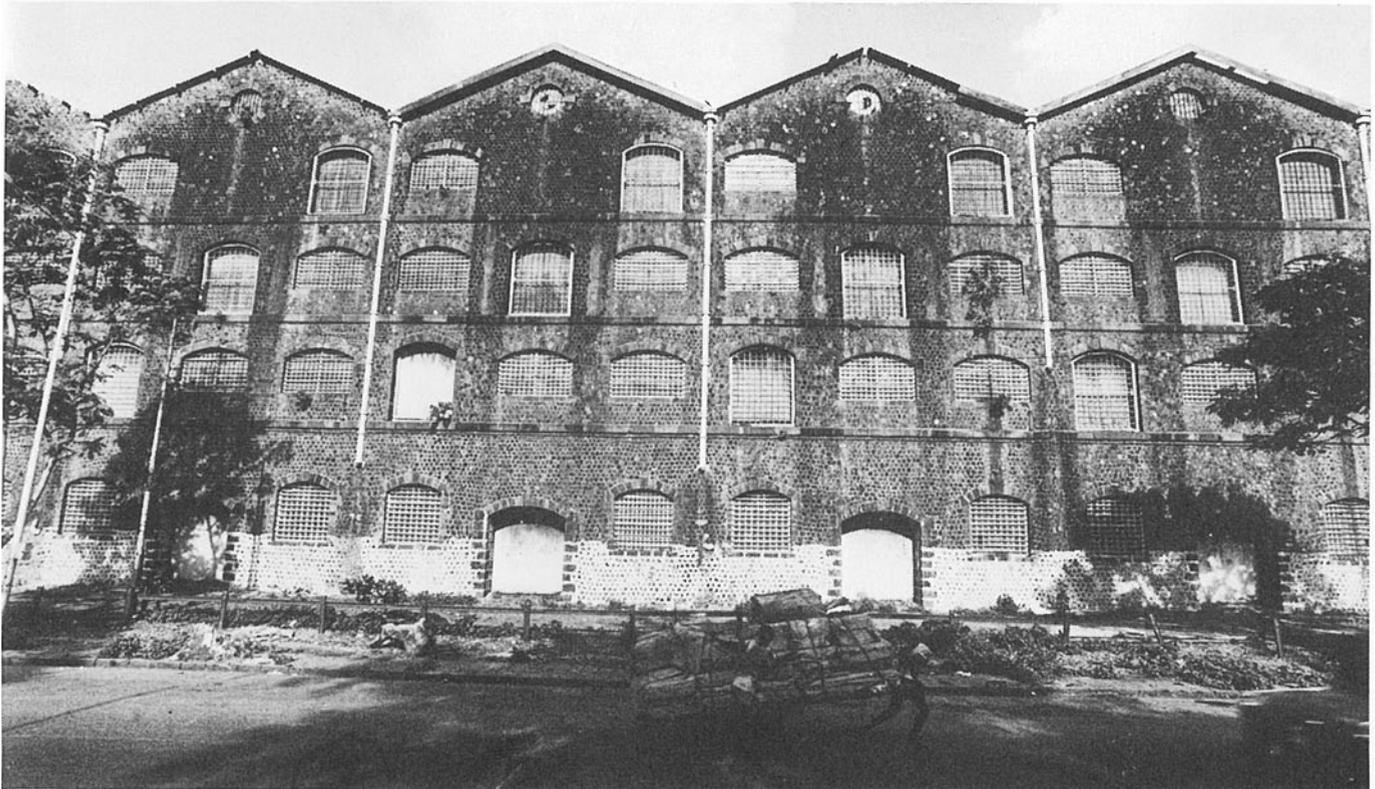
high originality, it melded neo-Gothic architecture with tropical and Saracenic motifs, forming a style which came to be popularly known as “Bombay Gothic”.

Victoria Terminus is a great monument to the Railway Age and to the city in which it stands. There could hardly be any citizen of Bombay who has not been at least once through its monumental portals and felt the exhilaration of arrival in a great metropolis.

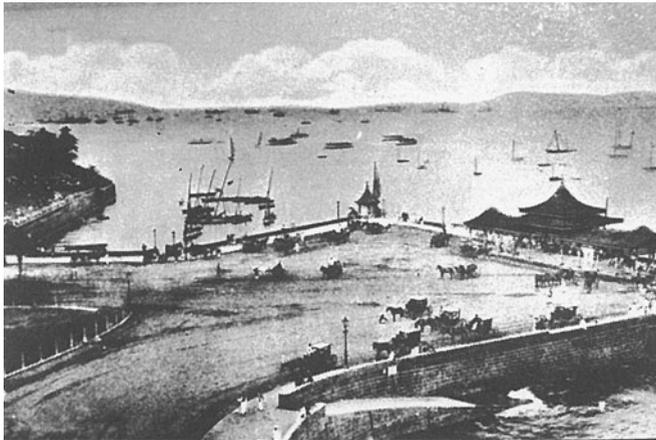
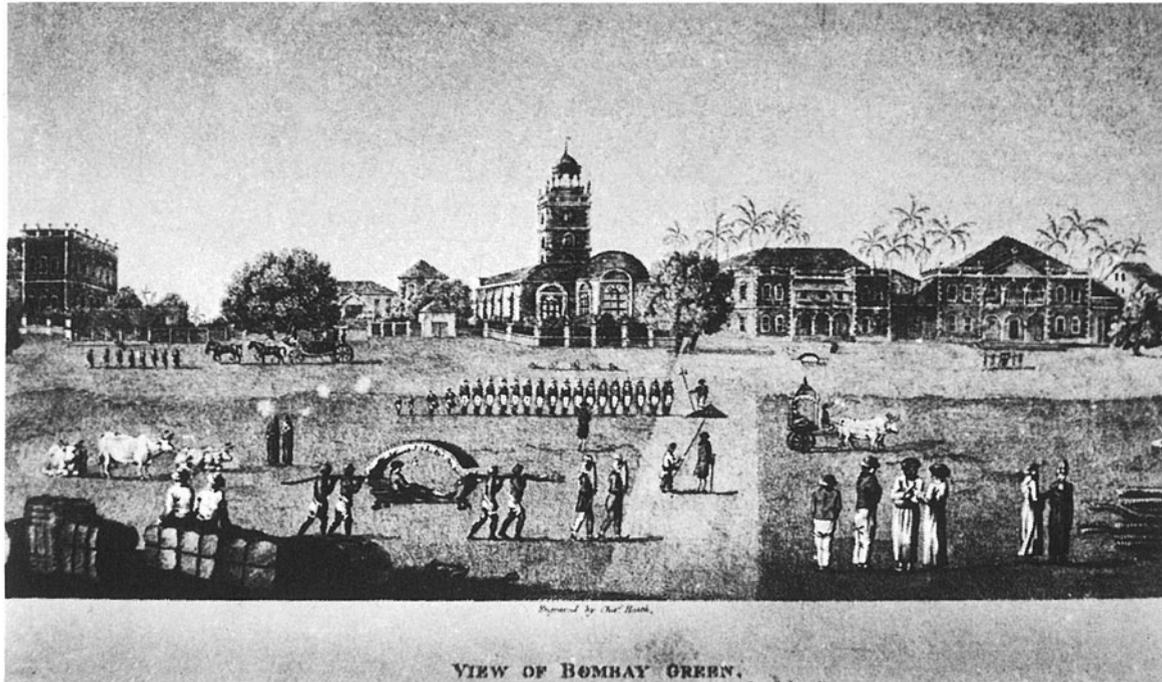


**Commerce and Urbanisation** The Industrial Revolution in England brought in its wake a parallel development in India. As trade grew, there was increased port activity, necessitating the building of extensive docks, shipping facilities and huge warehouses to store goods. Around these nuclei grew new urban centres: Calcutta, Madras, Bombay; and further east of India: Singapore, Hong Kong, Sydney. Each of these precipitated a rapid concentration of population, becoming within a few decades the giant metropolii we know today.

The concentration of population that comes with urbanisation has changed the demographic patterns across much of Asia. For us in India it has been a two-edged sword: creating on one hand the considerable range of skills that urbanisation generates, and on the other the dense (and too often squalid) concentrations of population that exist in so many of our cities.



*With growing industrialisation, enormous warehouses sprang up in the big cities.*



*Old view of Bombay harbour. With the growth of cities came greater port activity.*



*The former Dhobi Talao in Bombay, now a busy traffic intersection.*

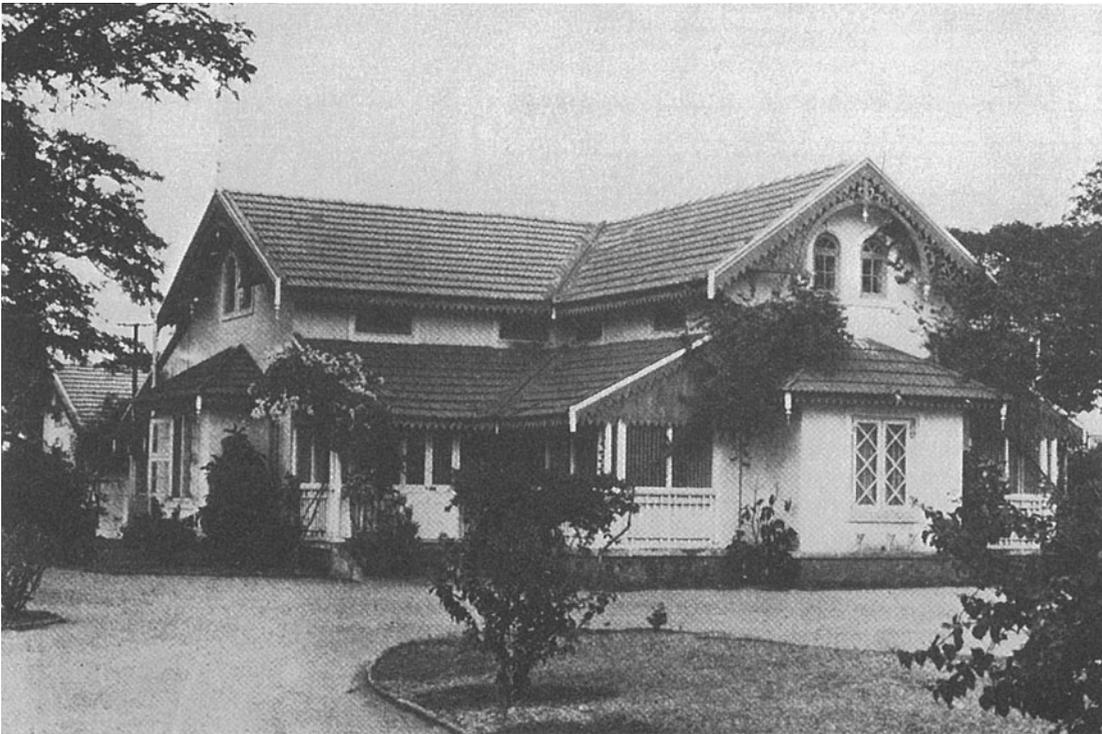
## Cantonments and Bungalows

A distinct new settlement pattern emerged when the British set up separate military camps (cantonments) on the periphery of cities. All cantonments share a similar character arising out of common elements – the church, the club, the parade ground, the barracks, the bungalows, the spacious tree-lined avenues.

Of primary importance to the cantonment was of course the parade ground, which had many functions. Firstly it was a space for the military units to practise

their various manoeuvres. On Sundays and holidays, it became a *maidan* for a *chukkar* of polo or a game of cricket. Lastly, it served as a buffer zone between the bungalows of the cantonment and the crowded gullies and alleyways of the native town.

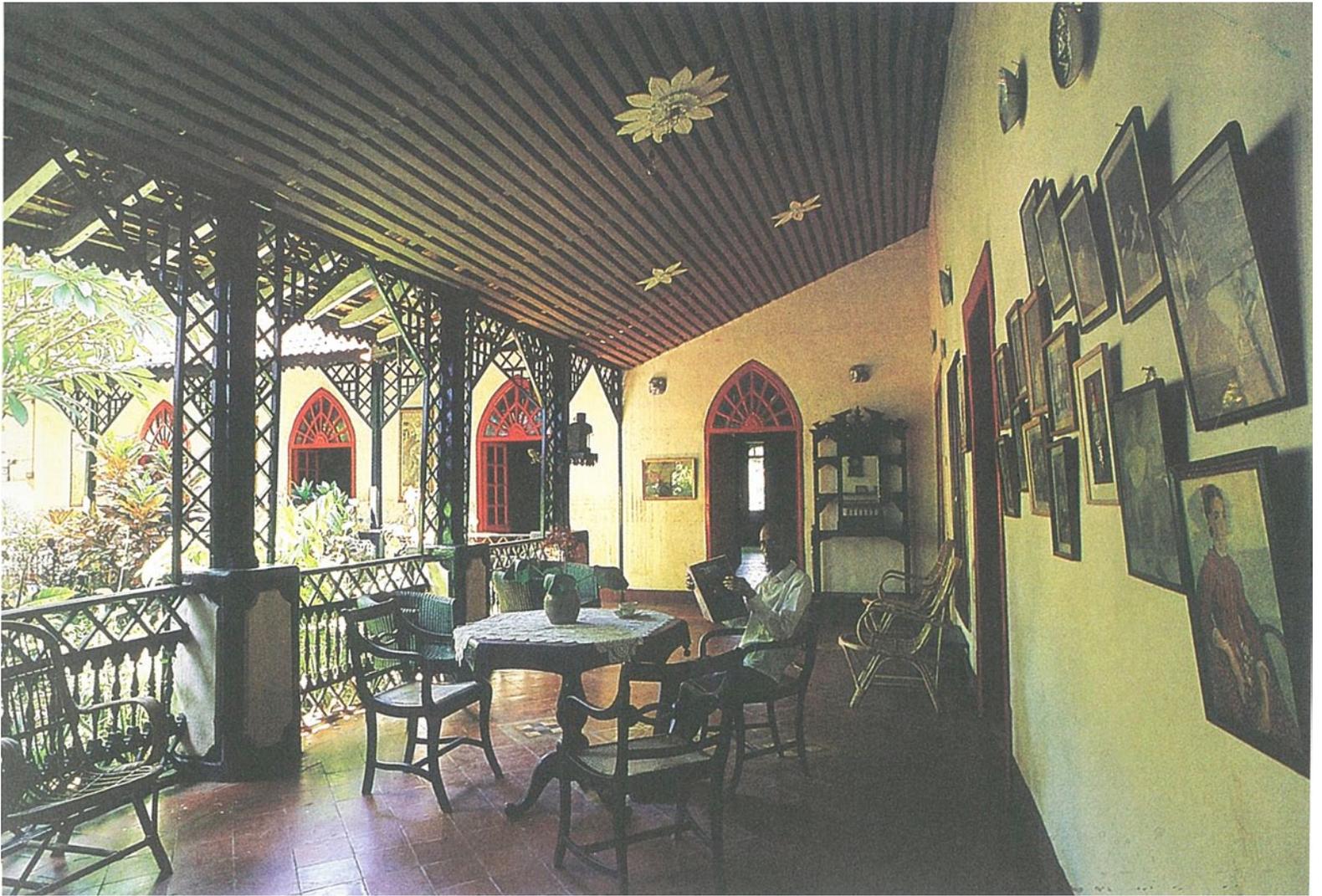
With its name originating in the humble Bengali *bangla* or hut, the bungalow was also decisively influenced (via earlier colonists like the Dutch and Portuguese) by the indigenous vernacular architecture of South-east Asia. To the



*Typical bungalow set well back from the road within its own compound.*

*Verandah of a hill-station bungalow.*





British, it rapidly developed into their ideal form of tropical housing. Essentially a single-storey house with a wide verandah to keep out sun and rain, this exotic Anglo-Indian hybrid became the prototype throughout the far-flung British Empire.

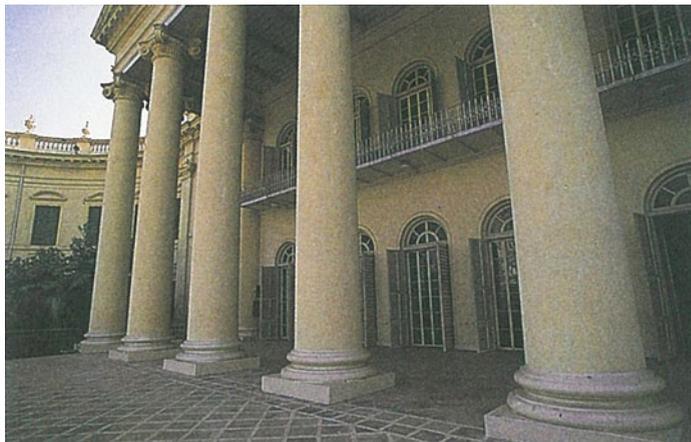
*Verandah of a house in Goa, with traces of Portuguese influence.*

**Raj Bhavan, Calcutta  
(Inaugural ceremony,  
1803)**

Designed by Charles Wyatt as the residence of the Governor-General of India, this truly elegant edifice was based on Kedleston Hall in Derbyshire. It represents an extraordinary synthesis of the English country house and the cantonment, since by the ingenious placing of the reception rooms, the Chowringhee *maidans* are made to double as the equivalent of an English park. Thus on

a relatively small site, a very grand ambience is created.

The architecture is neo-classical, representative of the Europe of its time – yet incorporating, with great panache and assurance, the wide verandahs and other transformations essential for survival in the hot humid climate of Calcutta.



*Recreating the aura of an English country house, with its spacious grounds.*

*Left: Wide arcaded verandah of Raj Bhavan.*

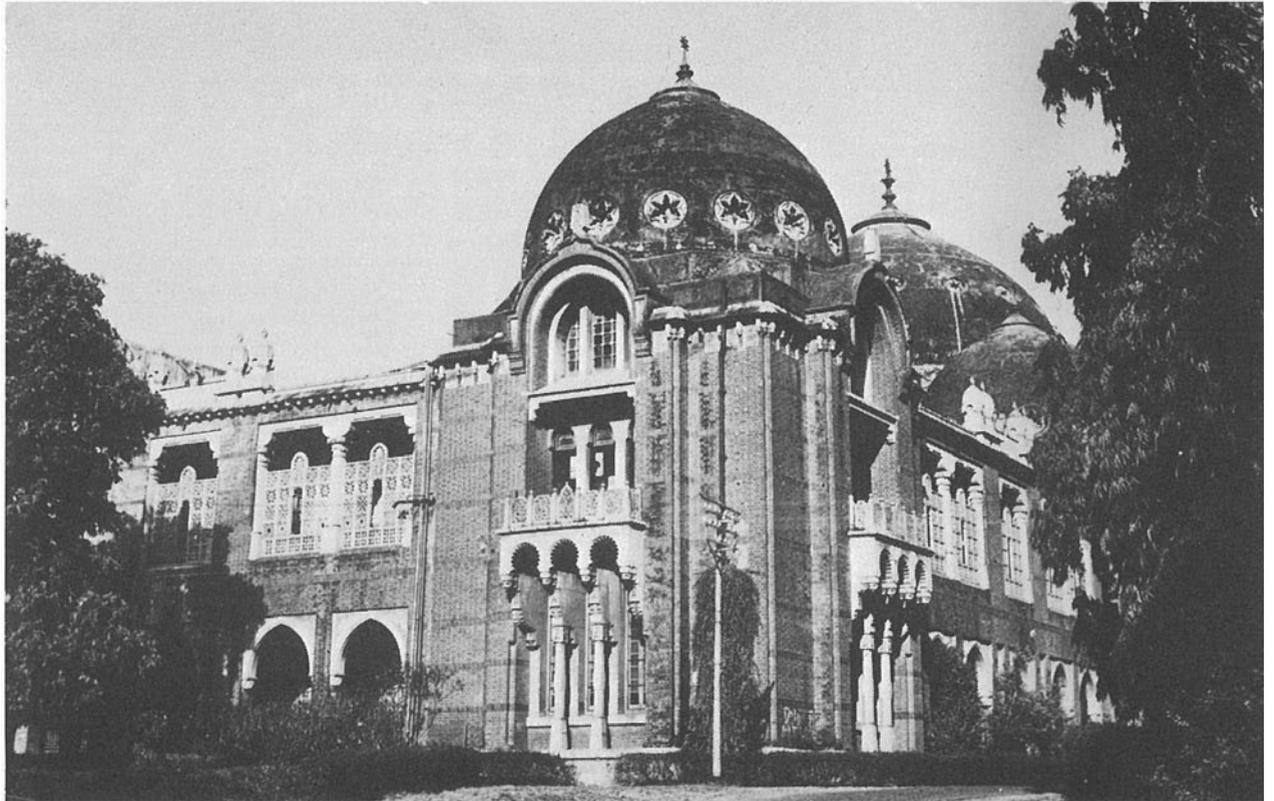
**Senate House,  
Baroda University**

This building, designed by Robert Chisholm (1840-1915), is a truly creative act of architecture, one that bears comparison with the finest buildings being constructed anywhere in the world at that time. Its exquisite beauty does not come from any one particular style, but is generated by an extraordinary amalgam of many different influences, perfectly integrated into a consistent plasticity by its architect.

Chisholm was not only one of the most gifted English architects working in India, but was also one of the most vehement

supporters of local craftsmen – “those men have an art language of their own, a language which you can recognise but cannot thoroughly understand. For this reason an architect practising in India should unhesitatingly select to practise in the native styles of art – indeed, the natural art-expression of these men is the only art to be obtained in the country.”

In this building, Chisholm gave shape to his philosophy and achieved a lyrical beauty which even Lutyens could not surpass.



*View of the Senate House in which  
Chisholm blended diverse architectural  
influences to achieve a unique lyricism.*

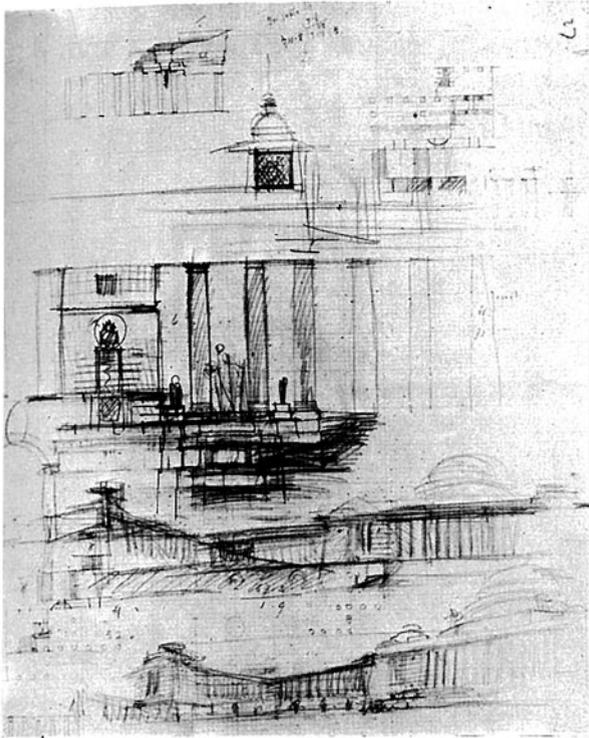
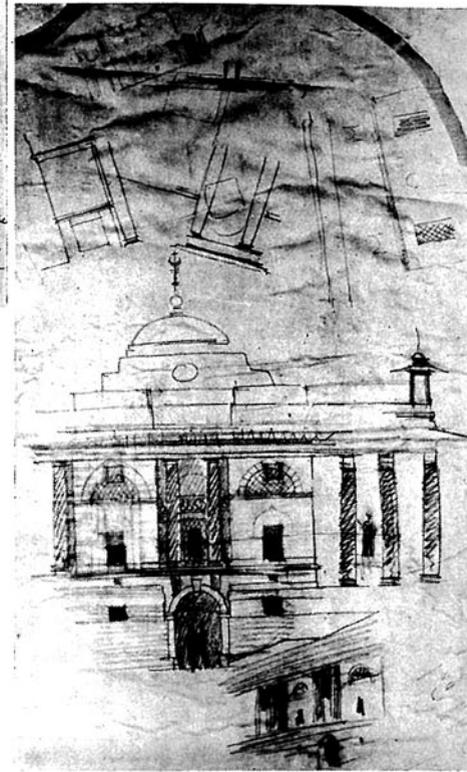
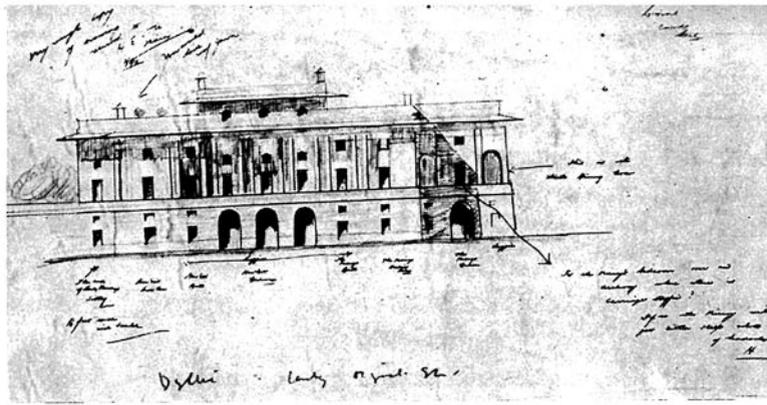
**Rashtrapati Bhavan,  
New Delhi (1920s)**

We come to what is, without doubt, the most ambitious of all architectural projects in the history of the British Empire: the building of New Delhi. For this great venture, Edwin Lutyens (the most gifted English architect of his time, who also had the good fortune to be married to the daughter of the previous Viceroy) was selected. This commission, as he himself well realised, was to be the crowning achievement of his career.

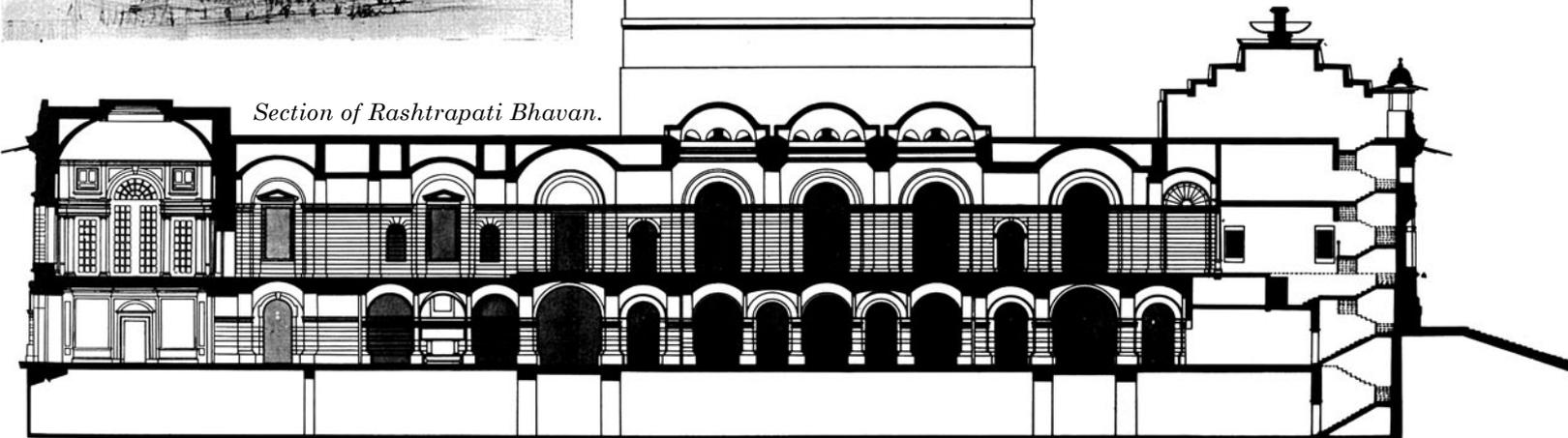
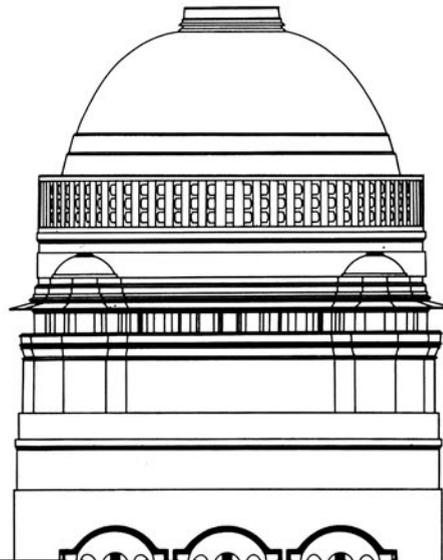
Lutyens should indeed have been an excellent choice. An eclectic architect, he had worked in a number of different classical styles, which he varied to suit the programme, the site, or his clients' tastes – creating in the process a unique series of English country houses. Yet perhaps it was this very same easy facility, the extraordinary visual talent unanchored in any specific credo, that rendered him temperamentally incapable of conceptualising the kind of

*The beautiful Mughal  
gardens of Rashtrapati  
Bhavan.*





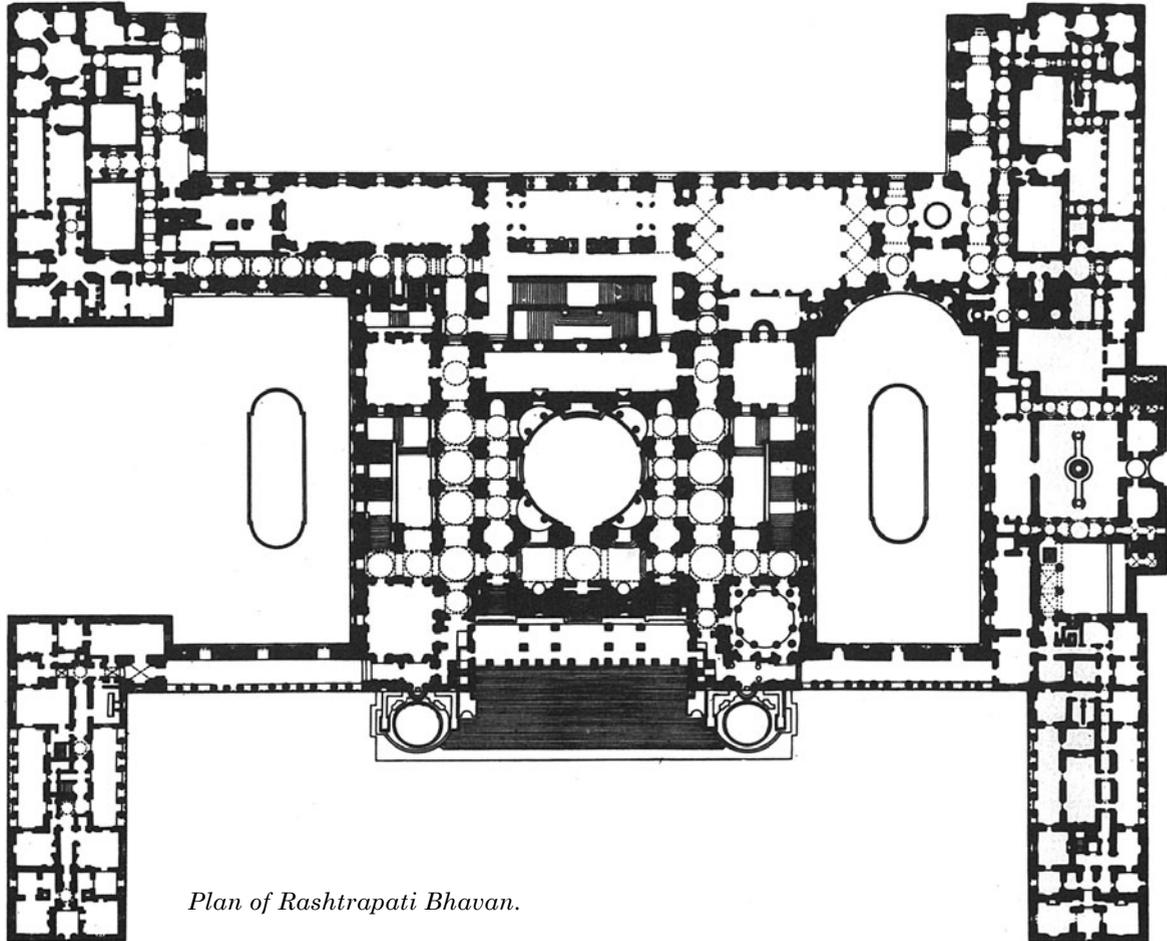
*Lutyen's New Delhi sketches.*



*Section of Rashtrapati Bhavan.*

transformations we have been discussing. When he first arrived in India, he was quite antipathetic to the wealth of India's architectural heritage (stigmatising, in fact, Fatehpur Sikri as "the work of monkeys"). Later, because of pressure brought by the Government to "Indianise" his classical orders, Lutyens surmounted the Viceroy's House (now Rashtrapati Bhavan) with a dome reminiscent of Sanchi – from where he also took the

design of the stone walls marking the entrance to the capital complex. But of the great Buddhist mythic values and images – the sacred mountain, the *axis mundi* – he took nothing. The result: an architectural pastiche involving only the superficial *transfer* of some indigenous idioms, but not the powerful and decisive *transformation* we saw in earlier masterpieces, such as Diwan-i-Khas and Ranakpur.



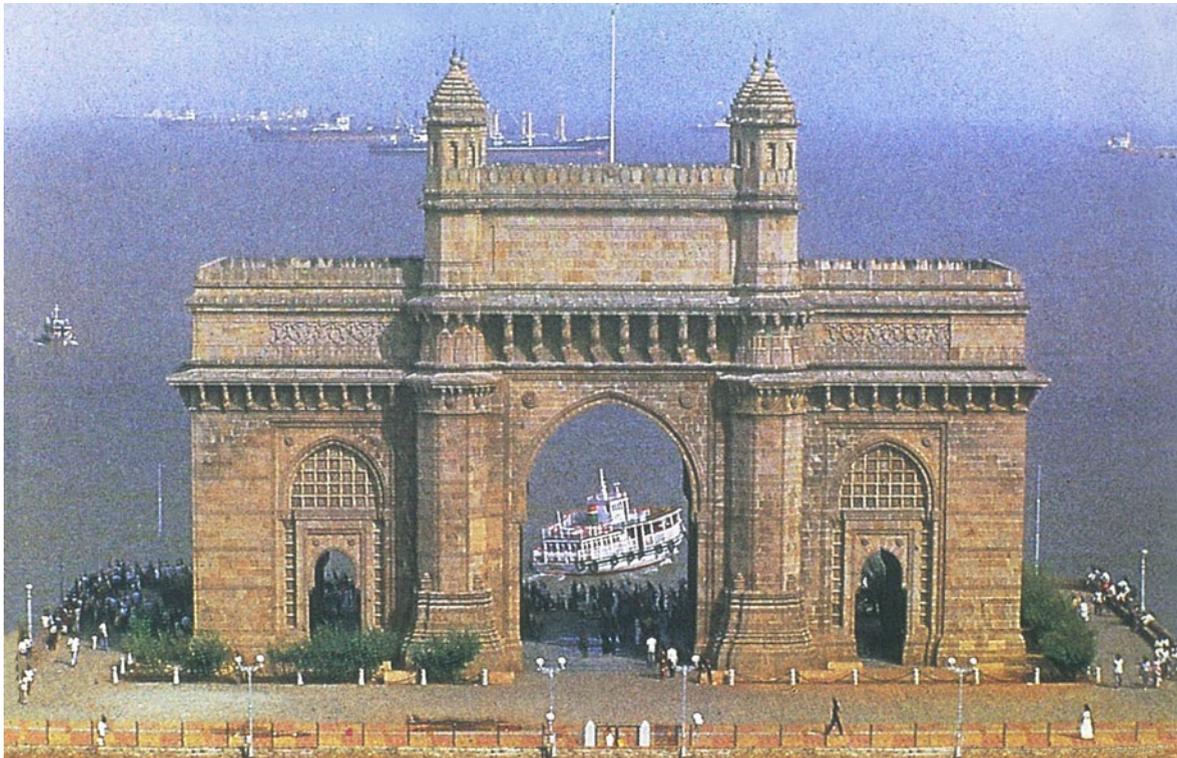
*Plan of Rashtrapati Bhavan.*

**Gateway of India,  
Bombay (1911)**

This triumphal arch was constructed in Bombay to commemorate the visit of King George V and Queen Mary – the first (and only) reigning British monarchs to visit the Jewel in their Crown.

Modelled on Gujarati architecture of the 16th century, it was designed by George Wittet, an architect with considerable knowledge of local building traditions. The monument is in the Indo-Saracenic style and is constructed of beige-coloured Malad stone. Such has been its

grip on the public imagination that within a very short while it became the primary symbol of the *urbs prima* of India.

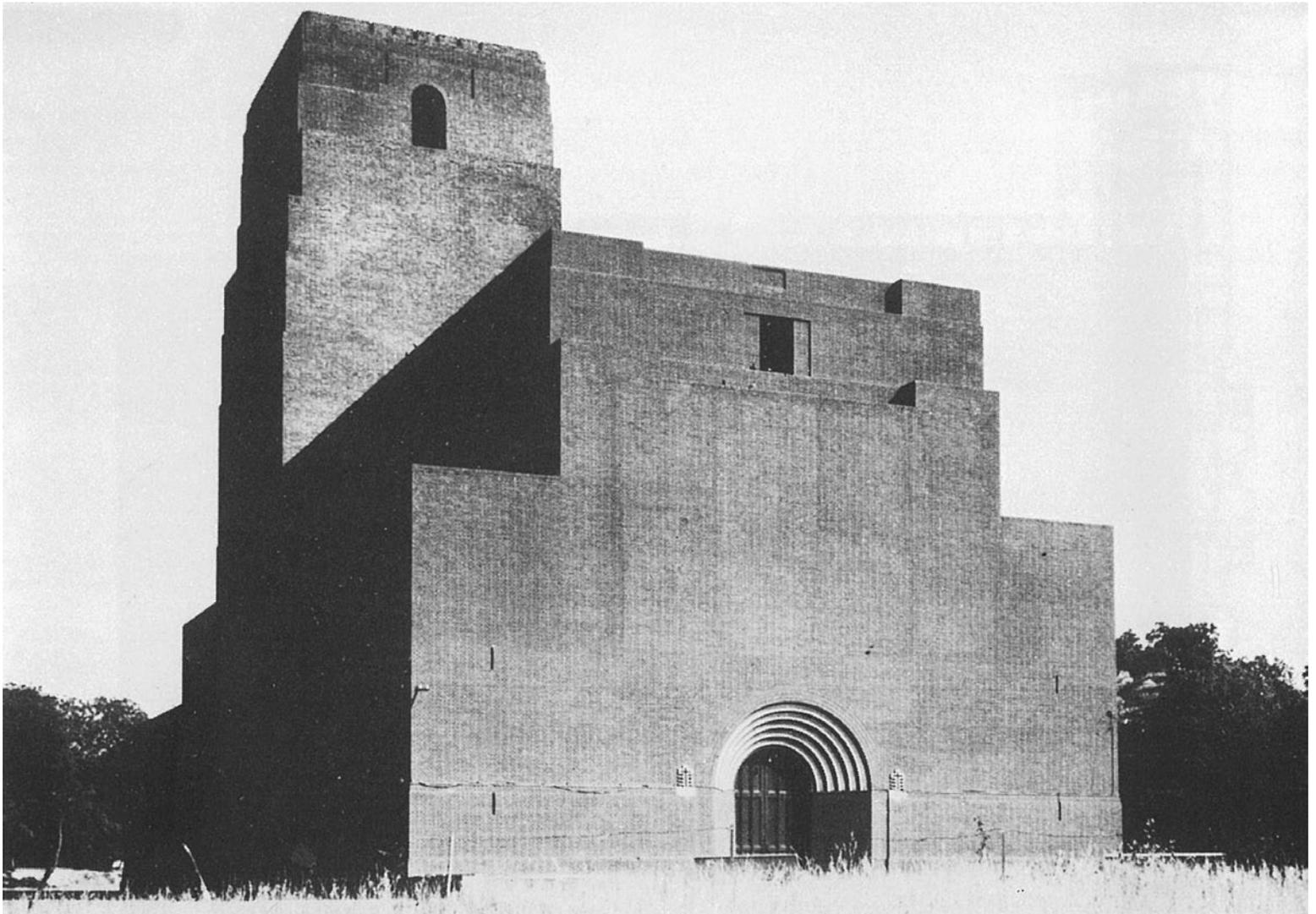


**Garrison Church  
of St. Martin,  
Delhi (1928-30)**

Designed by Arthur Shoosmith (1888-1974), this monumental composition conveys a massive and brooding power. The noted British historian and architectural critic Gavin Smith has said: "I have no hesitation in saying (this) is one of the great buildings of the 20th century and it is without question an extraordinarily original composition – a massive gaunt monolith of 3½ million bricks, looming straight out of the arid

Indian plain. The walls are battered and rise in a series of setbacks, a huge sculptured cenotaph of brickwork pierced by small deeply shaded openings cut straight through the mass."

It is a fine representative indeed of the high standard of architectural design – as well as building construction – found in the India of that period.



**Lalbai House,  
Bombay (1941)**

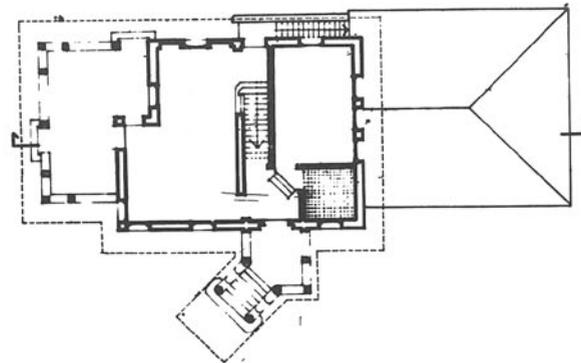
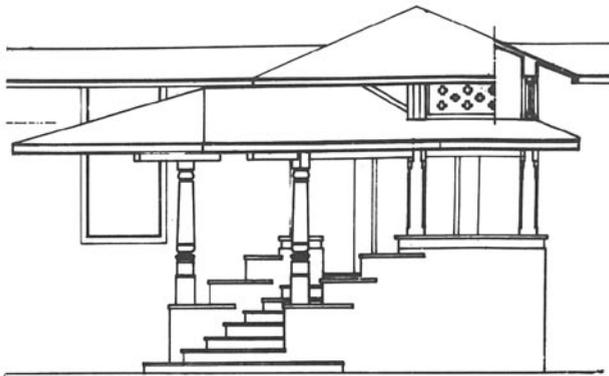
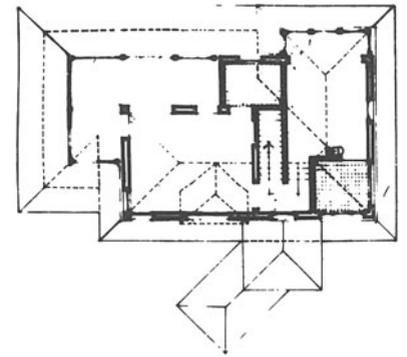
Designed by Claude Batley, this house testifies to the fresh and innovative quality of his work. Batley was an exceptionally gifted architect combining a real understanding of traditional architecture with a deeply personal approach to building.

This house, on the slopes of Cumballa Hill, is sited with great sensitivity. The wooden railings and tiled roofs – ubiquitous features of vernacular domestic

architecture – represent the primary source from which Batley drew. Using undressed rubble quarried from the site for the base, he constructed a lighter superstructure in plaster and a roof in timber. The different materials accord with the asymmetry of the house, both in plan and in elevation, thus creating a dynamic disequilibrium so typical of Batley's heterogenous attitude to form and material.



*Left: Exterior of Lalbai House.  
Bottom left: Detail of porch.  
Bottom right: Ground floor plan.  
Below: First floor plan.*



## **Bombay Mutual Building**

By the 1930s, the struggle for independence had begun. There was a ferment of new ideas – a renaissance of values, a reassertion of Indianness.

A number of Indian architects set up practice, especially in the big cities. Principal among them was the firm of Master, Sathe and Bhuta, who within a decade executed a number of prime commissions in the city of Bombay. Several of these are located on Sir Pherozshaw Mehta Road – a major artery which had just been cut through Parsi Bazaar. This building for the Bombay Mutual Insurance Company stands

proudly at the intersection of this new thoroughfare with Dadabhai Naoroji Road, the architecture an intriguing amalgam of Art Deco with more indigenous themes.

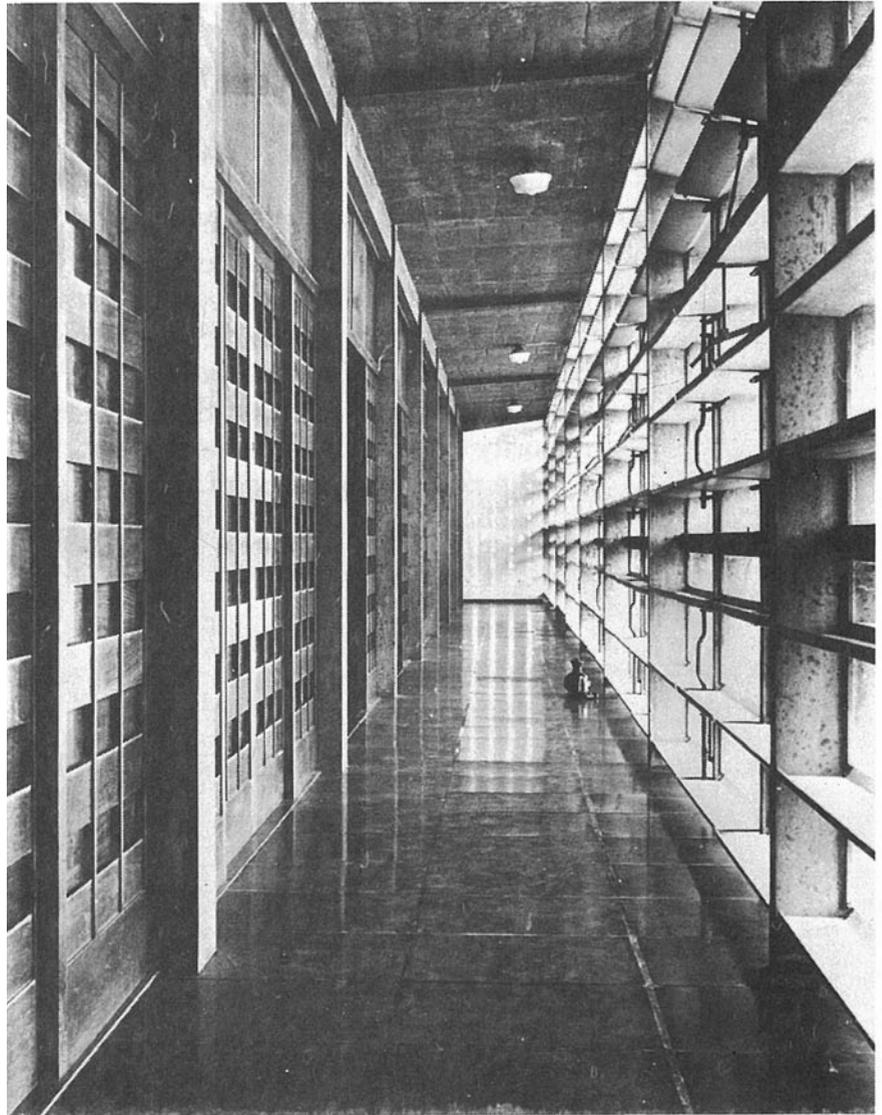


## **Golconde, Aurobindo Ashram, Pondicherry (1936-48)**

Without doubt the finest example of modern functional architecture built in India in the pre-independence period, Golconde was designed by Anthonin Raymond (1888-1976) who had gone to work with Frank Lloyd Wright on the Imperial Hotel in Japan. On his way back to America, he journeyed through Madras, where he was commissioned to design this hostel for visitors to the *ashram*.

Golconde masterfully combines a superb understanding of light, ventilation and local living patterns, with extraordinary inventiveness and creativity. It constitutes a near-perfect expression of the design philosophy of Raymond himself: “We should base our designs directly on the needs and requirements of the clients and deal directly with conditions growing out of the work itself and the location.”

The building itself is a marvellous tropical contraption of operable louvres and thin-shell concrete walls ensuring cross-ventilation and sun protection to its occupants. As Malay Chatterjee has written: “Though few architects in India were aware of its existence, Golconde was the first expression of a new era about to commence.”



*Gleaming corridor within  
the Aurobindo Ashram.*

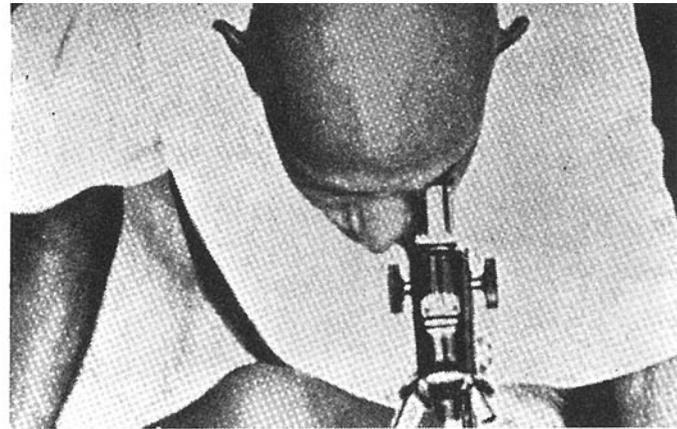


*Left: Imaginative flight of steps.*

Three figures at this time exercised a powerful influence on events:

Mahatma Gandhi, the leader of the freedom struggle. On the left is a photograph of his last possessions, an image of crucial importance, personifying renunciation. It is not only a moral statement (and an aesthetic one as well), but is the key to understanding the socio-economic realities of the vast majority of our fellow citizens today. On the right is an image of Gandhiji

looking down a microscope, for this unique man was also vitally interested in what Science and the Age of Reason had to offer us, and to what the future might bring. In the exhibition, these images frame a window opening on to the real India of the villages, a vision going back to the primordial roots from where we started this *vistāra*.

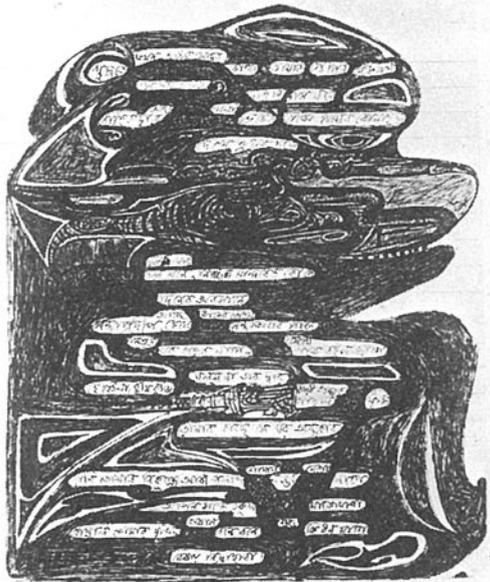


The second figure in this triumvirate was Rabindranath Tagore. If Gandhiji understood India through his grasp of politics and economics, Tagore's understanding came from the intuitive genius of the creative artist. Writer, musician, painter, philosopher, he was an extraordinary force not only in the life of Calcutta and Bengal – but in the rest of India as well. Crucial to his cultural renaissance was the founding of

Shantiniketan, an arts complex in an idyllic rural setting. Here, in simple thatched structures and under the shade of trees, Tagore re-established once again the classic *guru-shishya* relationship, re-awakening in our blood centuries-old attitudes to learning and knowledge.

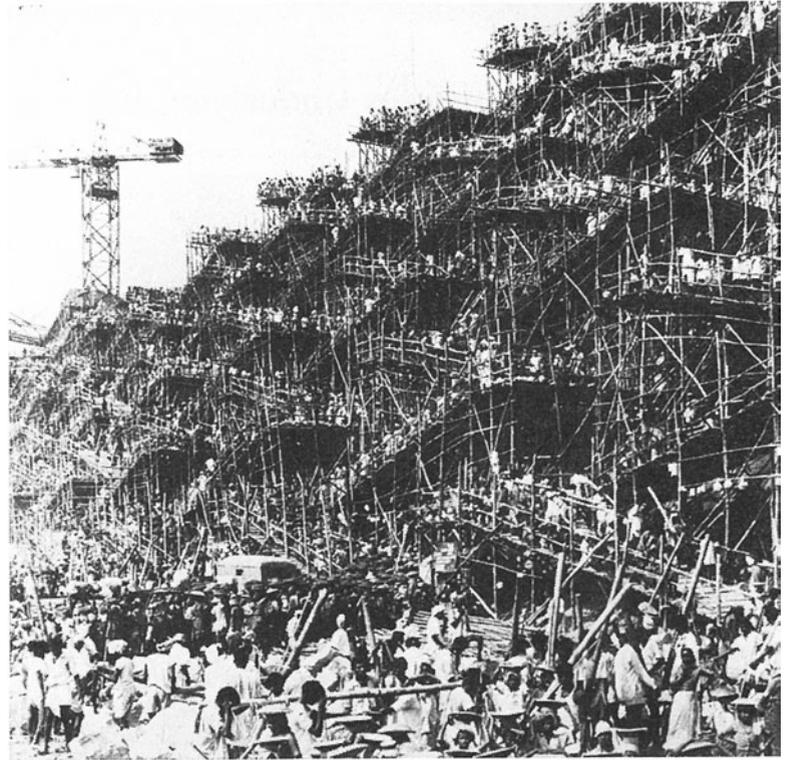
*Tagore at Shantiniketan.*

*Below: Manuscript of a Tagore poem.*





The youngest of the three was Jawaharlal Nehru, a leader of exceptional intelligence and sensitivity. Nehru understood the essential non-duality of India: that looking back and rediscovering our past does not diminish – but in fact *strengthens* – our ability to conceptualise new options, to invent our future. As the first Prime Minister of independent India, he was determined that we should join the comity of nations as a modern, liberal and democratic society. His beliefs in science and rationality affected decisively the young nation – and the new architecture it was to build over the coming decades.



“...the biggest temple and mosque and *gurudwara* is the place where man works for the good of mankind...”

*Jawaharlal Nehru at opening of Nangal Canal, July 1954*

**Today, India is an incredibly rich reservoir of mythic images and beliefs. These are like transparent overlays, all co-existing in an easy and natural pluralism. Today we live in many Indias.**

# Fundamental Principles Underlying Indian Architecture

Kapila Vatsyayan

“Man is the measure of all things, of being things that they exist, and of non-entities that they do not exist.”

Protagoras  
(C.481-411 B.C.)

As far back as the 5th century B.C. in a culture remote from India, Protagoras echoes the seer of Vedic times (2500 B.C. to 1500 B.C.). In a most powerful hymn called the *Purushasukta* (literally the hymn of Man or of Cosmic Man), the universe and the cosmos is conceived of as Man with all parts of the human body, a bone structure, head, upper and lower limbs, as well as all systems – circulatory, digestive, nervous and so on. The Primordial Man of the Vedas is the creator of the world: “From his speech were born the divinities – earth and fire; and from his breath – space and air (*antariksha* and *vayu*); and from his eyes – heaven and the sun; from his ears – the quarters and the moon; and from his mind – the waters.”

Primordial Man (Purusha) stands always in relation to earth and sky. Innumerable references could be cited from Indian texts ranging from the earliest Rig Veda (2500 B.C.) to the later Upanishads (5th century B.C.) to prove that ‘Man as Measure’ is a critical term of reference in Indian speculative thought.

A perusal of this literature makes it abundantly clear that through the relationship between the image of Man and earth and sky, a series of correspondences are established between the limbs and organs of Cosmic Man and universal phenomena. In addition all societal structures, their inter-dependability and inter-relationships are explained through the metaphor of the Primordial Man, Purusha. “His face becomes the Brahman, his arms the Kshatriya, his thighs the Vaisya and his feet the Shudra.”

Visually Cosmic Man is in a standing erect posture with feet on earth and his arms outstretched, reaching the quarters or cardinal directions. Concurrently, a powerful correspondence is established between the standing man and the *axis mundi*, the central pillar (*stambha* or *skambha*) is located in the middle or navel or centre of the earth.

This mythical view gives rise to a geometrical form of a centre within a circumference with vertical and horizontal diameters. Further divisions into diameters and radii are equated with the five elements, and the directions or cardinal points of the compass.

Psychical equations are further established through overlayings to suggest the five mental states, the gross and subtle elements. A clear structure of sheathing and overlaying is evident.

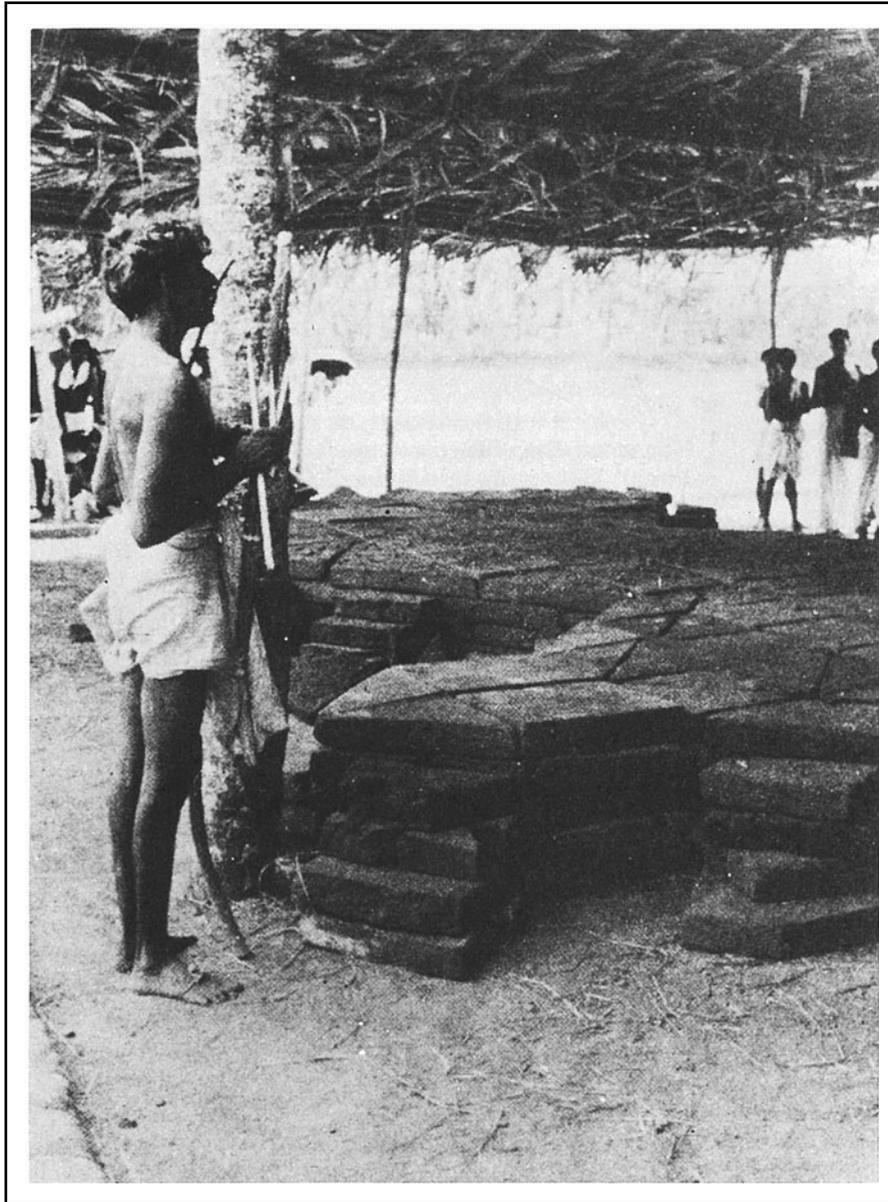
The image of Man, then, becomes a fundamental paradigm for explaining all phenomena, macro and micro. It is used as a sustained term of reference in all disciplines.

Most important is the transference of the concept and the world view into the language of art, especially Indian architecture. However, there is an intermediary stage of great importance between the speculative and mythical and its concretisation into the formal value of art, both at the theoretical and the practical levels. It is through the metaphor of Primordial Man that the Vedic seer communicates all spatial and temporal relationships.

The Vedic ritual (*yajna*), limited to a period of 21 days, is the methodology by which a terrestrial space is consecrated so as to suggest or replicate cosmic space and time. Through it astronomical time is corrected and the cosmic order (*rita*) re-established.

The Vedic altars were the beginning of Indian architecture and it is therefore necessary to briefly describe them and the ritual space, in order to comprehend how the notions of Indian architecture developed directly out of the elaborate system of Vedic ritual, the enclosure of the altars and the three fires.

The image of Man was central to the conception. The entire ritual



*Yagna held in Kerala testifies to the continuity of tradition over hundreds of years. Note five layers of altar.*

symbolised the dismemberment of Primordial Man (Prajapati), in other words, a disintegration of the universe and its subsequent integration into a whole.

Although no great Indian architecture has survived earlier than the 5th century B.C., concepts underlying this architecture can be traced back to the world view articulated in the Vedas and the metaphysics of the Upanishads and the methodology of the *yajna*.

The sacrificial enclosure (*yajnashala*) was built on consecrated earth which was ploughed, levelled and carefully measured. The unit of measure was the *purusha-vyama* (Measure of Man). And this *purusha-vyama* is literally 'the measure of man' with his arms up-stretched, a measure of 120 *angulas* (fingers). The smaller units of measurement are all multiples of the primary unit which is equivalent to the breadth of a finger. The *Satapatha Brahmana*, the primary text, is clear on the subject of the measure: "He measures it (the fire altar) by finger breadths: for the sacrifice (*yajna*) being a man (*purusha*), it is by means of him that everything is measured here. Now these fingers are his lowest measure."

Using these and intermediate units of linear measurement, such as the *artani* (a cubit, equivalent to the distance from the tip of the middle finger to the elbow), the *mahavedi* (a plot marked out to the east of the sacrificial shed) is carefully measured out and demarcated with a cord or bamboo rod. The shape of the *mahavedi* is sometimes a trapezium and the *vedi* (sacrificial ground) is in the shape of a rectangle. The ground is

narrower in front and broader at the back, measuring in some *yajna* 24 cubits in front and 32 at the back.

On this ground are built the three altars. The first, the *ahavaniya*, is in the form of a square and represents celestial space; the second, the *garhapatya*, is in the form of a circle, symbolising the terrestrial world; and the third, the *dakshinagni*, is a semi-circle denoting the air world.

The description of the *ahavaniya* is pertinent: "Thereupon he raised a square altar south of the *dakshinagni*. He makes the corners point towards the intermediate quarters; this is one fathom (*vyama*) square and represents the celestial world." The *garhapatya*'s description is equally graphic. "The *garhapatya* hearth measures a fathom (in diameter) for man (*purusha*) is a fathom high, and man is Prajapati and Prajapati is Agni; he thus makes the womb of equal size to his (Agni's) body." It is *parimandala* (circular) for the womb is circular and moreover the *garhapatya* is the terrestrial world and this world doubtless is circular.

The ground plan of the sacrificial area (*shala*) could be further discussed to show how each area of the earth is carefully demarcated and measured for specific purposes. The laying of the bricks and their construction follows the basic measure of a square. In all there are 396 (395 + 1) *yajumati* bricks (360 + 36 bricks corresponding to 360 days of the year and the intercalary month of 36 days). They are put down in five layers signifying the five elements and the five mental states. Of these 21 are around the *garhapatya*, 78 round the

*dakshinagni* and 260 surround the *ahavaniya*. Finally, there are the 10,800 *lokamprna* (space-filling) bricks corresponding to the *muhurtas* (or hours). Each brick, each layer and each altar shape represents an aspect of the cosmos. The five layers and different categories of stones and bricks represent the forms of Prajapati.

It is significant that after laying down all these details the *Satapatha* mentions that it is not through the body that immortality is achieved. Death must have its share, as can be seen from its capacity to destroy the body. In short, the concretisation, however important, must ultimately be annihilated into the formless and that beyond form. Prajapati is all this and yet beyond it. First, the cosmos takes concrete shape in the body of man and finally it is brought home that the body of man, though important and significant, is not the ultimate. The circle of concepts is complete.

The Vastu-Purusha Mandala is an extended concretisation of the concepts and designs of the *mahavedi*, *uttaravedi* (the square high altar) and the three hearths. The organisation of the temple, its ground plan and its elevation, rests on this.

Indian architecture re-states these principles in both sacred and secular buildings. As in the case of the sacrificial enclosure (*yajnashala*) so also the earth on which the temple is built must be consecrated, the water tested, and the consistency of the soil examined. The soil is further tested by being ploughed and sown with seeds, and by watching their germination for 3, 5 and 7 nights. The practical considerations are obvious

but in the scheme of sacred Indian architecture they assume greater significance as a correspondence is established between these functional acts of consecration and the body of the building. The earth thus cleaned, tested and purified is ready for the erection of a model of the cosmos.

On this smooth, purified surface – like water or the face of a mirror – the temple diagram of a Vastu-Purusha Mandala is drawn. The Vastu-Purusha Mandala is a square diagram (*yantra*) divided further into smaller squares, most often 81 (9 x 9) or 64 (8 x 8) squares in the case of temple architecture. The nucleus of 4 or 9 divisions is reserved for Brahma, the principal deity. Architecturally, this unit translates into the sanctum (*garbhagriha*), the womb chamber of the temple. Around the central square in the Vastu-Purusha Mandala are placed the 12 Adityas and on the borders are 32 Padadevatas, the deities representing celestial bodies.

The physical orientations of the temple are invariably established in relation to the motion of the planets. The four sides of the square lie towards the cardinal points and the corners towards the intermediate points of the compass. The temple is correctly located in both space and time. The Vastu-Purusha Mandala represents both these aspects in the same manner as the *vedi* and the duration of the sacrifice. In the sacrifice ‘cosmic order’ was, so to say, restored through the sacrifice, and the unequal courses of the sun, moon and planets were readjusted. The Vastu-Purusha Mandala incorporates into a single synthesis this course of the sun

and the moon and the planets and in doing so it symbolises recurrent time cycles.

According to texts, especially the *Brhat Samhita*, the Vastu-Purusha Mandala of 81 squares (9 x 9) and 64 squares (8 x 8) is further divided into smaller units. An elaborate correspondence is established between each of these squares and the planet deities. While Brahma occupies the central square and is always the presiding deity coinciding with the nave, the central *axis mundi*, the sanctum, the *garbhagriha*, other deities occupy adjoining squares. In the outer series, there are deities like Indra, Jayant, etc., and in the outermost are the various minor deities including also the *asuras* (demons).

The diagram can also be read from the point of view of astronomy and the movement of the planets. In short the Vastu-Purusha Mandala is an abstract design with meaning at multiple levels. It is both a statement of enclosed space as well as of time which moves from the centre to the periphery in a serpentine coil. Each of these squares also has a lotus design. While four in the corners of the Vastu-Purusha Mandala have four petals, the others have eight. The central square represents a cosmic form of Vishnu, i.e. *Vishvarupa*. Each of the inner enclosures also possesses a syllable, a *matrika*, in addition to the presiding deity. The allocation of the syllables or letters of the Sanskrit alphabet commences with the north-east corner of the second inner enclosure of 24 squares and ends with the central square. Thus all 49 syllables are contained if the diagram is read in clockwise fashion.

This diagram of the Vastu-Purusha Mandala is the symbol of the macrocosm. The architectural edifice is made after this *mandala* and is the abode of the world, the beings of the three planes – nether, terrestrial and celestial. In its totality the Vastu-Purusha Mandala is the example of Man in a sitting posture with his head in one cardinal direction and his feet in the other. He is Sakala omnipresent, containing all deities in their congregation. The same *mandala* can give rise to manifold forms but in its element it is the multiplicity of forms only to suggest the beyond form.

**Dr. (Mrs.) Kapila Vatsyayan**, one of India's most eminent scholars, is Secretary, Government of India's Department of Arts, with special responsibility for establishing the Indira Gandhi National Centre for Arts. With two M.A. degrees, Dr. Vatsyayan also received doctorates from Banaras Hindu University and Rabindra Bharati University. She is the author of several books and research papers, among them Traditional Indian Theatre, Dance in Painting, and The Square and the Circle of the Indian Arts.

# Parallel Structures: Ritual Dimensions of Some Tribal Dwellings

Jyotindra Jain

**Anthropology has taught us that the world is differently defined in different places. It is not only that people have different gods and expect different post-mortem fates. It is, rather, that the world of different peoples have different shapes. The very metaphysical suppositions differ. Space does not conform to Euclidean geometry, time does not form a continuous unidirectional flow. Causation does not conform to Aristotelian logic, man is not differentiated from non-man or life from death, as in our world.**

— Walter Goldschmidt<sup>1</sup>

We are familiar with the fact that the Brahmanic temple is an embodiment of some of the cosmological and mythological ideas of an ancient cultural tradition. It is not that the concept of the Brahmanic temple developed in isolation as the creative expression of an individual architect. It is rather that innumerable currents of beliefs and practices interacting with one another over a large span of time and space have flowed into the creation of a multitude of architectural forms and that the Brahmanic temple is only one of these expressions.

On the other hand traditional Indian tribal and village architecture which may appear to be purely functional and utilitarian on the surface is in reality not so mundane. The traditional dwelling of several of these communities at one level fulfilled the day-to-day functions of the 'kitchen', 'bedroom', 'living-room', 'pen-place' and 'courtyard', but at another level represented a whole universe packed with beliefs and ritual practices,

mythological and symbolic meanings, archaic customs and memories. The traditional dwelling, in this sense, becomes a symbolic replica of the cosmic structure of spaces representing the worlds of men, gods and ancestors – communion among them being governed by the cycle of daily and yearly rituals.

This article is an attempt to excavate the cosmological and mythological layers underlying the 'Euclidean geometry' of some Indian tribal and village dwellings and settlements and thereby identify a 'stratigraphy' which is normally not perceived by the bare eye.

A study of several tribal dwellings of Northern India<sup>2</sup> points to the fact that they are simultaneously abodes for men, gods and deceased ancestors. These three categories correspond to the earth (men), the heaven (gods), and the netherworlds (ancestors) of the Hindu, Buddhist and Jain cosmology – though not consciously conceived as such a system by the tribal communities.

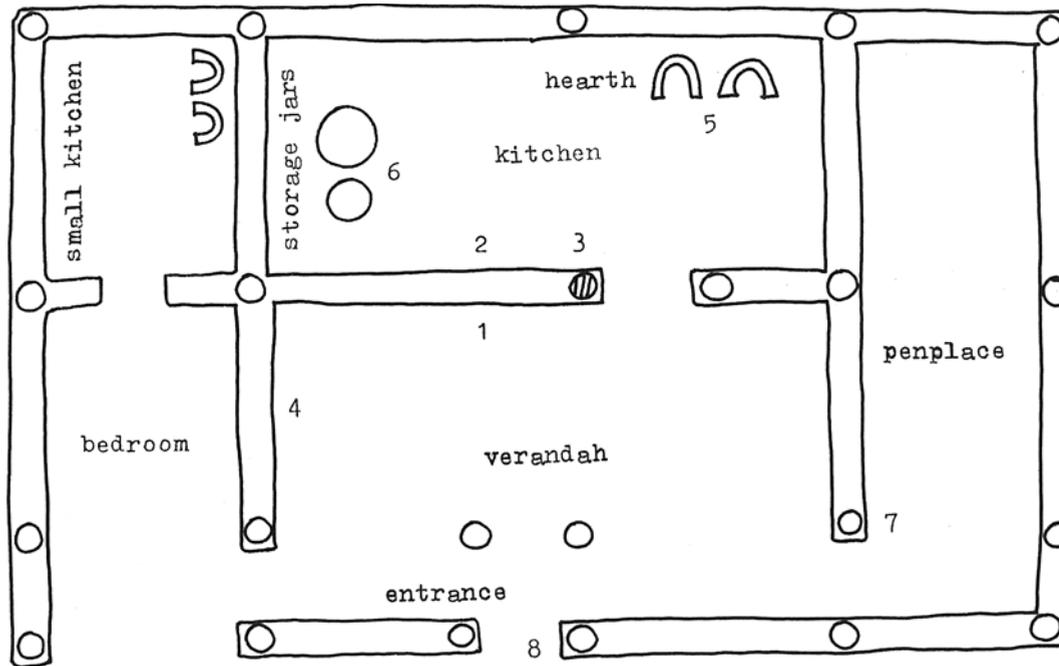
Man is in continuous interaction with the gods and deceased ancestors whose physical manifestations are the various symbolic elements and sacred spaces of the dwelling and its surroundings. Deified ancestors differ from gods in that the former are mainly family deities, whereas the latter are venerated by the entire village or community. Let us examine how the spaces and architectural elements of the dwelling relate to various gods and ancestors. To begin with, take the dwelling of the Rathva and Bhilala tribes of the border area of Gujarat and

Madhya Pradesh (Chhota Udepur /Alirajpur region).

The main wall of the verandah that divides it from the kitchen is sacred to such deities as Ind, Pithoro, as well as those related to their myth of creation<sup>3</sup>. These deities are installed in the wall by means of colourful paintings. The side walls are reserved for depiction of ghosts and deified ancestors. These paintings by themselves represent the entire cosmos and the myth of creation of the Rathvas and Bhilalas. Through a ceremony of invocation, the deities are invited to descend into the paintings and take shelter therein. (The 'iconographic' strata of the house as juxtaposed against the functional strata can be seen in Fig. 1.)

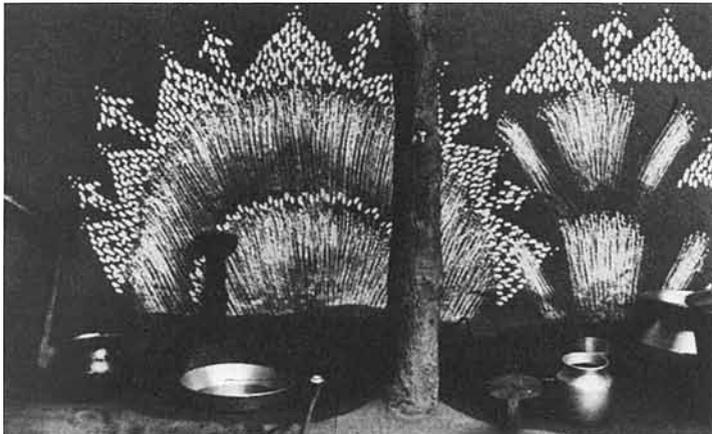
In times of crisis such as failure of the harvest, disease, loss of cattle or property, the deities living in the wall-painting are invoked and consulted. At the time of the invocation ceremony, the space of the verandah – where the inhabitants normally relax, smoke a *hukkah*, pound grain, chat with guests or sit and drink – is converted into an area of the otherworld of their cosmology, where the deities descend, receive sacrifices and converse with the family members.

The Saoras of Orissa too have a similar practice. On one of the mud-plastered walls, a square or rectangular enclosure is drawn with a twig dipped in rice-paste. This enclosure is known as the 'house' of the gods. Inside the enclosure, a whole universe comprising gods, men, animals and vegetation is depicted. The deities are invoked to come and reside in the



*Sketch of a Rathva-Bhilala house. 1. Wall sacred to Pithoro and other gods. 2. Wall sacred to gotar devi. 3. 'Central pole.' 4. Wall sacred to deceased ancestors. 5. Hearth, sacred to Akhado Baman. 6. Storage jars as abodes of Anniraya. 7. Deities Bhehanto and Kohajo. 8. Guardian of the entrance, Jhampa-tota. 9. Space sacred to god Ind.*

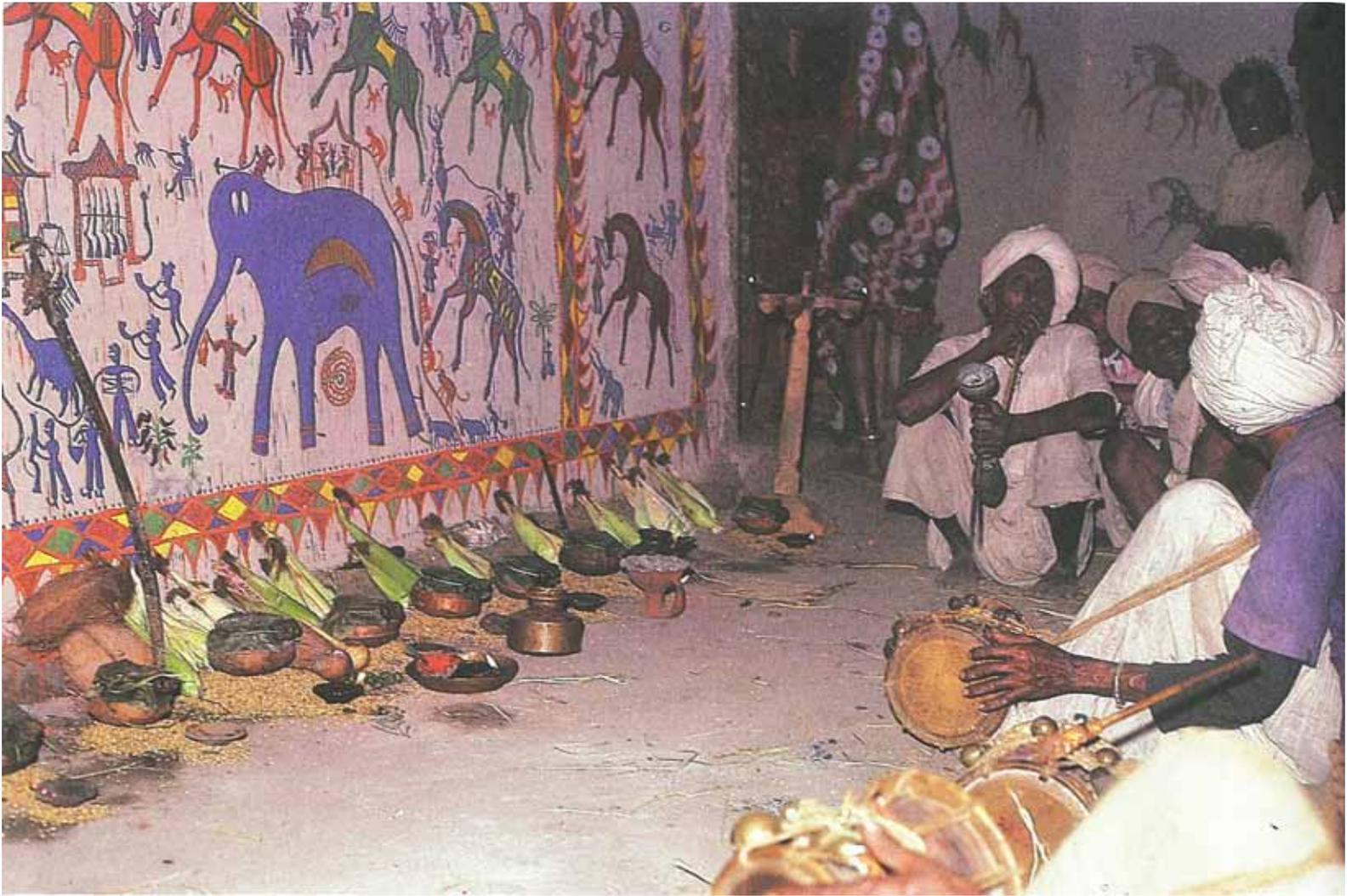
*Fig. 1*



*Rice painting near the hearth is symbolic of the goddess Laxmi – a common practice in tribal areas of Orissa.*



*The Saora tribals of Orissa draw a 'house of the gods', comprising a whole universe of creatures and vegetation.*



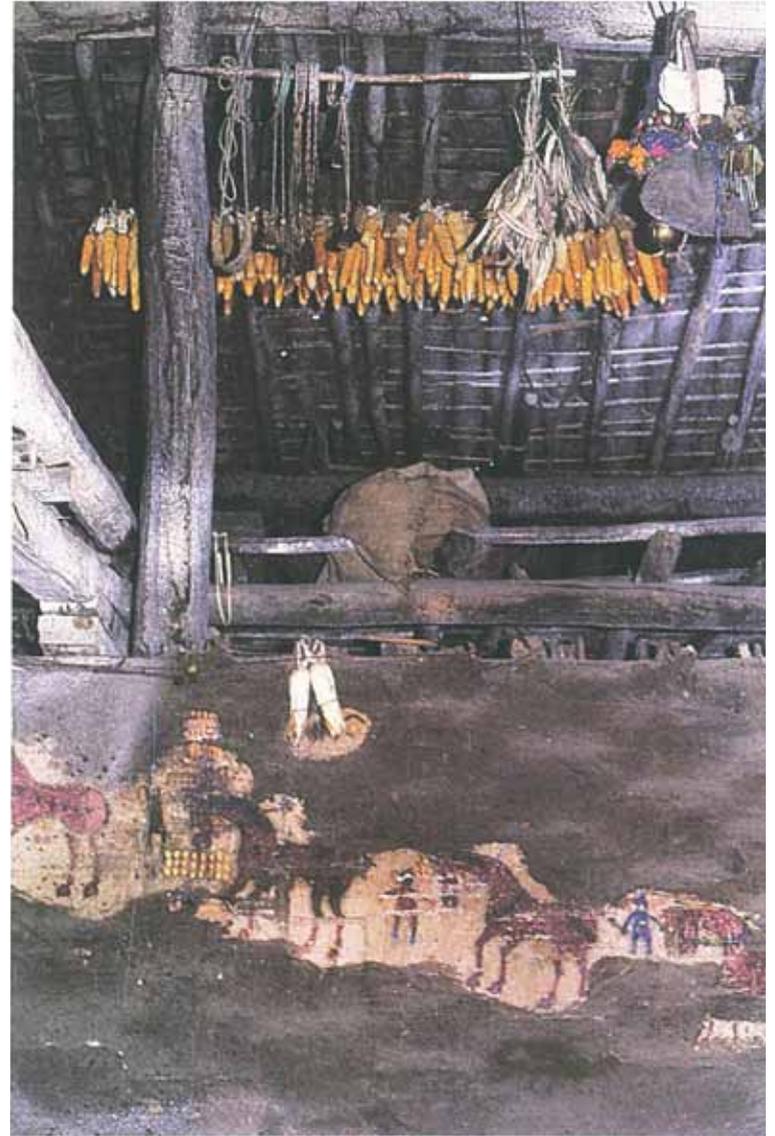
*The main wall of the verandah is sacred to such deities as Ind, Pithoro, among the Rathva and Bhilala tribes on the borders of Gujarat and Madhya Pradesh. The gods are installed in the wall by means of colourful paintings which represent the tribals' entire cosmos and their myth of creation. Through an invocation ceremony, at which offerings of food are made, the deities are invited to descend into the painting and dwell therein.*

*Right: Detail of painting.*





*Left: In a forested area on the outskirts of villages, deities and ancestor memorials in the form of carved wooden images are installed. These are periodically venerated through offerings of terracotta animals.*



*The 'central pole' of the house is a very important ritual element among many tribal communities. It is the seat of gotar devi, the clan goddess. The central pole is also sacred to deceased ancestors and offerings are made to it on festive occasions. When the foundation of the house is laid, the owner ritually places a coin in the hole for the central pole. Actually, this pole is not really in the centre of the house, but marks the last third of the central axis.*

'house' in the following words: "I have made a house for you. Here are your elephants and horses. Come riding on them. Come and see what a fine house I have made for you. Deities of the sky, come and see the house. Deities of the hills, come and see the house..."<sup>4</sup>

Once the gods painted inside the enclosure are invoked and offerings made to them, they descend into their 'house' and live there. On ceremonial occasions, the family places offerings before them and the deities in return protect the family. In this case the use of the word 'house' for the painted sacred enclosure clearly signifies the presence of a 'house' within a house – one representing the iconographic strata and the other the functional.

The Rathvas, the Bhilalas as well as several other tribal communities of Central and Western India hold the 'central pole' of the house as one of the most important ritual elements<sup>5</sup>. Here the ridge-piece rests on several supporting posts of which one is considered to be the 'central pole' of the house. However, it is not situated in the actual centre of the house but marks the last third of the central axis. This pole is the seat of *gotar devi* or the clan goddess whose installation here is represented by vermilion dots. The kitchen wall which is sacred to the same goddess is by virtue of the fact that this pole intercepts the wall on the kitchen side. During the marriage ceremony, offerings are made to *gotar devi* in the house of the bride as well as the bridegroom. The central pole is also sacred to deceased ancestors and at its base are placed offerings of rice, chickens or a goat, on such festive occasions as Divaso and Divali. At the

time of laying the foundation, the owner of the house ritually places a coin into the hole for the central pole. This practice brings to mind the immense significance of the *axis mundi* of Hindu, and particularly Buddhist, sacred architecture.

Among the Barelals of the Satpura Hills, a small post called *ginjri* is installed in the kitchen in honour of *kul devi*. Here the actual central pole has no cultic significance.<sup>6</sup> The Jhabua Bhils of Barwani region of Madhya Pradesh erect a piece of teak wood near the hearth to venerate their *kul devi*.<sup>7</sup>

The kitchen is considered to be one of the most sacred places among many tribal communities. The Rathvas and the Bhilalas install their clan goddess on the back of the main painted wall in the kitchen (Fig. 1). The hearth itself symbolises the deity Akhado Baman, the eldest brother of god Ind.

When the house is ready, the chief woman of the family makes two horseshoe-shaped mud *chulhas* or ovens. The deities of the hearth are invoked and installed in them by the *badvo*, the main religious practitioner. Offerings of rice, chickens and *urad*-grain cakes are cooked. The *badvo* then invokes various deities and puts fine vermilion dots on the back of the oven on the right side<sup>8</sup>.

Among the Bhils of Rajpipla and West Khandesh, as the bride enters the house of the bridegroom, she is ceremoniously led to the hearth for its worship<sup>9</sup>. And among the Balahi weavers of Nimar District of Madhya Pradesh, the head of the family dips his palms in rice-paste and puts their impressions on the kitchen wall to personify the deities of the hearth<sup>10</sup>.

The grain storage jars of the Rathvas are the abodes of Anniraya, the god of foodgrains. These jars are placed in one corner of the kitchen, entry to which is restricted, since it harbours such powerful deities.

The dwelling of the Pardhans of the Upper Narbada Valley<sup>11</sup> consists of three structures. The main one is called the *deo-ghar* (house of gods) which also contains the kitchen. Two grain storage jars are kept before the fireplace to prevent undesired entry to it. Among most of these communities, where the kitchen is considered a sacred place, it has the function of bestowing fertility and wealth. For this reason among the Pardhans, when the eldest son is married, the parents let the newly-married couple live in the *deo-ghar* while they themselves sleep in one of the side structures. The Pardhanas' family wealth is also buried in the *deo-ghar*.

---

**'I have made a house for you.  
Here are your elephants and horses.  
Come riding on them. Come and  
see what a fine house I have made  
for you. Deities of the sky, come and  
see the house. Deities of the hills,  
come and see the house....'**

—Saora invocation

---

The Gonds and Bhumias of Eastern Mandla<sup>12</sup> (Madhya Pradesh) worship *dulha deo* (the bridegroom god) who is supposed to reside near the hearth in each house. Every third or fourth year the head of the family sacrifices a red or black chicken to the god who in turn protects the family from snakes and tigers.

The house is as much a shelter for the deceased ancestors as for their descendants. Among the Bhangi, Dhedh, Vaghri and Ravalia castes of Gujarat it is customary to have in the house a miniature underground chamber dedicated to the ancestors. This author witnessed in a village in Saurashtra a ritual of blood sacrifice, at which a piece of meat of the sacrificial victim was offered to the deceased ancestor residing in the chamber. Interestingly enough, this evokes comparison with *baliharana* or the ritual of throwing oblations on the ground for the household gods as described in the Grihyasutras<sup>13</sup>.

Another deity of the pantheon residing in the house of the Rathvas and Bhilalas is Jhampa-Tota, the god protecting the entrance. That is where he is installed and where he receives blood sacrifices from time to time. The gods who protect the cattle of the Rathvas against wild animals or disease are called Bhehanto and Kohajo. The pen-place, an integral part of the dwelling, is their abode.

The space in front of the Rathva and Bhilala house is sacred to Babo Ind (comparable to Vedic Indra) who ensures a rich harvest. Branches of particular species of trees are ritually cut and replanted in front of the house where, along with a plough, deities related to fertility are worshipped with offerings. The tribal ritual known as Ind Karvo is comparable in many respects to the Brahmanic festival of Indramaha<sup>14</sup>.

The Rathva and Bhilala dwelling does not exist in isolation but forms part of a greater cosmic scheme of the tribal world view. Adjacent to the house is the field, where Khetarpal, the field-deity,

takes shelter. Hedha Jatar or the goddess of the fence is provided an abode on the uncultivated strip of land along the fence. Beyond the hamlet is the entrance to the village, where the protector of the village, Jhampa-Tota, is housed. The periphery of the village is known as *him* which is occupied by the goddess Himodi, to whom terracotta tigers are offered. *Malon* is a wide, protected green patch near the village which is thickly forested with large trees. These trees, by convention, are not to be cut by anybody. *Malon* contains the main village shrine. Under some of its trees deities in the form of carved wooden images, or *khunta*, wooden poles, are installed. These are periodically venerated through offerings of terracotta animals and *dhapo*, dome-shaped miniature terracotta shrines. Gamdeo or the village god is also installed here.

The iconographic and symbolic significances in various tribal dwellings and settlements clearly reveal the deeper meaning underlying the physical structures and spaces. There is no firm dividing line between terrestrial and cosmic space because the tribal universe itself remains whole and unfragmented.

#### References:

1. In Introduction to : *The Teachings of Don Juan* by Carlos Castaneda, New York, 1974, p. 10.
2. Material from Northern India has been utilised here but it is most likely that similar beliefs and practices exist in Southern India or any other regions of the country.
3. For detailed information see *Painted Myths of Creation: Art and Ritual of an Indian Tribe* by Jyotindra Jain, New Delhi, 1984.
4. Elwin, Verrier: *The Religion of an Indian Tribe*, Bombay, 1955, p. 404.

5. Information derived from Haekel, Josef: *Der kulturelle Aspekt des Hauses bei den Bhilala in Zentralindien*. publ. in Festschrift Paul J. Schebesta, Vienna, 1963, pp. 357 ff.
6. *ibid.*, p. 361.
7. Koppers, W.: *Die Bhil in Zentralindien*, Vienna, 1948, p. 279.
8. Haekel, op. cit., p. 359.
9. Naik, T.B.: *The Bhils*, Delhi, 1956, p. 27 f.
10. Fuchs, Stephan: *The Children of Hari*, Vienna, 1950, pp. 344 ff.
11. Hivale, Sham Rao: *The Pardhans of the Upper Narbada Valley*, Bombay, 1946, p. 44
12. Fuchs, Stephan: *The Gond and Bhumia of Eastern Mandla*, Bombay, 1960, p. 393.
13. Gonda, Jan: *A History of Indian Literature : The Ritual Sutras*, Wiesbaden, 1977, p. 582
14. Jain, Jyotindra, op. cit., p. 61 ff.

**Dr. Jyotindra Jain**, a noted folk art authority, is Senior Director of the Crafts Museum, New Delhi. An M.A. in ancient Indian history and culture, Jain obtained his doctorate in ethnology and Indology from the University of Vienna. He is the recipient of several fellowships and is author of many publications, the latest being *Painted Myths of Creation: Art and Ritual of an Indian Tribe*.



**CONTEMPORARY  
ARCHITECTURE**

# MODERNITY — Inventing the future

The building of Chandigarh, the new capital city of the Punjab, provided the first important threshold in the emergence of contemporary Indian architecture.

Le Corbusier came to this ancient land with a powerful vision of the future – and acted as a decisive catalyst, triggering off our nascent sense of architectonic form and syntax.

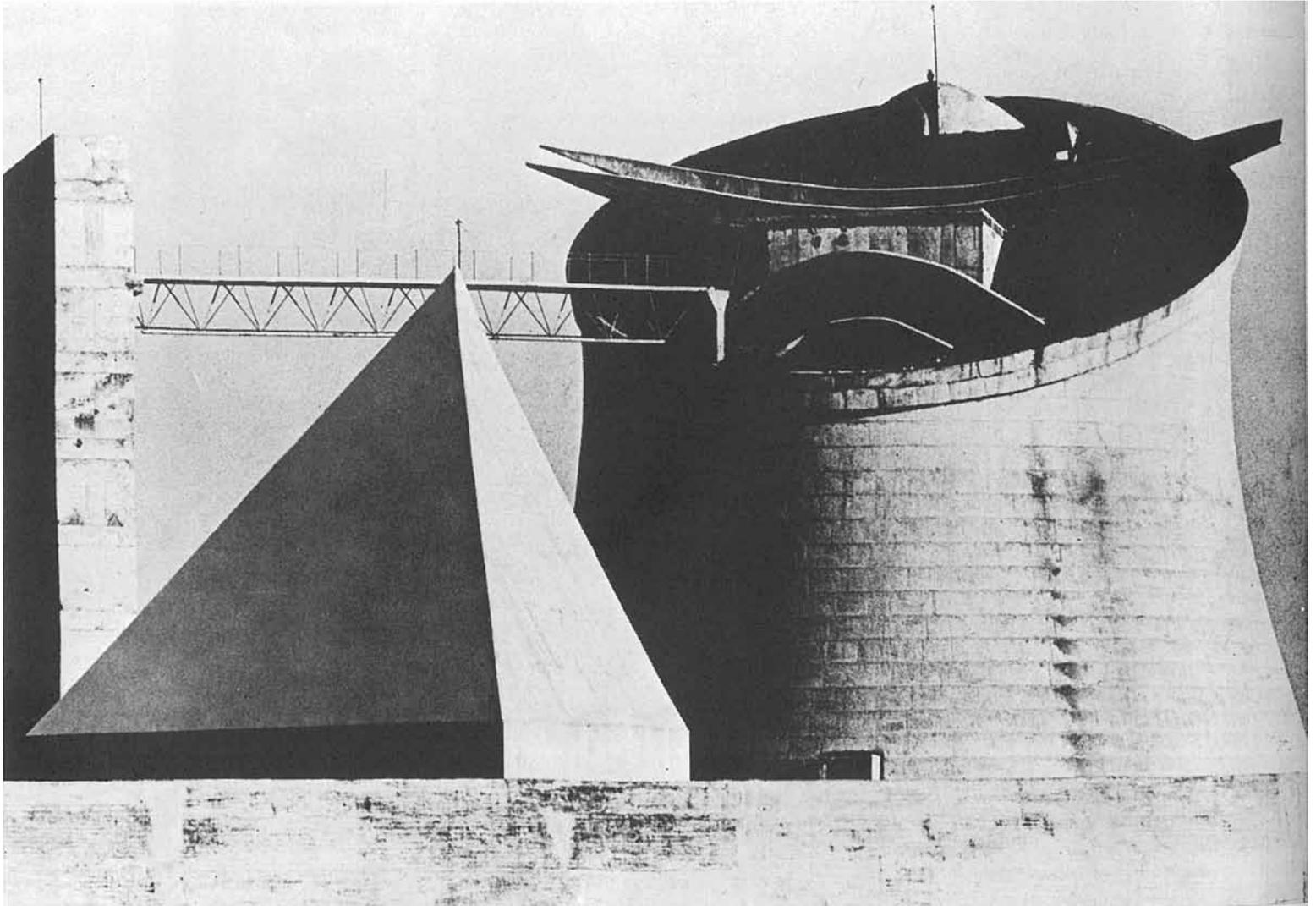
Inspired by this vision, young Indian architects studied the work of the other great modern masters of Europe and America – in the process producing new archetypes for an industrialising society, and using the mythic overlays of rationality and functionalism to generate imaginative new forms.

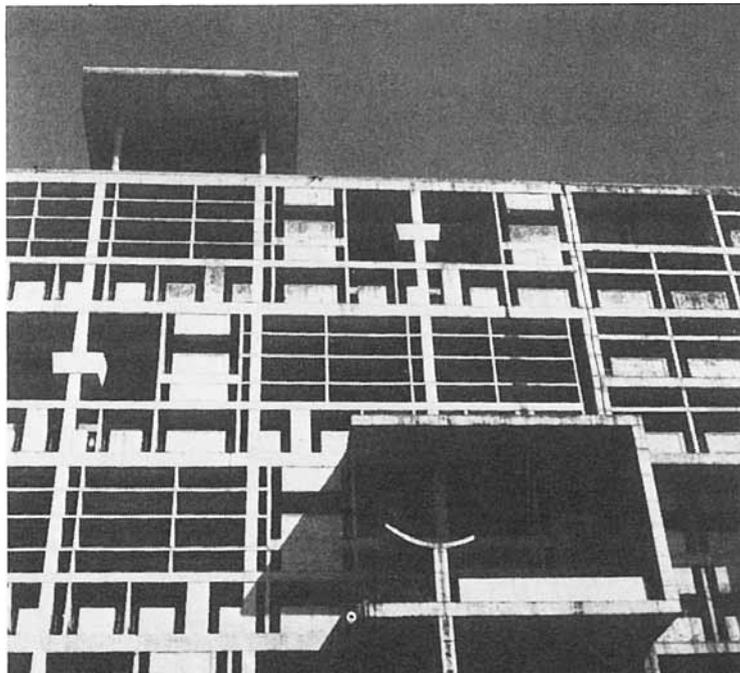
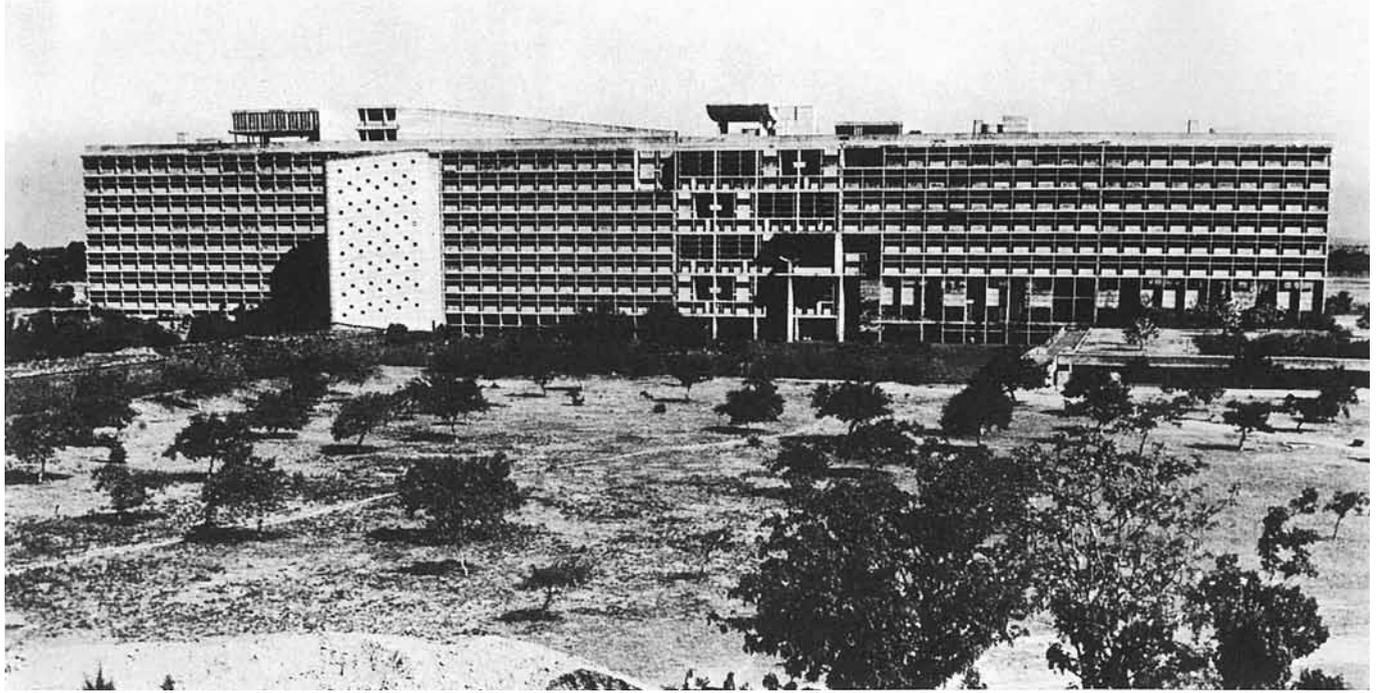


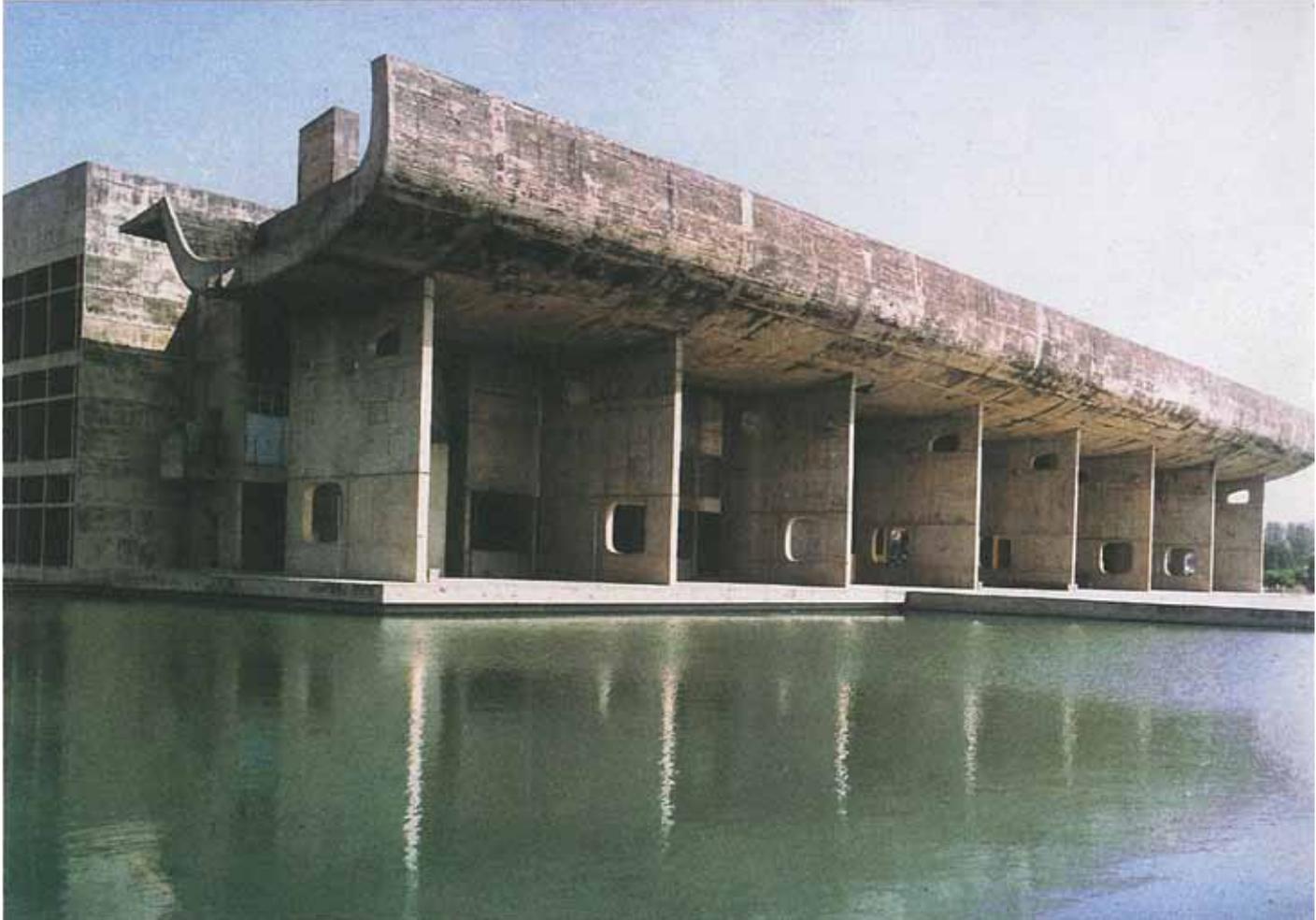
# THE SECRETARIAT, ASSEMBLY AND HIGH COURT

Chandigarh  
1952-60  
Le Corbusier

At the grand scale of public architecture for the capital complex, Le Corbusier develops a powerful vocabulary of plastic forms emerging from a dynamic spatial organisation.

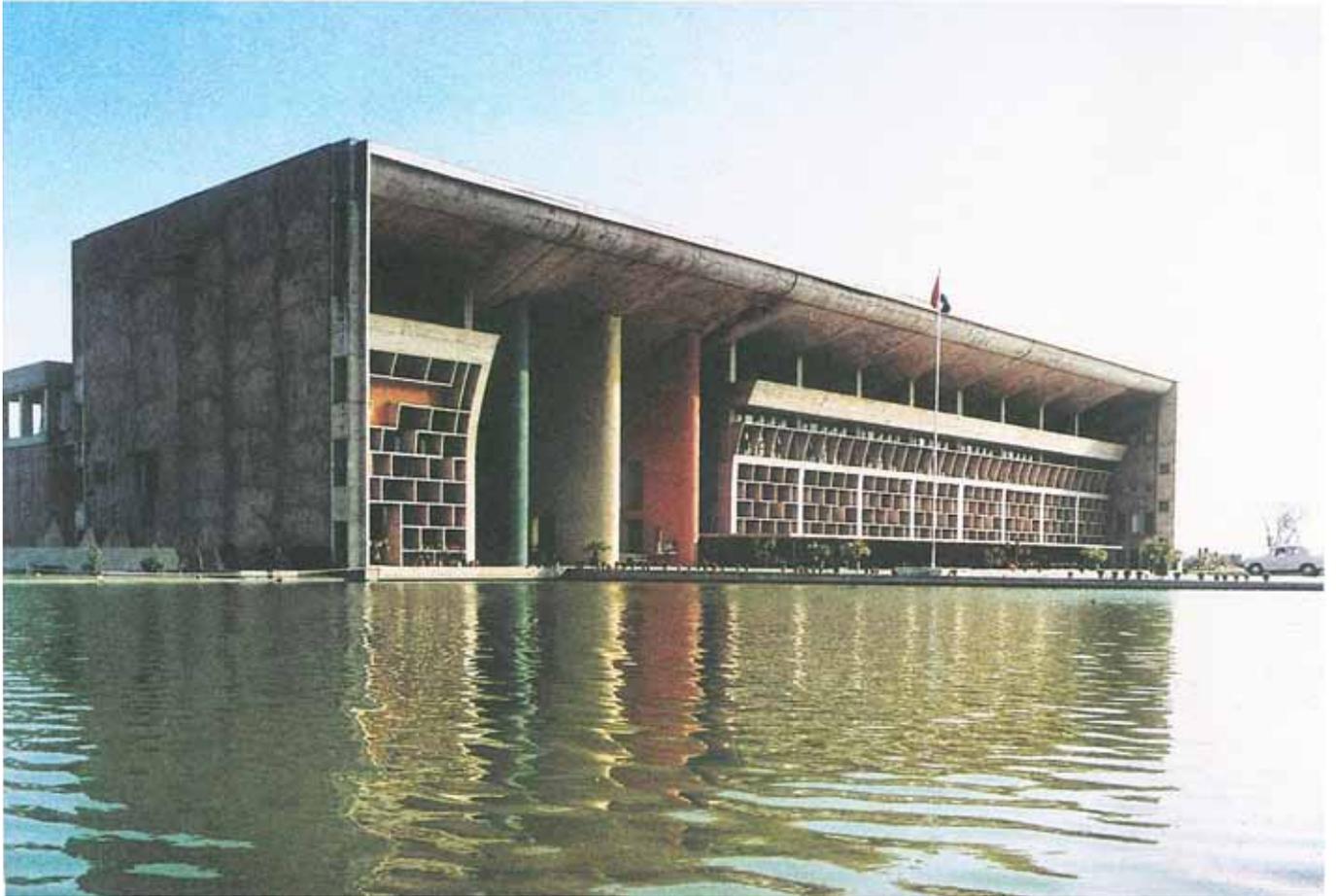






“It is totally immaterial whether you like it or not; it is the biggest job of its kind in India ... because it hits you on the head, because it makes you think ... and the one thing that India requires in so many fields is to be hit on the head.”

*- Jawaharlal Nehru on Chandigarh*

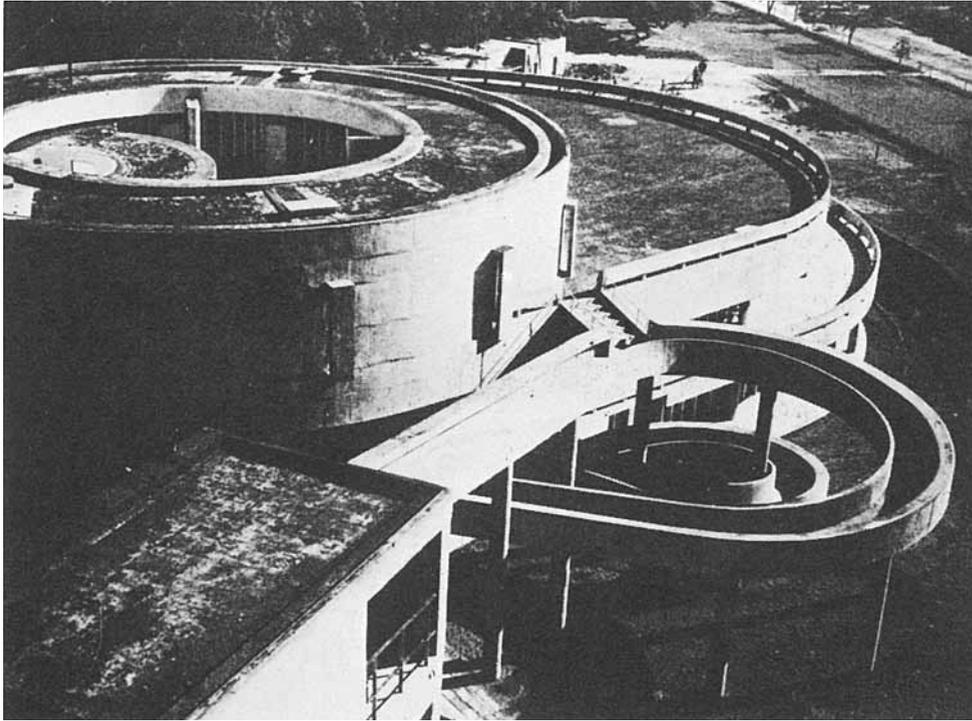


## POST-GRADUATE INSTITUTE OF MEDICAL RESEARCH AND EDUCATION

Chandigarh

1960-66 (Years of completion of two blocks of complex)

Jeet Lal Malhotra



The power and vitality of Le Corbusier's imagery had a staggering impact on architects all over the world – and especially here in India – generating a bold and imaginative response.



# SRI RAM CENTRE

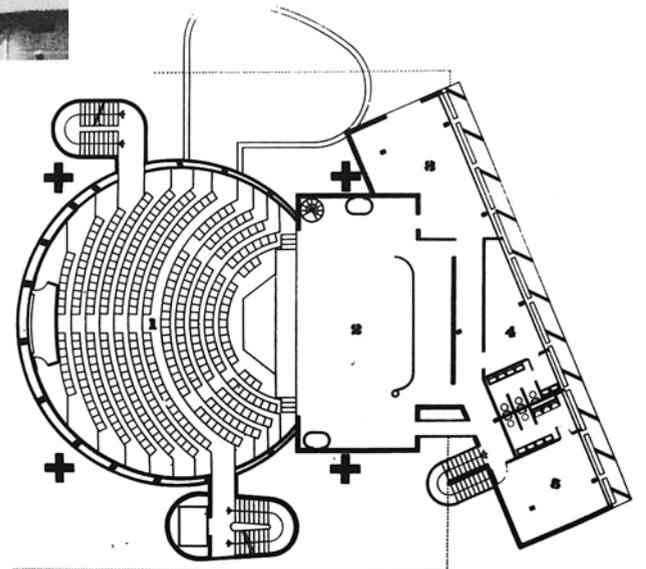
New Delhi

1966-72

Shivnath Prasad



Chandigarh created a spine of architecturally-conscious communities from Delhi down to Ahmedabad, Baroda and Bombay. This project, a centre for dance, drama and music, is a bold statement of urban form, extending the vocabulary of reinforced concrete.



1. Auditorium
2. Stage
3. Rehearsal room
- 4,5. Green rooms

# PUNJAB ENGINEERING COLLEGE

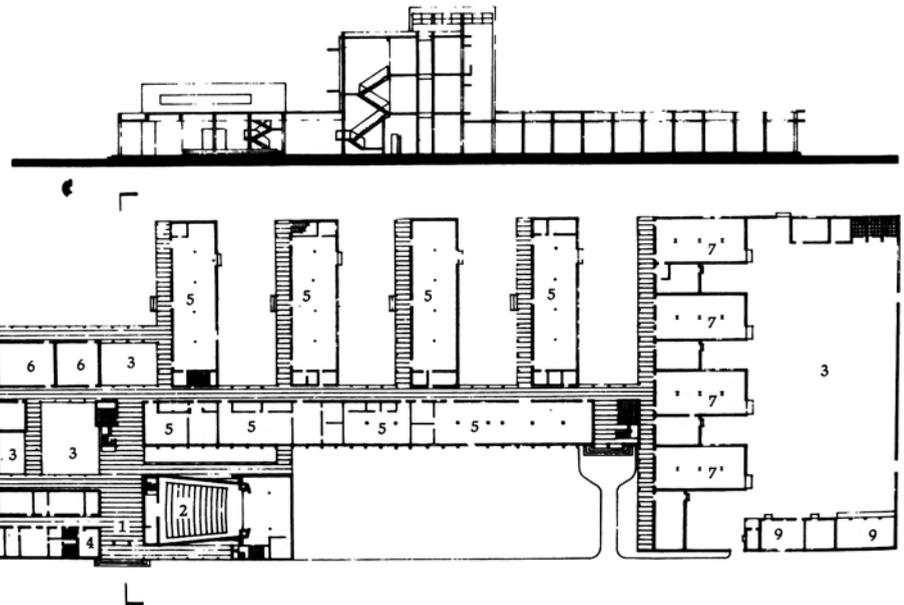
Chandigarh

1950-53

J. K. Chowdhury



Some of the Indian architects working in Chandigarh were influenced by Maxwell Fry and Jane Drew – as seen in this educational complex in Chandigarh built concurrently with the capital.



## Plan & Section

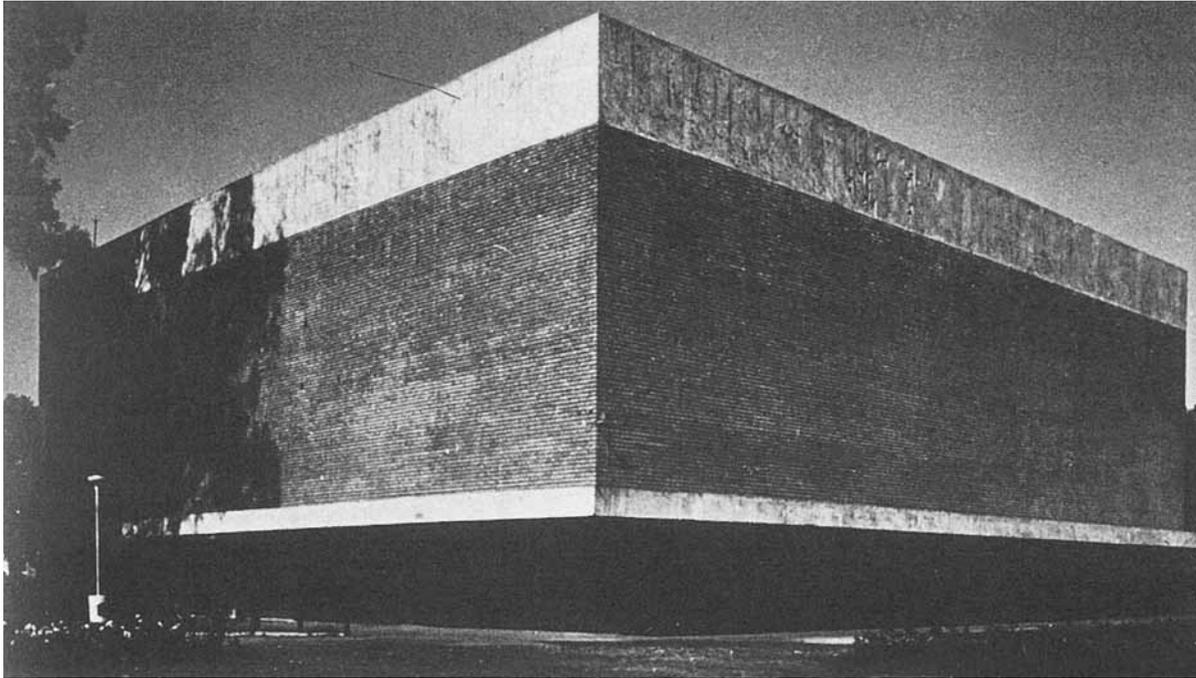
1. Main entrance hall
2. Auditorium
3. Open court
4. Offices
5. Laboratory
6. Lecture halls
7. Workshop
8. Museum & exhibition area
9. Stores

# TAGORE THEATRE

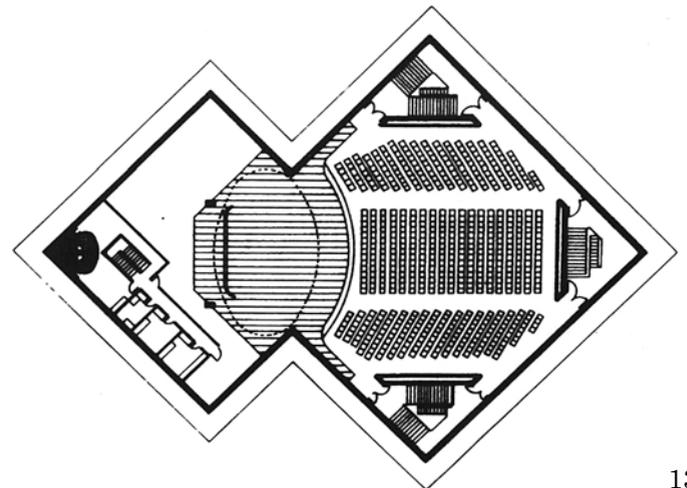
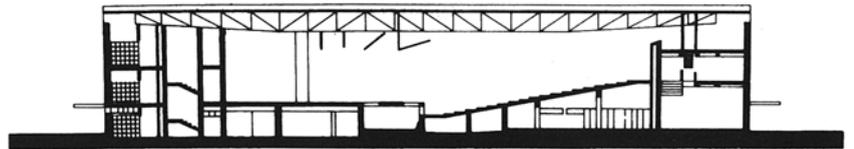
Chandigarh

1959-61

Aditya Prakash



Not all the architects who accepted Le Corbusier's philosophy necessarily worked within the parameters of his vocabulary and syntax. An example of non-Corbusian form – developed from his principles – is this theatre, generated by two elemental volumes interlocked in plan.

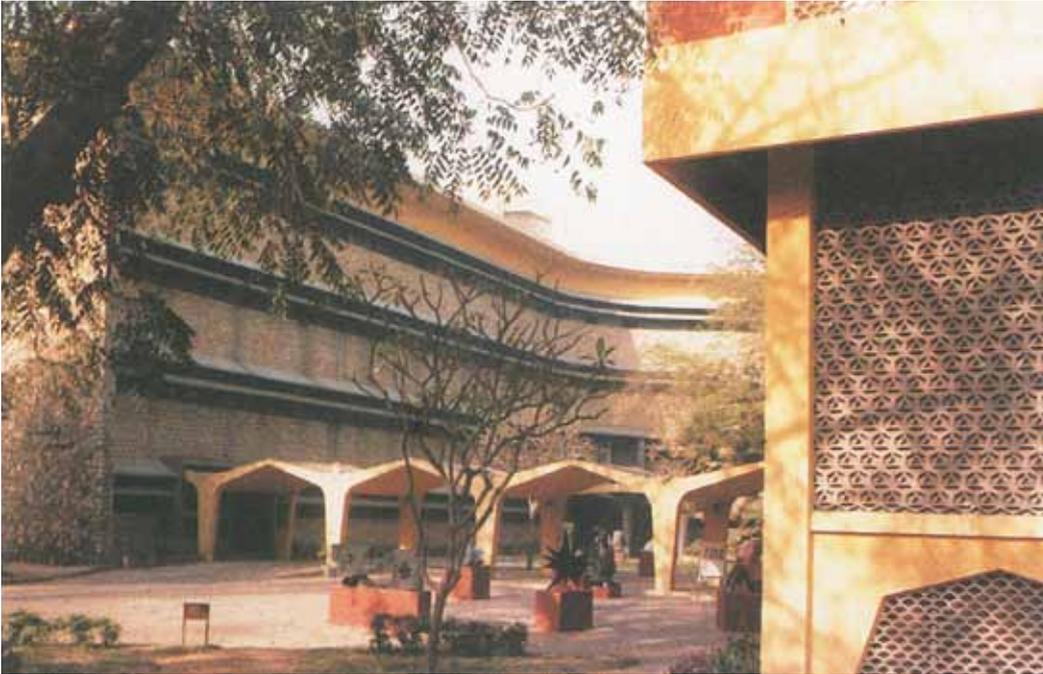


# RABINDRA BHAVAN

New Delhi

1959-61

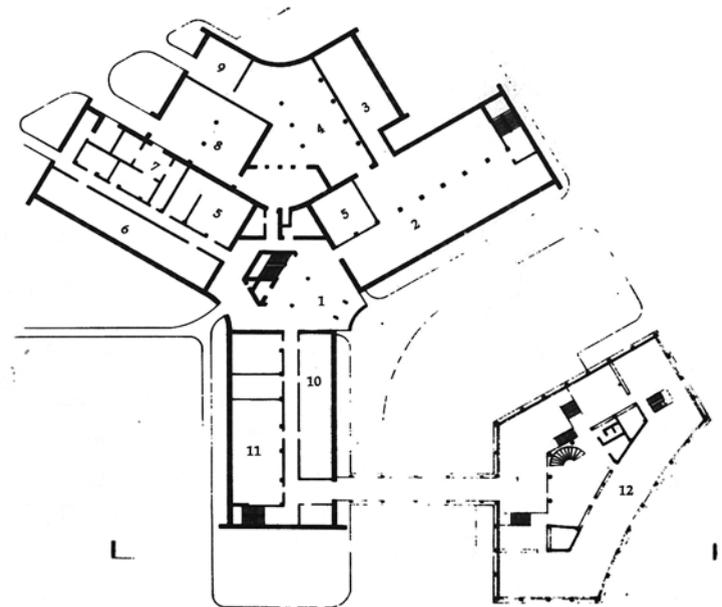
Habib Rahman



Other modern masters were influential as well: in particular Walter Gropius and Alvar Aalto. This example attempts to blend modernist approaches with traditional Indian elements such as the *jaali*.

## RABINDRA BHAVAN Ground Floor Plan

1. Foyer
2. Library
3. Scholar's room
4. Stacks & storage
5. Blower room
6. Museum for instruments & costumes
7. Services
8. Cycle shed
9. Receiving & despatch
10. Store
11. Photo & studio room
12. Gallery



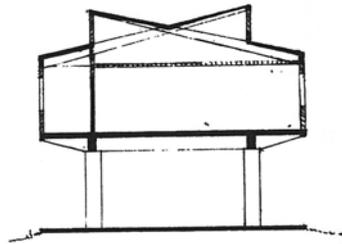
# TATA INSTITUTE OF SOCIAL SCIENCES

Bombay

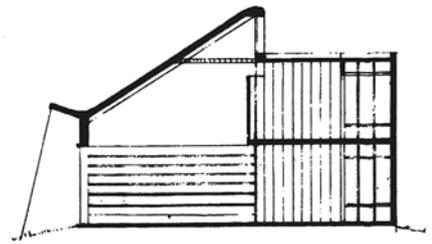
1951-54

Durga Bajpai

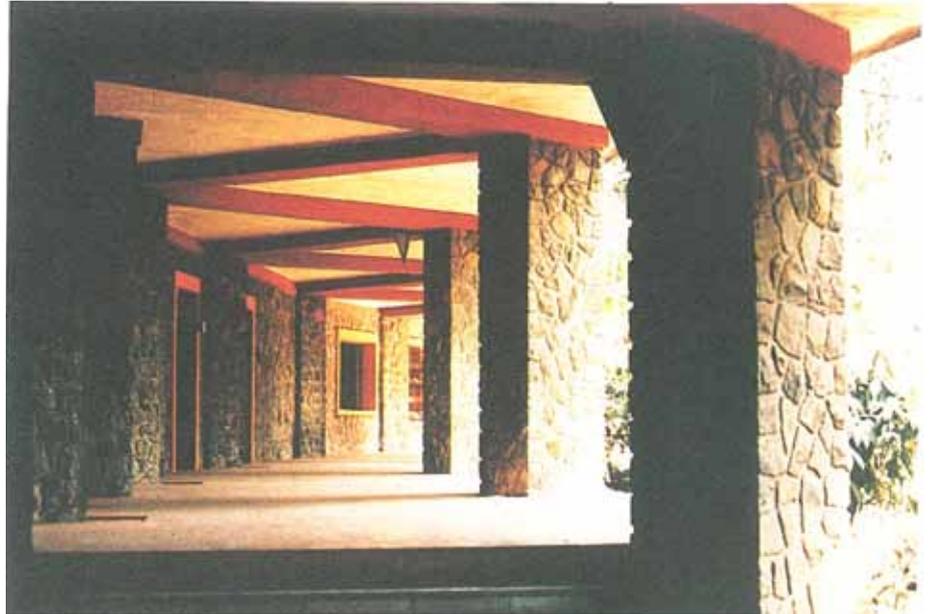
The principles of the modern movement – and in particular of Alvar Aalto – transformed with an earthy and natural exuberance for the semi-tropical climate of Bombay. One of the truly outstanding projects of its time.



SECTION THROUGH CLASS RM.



SECTION THROUGH LIBRARY.



AZAD BHAVAN  
New Delhi  
1954-59  
Achyut P. Kanvinde



Headquarters for the Indian Council for Cultural Relations – juxtaposing traditional motifs with the clean lines and volumes of modernity.

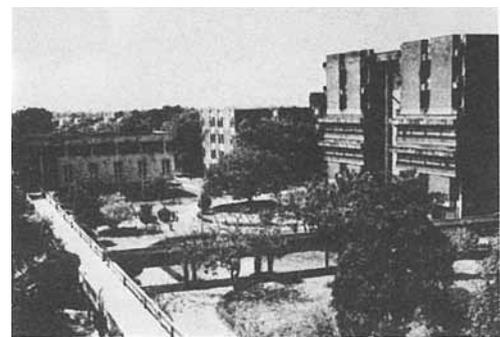
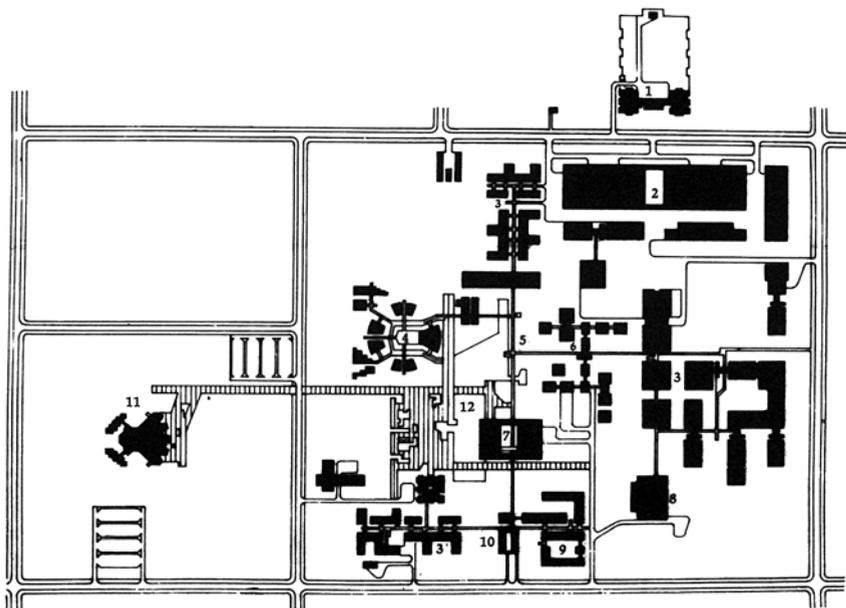
# INDIAN INSTITUTE OF TECHNOLOGY

Kanpur

1959-66

Achyut P. Kanvinde

The university campus as a pedestrian town. An elegant synthesis of urban design and architecture with grade-separated walkways for students and faculty.



## Site Layout

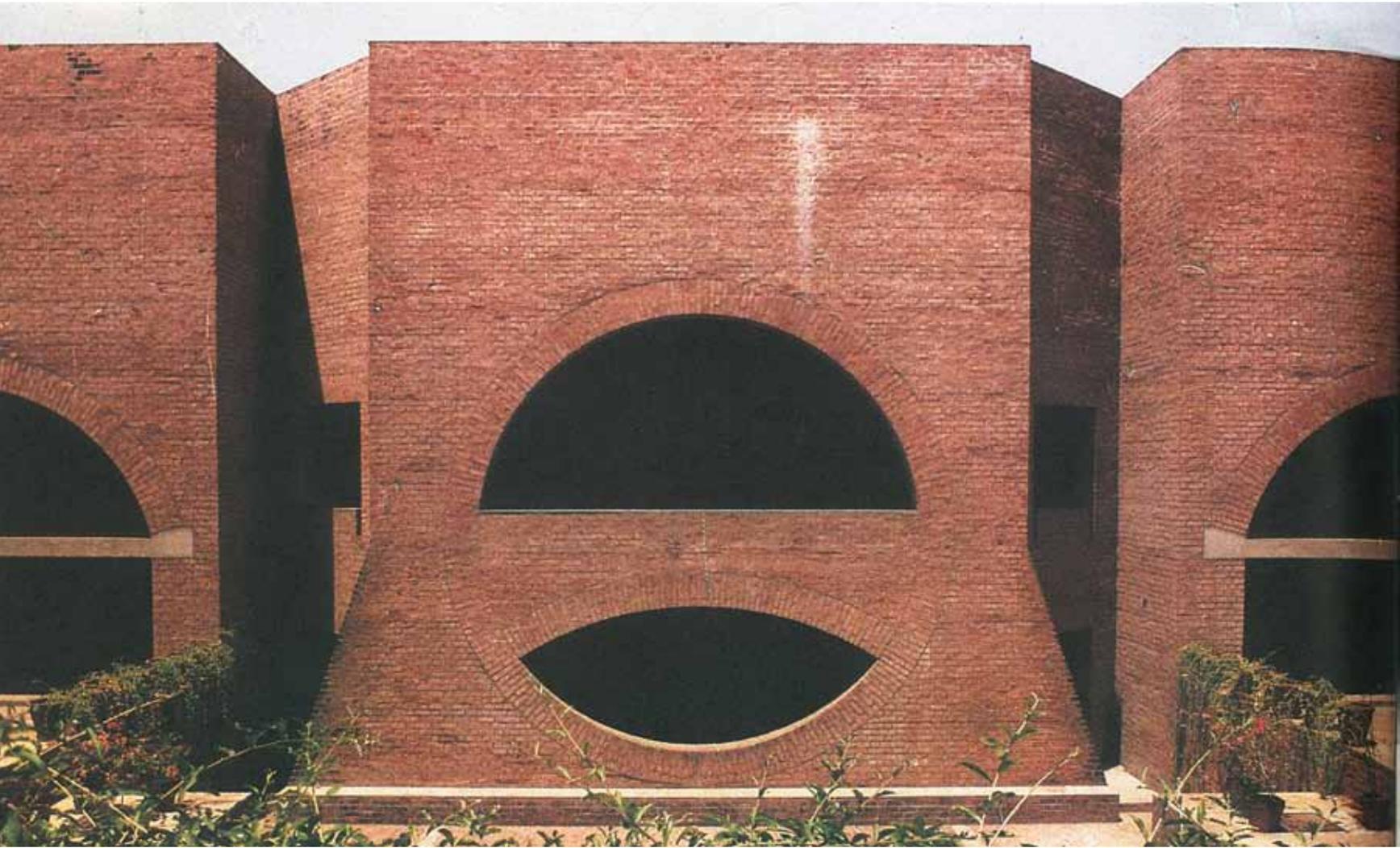
- |                     |                                  |
|---------------------|----------------------------------|
| 1. Central store    | 7. Library                       |
| 2. Workshop         | 8. Computer centre               |
| 3. Laboratories     | 9. Administration                |
| 4. Lecture halls    | 10. Covered parking              |
| 5. Elevated walkway | 11. Auditorium & cultural centre |
| 6. Faculty building | 12. Pool                         |

# INDIAN INSTITUTE OF MANAGEMENT

Ahmedabad

1962-74

Louis I. Kahn

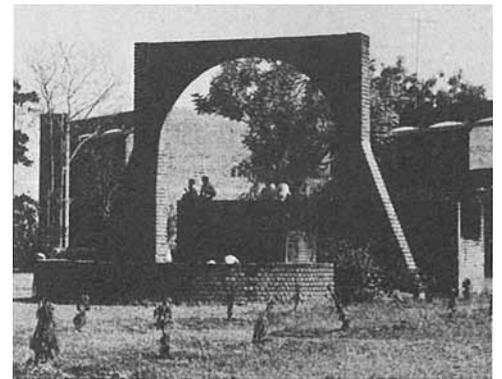
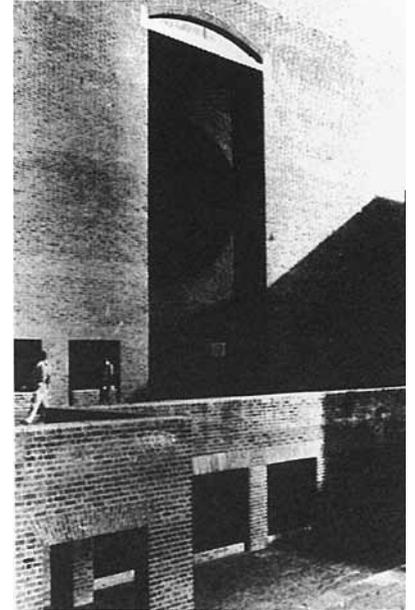
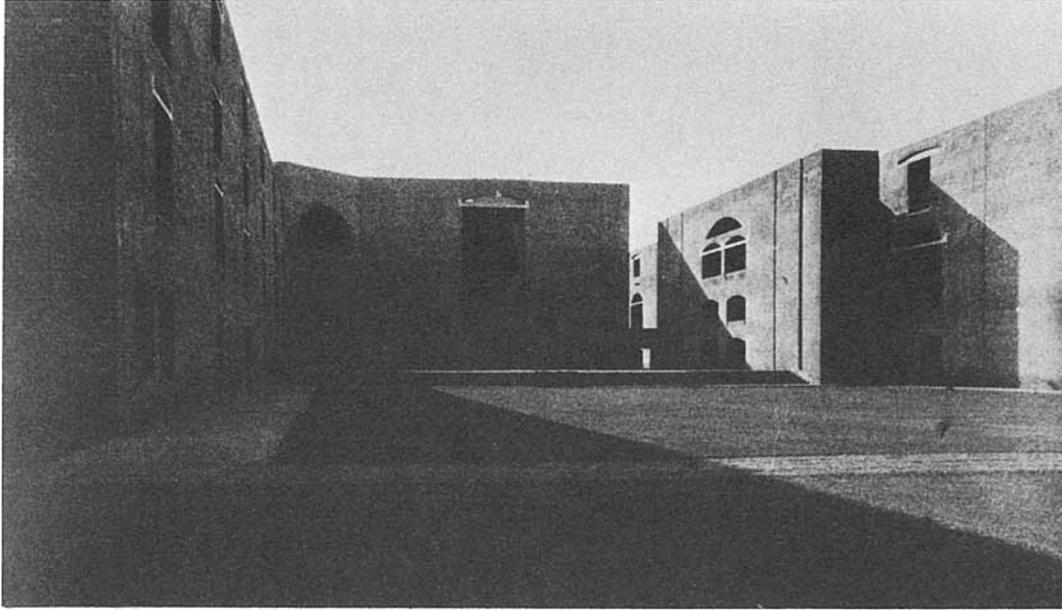


The coming of Louis Kahn, a second-generation modern master from America, created a new architectural impetus, just as Le Corbusier's presence had done a decade earlier.

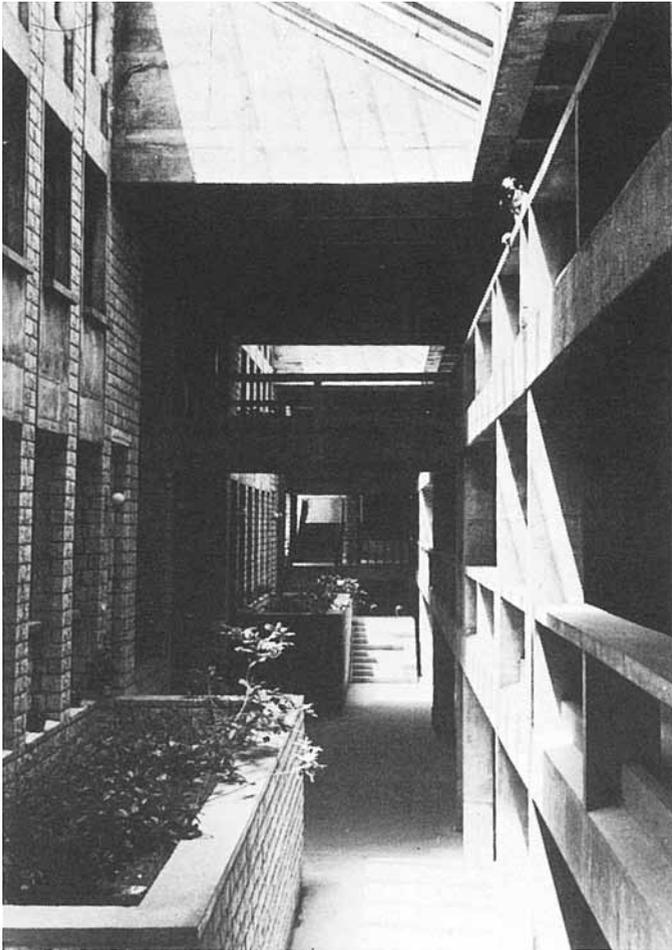
Kahn's emphasis was on geometrical order in plan, and the use of load-bearing brickwork as the major structural element.

The vocabulary of bricks, combined with reinforced concrete parts, offered a powerful new aesthetic.

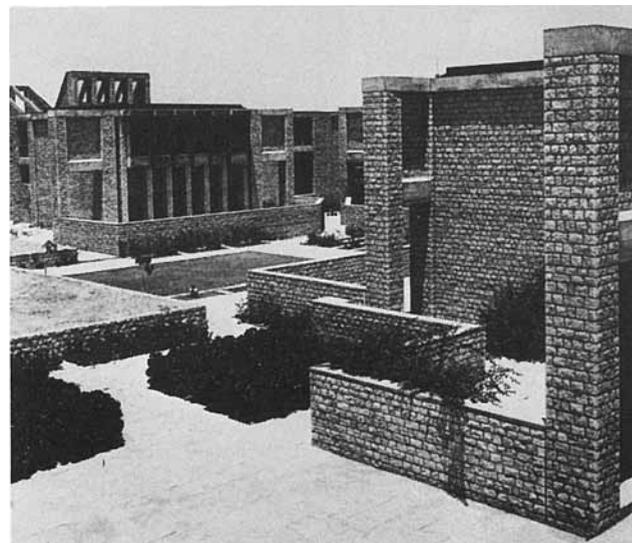
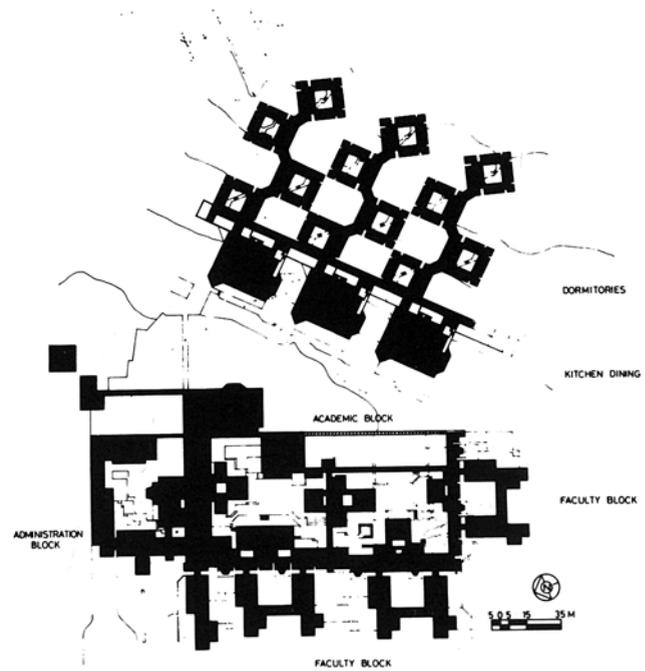
Young Indian architects became preoccupied with abstract geometry and spatial order.



INDIAN INSTITUTE OF MANAGEMENT  
Bangalore  
1977-  
B. V. Doshi

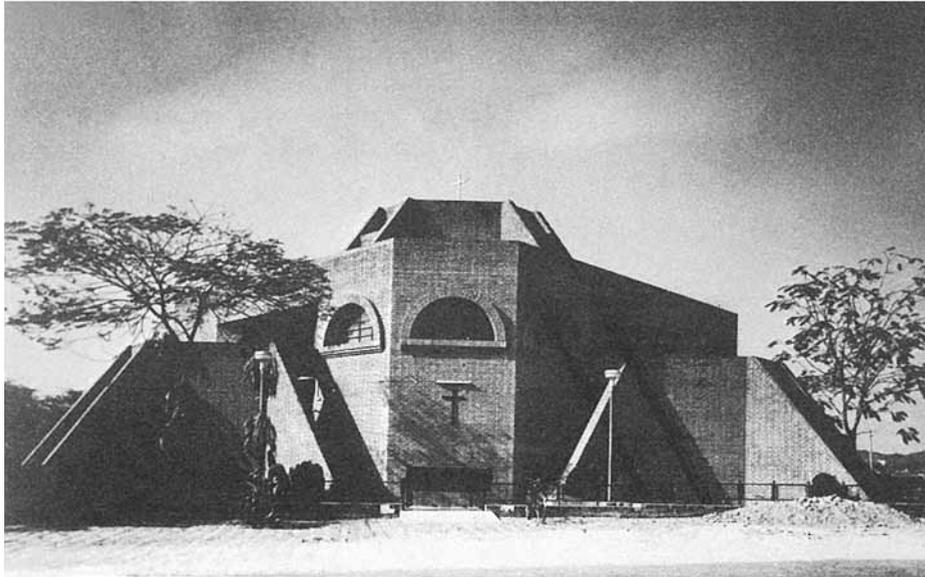


Developing a purist spatial geometry, while combining large-scale use of stone with reinforced cement concrete.

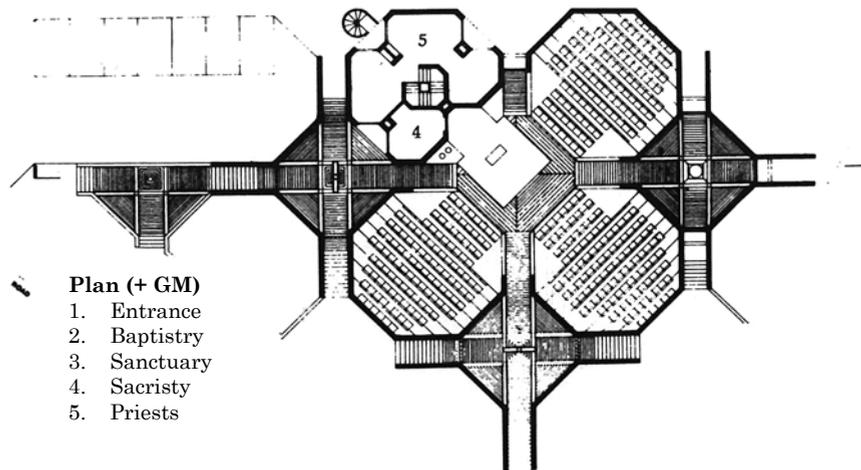
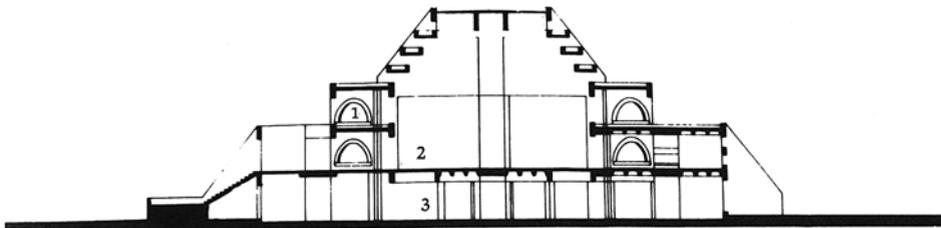
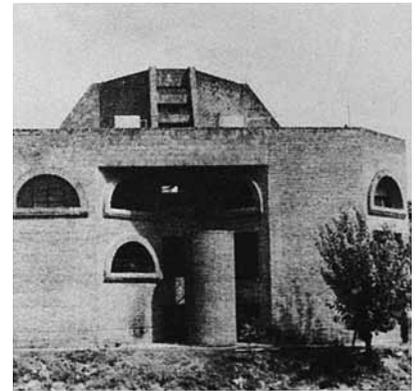


# ST. THOMAS' CHURCH

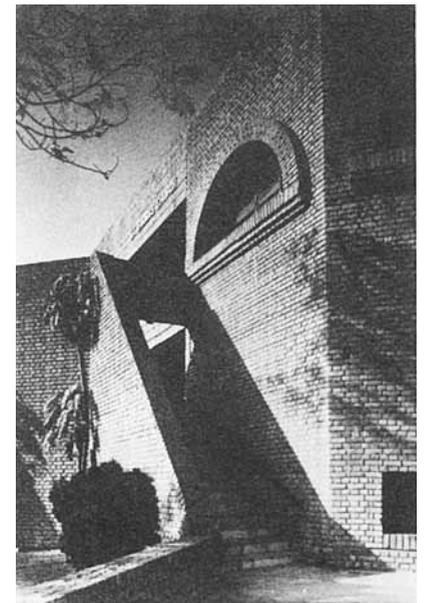
New Delhi  
1971-73  
Oscar Pereira



Geometrical clarity in plan and volume, enhanced by the directness of the exposed brick masonry.



- Plan (+ GM)**
1. Entrance
  2. Baptistry
  3. Sanctuary
  4. Sacristy
  5. Priests

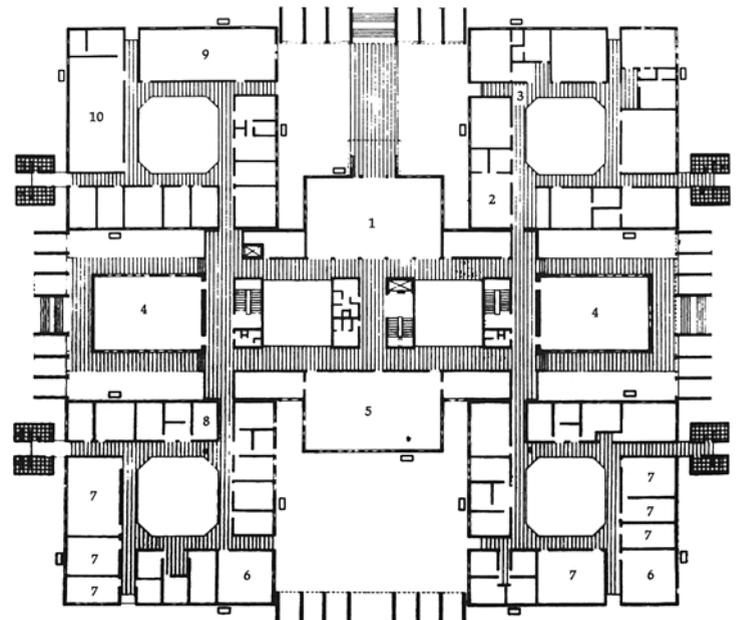
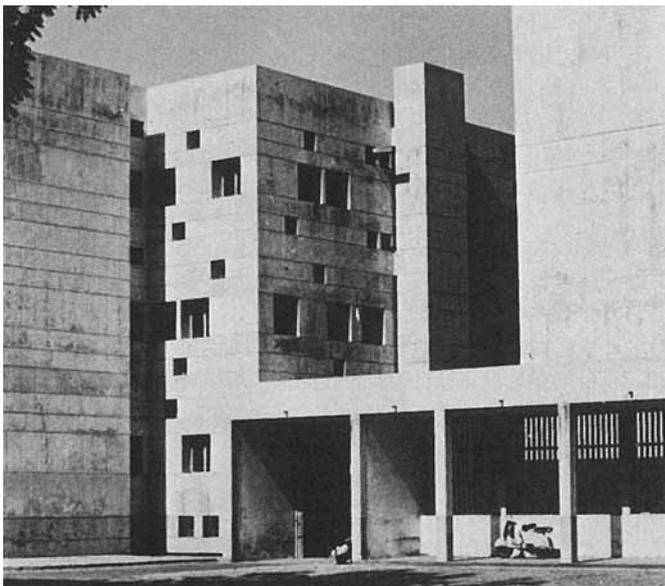




Working within the budgetary constraints of the Municipal Corporation, this project shows a simple but masterful handling of volumes and surfaces, generated from a plan of traditional symmetry.

**Ground Floor Plan**

- |                       |                     |
|-----------------------|---------------------|
| 1. Entrance hall      | 6. Faculty          |
| 2. Public information | 7. Laboratory       |
| 3. Administration     | 8. Staff room       |
| 4. Lecture hall       | 9. Health museum    |
| 5. Library            | 10. Forensic museum |

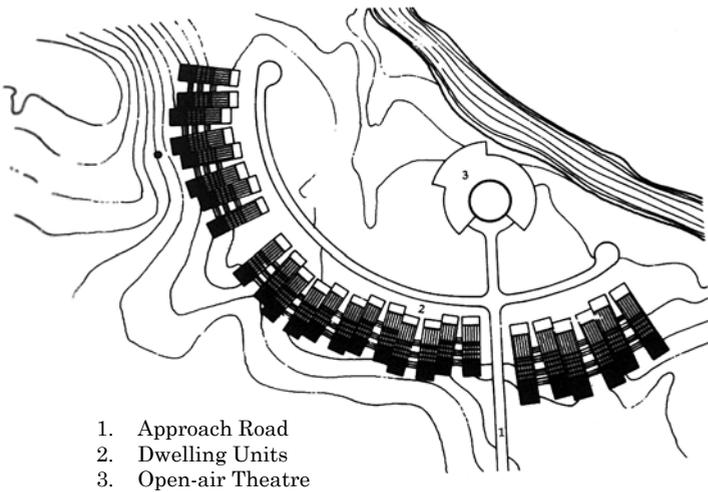


## SRI DASHMESH ACADEMY

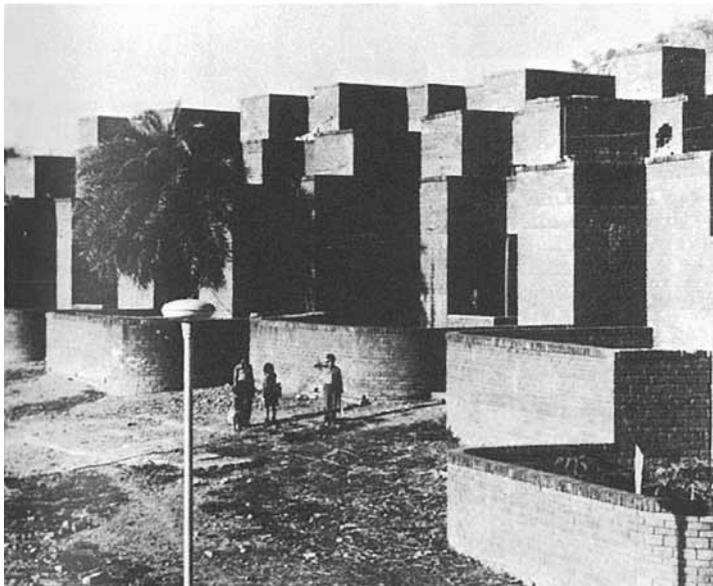
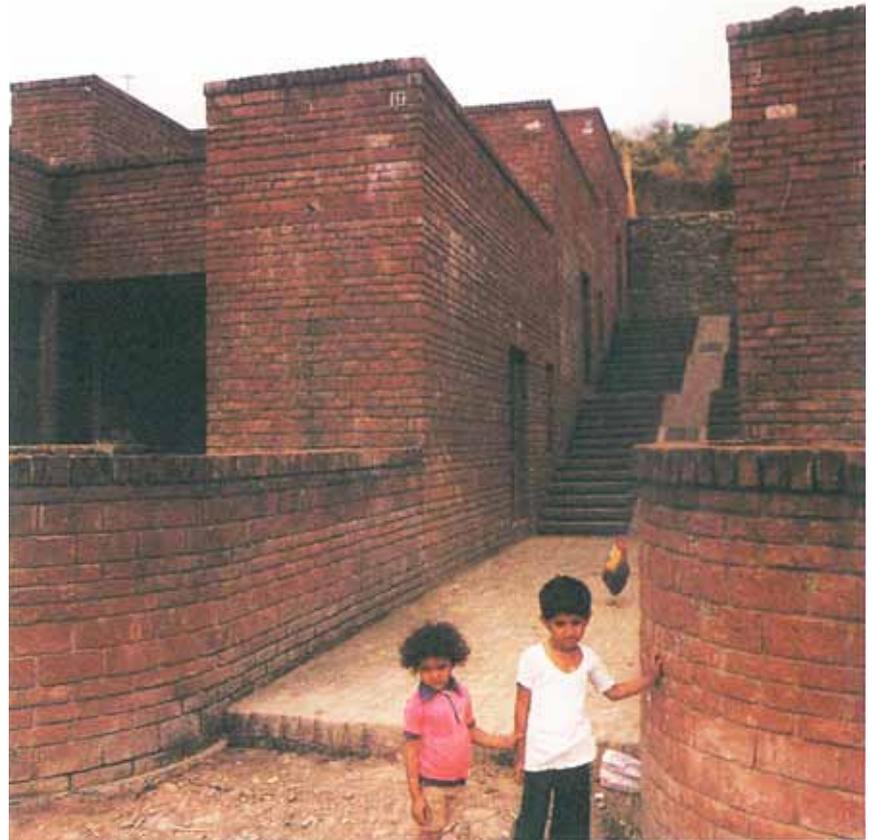
Anandpur Sahib, Punjab

1978-83

Satnam & Namita Singh



A bold expression of the cubist aesthetic of Chandigarh, set sensitively into its hillside location.



# NEHRU PAVILION

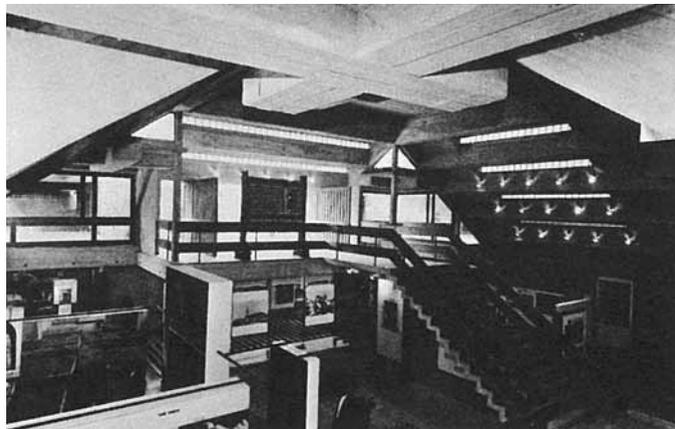
New Delhi

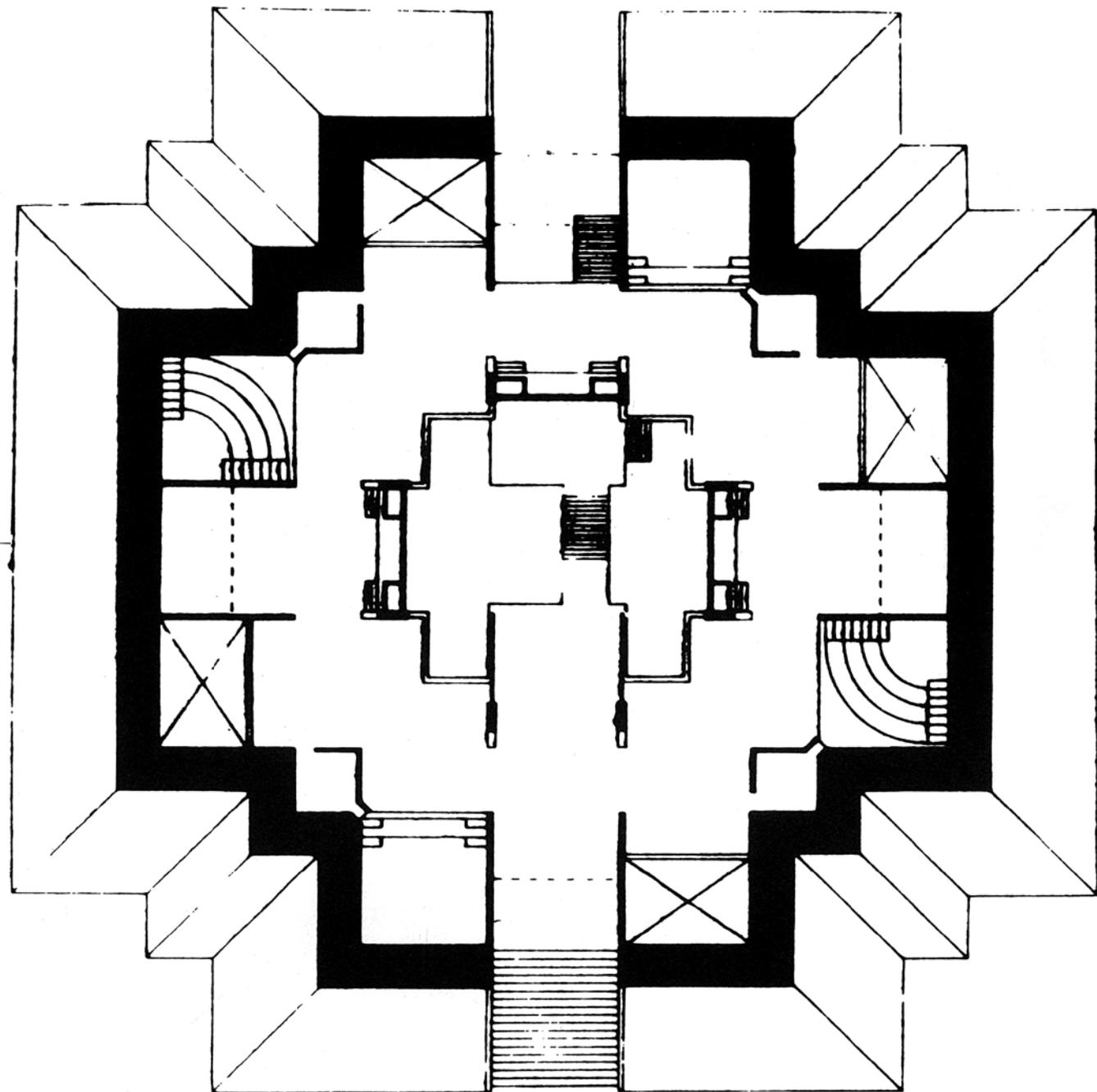
1971-1972

Raj Rewal



Geometrical complexity in volume, combined with a traditional order in plan, sheltered within the earth.



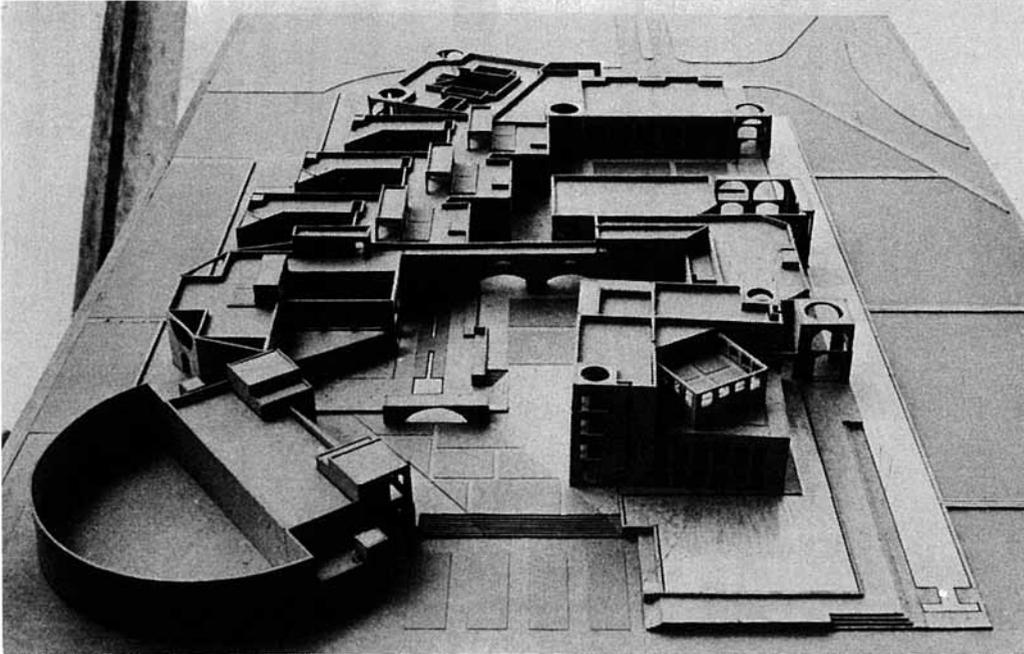


INDIAN INSTITUTE OF FOREST MANAGEMENT

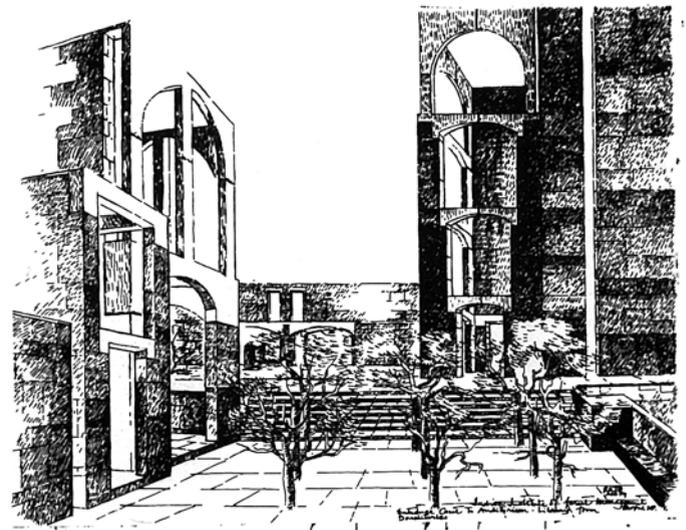
Bhopal

1984-

Anant Raje



A developed expression of purist spatial order sited with precision on a hill.

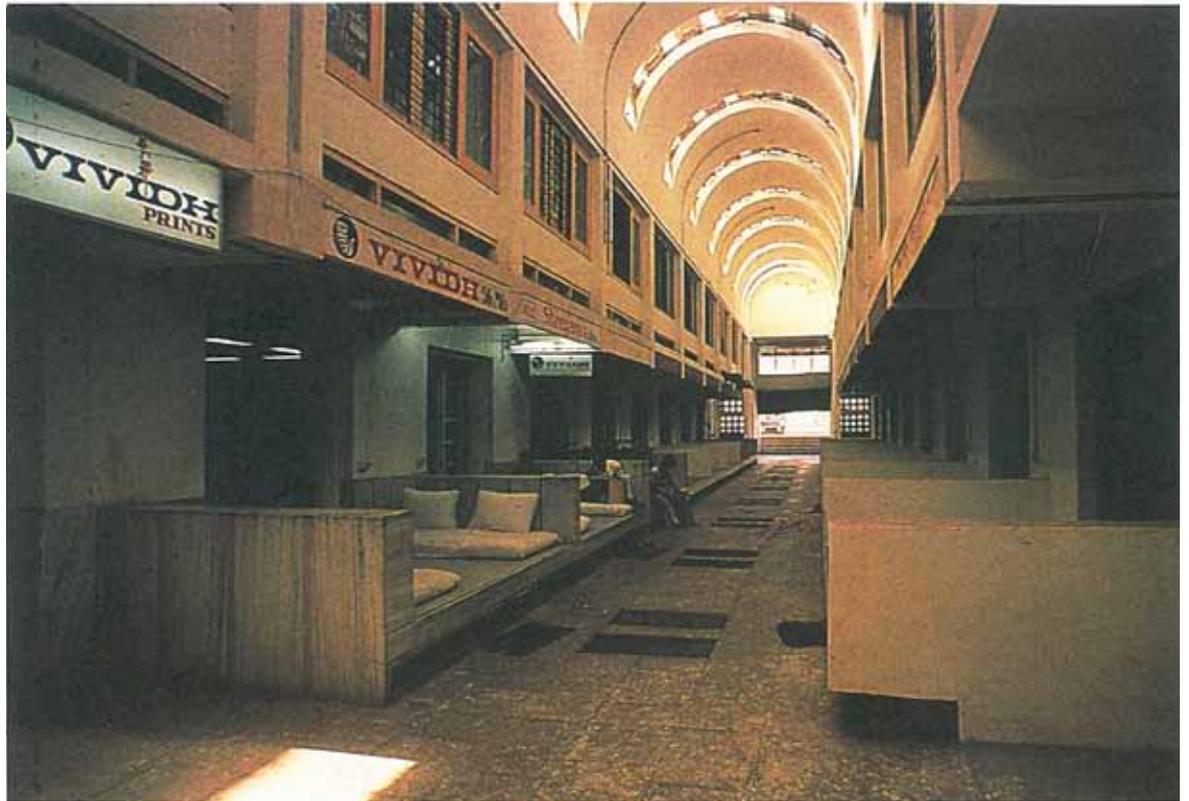


## BOMBAY CLOTH MARKET

Surat

1972-84

Suryakant Patel



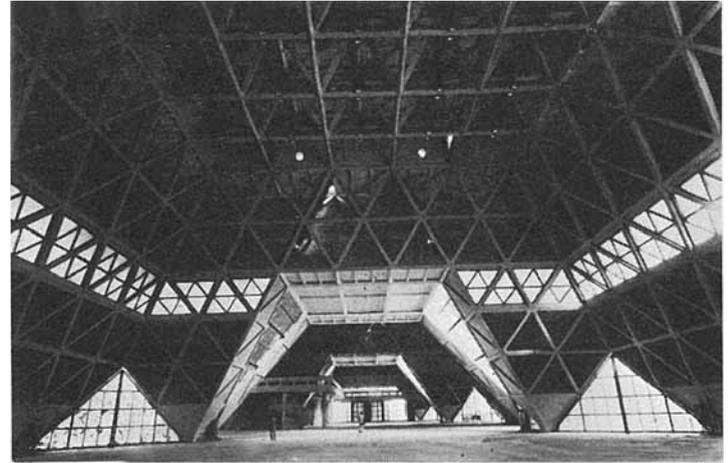
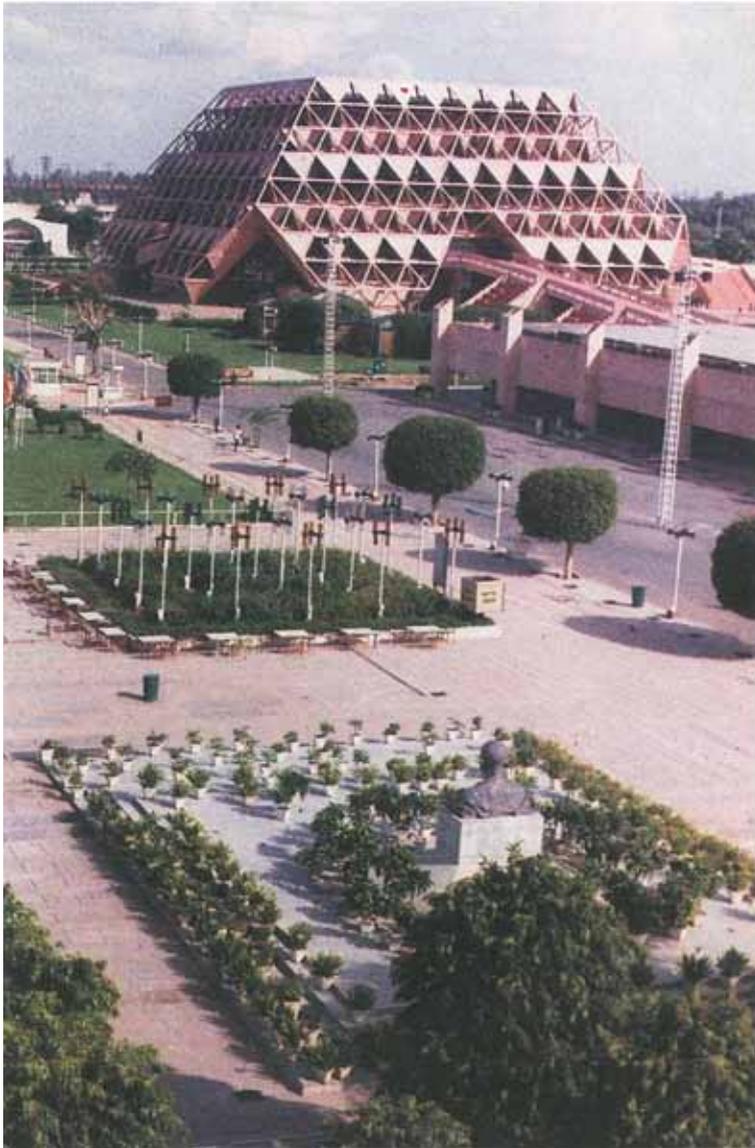
This project re-invents the traditional cloth wholesale market, incorporating platforms for traders into a modern functionalist vocabulary, full of light and exuberance.

# HALL OF NATIONS, PRAGATI MAIDAN

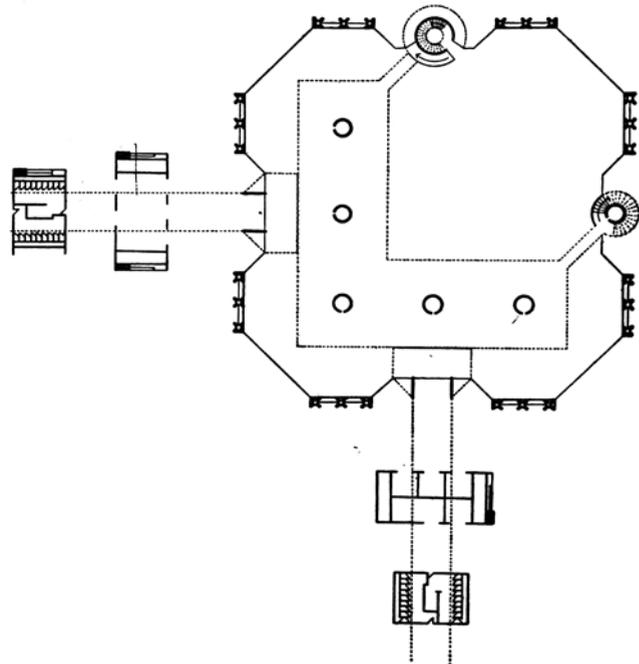
New Delhi

1970-72

Raj Rewal



This in-situ concrete triangular space-frame, creating a column-free exhibition hall, is a remarkable architectural/engineering achievement.



# DAIRY PROJECT

Mehsana

1971-73

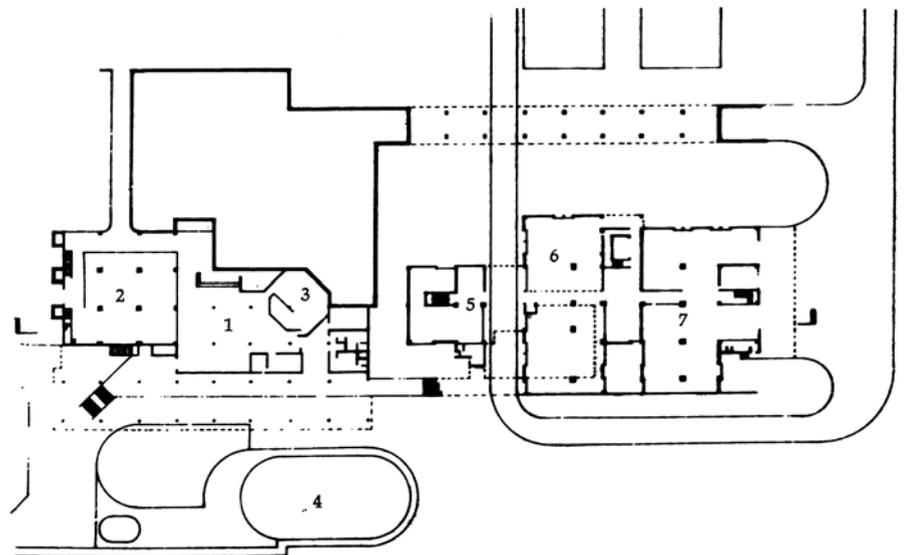
Achyut P. Kanvinde

A large-scale mechanised plant which uses vertical shafts both for natural ventilation and to give rhythm and dramatic silhouette to the built-form.



## Plan

1. Visitor's area
2. Milk tanks
3. Auditorium
4. Spray pond
5. Condensing plant
6. Spray drying
7. Finished goods

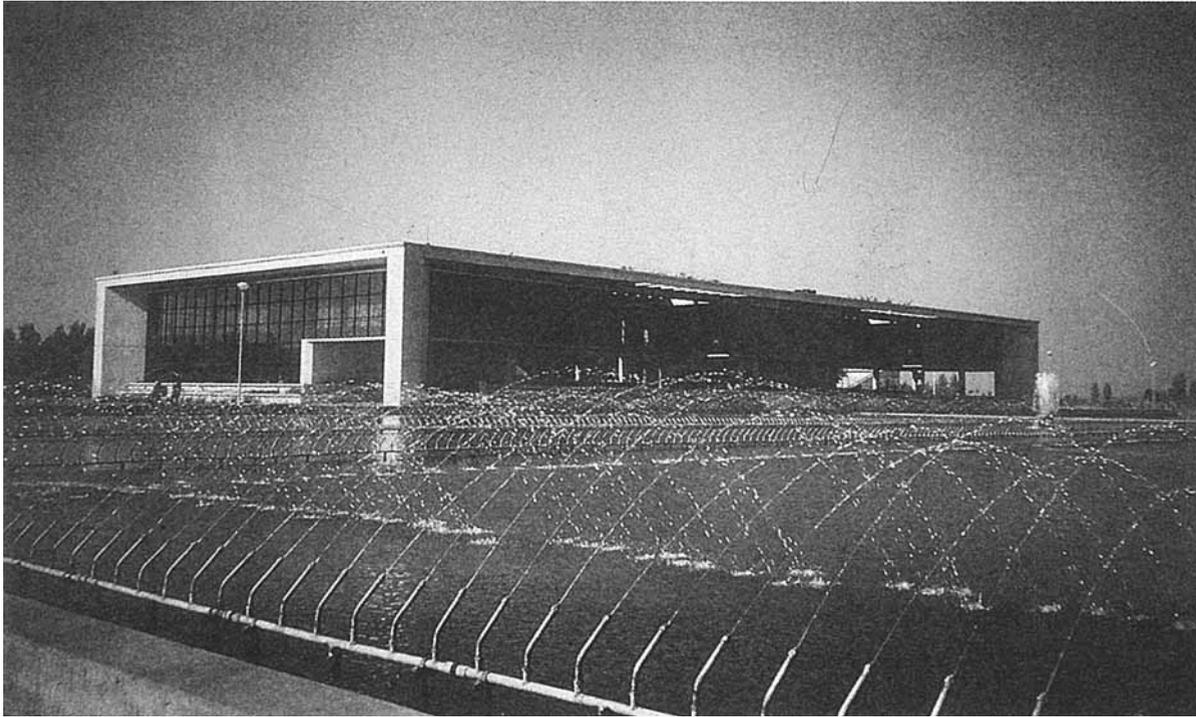


# R & D BUILDING, SEMI-CONDUCTOR COMPLEX

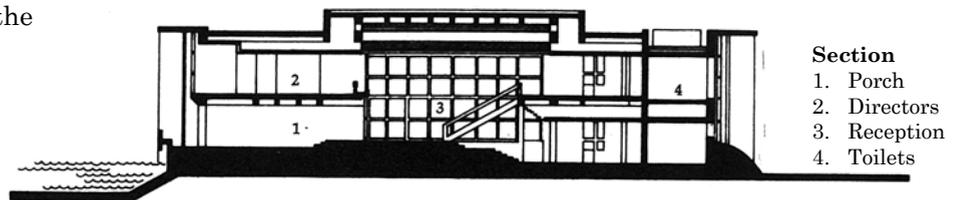
Mohali, Chandigarh

1982-84

Romi Khosla, Narendra Dengle, Anil B. Jain

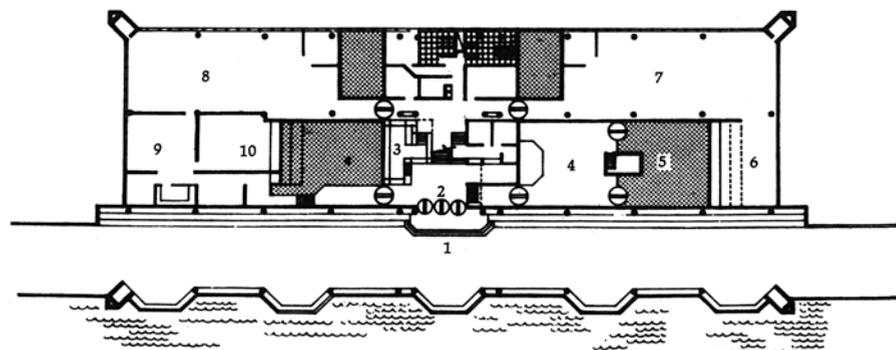


A statement of advanced technology to match the sophistication of the electronics industry.



## Ground Floor Plan

1. Driveway
2. Reception
3. Waiting & display
4. Auditorium
5. Court
6. Application lab
7. Marketing
8. Design centre
9. Standards & drg. office
10. C.A.D.



# INDUSTRIAL PROJECTS FOR ESCORTS

Faridabad

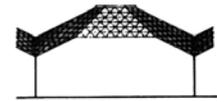
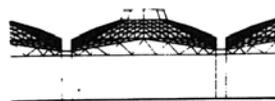
1960-85

Stein, Doshi & Bhalla

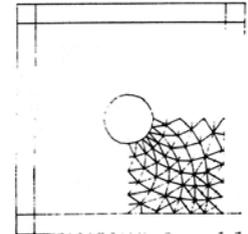
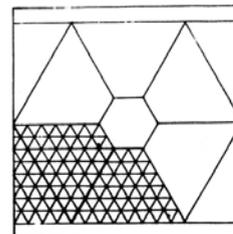
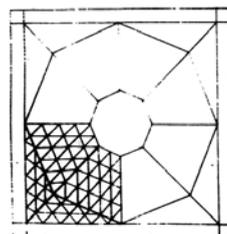


Metallic sheets are used to form warped surfaces – thus increasing their structural strength and creating a contemporary version of the traditional *chhatra* (umbrella). The configuration also allows a generous amount of clerestory lighting throughout the shopfloor of the factory.

1. Octagonal dome
2. Hexagonal dome
3. Radial dome



■



## CANTEEN FOR MILL WORKERS

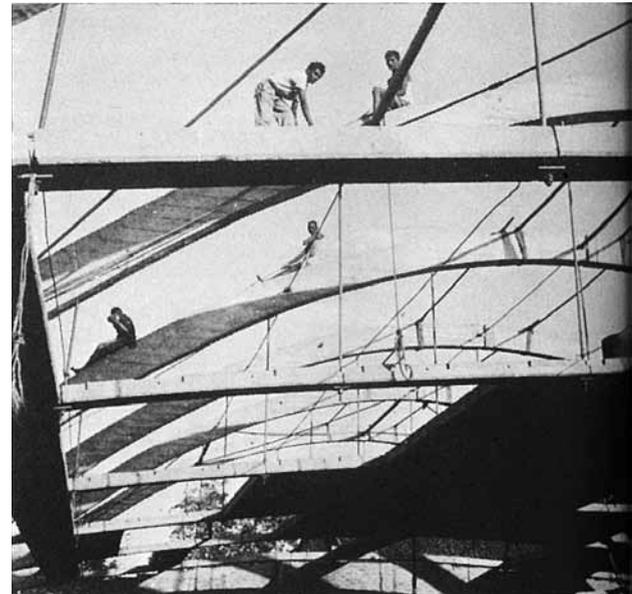
Ahmedabad

1951-54

Mody and Colgan



One of the first examples of sophisticated prestressed concrete engineering used to produce a clear-span structure and a concise architectural statement.



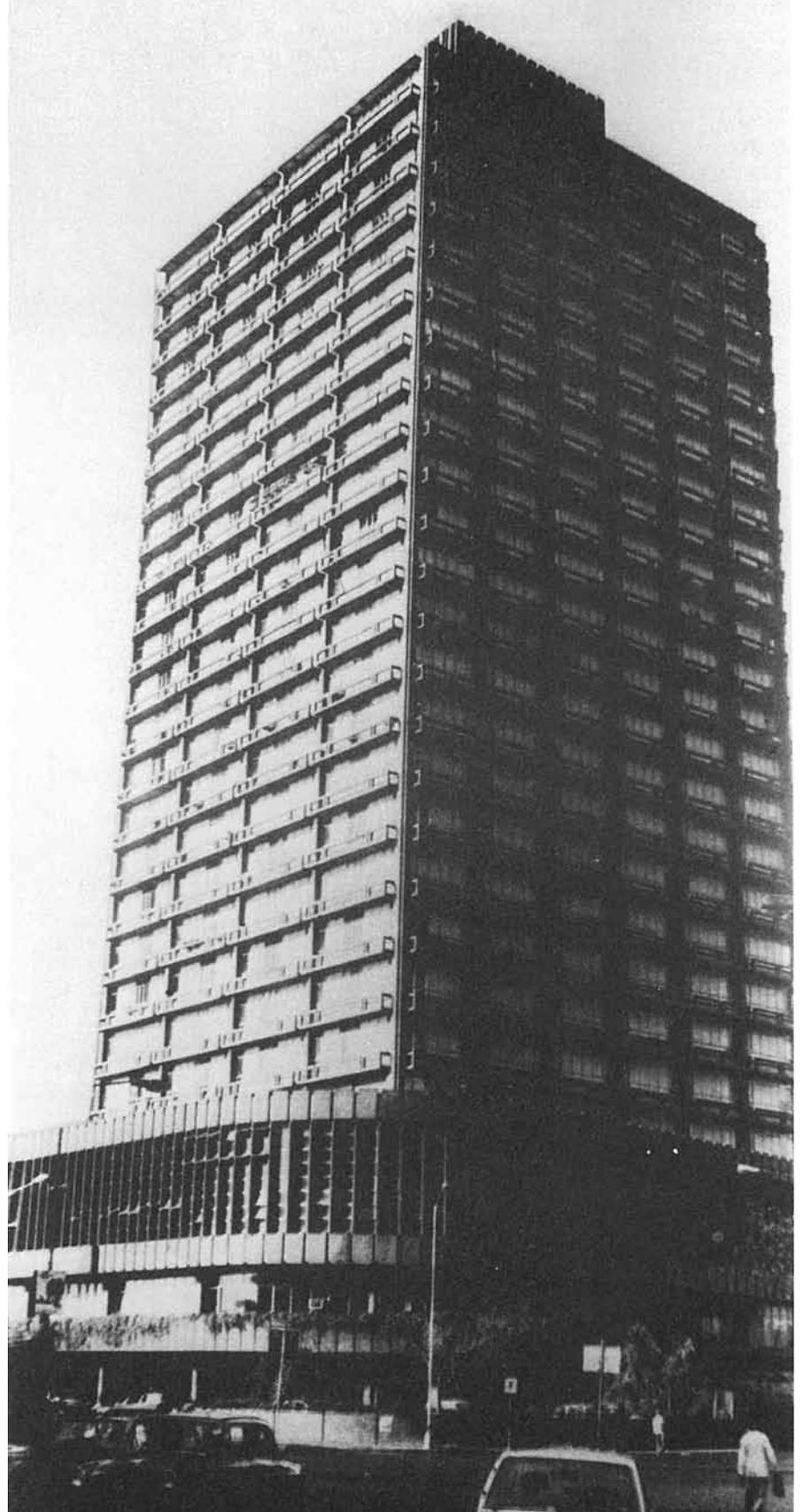
## EXPRESS TOWERS

Bombay

1967-70

Joseph Allen Stein

An office block in the heart of the commercial area, using a central service core to allow fully glazed exterior walls, protected by concrete frames which also facilitate window cleaning.



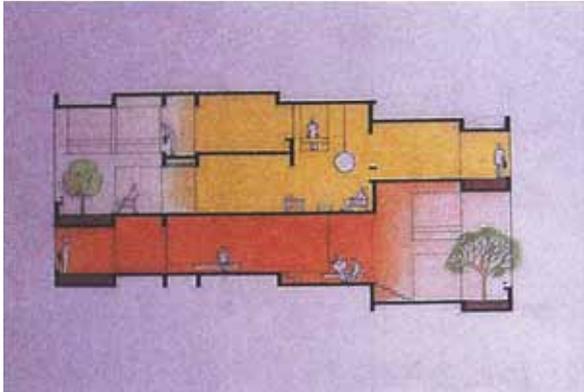
## KANCHANJUNGA APARTMENTS

Bombay

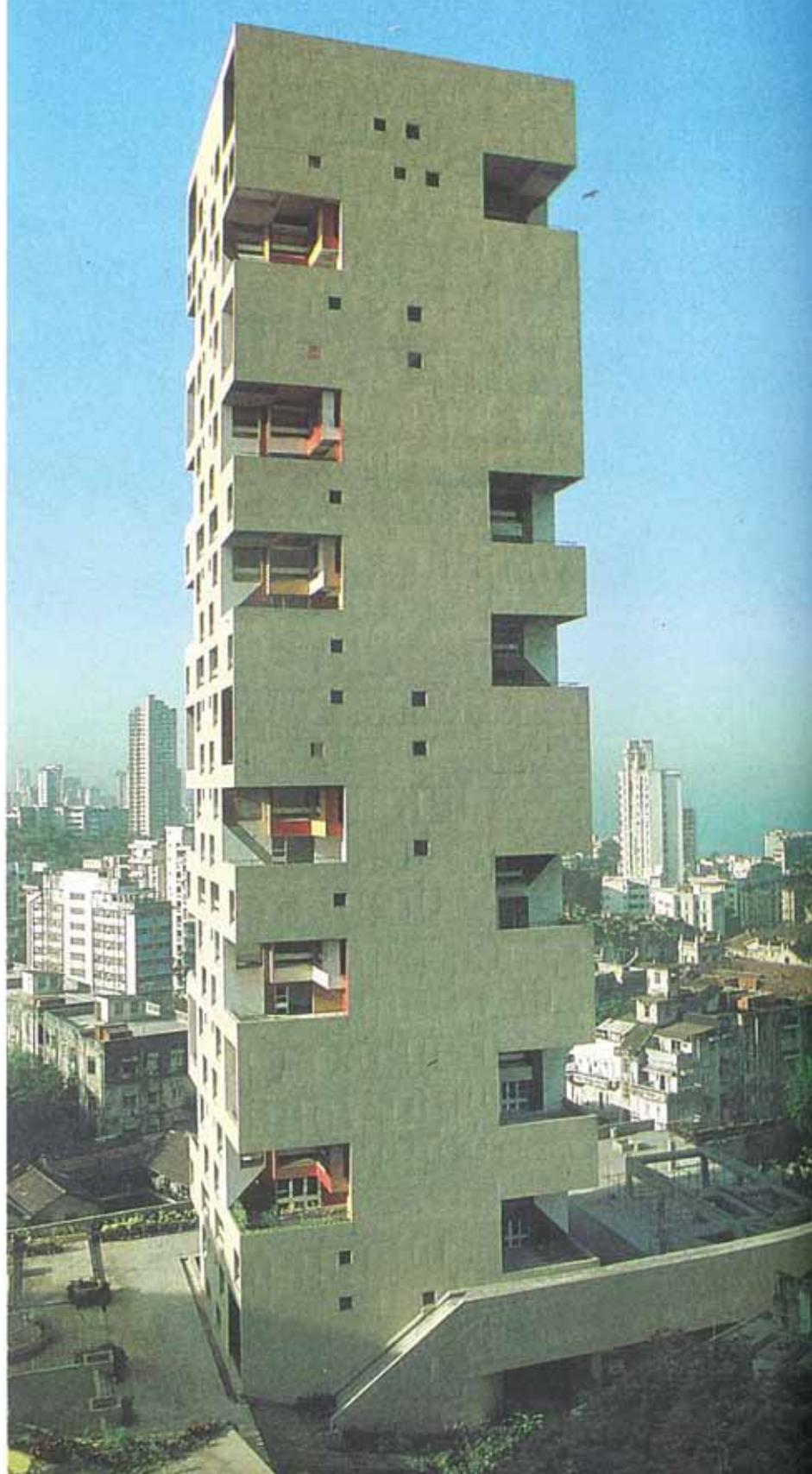
1970-83

Charles Correa

(in association with Pravina Mehta)



Thirty-two luxury apartments, carefully interlocked to catch the prevailing breezes through double-height verandahs which become gardens-in-the-air.



ASHOKA ESTATE  
New Delhi  
1972-74  
Achyut P. Kanvinde

A commercial office block in the central business district. Providing flexibility in subdivision of internal spaces by organising service cores on exterior faces, and a front entrance which becomes an urban-scale gateway.



# ROOTS — Culture as deep-structure

But modernity is only one of the many overlays that constitute India. From deeper levels of our psyche, are gradually surfacing older sets of mythic values and images – giving greater cultural resonance to the architecture.

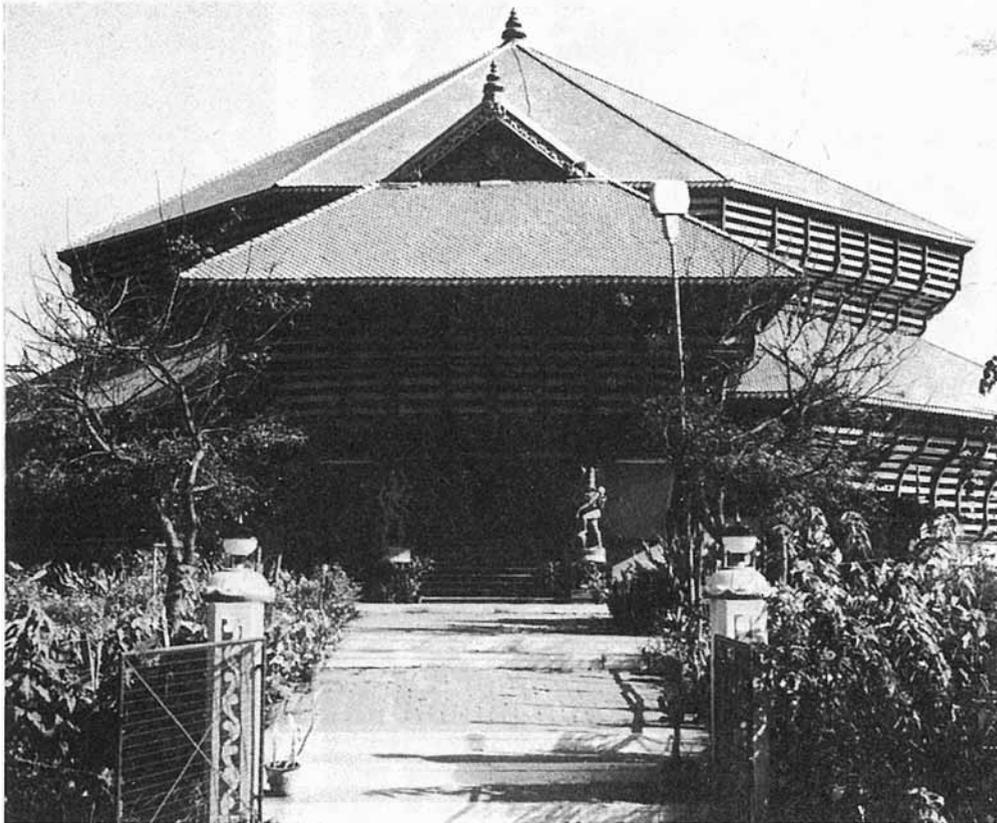


# KALAKSHETRA THEATRE

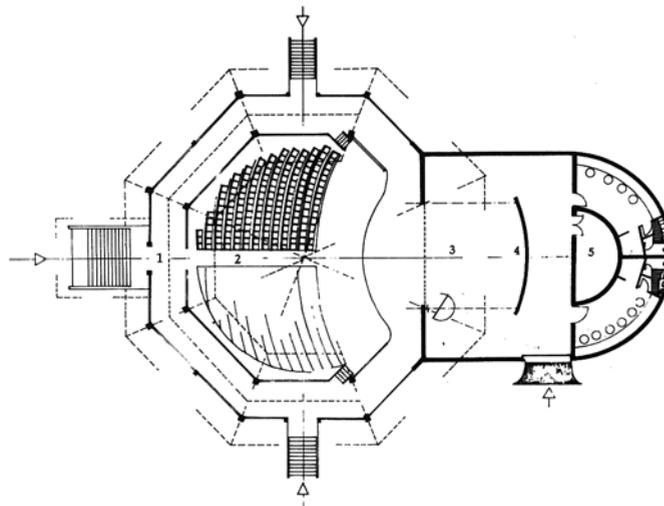
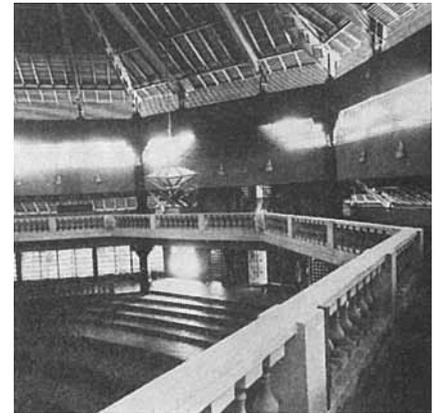
Madras

1978-84

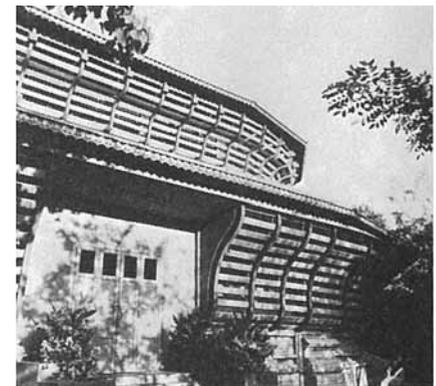
D. Appukuttan Nair



The international centre for the arts combines contemporary requirements of a large audience with a formal expression of traditional Kerala architecture.



1. Lobby
2. Aisle
3. Stage
4. Cyclorama
5. Backstage



## VIDHANA SOUDHA

Bangalore

1952-57

Public Works Department, Karnataka

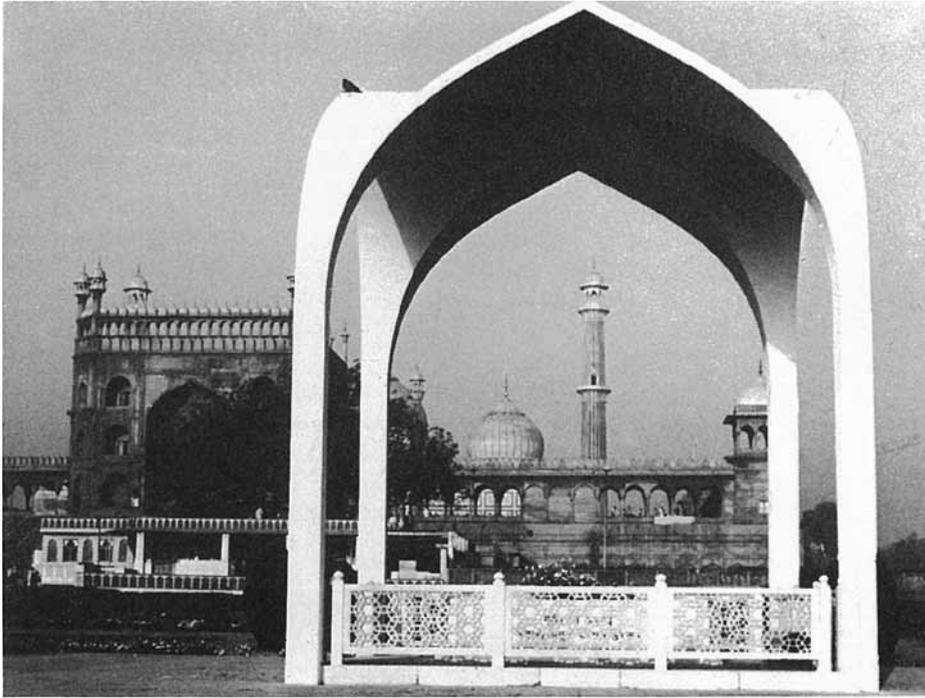


The Legislative Assembly building for the Government of Karnataka containing the administrative infrastructure for a contemporary polity, dressed in images of traditional values.



# MAULANA AZAD MEMORIAL

Delhi  
1958-59  
Habib Rahman

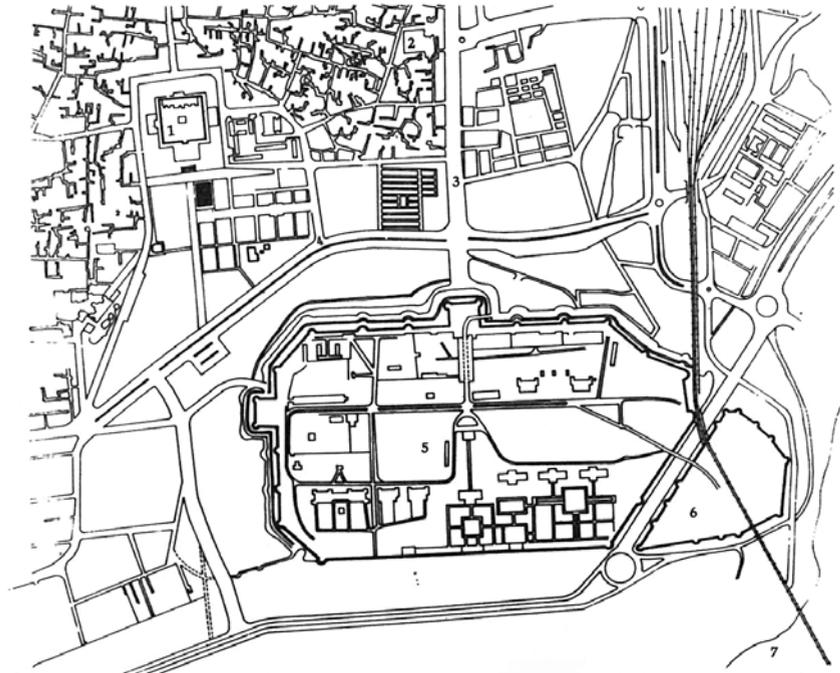


Built in a location of great historical significance, between Shah Jahan's Jama Masjid and the Red Fort, this memorial uses the delicacy of concrete shell technology to evoke the imagery of Islam.

Right: This memorial to a Chief Minister is an elemental form, eloquent in its abstraction, set on a palm-fringed beach in Goa.

## Location Plan

1. Jama Masjid
2. Shahjahanabad – Walled city
3. Chandni Chowk
4. Netaji Subhash Marg
5. Red Fort
6. Salimgarh
7. River Yamuna



BANDODKAR MEMORIAL

Goa

1975-77

Uttam C. Jain

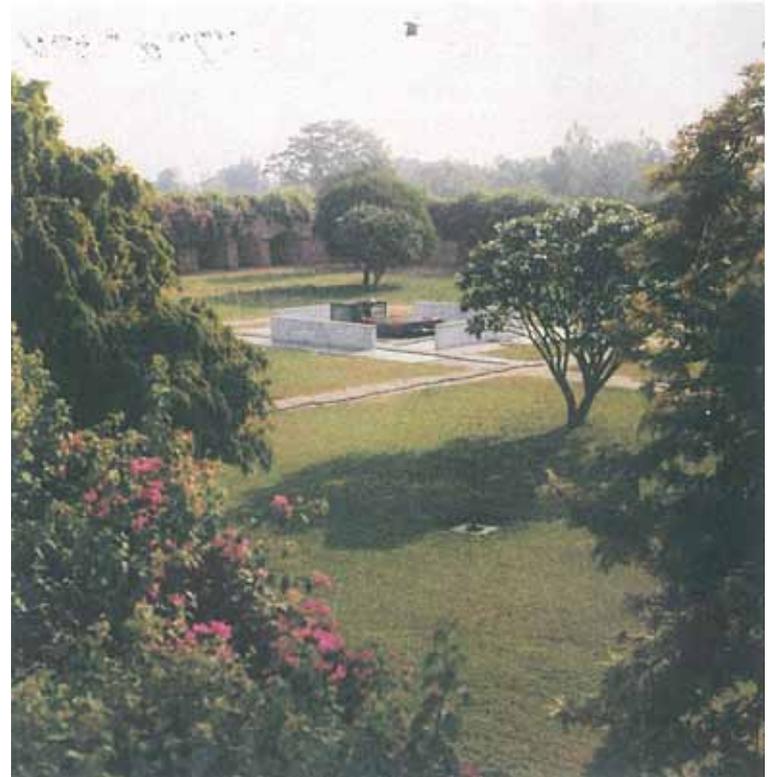
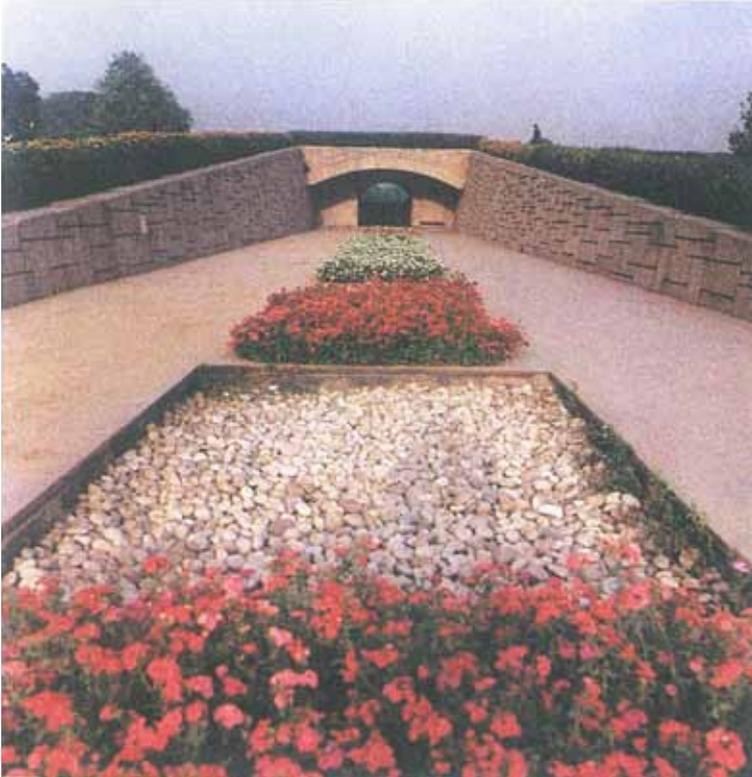


# MAHATMA GANDHI SMARAK, RAJGHAT

New Delhi

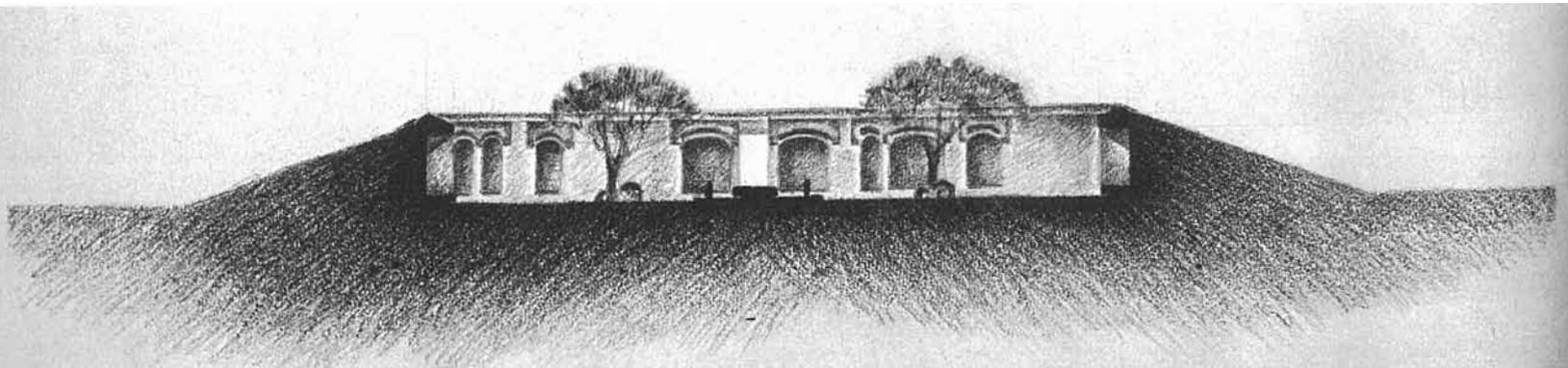
1956-57

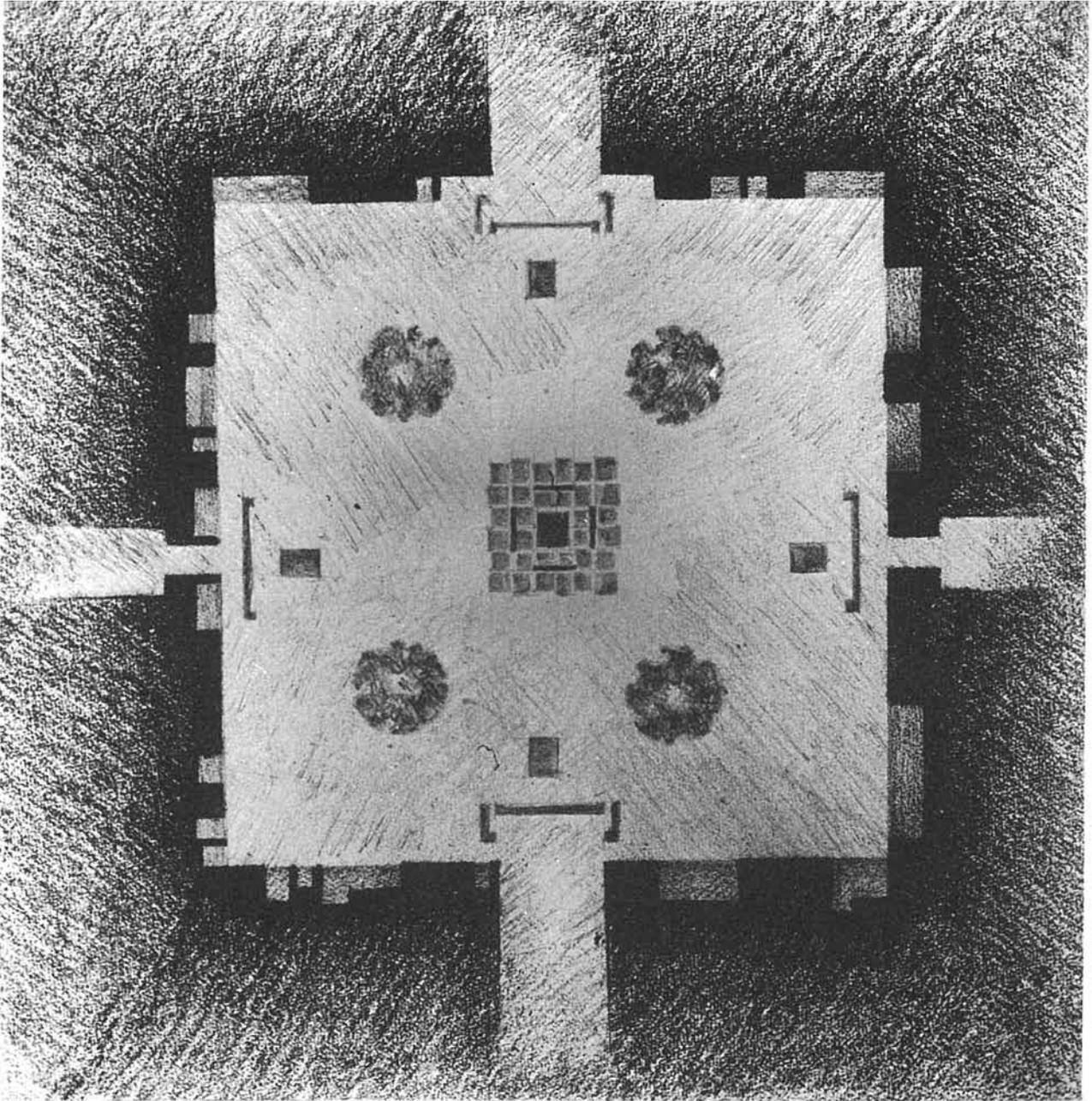
Vanu G. Bhuta



This monument to the life and martyrdom of the Father of the Nation evokes the sacred geometry of the *mandala*, finding a resonance with the great architectural heritage of India. The *samadhi* in the centre, where Gandhiji was

cremated, is set in the middle of a sunken square courtyard surrounded by caves and approached by four symmetrically placed ramps.





*Drawings by Apurva*

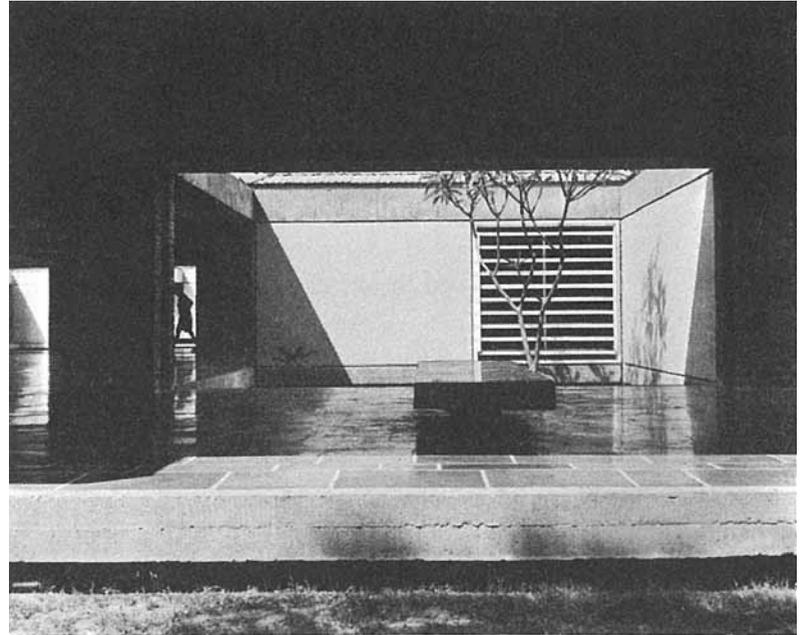
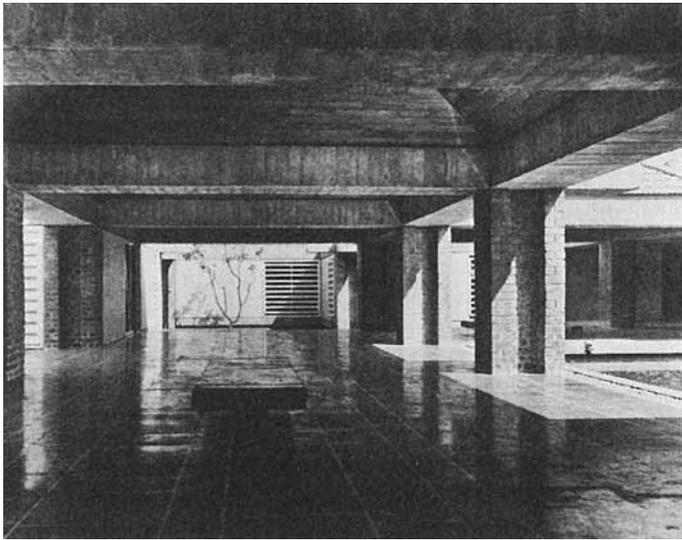
# GANDHI SMARAK SANGRAHALAYA

Sabarmati, Ahmedabad

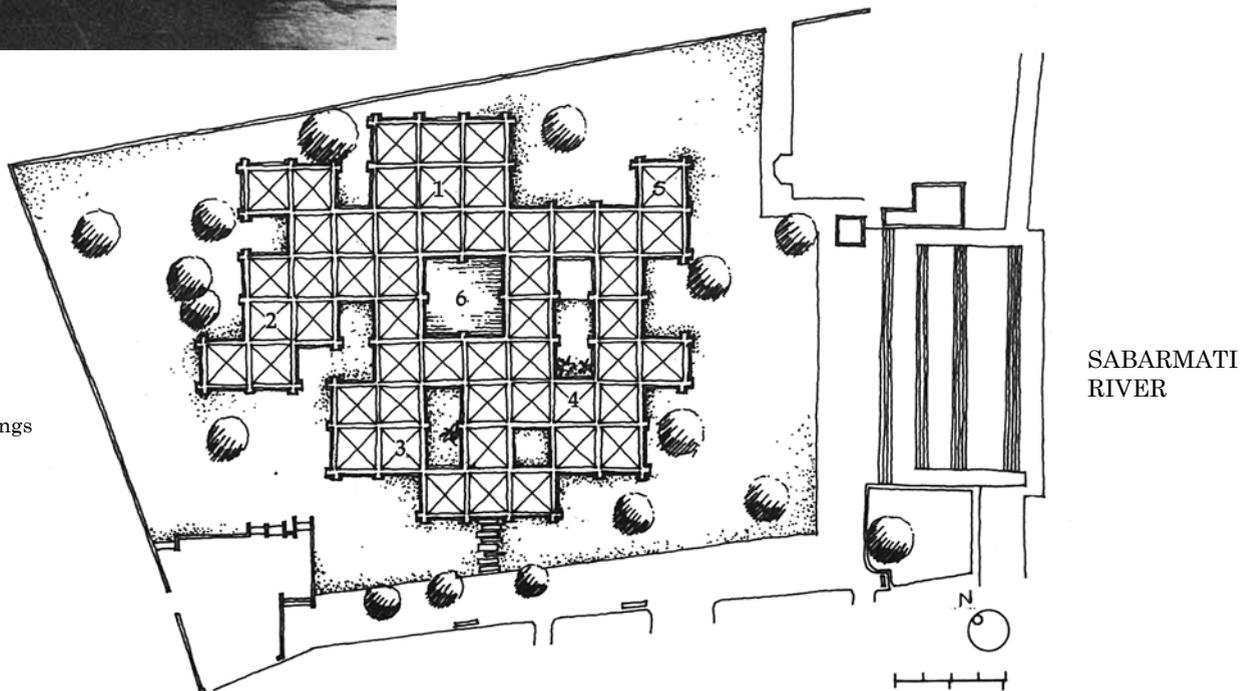
1958-63

Charles Correa

This memorial museum is located in the *ashram* where the Mahatma lived from 1917 to 1930. Housing his books, letters and photographs, this modest and humanly-scaled memorial uses brick piers, stone floors and tiled roofs to find a contemporary expression for the spirit of *swadeshi*.



1. Books
2. Photographs and paintings
3. Letters
4. Office
5. Meeting
6. Water Court



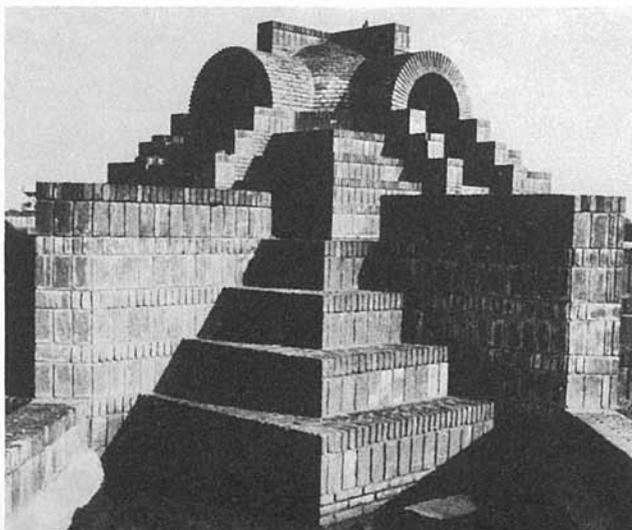
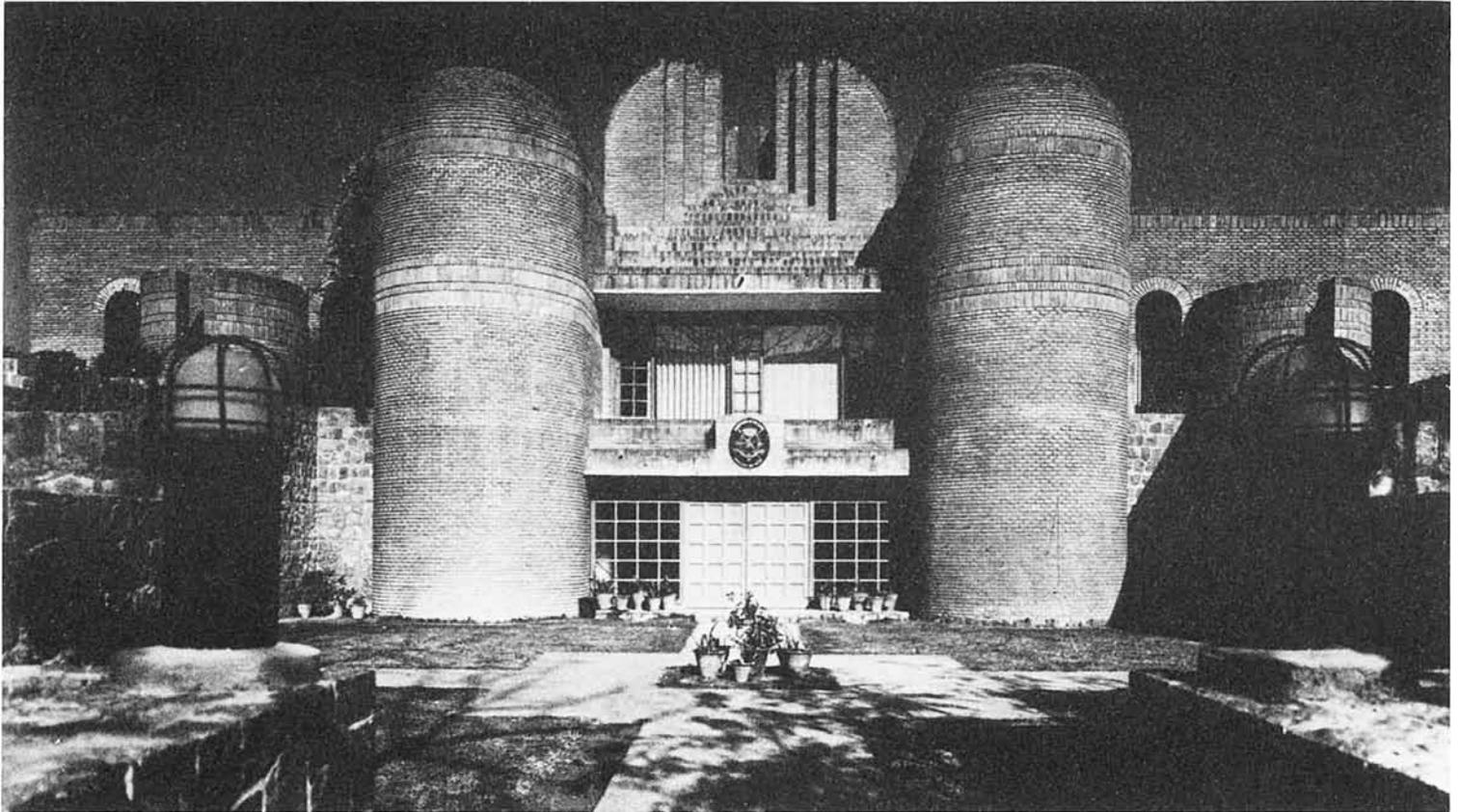


## BELGIAN EMBASSY

New Delhi

1980-83

Satish Gujral

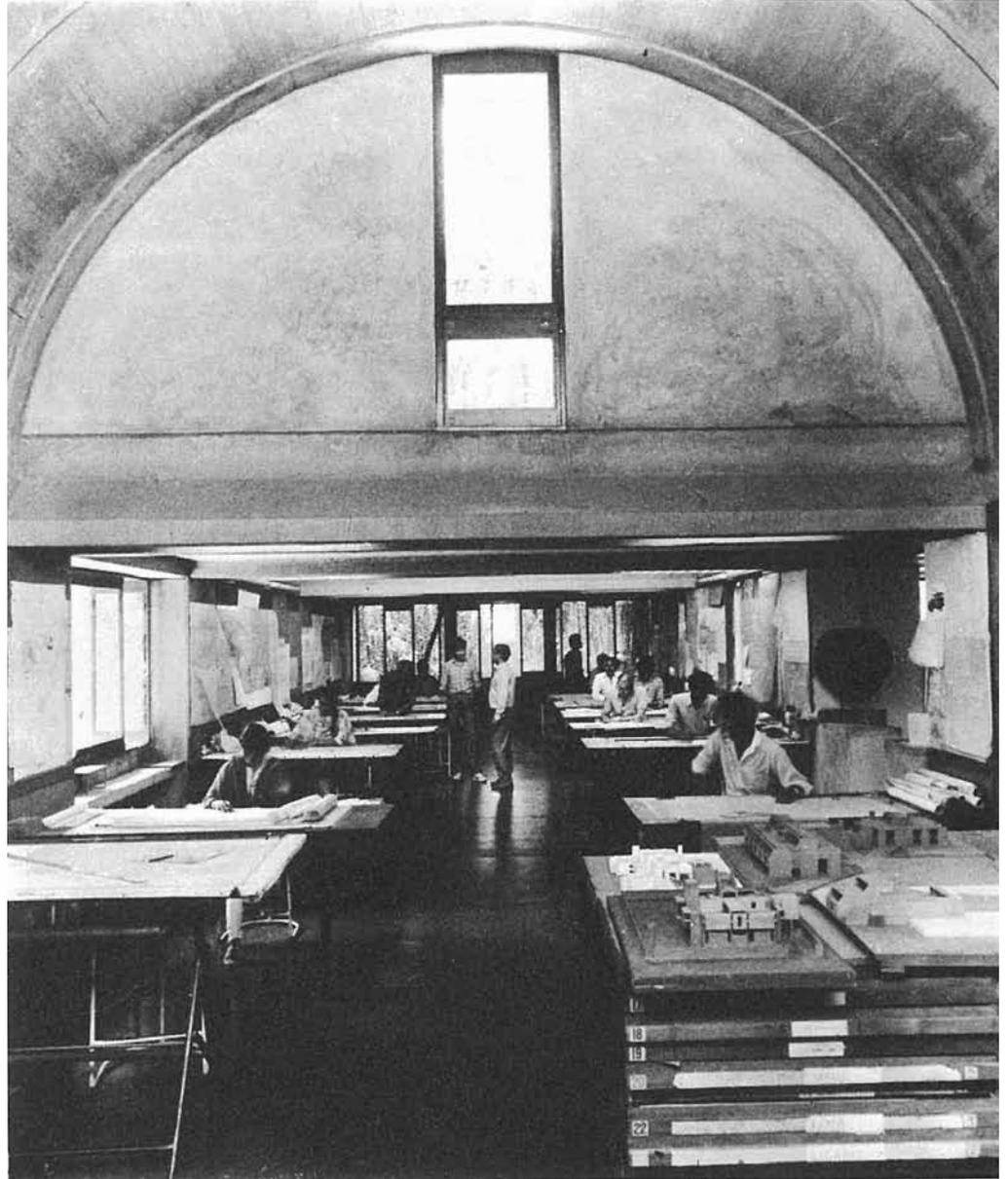


Brick masonry is used to generate a sculptural form, highly personal and yet intuitively evocative of India's past. The multi-levelled garden is a topological tour-de-force – creating a landscape of richness and complexity, accessible from the different levels of both Chancery and Residence.

SANGATH  
Ahmedabad  
1979-80  
B. V. Doshi



An architect's office and research centre – creating an environment suited to the local climate and ethos, using earth forms, open terraces and water channels.

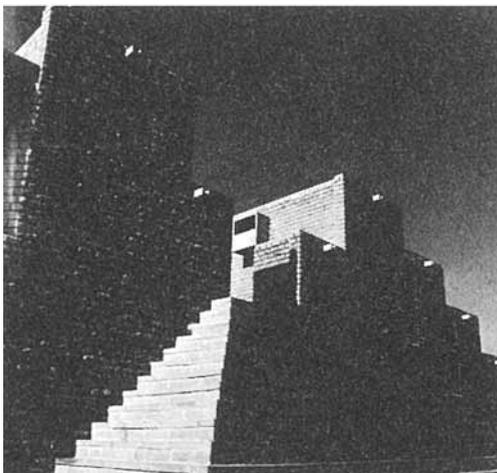
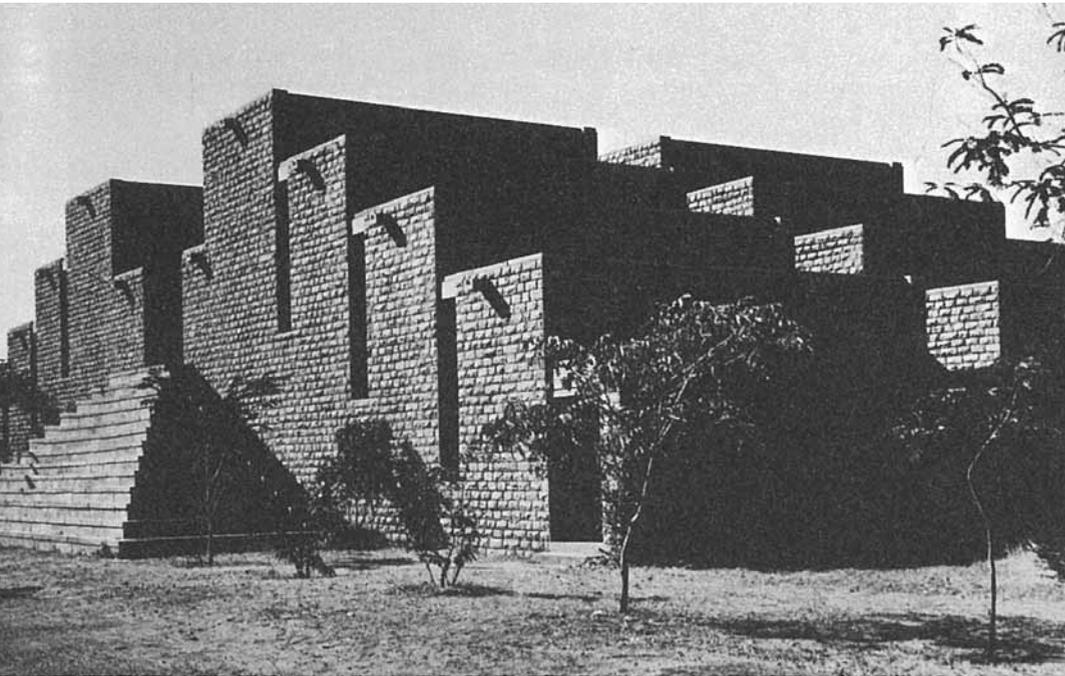


# LECTURE THEATRES

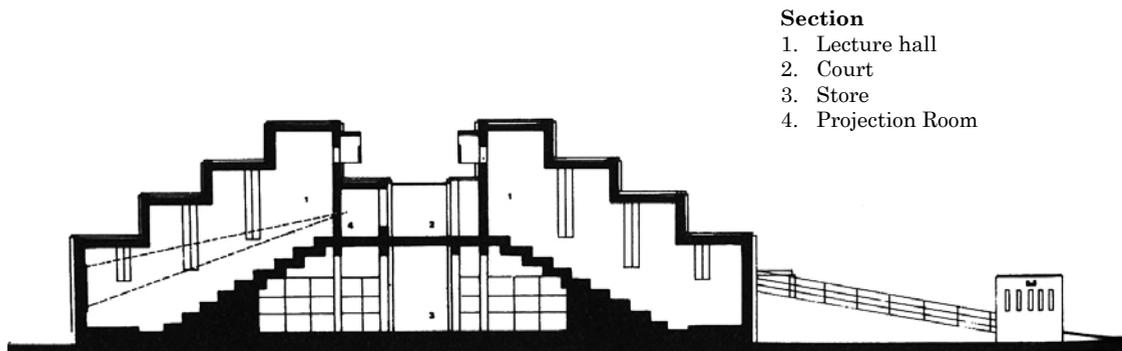
Jodhpur

1969-71

Uttam C. Jain



Using stone masonry walls and a formal geometry which evokes the visual clarity and strength of desert architecture.



## Section

1. Lecture hall
2. Court
3. Store
4. Projection Room

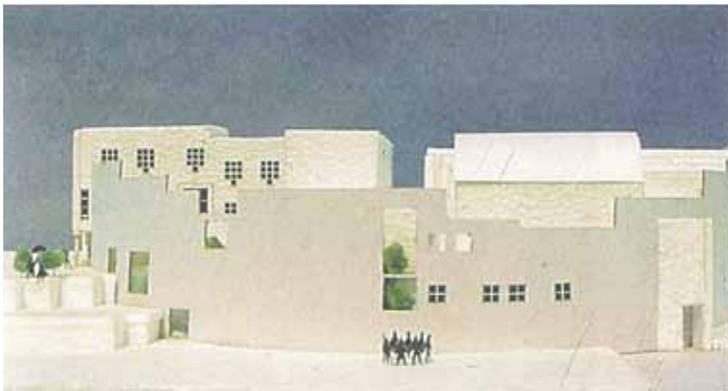
# INDIRA GANDHI INSTITUTE OF DEVELOPMENT RESEARCH

Bombay

1985-

Uttam C. Jain

Connecting diverse typologies through a movement system which increases awareness of the local surroundings.



# HOTEL CIDADE DE GOA

Panjim

1978-82

Charles Correa



A resort hotel which intensifies – to the point of surrealism – the colours and vocabulary of Goa's traditional vernacular architecture.

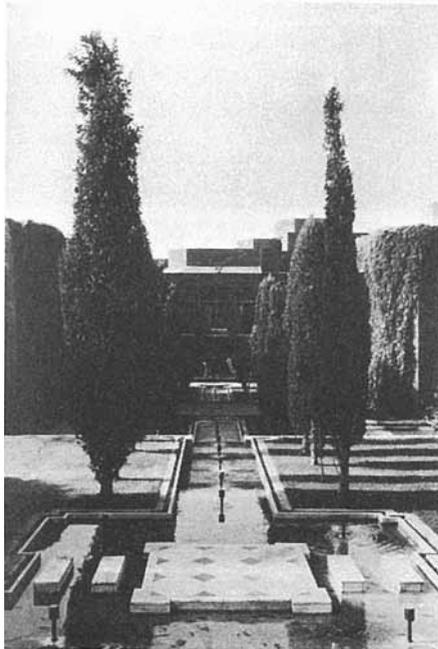


# HOTEL MUGHAL SHERATON

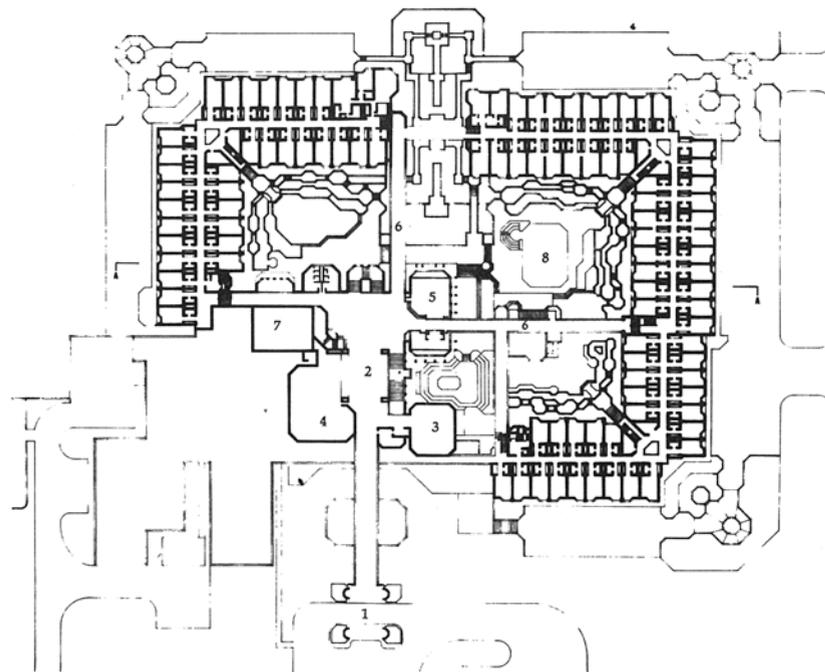
Agra

1974-77

A.R.C.O.P. /Design Group (Ramesh Khosla, Ranjit Sabhiki, Ajoy Chowdhury & Ravindra Bhan)



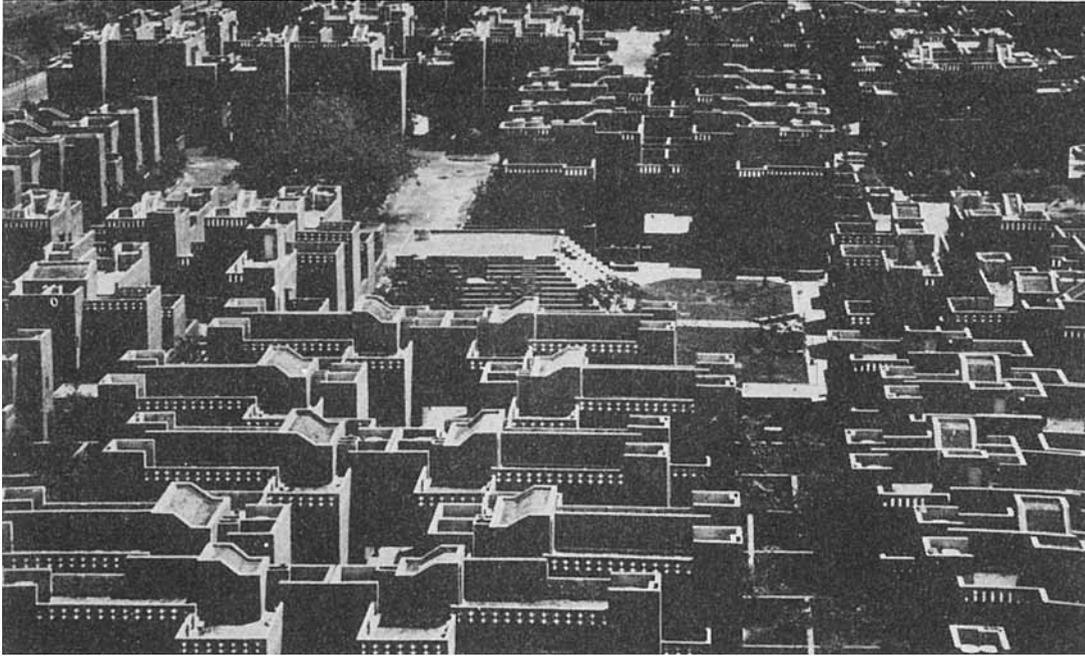
This 200-room hotel near the Taj Mahal re-creates a Mughal garden within courtyards formed by the guest rooms.



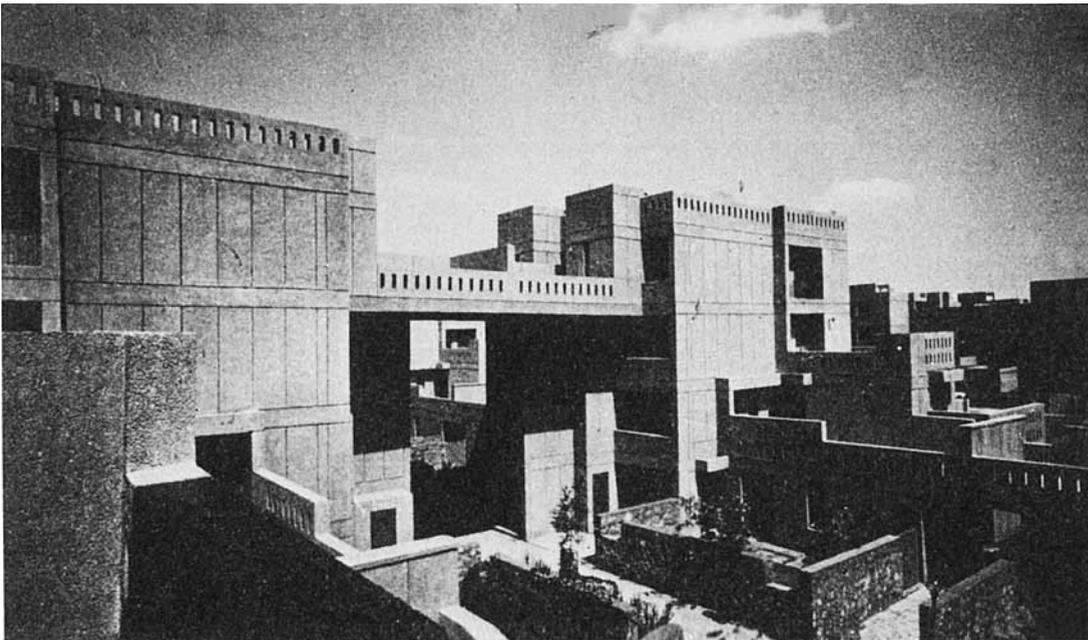
1. Entrance
2. Reception
3. Shopping
4. Administration
5. Lounge
6. Bridge
7. Ballroom below
8. Swimming pool

## ASIAD VILLAGE

Delhi  
1981-82  
Raj Rewal



Built to house the participants in the ninth Asian Games, this urban neighbourhood uses the morphology of the traditional North Indian town, recalling historic desert cities.

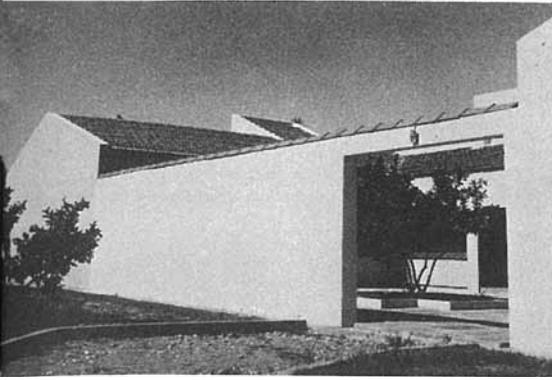


## RURAL MENTAL HEALTH INSTITUTE

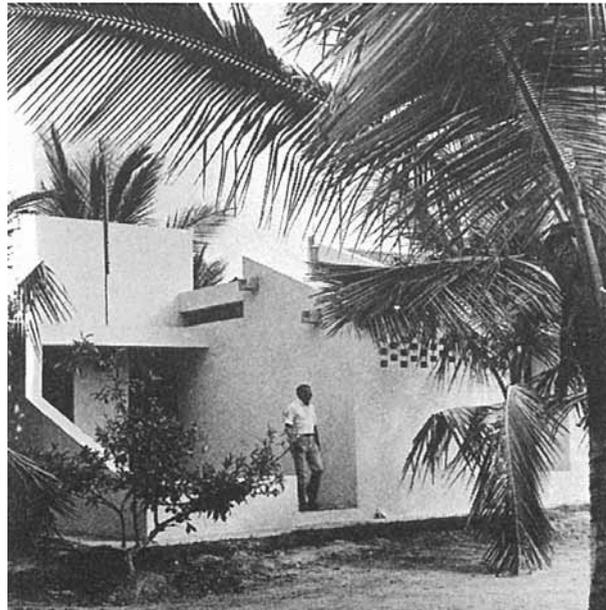
Sakalvara, Karnataka

1975-78

Architects' Combine



It is an institute for the mentally ill, having facilities for out-patients as well as in-patients including residential accommodation for accompanying family members.

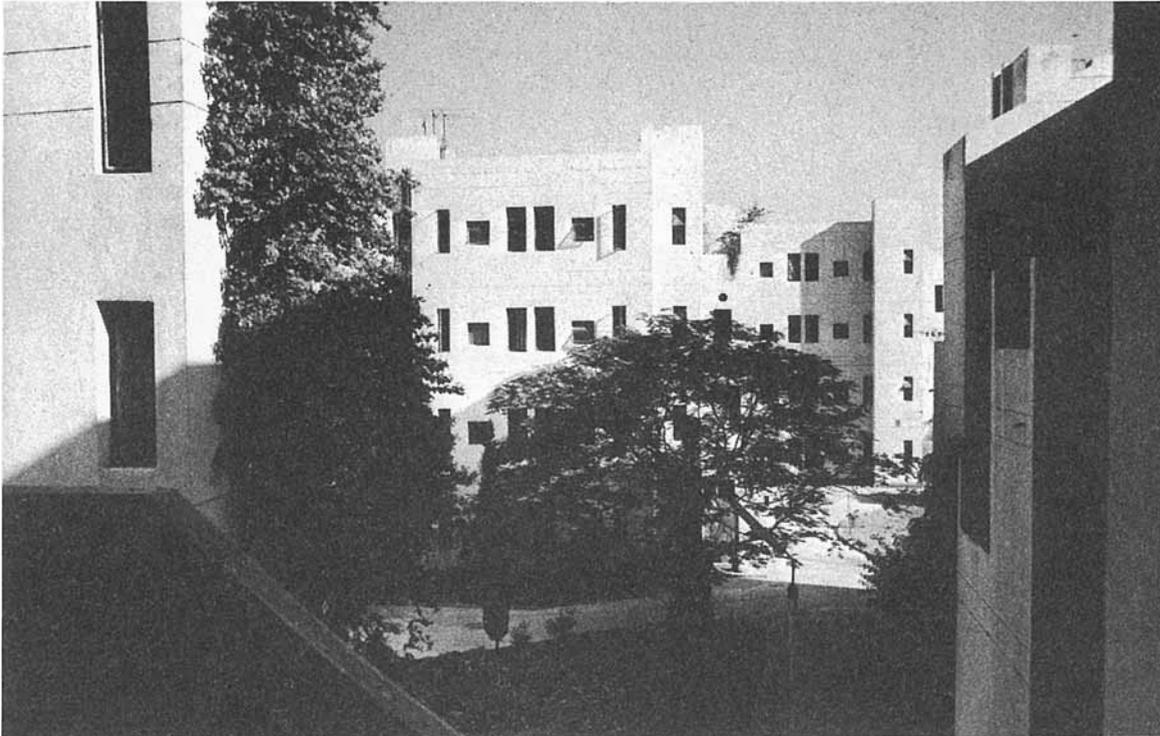


## PRESS ENCLAVE CO-OPERATIVE GROUP HOUSING

New Delhi

1974-78

M. N. Ashish Ganju



High-density housing for the middle-income members of the press corps of Delhi, designed as small neighbourhood clusters around landscaped courtyards to create a pattern of community living sheltered within a controlled micro-climate.



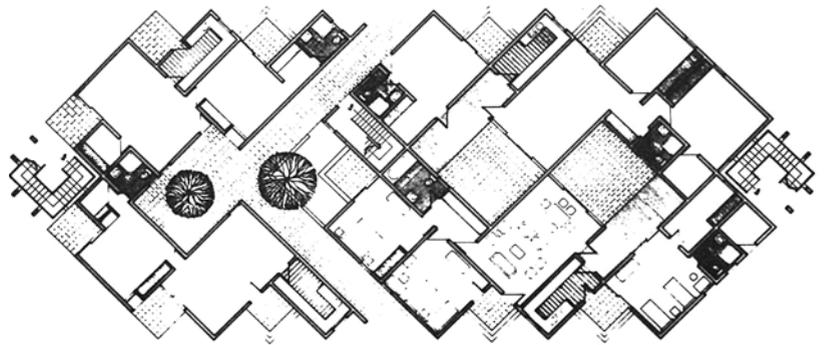
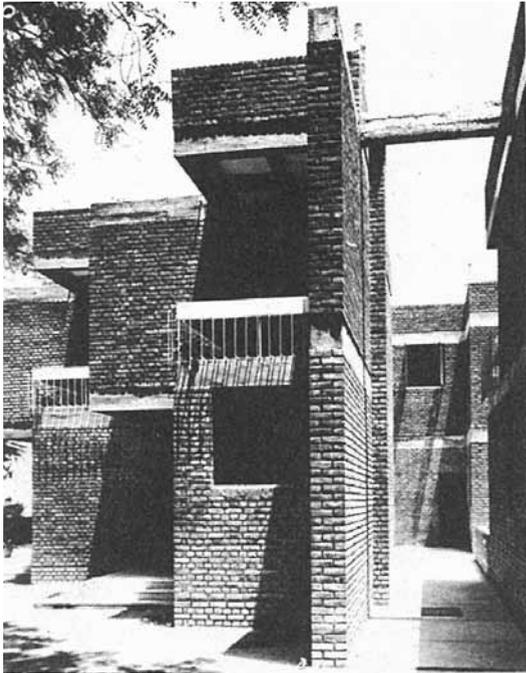
## Y.M.C.A STAFF QUARTERS

New Delhi

1961-63

Design Group (Ranjit Sabhiki, Ajoy Chowdhury & Morad Chowdhury)

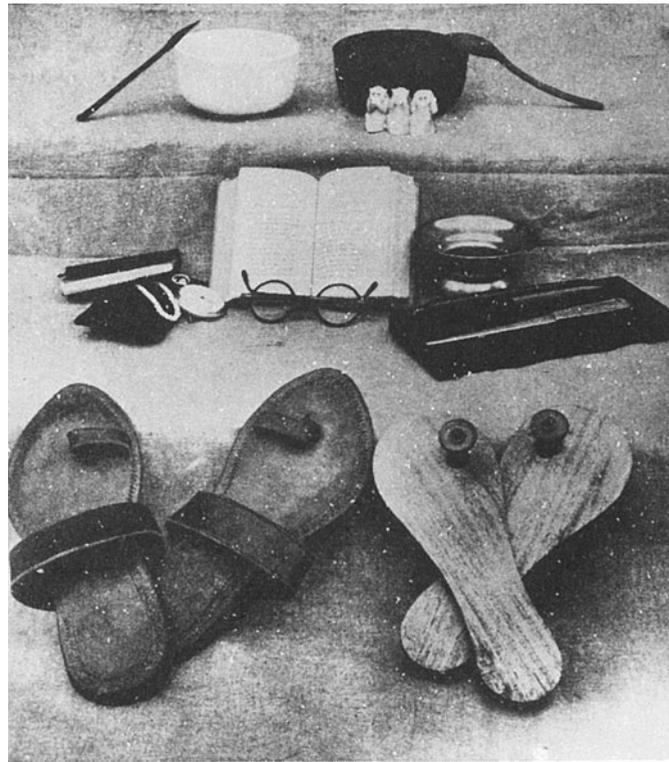
Apartments designed for urban living, grouped around courtyards and a narrow pedestrian street in the manner of traditional North Indian towns.



Ground Floor Plan

## LOOKING BEYOND — The start of a new *vistāra*

This image of Gandhiji's last possessions is perhaps the key – both morally as well as aesthetically – to India. Certainly it is the catalyst essential to evolving an architecture in consonance with the needs of the vast majority of our people, and the first step towards an understanding of the indigenous traditions and technology from which some day the new mythic images will emerge.





## LOW COST DEMONSTRATION HOUSES

Negicherry, Tripura/Kaibartapara, Assam/Falkawn, Mizoram

1980-81      1977-78

1980-81

National Buildings Organisation

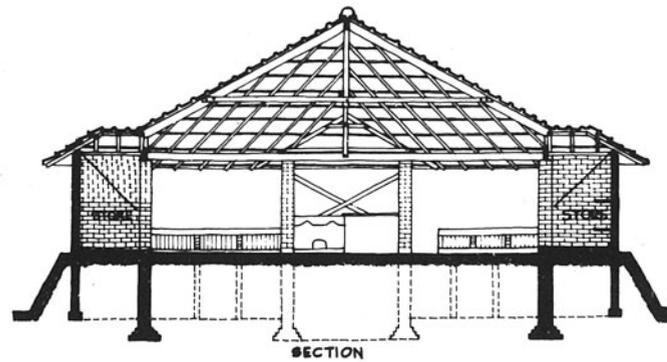
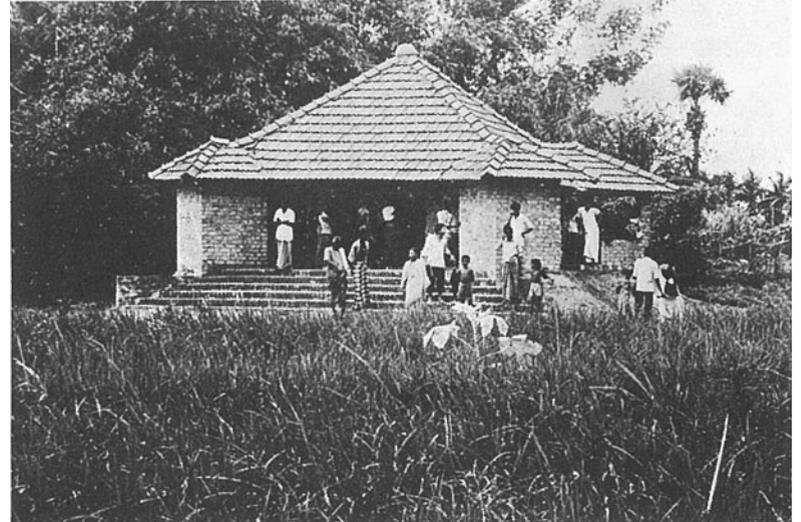
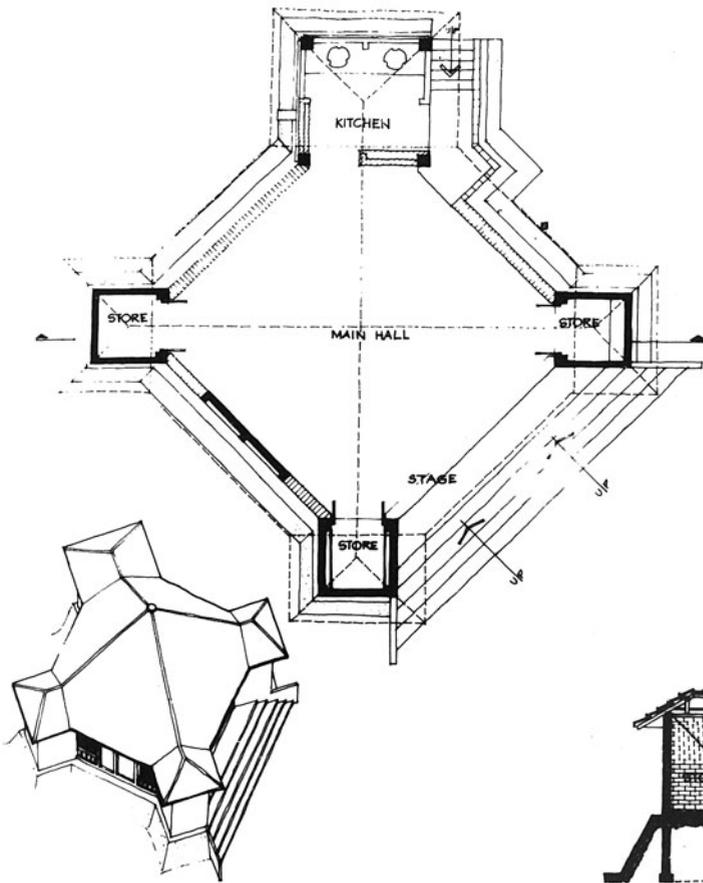
Housing Development Centre, NBO, (Howrah)



Two examples of demonstration houses built by the National Buildings Organisation – using local materials to construct houses within a minimum cost.



MOTHER & CHILD CENTRE  
Bagnan Village, West Bengal  
1979  
M. N. Ashish Ganju



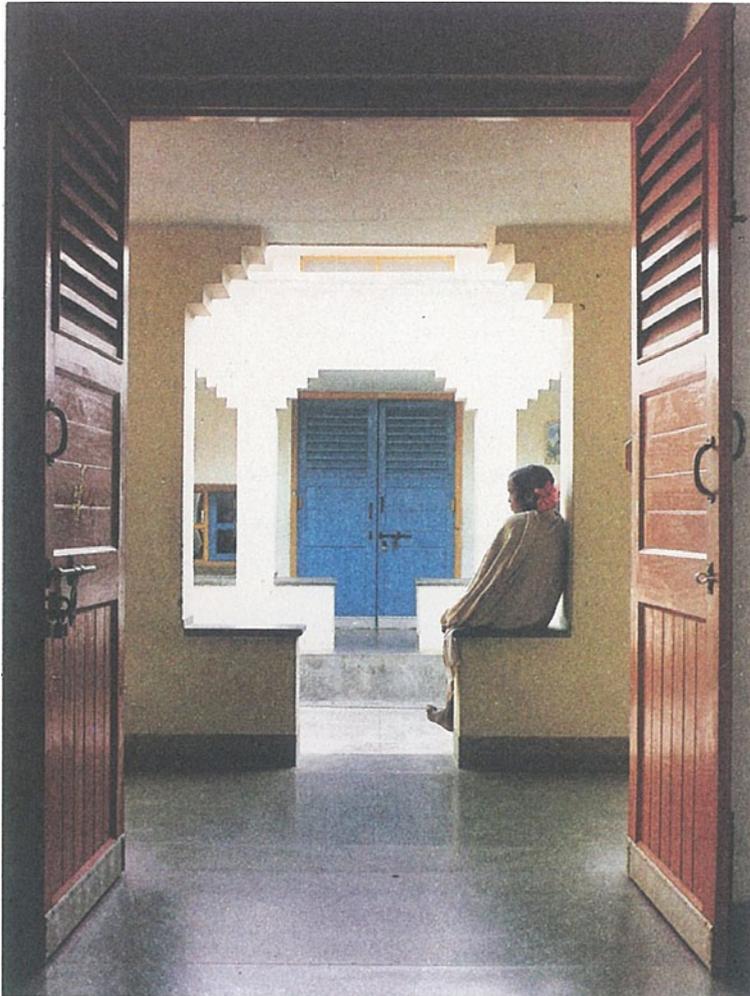
An experimental project to evolve a climatically and culturally appropriate prototypical community building to be built by rural artisans. The project was a demonstration of the principles developed as guidelines for government agencies building community centres in rural areas.

## TRIBAL CHILDREN'S HOSTEL

Kuju, Bihar

1979-81

Romi Khosla, Narendra Dingle, Anil B. Jain



Dormitories grouped around interconnected courtyards to create a village atmosphere in an organised manner, using a constructional aesthetic blending old and new.

# TRIBAL GIRLS BOARDING SCHOOL

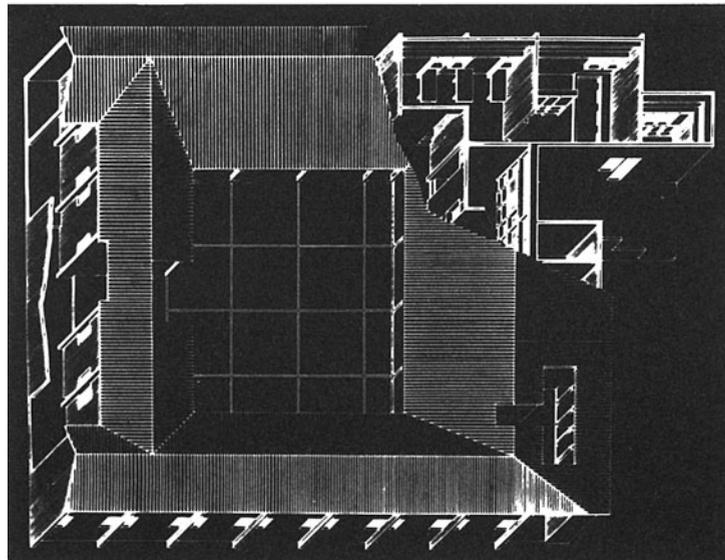
Udwada, Gujarat

1960-61

Pravina Mehta



Sponsored by the Bhagini Samaj, this school recreates the freedom of the tribal environment with a generous distribution of courtyards and open spaces.



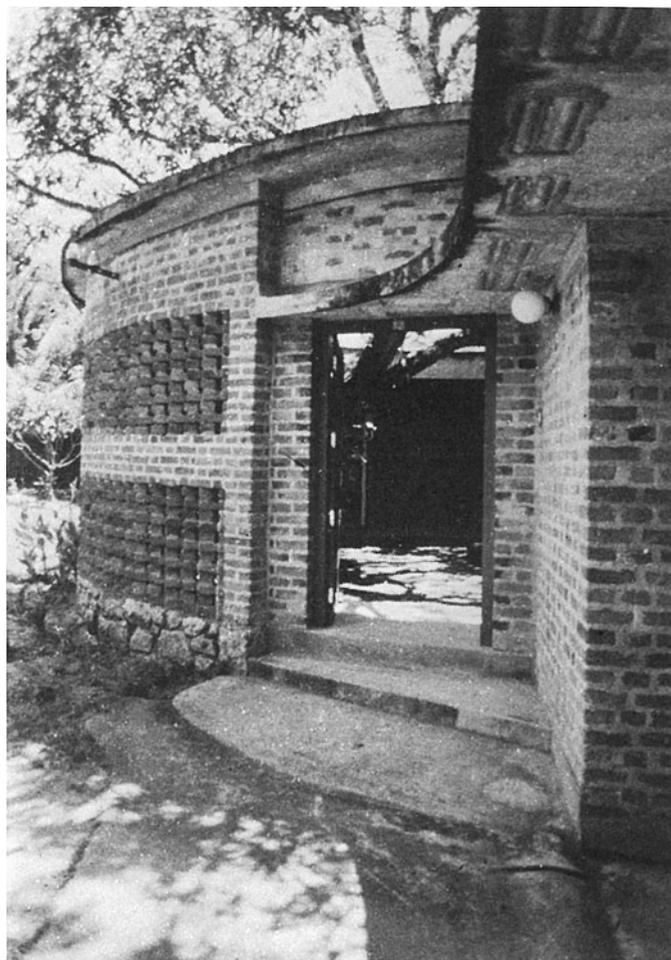
## HOUSING IN KERALA

Trivandrum

L.W. Baker



Examples showing the development of a contemporary vernacular architecture evolved from common building practices and a close working relationship between the designer and building workers.

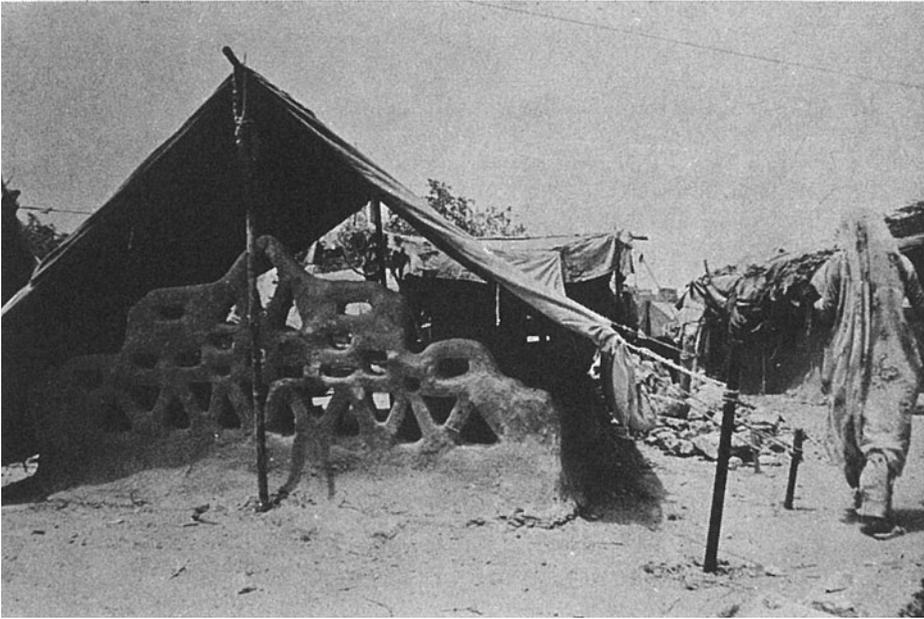


# ANANDGRAM – SQUATTERS RE-HOUSING PROJECT

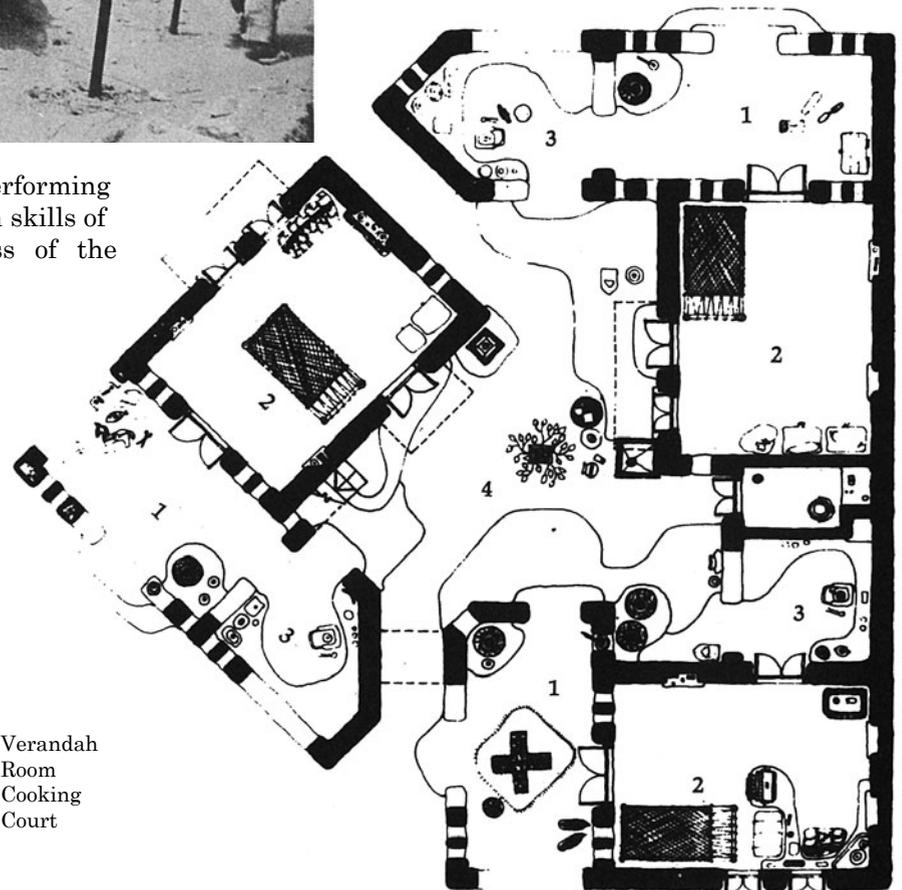
Delhi

1983

Revathi & Vasant Kamath in association with  
Members of the Anandgram Community



This community housing project for traditional performing artists and craftsmen, attempts to fuse the design skills of the architect with the collective consciousness of the dwellers.

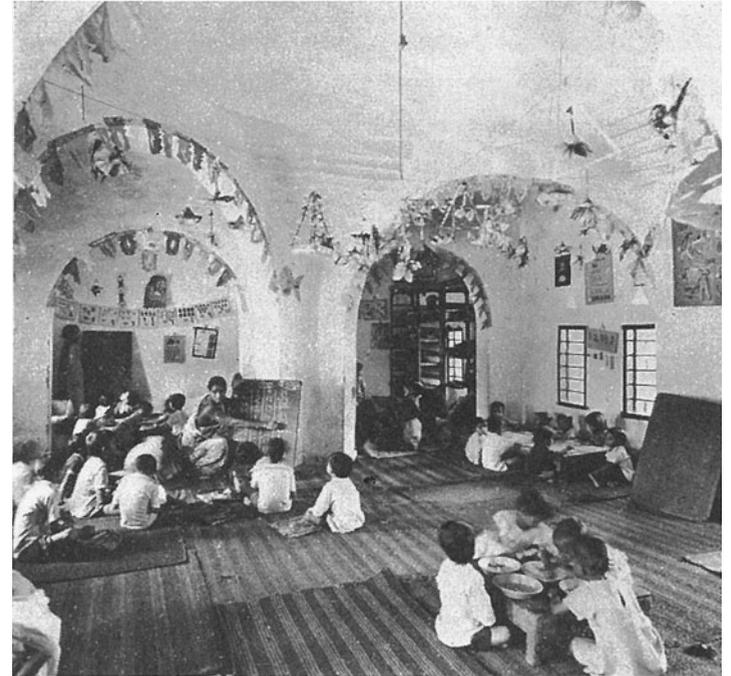


# SCHOOL FOR MOBILE CRECHES

Delhi

1981-83

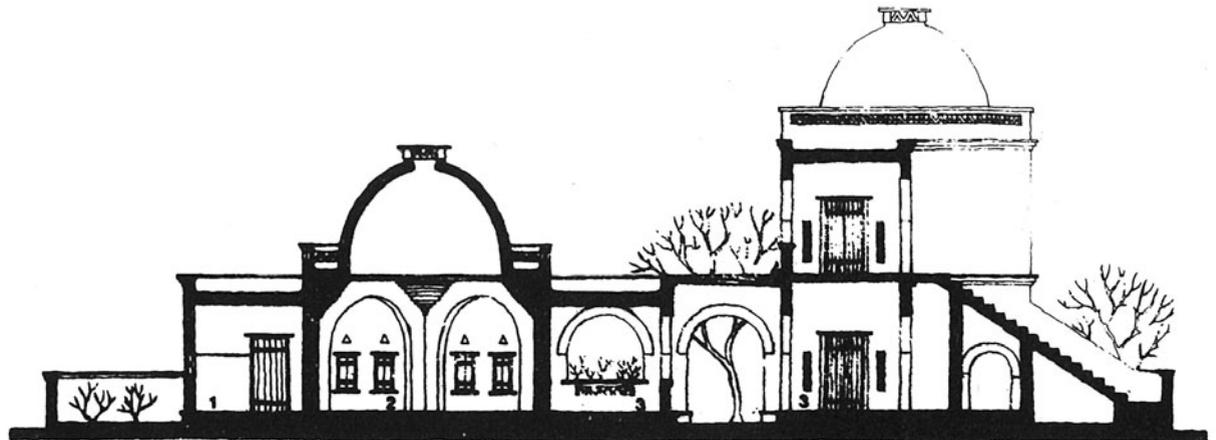
Revathi & Vasant Kamath



Built to provide day-care and an educational facility for children of construction workers, this project uses traditional construction technology to form a spacious and well-lit environment.

## Section

1. Toilet
2. Creche
3. Verandah



## SQUATTER REHABILITATION HOUSING

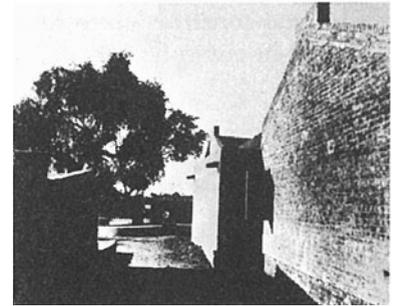
Vasna, Ahmedabad

1974-76

ASAG



Housing provision for rural migrants to the cities – an architecture grounded in severe economic constraints and based on the sites-and-services principle.



## HOUSING AT ASPIRATION

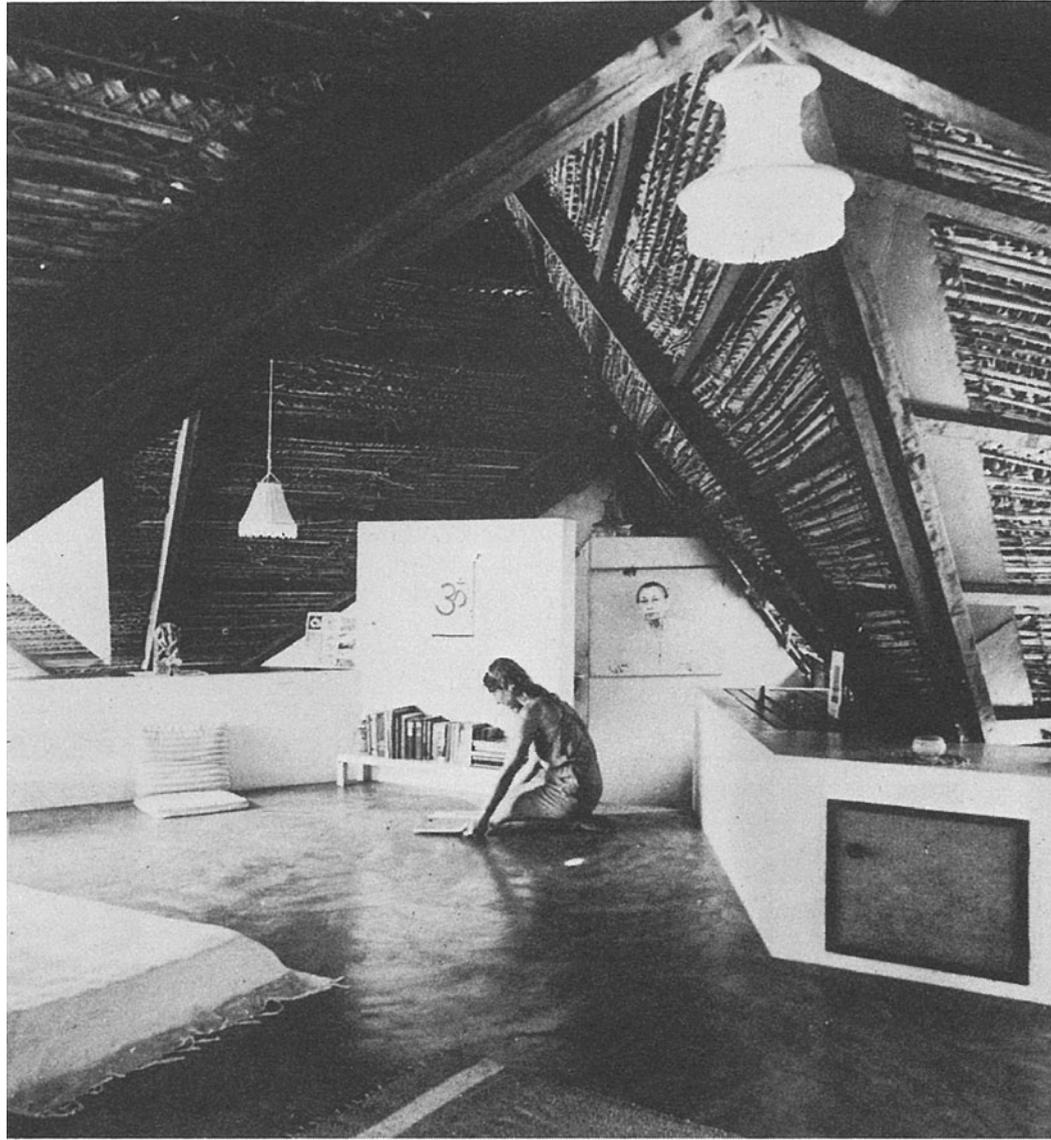
Auroville

1968-71

Roger Anger



Constructed as semi-permanent dwellings for the early settlers at Auroville, these houses use local materials in geometrically developed forms, sited to integrate with the surrounding landscape.



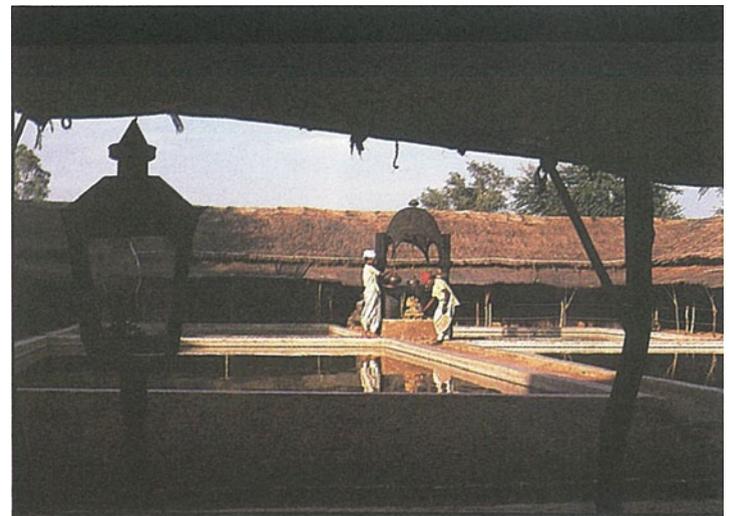
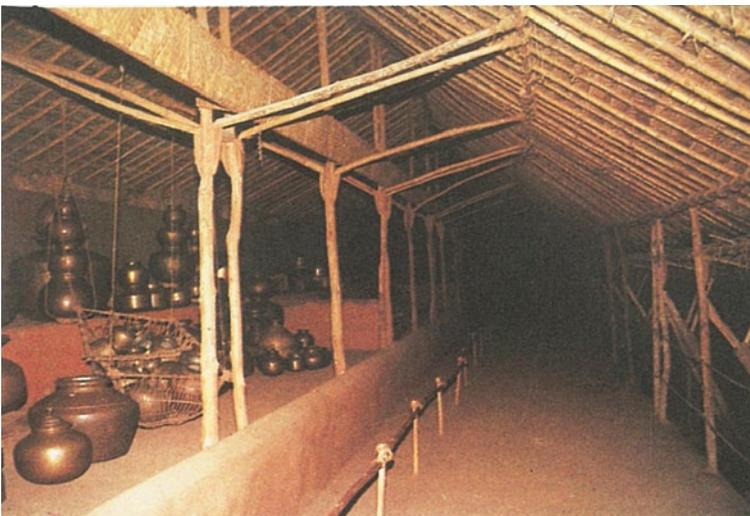
## VECHAAR

Ahmedabad

Surendra C. Patel – Sharad Gandharva



A return to the world of *manusha*, this timeless construction is a direct expression of the craftsman's ethos: the act of building becomes the aesthetic statement.



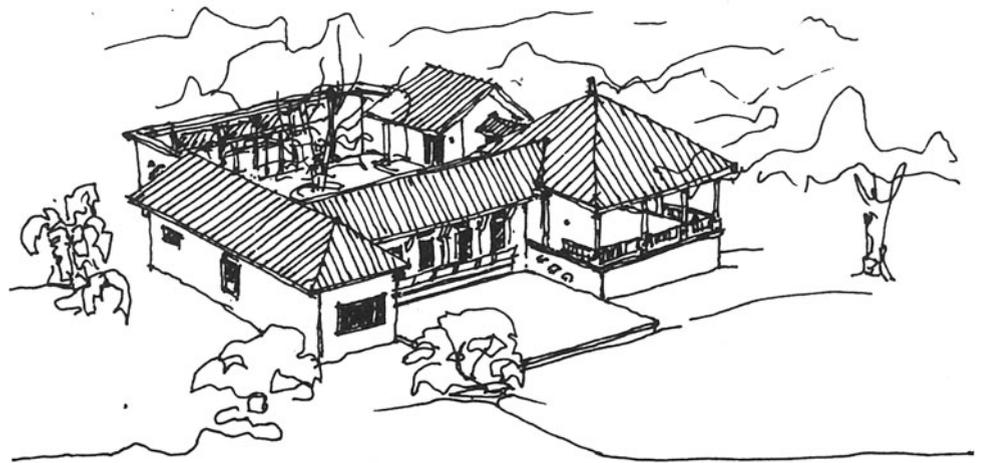
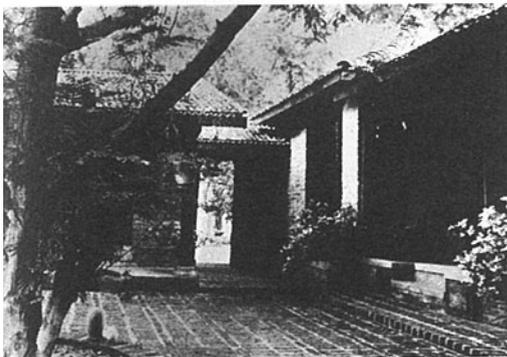
## ARTIST'S STUDIO

Ahmedabad

1985

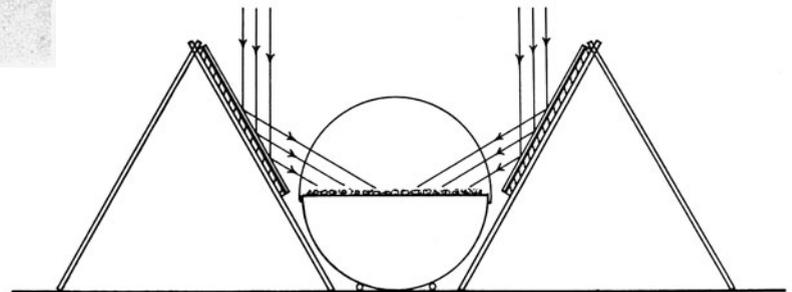
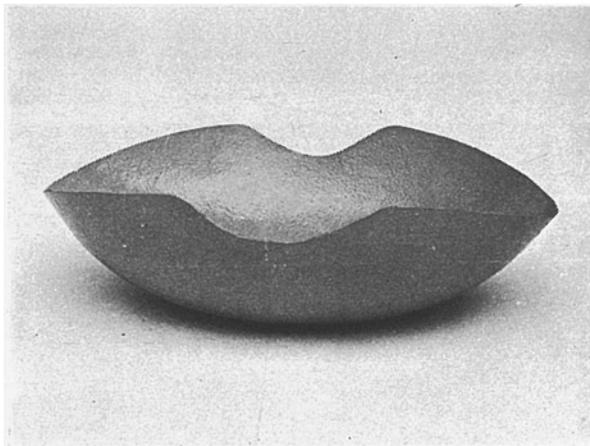
Sudhir Shah

An extraordinarily beautiful house. Of special interest are the courtyard and verandahs – a deeply traditional way of life as viable today as it has ever been.

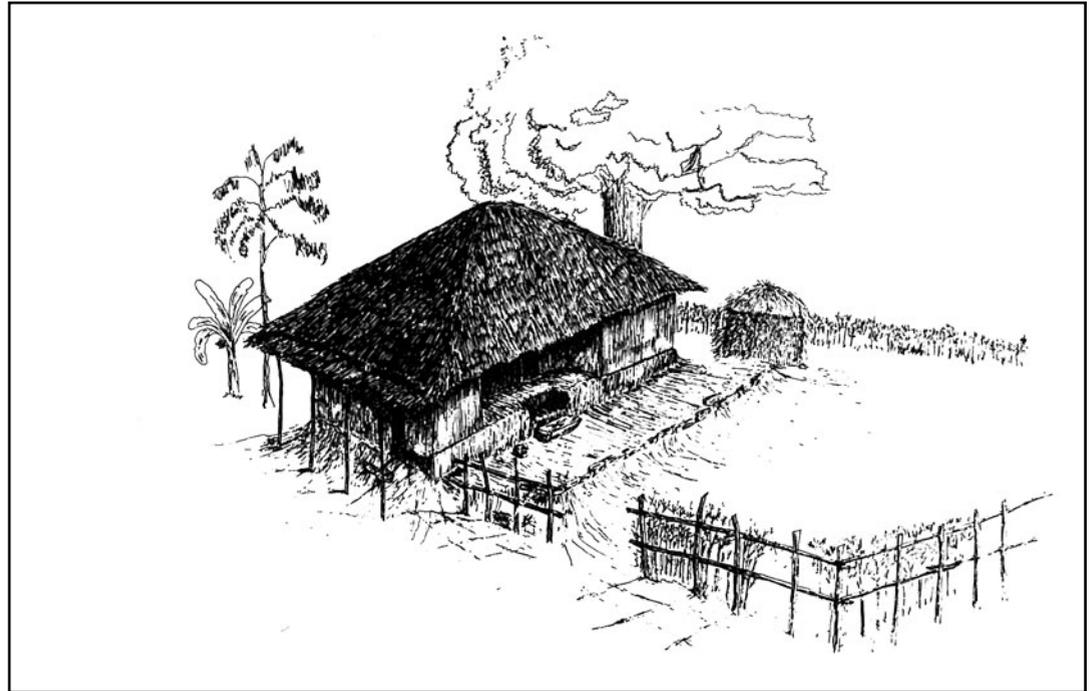




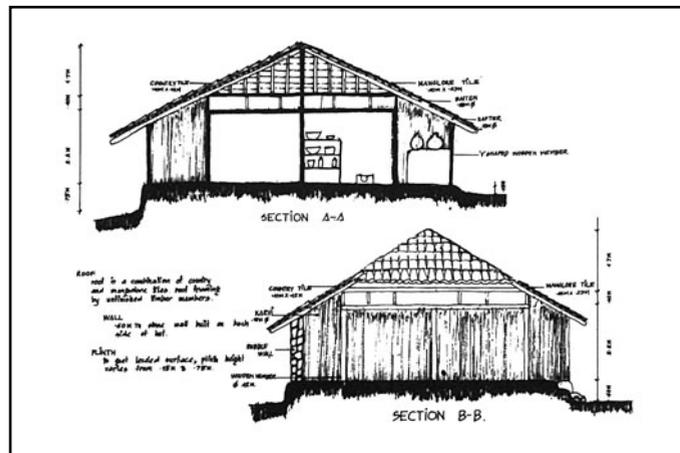
There are many diverse factors that determine the form of an object – ranging from function, material and technology to social and cultural values. Learning to be an architect involves understanding these many layers. On the right are examples of student work-documentations of indigenous habitat.



From such analysis, the young architect gets an understanding of the generic processes that underlie form – which in turn leads to the synthesis we call design. The images on the opposite page (a *gamela* for carrying building materials, a bamboo fruit dryer, a mosquito-net for campers) are further examples.



TYPICAL HUT



STUDY

TYPICAL HUT SECTION NO 15

SCALE  
1:40

# NATIONAL INSTITUTE OF IMMUNOLOGY

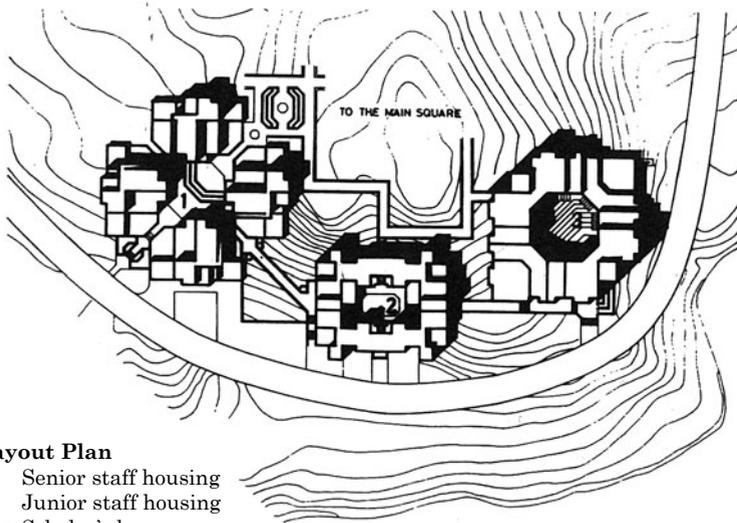
New Delhi

1983-

Raj Rewal

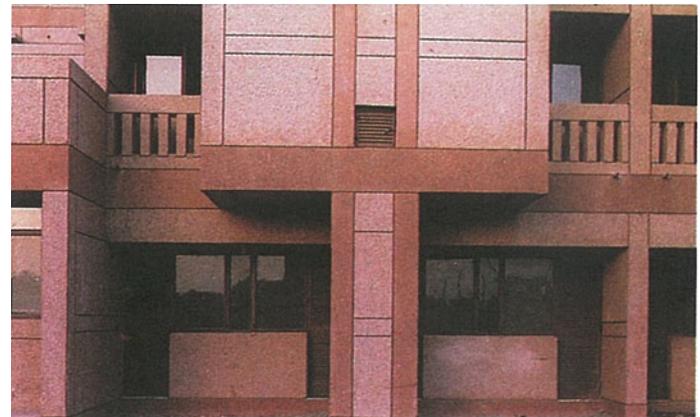


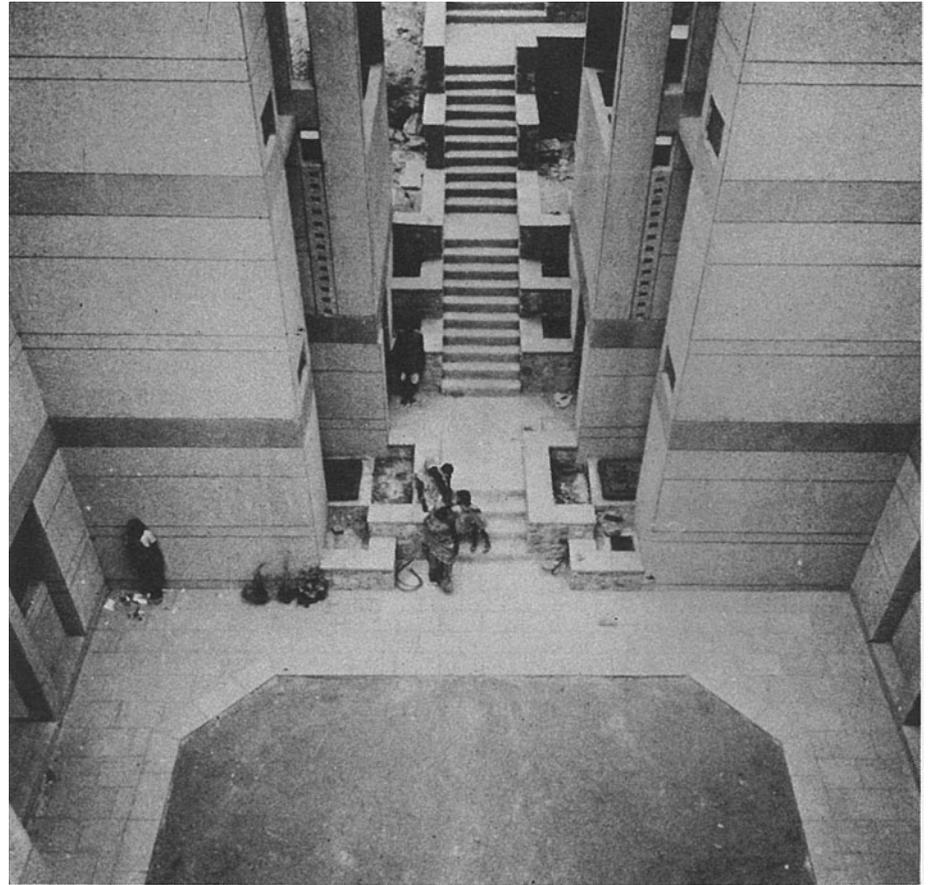
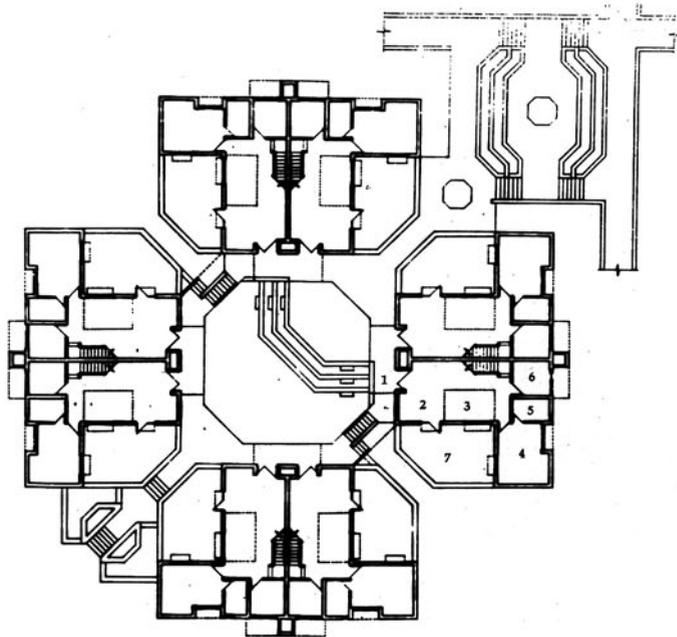
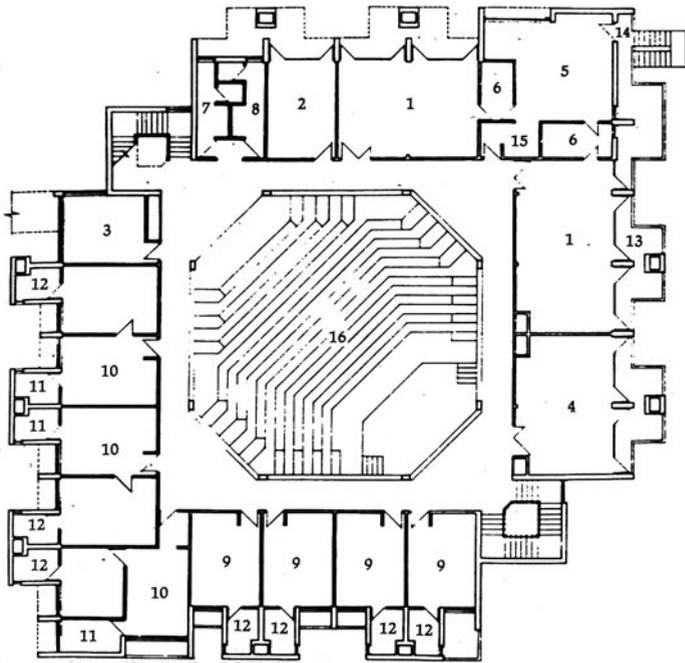
The patterns initiated at Chandigarh mature to form a synthesis of regional idioms and international ones.



## Layout Plan

1. Senior staff housing
2. Junior staff housing
3. Scholar's home





**SCHOLAR'S HOME**  
**Ground Floor Plan**

1. Dining hall
2. Reading lounge
3. Coffee room
4. Table tennis room
5. Kitchen
6. Pantry
7. Gents toilet

8. Ladies toilet
9. Single room unit
10. Double room unit
11. Kitchenette
12. Toilet
13. Dining terrace
14. Service entry
15. Room service
16. Open air theatre

**Senior Staff Housing Cluster**  
**Typical Duplex Unit Lower Level**

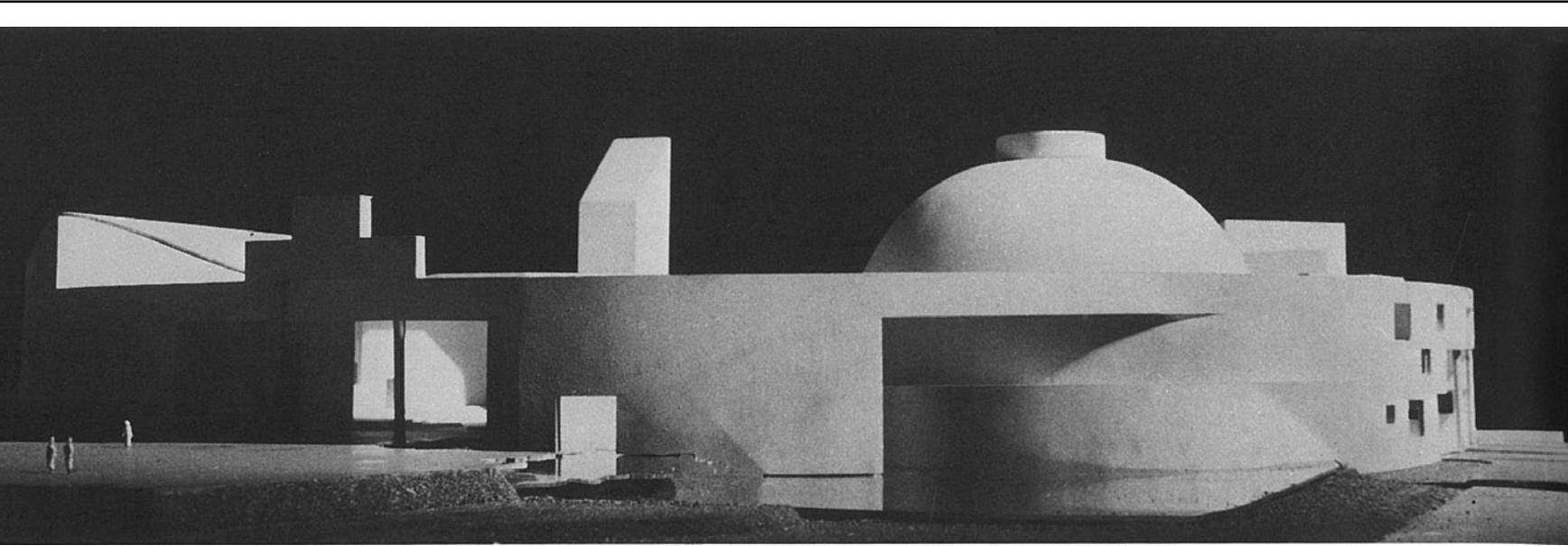
1. Entrance
2. Living
3. Dining
4. Bedroom
5. Toilet
6. Kitchen
7. Private courtyard

# VIDHAN BHAVAN

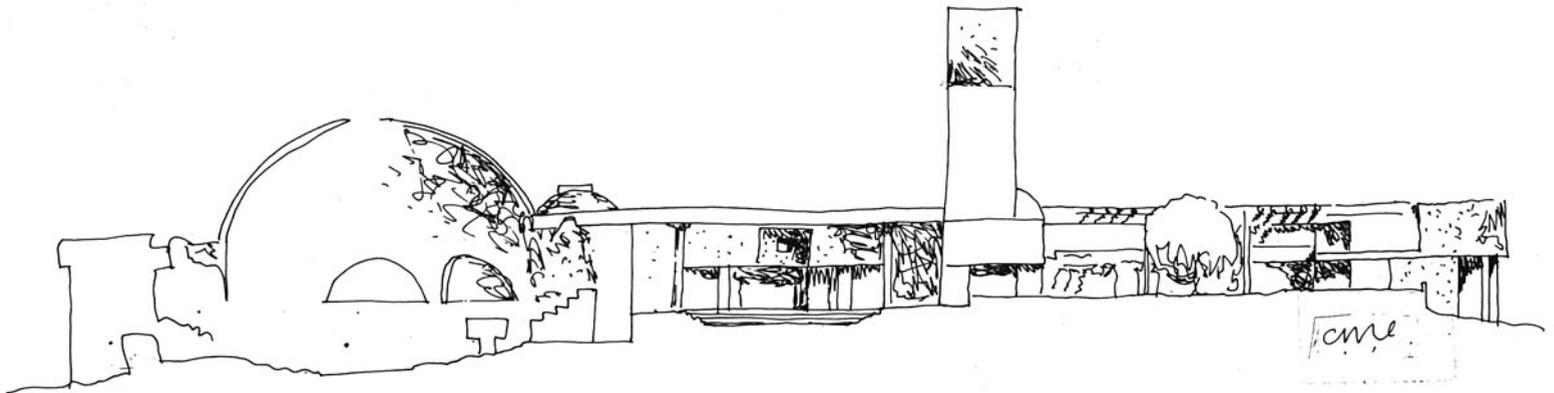
Bhopal

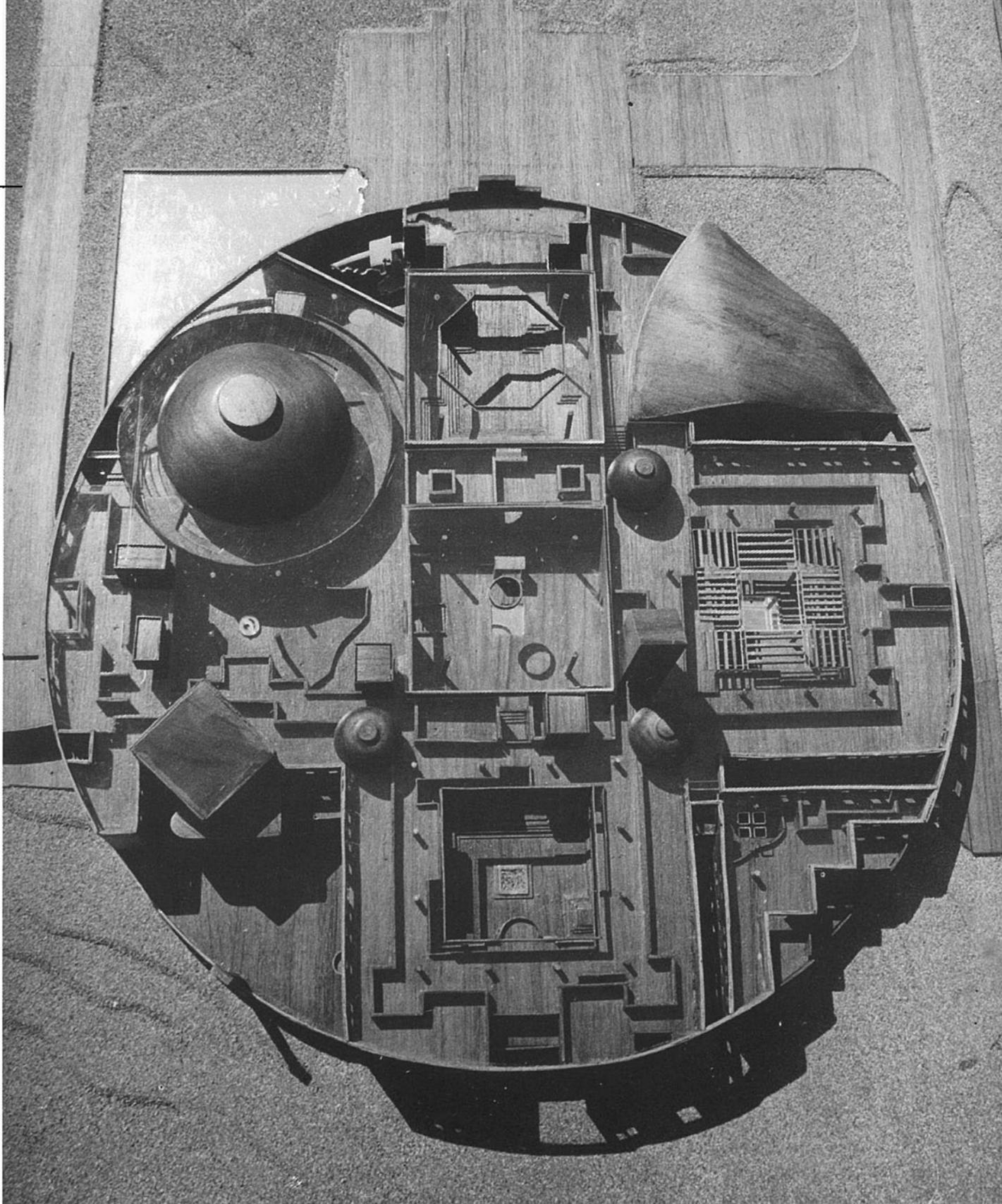
1980-

Charles Correa



The new State Assembly for the Government of Madhya Pradesh. Recalling ancient images to create public spaces, and gardens within gardens – a diversity of architectural experiences within a geometry of movement.





## VIDHYADHAR NAGAR PLAN

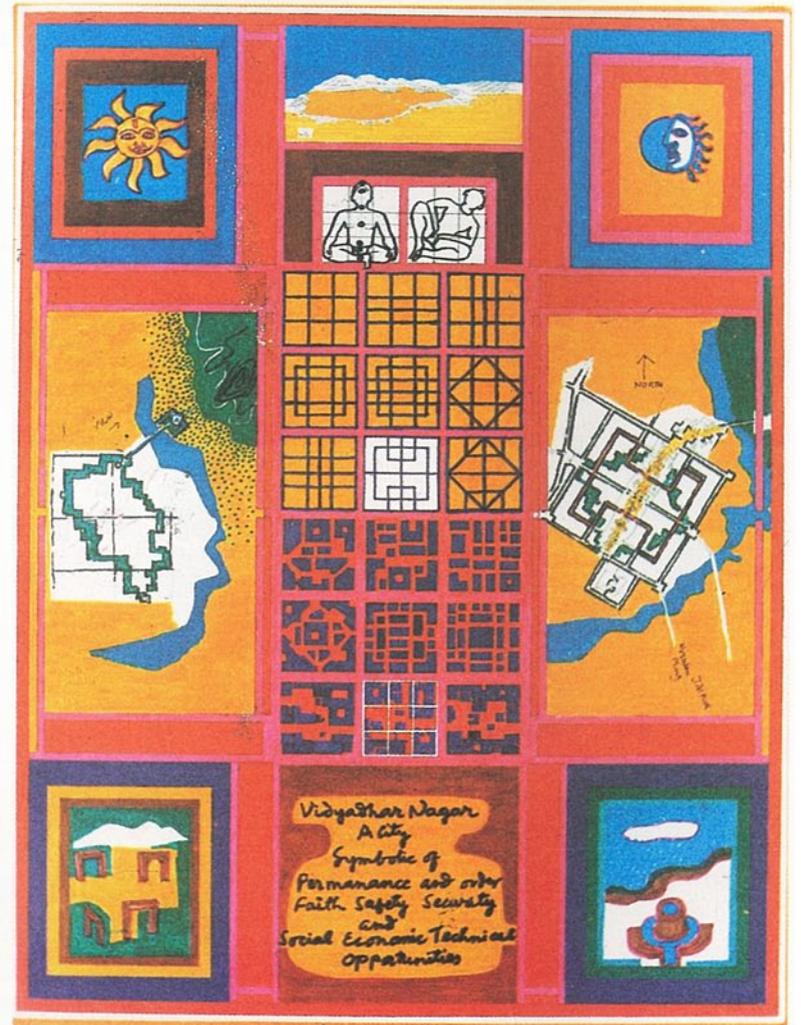
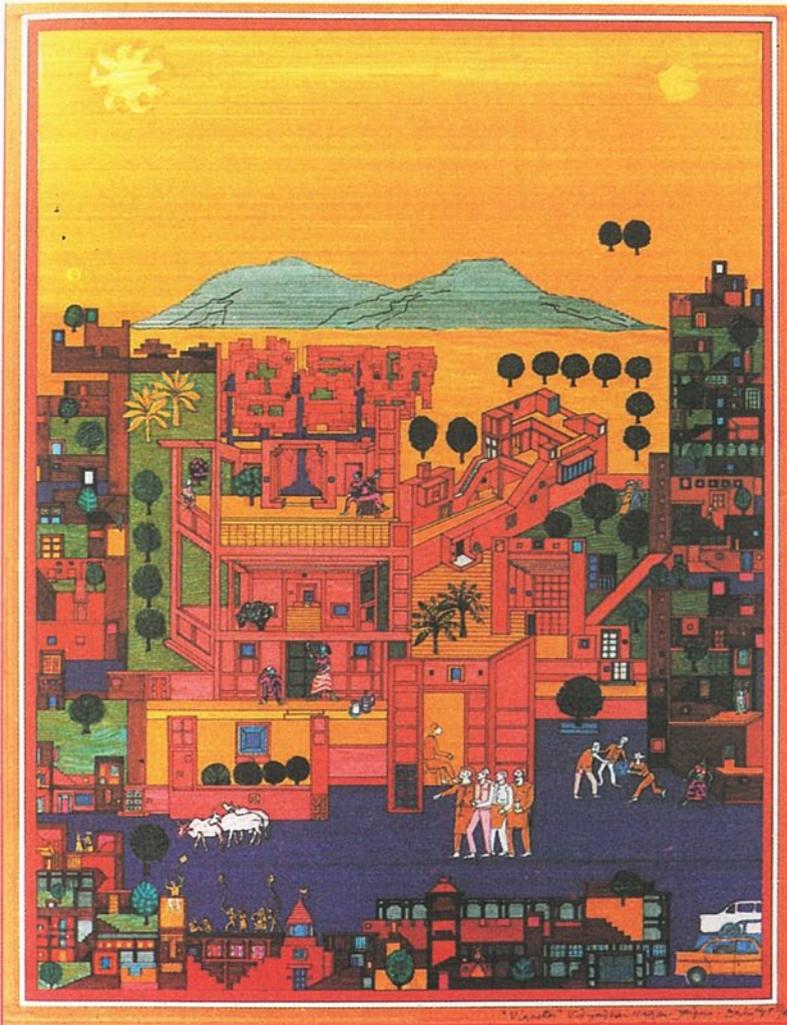
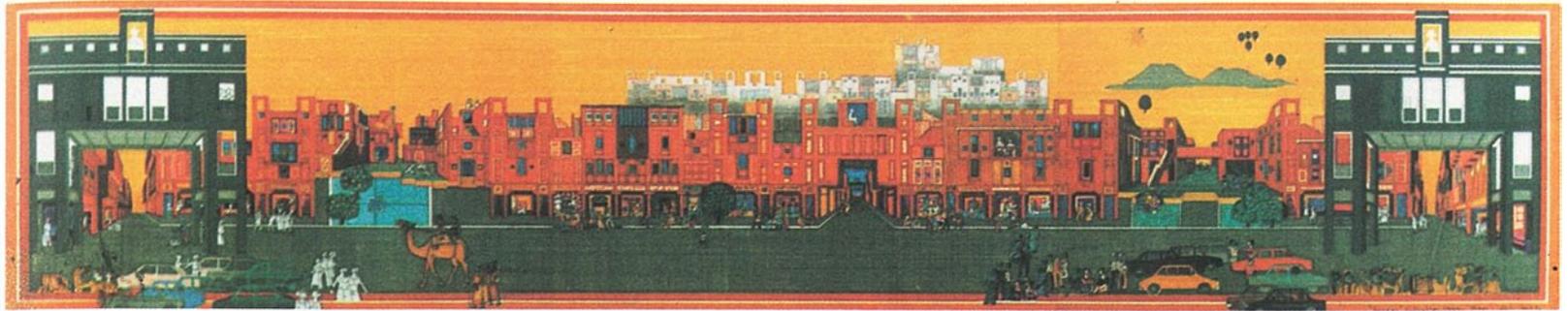
New Jaipur

1984-

B. V. Doshi



A new city for Rajasthan: transcending the urbanism of Le Corbusier in an attempt to re-create the ordering principles that made Jaipur.



## POSTSCRIPT

Architecture has to be appreciated at many levels. There is the experience of anticipation and comprehension of an idea and a programme, the act of negotiation and coordination of human and natural resources within a defined context, and finally the transformation brought about by the participation in and enjoyment of the built environment in use.

In choosing these building projects, I have tried to represent the diverse realities of the contemporary scene, within the three broad thematic subdivisions of 'Modernity', 'Roots' and 'Looking Beyond'. These divisions were defined by the dominant characteristics of the architectural syntax employed in the designs. The translation into building designs of sets-of-ideas and patterns-of-living being the determinant of the quality of the architectural product.

Within the idiom of 'Modernity' we see the development of an architecture which adds value to the idea of rapid industrialisation combined with urbanisation, an essential mobility of people and goods, and the theoretic notion of starting from a clean slate. In terms of design language, the characteristics of dynamic spatial organisation, boldly engineered structures, large masses and uniform surfaces define their own context in the landscape. The emphasis is on developing a grammar which signifies an efficient, orderly and industrious environment, with minimum reference to the past. It is an architecture which shares its premises with international developments. Yet it is significant to note that within this internationalism there exists a particularity which distinguishes its character from similar

developments in other parts of the world. Concurrent with the outward-looking 'Modernity' there has been the inner-directed search for 'Roots' in the land. The values which informed the great buildings of our past, and the diversities of regional culture have fashioned an architecture which uses modern technology to express the genius of locale. The building vocabulary is chosen deliberately to increase awareness of traditional values. Memorials are designed to project the ideals of great contemporary leaders; public buildings relate to the context in which they are placed; and in the creation of public residential architecture the dominant concern is to find appropriate expression for community-living with reference to climate, landscape and the need for spatial and material economy.

'Looking Beyond' is symbolic of the ageless quest for discovering a reality which transcends the mundane, yet is grounded in the human condition. In contemporary architecture it is reflected in examples which address the shelter needs of tribals and the poor, as well as those which focus on the timeless tradition of craftsmanship and the developing context of a society in transition. I have tried to choose examples here that are representative of the vast body of work that is being produced in the country. Of course, my choices are subjective – and dependent on the availability of information at present, which can neither be complete nor definitive. Many significant works may have been left out, but it is perhaps in the nature of things that there is always an unknown.

M. N. Ashish Ganju

**TALKING  
TO  
ARCHITECTS**

## LE CORBUSIER – ACROBAT OF ARCHITECTURE

B.V Doshi interviewed by Carmen Kagal

*Few men in history have altered the course of architecture as dramatically as Le Corbusier. His prodigious output, his extensive writings, the very quality of his genius cast him upon a lonely eminence, so that he always remained something of an enigma. It was only to a handful of colleagues that Le Corbusier showed his human side – sensitive, capable of warm and lasting friendships, deeply concerned about the condition of man. In Le Corbusier's intimate circle was Balkrishna V. Doshi, himself a distinguished architect, who worked with the master over a period of some seven years – first in Paris, later in Chandigarh and Ahmedabad. This association provided a rare insight into the mind of Le Corbusier. Looking back over the years, Doshi stresses Le Corbusier's remarkable architectural agility, his endless capacity for improvisation and innovation. Here, then, is Doshi's portrait of Le Corbusier as man and as architect.*



*Le Corbusier*

- Q. *So much has been written about Le Corbusier that I think we can dispense with the basics. We know, of course, that he was a many-sided man – architect, painter, sculptor, poet, author – or rather polemicist. However, if you had to choose the one outstanding quality of his personality, what would it be?*
- A. This is interesting because, you know, I have my own private image of the man. And the key to his personality, for me at least, is contained in a poem he once wrote. It's called "The Acrobat" and it goes:

An acrobat is no puppet,

He devotes his life to activities  
in which, in perpetual danger of death,  
he performs extraordinary movement of  
infinite difficulty, with disciplined

exactitude and precision.....free  
to break his neck and his bones and  
be crushed.

Nobody asked him to do this.  
Nobody owes him any thanks.

He lives in an extraordinary world, of the  
acrobat.

Result: most certainly! He does things  
which others cannot.

So I will always see him figuratively walking the tightrope, swinging from the trapeze, scorning the safety of the net. He did things that no one else would dream of doing; he took risks, big risks, he dared. That's why I think of him as the acrobat of architecture. I think you'll see what I mean as we go along.

Q. *Yes, I recall that he's been referred to as a magician, a juggler, someone who could keep all the balls in the air at one time. But can you give me a concrete example of what you mean?*

A. Oh, there are dozens of instances. When the roof of the gymnasium of the Unite d'Habitation at Marseilles was being finished, the engineers came to him and said, "Monsieur, this will not work, there are going to be some cracks." So he said, "What would have happened if God had done this and the cracks appeared? We would paint, wouldn't we? So we'll paint. That's all." What he was saying was that things will always go wrong some place, but we can always find alternatives.

Q. *Can we go back to the beginning, to the time you first met Le Corbusier?*

A. That was in 1950. I was living in London then and I learned that the CIAM Congress was going to be held at Hoddesdon. Somehow I managed to get myself in as an observer. When I got there I found they were discussing Chandigarh. I also found I was the only Indian present, and so I was asked a lot of questions – "What is the meaning of Chandigarh?" and so on. This encouraged me to ask if I could get a chance to work on the project. Maybe, I was told, but Le Corbusier is a very difficult man to work with. Incidentally, this was the first time I met and shook hands with him. Later I was told to submit an application in my own handwriting. He had this peculiarity – perhaps he had it checked later by those handwriting specialists. He had many little superstitions. Years later I discovered that he always carried a big coin, some kind of icon, given to him in Brazil. His wife used to complain because it tore his pockets all the time. Anyway, the upshot of it all, was that I was told I could join but I would be paid nothing.

Q. *And so you went to Paris?*

A. Yes, I went to 35 Rue de Sevres. A strange place—quite unlike the usual architect's office which has

certain set divisions. His own room was very small, with everything painted black. There were just two lights, one focused on a sculpture, the other exactly on his table.

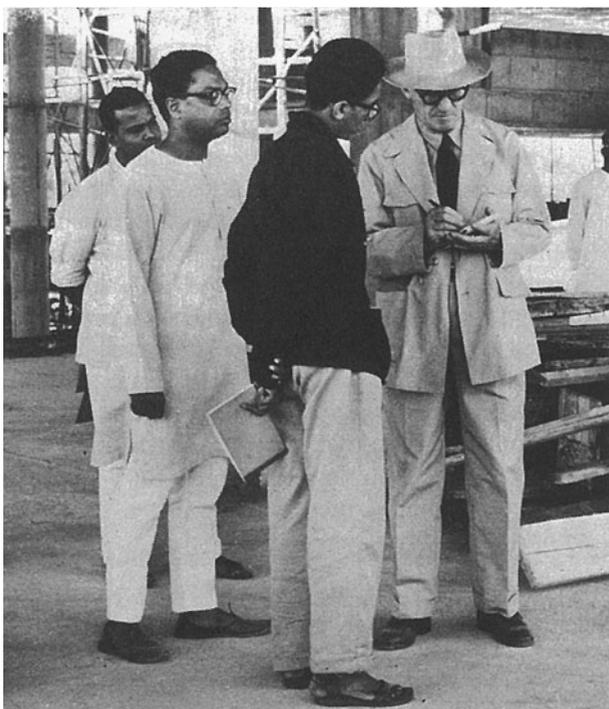
When I knew him much better I could understand the significance of the room. Because where work was concerned he was like a monk, an ascetic; he spent a lot of time alone—painting, thinking, writing. Now what is this but meditation? Indeed, for 40 years, he never met anyone until lunch time. And he was very irritated if someone disturbed him. He once went into isolation for four days, without even enough food to sustain him. And he thought and pondered long over whether his theories were correct or not. At the end of the four days, he emerged convinced more strongly than ever that what he was doing was right.

Q. *Does this mean that once he made up his mind, he wouldn't change it? To use the analogy of the acrobat, once he set foot on the rope, there was no turning back.*

A. Yes, but it was always a considered decision, never capricious or impulsive. A lot of thought had gone into it before. Let me give you an example. When the Millowners' Building in Ahmedabad was being planned, he had this large space but the toilets were small and the doors to them were only 70 cm. So a letter came from the millowners complaining about this. Le Corbusier replied, saying, "Gentlemen, you will realise that a pregnant woman with two suitcases walks easily along the corridor of a railway wagon which is never wider than 70 cm, so I'm very sure that this door is not too small for you, fat though you are."

Q. *He must have enjoyed that, his clash with the millowners. Because he did see conflict as an essential element of creative life, didn't he?*

A. Oh, certainly. He enjoyed struggling against an adversary, the more powerful the better. Remember



*A youthful Doshi (in black coat) on site with Le Corbusier.*

that early in his life he had said, “I want to fight with truth itself. It will surely torment me. But I am not looking for quietude.” He knew that there would always be conflict and trouble and he believed in being prepared for it. He once drew a diagram for me – a star, above it a cloud, and above that a dagger – and he said, “You can always look at the stars, but remember that behind them is a cloud, and behind that a dagger.”

In fact, I think he found a certain exhilaration even in defeat. In Paris after Marseilles, we were all waiting for him to come back from a client, and when he returned we asked, “Monsieur, what happened? Did you get the assignment?” “No,” he replied, “they wanted me to change the kitchen

height, change this, change that. So I told them, I have not worked for 25 yers to change now. I would rather not build. Goodbye.” “But what will you do now?” we asked. “The one thing I’ve learned in life,” he answered, “is to take revenge for my defeat by working twice as hard.”

Q. *What in your opinion was his essence as an architect?*

A. He had so many qualities that it’s difficult to summarize. One of the most important certainly was that here was a free mind, bound by no rules, not even his own. He never worked with one idea but orchestrated many ideas, each the seed of a different tree and each enriching the other. So he moved constantly in different, apparently contradictory, directions. I was once in his office with P. L. Verma, then the Chief Engineer of Chandigarh. And Le Corbusier asked, “What is the truth really?” Then he drew two parallel lines, with a wavy line in between. “Truth is like a river,” he said, “it flows continuously, changing course, modifying itself, without ever touching either bank.” Truth for him was always in the process of evolution.

He was not concerned with consistency. And he was constantly improvising. For example, in the Millowner’s Building there is a regular series of columns, but suddenly at the end he removes two columns to make a concrete wall. No purist would do this. But he needed that to make a visual impact – his real strength.

Structure for him was only related to the function it must perform – it was not a rigid element. So he did not follow one system, but used many systems to achieve his goal. Because many systems together really add up to another system, don’t they?

He was never rigid, always varied, forever playing with dualities and multiplicity. In the High Court at Chandigarh, for instance, the main portico is made of three large parallel walls and originally they

were painted white, but after a while he painted each a different colour because he wanted that area to stand out and be conspicuous. Now anyone doing this in a school of architecture would fail because it is not consistent. But to create a space, Le Corbusier would sacrifice everything.

And he knew how to go about it because he was a great inventor. Thus when Marseilles was being built he was away for a while and when he returned, his engineer colleague Bodiensky had already built the windows – simple, square wooden windows. Now Le Corbusier was anything but simple. Immediately an idea struck him: why not paint the sides of the sun-breakers to distract from the windows? *A trompe d'oeil*, so to speak. He had complete mastery of how to guide people's vision.

Q. *This is another element in his architecture, isn't it, the use of colour?*

A. Yes, to him paint was not alien – it was also used to add to the total experience. He could paint a wall to highlight the space, or to limit the space or to conclude the space. In other words, he could make space infinite or finite or destroy it completely.

Q. *How were all these qualities reflected in Chandigarh? How did he react to India in the first place?*

A. He saw many things for the first time – the bright blue sky, the relentless sun, the hot winds, the cool moon, the beauty of tropical nights, the fury of the monsoon. And he said to me once that while his work thus far had been a counterpoint to nature, he now realised that he had to have a pact with nature. The Sarabhai house is a perfect example of how architecture and nature can merge. He looked at the skyline of Indian temples, he saw arches and domes, verandahs and balconies. In general I have the impression that in India he felt the impact of another culture that has joy and grace and compassion.

Q. *What would you say was the impact of India on his work as an architect?*

A. Well, mainly that he was looking at things in a different way than he had in the West. What do you do in a country where there's no technology but lots of very skilled people, people with ideas; a country far behind in time but also very vital and full of energy? He began to think of using natural materials in a different way. When he came to Ahmedabad in 1951 and he saw the concrete columns in Kanvinde's ATIRA building, I know that he took pictures back to Paris and asked: Why not use concrete like this?

Q. *Are you saying that *béton brut* was discovered here?*

A. No, not really discovered – Marseilles had already been built in rough concrete. But here we have to do the formwork in small plates, because pouring and casting is difficult. And he said, why not take planks and do what we call shuttering? He also used steel formwork and said, why don't we show the rivets also so we can feel how the concrete is poured. In India he looked anew at concrete as texture. What he did here was to add plasticity. Le Corbusier was a man of great plasticity.

Which reminds me. He spent a lot of time looking at Indian miniatures and he once showed me a painting of Krishna and Radha dancing. "You see," he said, "how front and back are both shown, how you can twist the plane to get a complete image." The problem that was intriguing him was how to get another dimension within the same plane. And this is what he did in Ahmedabad – he made the formwork go against the nature of the concrete, i.e., normally the formwork is designed vertically, but here he placed the shuttering planks diagonally, so that the shadows cast are diagonal, while the basic level remains horizontal. This was done with the idea that the plane must get another dimension through shadow.

In Indian miniature paintings you notice that something will suddenly go out of the frame. Or out

of all those cows, one cow will turn its head. We allow those exceptions. Le Corbusier was like that – exceptions were important to prove the rule. And this came out of the realisation that rigid structures are not the answer if you want them to survive.

Q. *Did he really know about Indian philosophy? So much significance is attached now to such things as the symbolism of the wheel, for example.*

A. I don't know. But I doubt very much that he really read Hindu philosophy or anything like that. Basically people who are philosophers don't have to study religions or faiths. They sense things and feel it when they move around – they absorb intuitively, unconsciously. They work mostly by instinct.

Q. *What about the Open Hand? People also see parallels between this and the open hand of Christ and Buddha. Did it have any spiritual meaning?*

A. Again I don't know, but it's possible. He was a very secretive man, and though he was religious he never admitted it. I think all creative people are mystics in a sense. Let me tell you a story about Bucky Fuller. He was once in Florida with the contractor who made his domes, and Bucky said to him, "We must find an office building with this kind of plan." And he drew a plan with a basement. The contractor said, "Bucky, basements are not possible here because the water level's too high." "You think so?" asked Fuller, "Anyway let's go and find out." So they started driving around, and Bucky kept looking at the tops of the trees all the time. He would just say, go straight, turn right, or turn left. After 10 minutes they came to a house and Bucky said, "Stop. There's a house. Go and ask about it." The contractor went in reluctantly and said to the owner, "I know there's no sign saying that this house is for sale, but is it?" And he replied, "Well, I've been thinking of selling it so, yes, it is for sale." "May I see the plan?" he was asked. And amazingly the

house had a basement and a plan almost exactly like the one Bucky had drawn.

Q. *So what was he, psychic?*

A. Yes. And therefore I'm convinced that all these people have their antennae absolutely acute. Otherwise how come that the Shodan House ramp which was done in Paris is very similar to the ramp in the Amber Palace which Le Corbusier had never seen? And how come that Louis Kahn's dormitories and structures at Ahmedabad are very close to the buildings in Mandu, which I showed him later much to his surprise. Therefore these people were not only psychic, but at a certain level of creativity your intuition becomes universal.

Q. *Which brings us to another question often raised with regard to Le Corbusier – that of intellect as opposed to emotion or instinct.*

A. With Le Corbusier the prime motivating factor was undoubtedly instinct. He never had a set plan in his head. In regard to his painting he told me, "When I start to work it's blue, but when I've finished it's green. I don't know how that happens." And otherwise why would he choose the cooling towers of the Sabarmati as the model for the Assembly building in Chandigarh? Nobody would dream of doing that. But to him it was a wonderful symbol of tomorrow, of rising aspirations, a figure of tremendous force. This was his impulse operating, his visual insight telling him: this is what you must do against those mountains and in that barren area.

Q. *Is this true – the connection between the cooling towers and the Assembly?*

A. Of course it's true, it's 100 per cent true. I was in Ahmedabad at the time, and I know that he went to the cooling towers in the night. He was fascinated by them; he picked up two wooden planks and struck them together to check the acoustics and made a note of it. And because he'd stayed there so long he developed pneumonia when he got back to Paris.

Q. *Which brings us to Chandigarh. But how did he go about the building of Chandigarh?*

A. Whenever Le Corbusier worked he would go to the site, to get the feel of it – without this he wouldn't even do a drawing. In Chandigarh the first thing he did was to sketch the Himalayas – you could say he was overwhelmed by them – then the barren land, a couple of mango trees and of course the bull with the big horns. From the very beginning, I feel, he began looking at the city as an offering to the Himalayas. I remember Giedion, the noted architectural historian, writing to him at that time saying, "You who talk so much about the Piazza San Marco, how dare you put buildings so far away in a climate that's so hot." Le Corbusier's answer was, "Yes, but I am doing this as objects against the backdrop of the mountains. This is my notion of space in the 20th century."

Q. *There's been so much controversy over Chandigarh – what exactly was the extent of Le Corbusier's involvement in the city?*

A. We must be very clear about this: his concern was the master plan, the capitol complex – the four major buildings – the Civic Centre, parts of Sector 17. Isn't it ironic that the man who propagated Unite d'Habitation was not allowed to do housing? He said: "Maxwell Fry and Jane Drew want to do housing. If I interfere now there'll be trouble."

Q. *What about the demarcation, the segregation of classes?*

A. This was given as a directive by P. N. Thapar, then the Secretary, Punjab Government, and Fry and Drew followed it. But Le Corbusier told me, "This is a bureaucratic decision and I don't agree with it."

Q. *What about the absence of bazaars, another criticism often levelled against Chandigarh?*

A. Look, Le Corbusier was essentially a man of the Mediterranean – he was fascinated by places like the *casbah* in Morocco. And I have seen with my own

eyes his Chandigarh sketches with shopping streets leading to open spaces and he's even written there "The Indian Bazaar". But those sketches are missing now, lost, disappeared, I wish I'd pinched them at that time.

Q. *So it's very unfair to blame all the ills of Chandigarh on Le Corbusier?*

A. Of course it is. I remember we were once walking in the High Court area, at that time the land was quite flat, and I said, "Monsieur, with such wonderful buildings coming up here, look at what is happening all around – the buildings by Fry and Drew, I mean." He replied, "I know, but don't worry. I'm going to create hills here so that we will not notice them and this will become a contained place."

Q. *So he was dissociating himself from the rest of Chandigarh?*

A. That's what I'm saying. He was creating an island for himself. On my next trip to the city, those hills – mounds, rather – were made. He didn't complain, but just found a way to enhance his own world. As I've said so often, he was a man of great invention. If the site had something undesirable he would hide it. He was always doing these balancing acts.

Q. *What do you think of Corbusier's Chandigarh, then?*

A. I think the capitol complex affords a unique architectural experience. There is this tremendous juxtaposition of the Assembly and the High Court, saying that justice is independent of politicians. So we have an independent justice, an independent legislature and between them lies the Governor's Palace. Thus a triangle is set up to symbolise people's participatory governance. And then we have the Open Hand which says, let us open ourselves to the world – let us give and let us take. The whole conception is fantastic. It's an example of how to create buildings which respond in terms of space and confront one another allegorically. For the first time you have a complex of buildings

placed in a certain order, philosophically and visually, in relation to site and then in relation to form and scale. In the classical manner, the church was always placed in the centre of the town, but here we have Le Corbusier taking his capitol buildings far away and also placing considerable distance between them.

Q. *But he's been criticised so much for those distances.*

A. I know, but it was all carefully thought out and conceived that way. These powers must confront each other so the distance between the buildings was very important for him. He didn't see it as a gathering place for people, but rather as a vast area where tensions are set off, an area that is awe-inspiring. So it had to be kept very pure. And I think the same thing is true of the capitol's distance from the city – he didn't want it mixed up with all kinds of day-to-day activities. Of course the problem remains: how do people in a democracy use these buildings? But I think that both Le Corbusier's vision and the people's convenience have validity.

Q. *Would you like to comment on the individual buildings in the complex? Let's take the High Court.*

A. In the High Court, as always, silhouette was important for him. You see these shapes, almost like an umbrella, but look at the negative space and it's like a dome (perhaps a reaction to Indian architecture). So he had this play of positive-negative, of floating form against the light. I believe that this relationship with the sky was being discovered at this point in his work. And now he was using elements even at the cost of structure. These shells in the High Court were supposed to be very thin, but engineering-wise that was not possible so they were done as slabs, curved slabs, cantilevered.

Of course the High Court has many problems. The rain beats in so you have to build an arcade. The judges don't like it because the courts can't

function the normal Indian way. But one really has to look at the High Court as a plastic building in terms of form and space. And I think it's a magnificent building, it's a grand way of arrival – the way it sits on the plaza and the poetry its silhouette evokes.

Q. *What about the Assembly?*

A. The best thing here is to tell you what Louis Kahn said when he first saw it. He said: "I have never met a man in my whole life who can freeze his dreams. Le Corbusier has done this in the Assembly building." I myself think of the Assembly as the culmination of architectural experience, pure experience. It is absolutely unmatched in terms of form, space, proportions, the play of light. I could go on for hours about it – how he created a dual structural system for the interpenetration of volumes; how beautifully he taps the sun to bring this wonderful light into the building; how the pure geometry he talked about all his life came back on top of the Assembly in the cylinder and the pyramid and the cube. In the end he created a building that was a piece of sculpture.

But again I have the feeling that there are lots of problems in the Assembly. While it was an absolute success in formal terms it was not the same in practical terms.

Q. *The Secretariat?*

A. The Secretariat too has its points and it's very impressive from the front, but that also happened by accident. The initial design had sun-breaker-like balconies, but the problem arose that such big spans would not work because they were also cantilevered, so you needed supporting elements. Everybody wondered where the solution lay and a lot of work was put in. One fine morning Corbusier arrived at the site, took a look at what was happening and said, "No, no, no, not like that. Let the columns go straight down breaking the sun-breakers. Don't

make changes in design – just let them go through, they are really supporting elements.” So the columns went right down, and the sun-breakers changed and a totally new pattern emerged, most interesting and very beautiful because you never anticipated the strange rhythm that would occur. In his desire to be formal he often landed in a mess. But, like the acrobat, he always managed to emerge unscathed. However, everyone knows that the Secretariat fails, fails totally, as an office building.

Q. *What about the plan of the city?*

A. I think that 20 years hence Chandigarh may not even be considered an Indian city because it gives us Le Corbusier’s sense of the future but not of Indian life. Indian communities live in groups, *mohallas*, there’s a mixing of families income-wise. This was never considered in Chandigarh. So you have streets, open spaces, houses – but you have no life.

Q. *What was your involvement in Chandigarh and with Le Corbusier?*

A. I worked on the High Court, designed some sections of it. I also did some work on the Governor’s Palace which as you know was never built. In Ahmedabad I worked fully on the Shodan House and the Millowner’s Building.

Q. *And this is over a period of seven years, so you got to know him well?*

A. Yes, I was close to him both professionally and personally. Whenever I went to Chandigarh, we would take long walks together, during which he would tell me all kinds of stories. He was a stern man, and he had withdrawn from people in a sense, but he had a very warm human side that I can never forget. For example, when I was leaving Paris I lunched with him. He had spread some of his drawings on the table, and said, “Doshi, I want you to select one.” So I picked one. “Ah”, he

exclaimed, “you have chosen the way I would have. Why don’t you take another,” I did so, and again he was pleased so he gave me one more. I finally ended up with three of his drawings, and I can tell you he didn’t easily part with them.

Q. *What influence would you say Le Corbusier had on you?*

A. Oh, he changed my entire career. Apart from architecture, he taught me to be a strategist, how to face the music, how to look at things and how to be open. Take strategy. He once told me, “Don’t send all the photographs of the building to the client. Send just one so that they get only a partial idea. This way you’ll have fewer arguments.” And when I was leaving Paris and went to say goodbye he had some colour samples in his hand. “Look”, he said, “when you show them the colours ask them to select one, but always keep the second choice for yourself. So they will be happy and your choice will compensate theirs.”

Architecturally, all my buildings have been influenced by him, though not obviously. In my home, for example, built in 1961, I had been greatly impressed by the Sarabhai house, and I was really trying to create that shadow and that proportion. But I wanted to do something he hadn’t done. So I decided that in the interior I would not use anything rough – I would have a polished floor, plastered walls, and not use sun-breakers (even now I avoid them, I’ve only used them once or twice). Still there are some similarities. When I left Le Corbusier I took a vow that I would not use the elements – apparently the same elements – associated with him. When you decide this, then you are left only with his spirit, which is expressed in proportions, modulations of space, creation of rhythms, tonalities. My greatest discovery was that I found freedom. I know that Le Corbusier would not have liked me to be imitative or to repeat a building again and again, but to invent and seek out

new expression. That's why I keep his photograph on my wall to tell myself, "He is there, watching me. Am I repeating myself?" So I make mistakes all the time but I'm happy that I'm trying.

Q. *What about your other buildings?*

A. The Institute of Indology was also built when I was filled with Le Corbusier and is strongly influenced by him. But I think my office building, Sangath, is truly representative of Le Corbusier. He would have been happy with it. This quality of light, for instance, would not have been possible without him. These are skylights, reflected skylights. He knew how to create a soft light that makes people's faces glow, not a hard light that results in harsh lines. Treatment of light, as you know, was one of his great strengths.

Q. *What about your School of Architecture?*

A. He didn't see the School, but when I was in Paris in 1963 I was telling him all about it, how we were going to have various scientific disciplines, physics and chemistry, how the architecture students would analyse buildings, study form, etc., etc. He listened in silence while I went on, then he just picked up a footrule from his table and asked, "But will they know how to use this?" I was quite taken aback but when you think of it the essence of architecture is how to use scale, isn't it?

Q. *What would you say is the influence of Le Corbusier on Indian architects in general?*

A. I would say it is more apparent than real, more in terms of visual impact rather than theory, practice and analysis – in relation to our own culture. But there are people like Shivnath Prasad on whom he had a profound influence. Also Charles Correa and myself, and a lot of others in Delhi. It's difficult to assess, though, because by and large it's all fragmentary, just bits and pieces. Particular features were picked up – sun-breakers, of course, rough concrete, brick and concrete – and a few did pick

up his notions of space. Generally the formal aspects were picked up but not the spirit.

Q. *Not many people were as closely associated with Le Corbusier as you?*

A. Yes, that's true. There were some who were with him for as long as 10 or 15 years in Paris, but very few had the chance to be on site with him. I was witness to his endless adaptability and his capacity for improvisation. For example, the contractor would come to him and say, "I do not have this size of building material, say, stone." He would ask, "What sizes do you have?" The contractor would tell him. He had perhaps allowed for three sizes, but the contractor may have had only two. Then he would say, "I'll take this, which is my Modular, but you'll have wastage. All right, I can use the wastage as residue." He could treat flooring with residue, window panels with residue, sun-breakers with residue. And he would create a rhythm in his residue, adding a new dimension so that the building was actually enriched.

Q. *Le Corbusier says somewhere that he admires "the house of peasants, the shack, the thing that is modest and on a human scale."*

A. You could say he was one architect who gave the ordinary man dignity. It was always as if he were looking at man and God together – no human being was really ordinary. Since he was not involved in politics or economics, he tried to give man dignity through his dwelling. What he would do was to scale the building in such a way that no man felt less than a king in his house. I recall him drawing some sketches and saying, "Here is a small house; if I make a tiny door the house will look still smaller. But if I make a full-scale door that will change things." So this little act of altering the relationship between the opening and the space and the man made all the difference.

He was always fascinated by small-scale structures – steamships, railway carriages, houses of the poor. I remember taking him to the *pols* in Ahmedabad, to rooms just two metres wide. And him stretching out his arms and saying “My God, look how these people can live.” For him there was no problem thinking in two scales – the tiny, miniscule, and then the very large. Very few architects can do equally well in both.

Q. *What was this, the attraction of opposites?*

A. Yes, and it had some odd manifestations. At meals he would say one should eat sweet and sour things together. And when he ate meat he would say, “Let’s put some salt,” but big pieces of salt, not really spread out, so that the meat had no salt in some places and a great deal in others. In his drawings he had very thin lines combined with thick ones. His furniture was very low and the base was very thick. It seemed as though he always wanted two dimensions – thin and thick, tall and low, rough and smooth, light and shade. There was always this kind of counter-balance.

Q. *This leads us to the role of music in his work, the use of counterpoint, if you will.*

A. Music was terribly important to him – he came from a musical family as we know – and he extended this to his architecture. One of my most vivid memories of this came when we were working on the Shodan House. For some reason the pattern was too rigid, and Le Corbusier recognised this and it bothered him, so he turned it over to me. And when I began to work on the house I felt that instead of round columns, perhaps it should have a rectangular column that could do many things – become a wall, meet the wall at right angles and become a cupboard. When I showed him what I’d done, he said, “This is working right now. Let me begin to explore it.” Within two hours he had made a miracle out of the

sections by just adding a little beam here and a slab across and putting a circle there to open it up. I remember I had some regular sun-breakers and when he looked at them he said, “Ah, you are too rigid, you know. Knock off these two.” So I knocked them off, and I realised after many years that those two were expressing the garden and the others in a regular rhythm were expressing the room. This is how he got other rhythms into the main rhythm.

Much the same thing happened in the Sarabhai House where you have these enormous, very heavy beams which really take you right in. The walls became almost like sliding panels – they are carrying load but sometimes you have a four-metre span, sometimes you have only a one-metre jack in between. Now Louis Kahn would not do this – he would certainly have a constant span.

Q. *That’s something I’ve been meaning to ask you about – your experience of working with Kahn and the difference between him and Le Corbusier.*

A. As you know I was also associated with Kahn for many years and it seems to me that he was always striving towards simplification, trying to get into an order that was very clear, very consistent, very precise, very austere. Now Le Corbusier didn’t give a damn about any of these qualities. He actually seemed to enjoy crisis situations because they offered a new way of putting things together. It was almost as though architecture were a game – or a gamble! I often say that Lou was trying to build silence – totally integral, without ripples of any kind. Whereas Le Corbusier was anything but silent – not that his buildings were noisy. They were musical – like the sound of someone playing the flute in a forest. The difference between them is that between serenity and joy.

To use another analogy, Kahn and Le Corbusier can be compared to Mughal and Hindu architecture. Now in India we had the same craftsmen working

on both, but if they were building a mosque it would be very simple, clear and pure and the geometry would be very explicit. In the temple, on the other hand, things would twist and turn, go up and down, in apparent disorder. Like Le Corbusier who delighted in pure geometry which he would then destroy.

In general, I think Lou would accept the constraints while Le Corbusier would not. He would rise above them, and that is why he could create those fantastic unfoldings of spaces, those marvellous changes of light. Lou's buildings are for meditation, Le Corbusier's buildings "sing".

Q. *What were they like personally?*

A. Oh, they had totally different temperaments. Take food habits. While he was in India Lou would just eat boiled fish and boiled potatoes – nothing else. Whereas in Delhi Le Corbusier took me straight to Moti Mahal, ordered *tandoori* chicken and all kinds of Moghlai dishes and enjoyed it enormously.

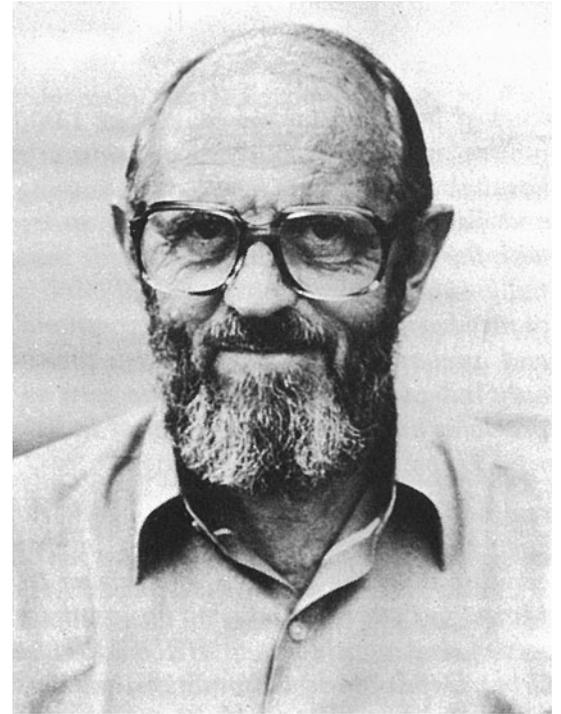
Q. *Did the two men know each other?*

A. Well, not really, though Lou did attend a lecture given by Le Corbusier in Philadelphia. In typical fashion he stood right at the back of the hall, but after the talk people brought Le Corbusier over and they were introduced. I thought it would be a good idea for the two masters to meet and I told him, "Lou, one of these days when we're both in Europe why don't we go to Paris to see him?" He just replied, "Maybe".

After Le Corbusier died I went to Paris, of course, and after three days I went to Philadelphia. I remember Kahn lived on the fifth floor then, and he threw the key down to me. As I entered I could see he was extremely dejected and at once he said, "Have you heard?" I answered, "Yes, I've just come from Paris." Then, turning an agonised face to me, he asked, "But whom shall I work for now?"

## LAURIE BAKER – ARCHITECT FOR THE COMMON MAN

An interview with Gautam Bhatia



*“George Bernard Shaw, Bertrand Russell and a group of others used to hang out together. One day Shaw laid a bet. ‘I will try,’ he said, ‘to sell £5 notes for £1. And you will see how many people rush to buy them.’ So the next day, parading about the streets around Picadilly, Shaw shouted, ‘Who will buy my new, crisp £5 notes? Only £1. Please, madam, only £1 for this beautiful new £5 note.’ The others watched Shaw peddle but without any success.”*

*Laurie Baker, an English architect now settled in India, recalls this story with obvious relish because of the striking parallels it holds to his own situation. “A better building at half the cost” has been Baker’s motto for the 41 years that he has practised in India. And yet, as in Picadilly, there are few takers.*

*Baker graduated from the School of Architecture in Birmingham in 1937. Shortly afterwards,*

*while an apprentice in a London office, war broke out and being a Quaker he chose to enlist in the Friends Ambulance Unit, as a member of a missionary medical team. Throughout the course of his war service, which took him through areas of active combat and heavy casualties in China and Burma, Baker worked patiently with civilians suffering from leprosy. But six years of hospital work took its toll and in 1943 he chose to return home.*

*In Bombay while waiting for a ship to England, Baker had a chance encounter with Mahatma Gandhi. He began attending Gandhiji’s lectures and prayer meetings, and the Quaker in him began to imbibe the message of the Mahatma: that real service meant service to the ordinary people. It was for this that a year later Laurie Baker returned to India, never to leave again.*

*And in the 41 years that he has lived and*

*worked in India, he has built over 1,000 private houses, numerous churches, mission schools and hospitals, several state government housing schemes and fishing villages. His life-long preoccupation with the idea of providing shelter for the homeless millions and indeed the successful implementation of his ideas, has brought him international acclaim and numerous awards along with the title of the only Indian architect. Some have gone so far as to proclaim him the Hassan Fathy of India.*

*Baker is today perhaps the only architect with a real understanding of the needs of the rural poor. Even the government, unable to improve living conditions in the villages, has turned to him for advice on their rural housing programmes. He has served as a consultant to HUDCO (Housing and Urban Development Corporation) and the Planning Commission, and as an adviser on several state and central housing committees.*

*Although his energies have been mainly directed towards public housing he has worked on several private commissions as well. Yet in all his work – whether house, school or church – there is an uncompromising adherence to local conditions, conditions which recognize the living patterns of the occupants, the nature of the site and materials and the expression of their intrinsic qualities.*

*The predominant issue in current architectural debate is more of an accusation: Why have modern Indian architects failed to produce a distinctly Indian architecture? In a country of unimaginable diversity and stark contradictions, rich in tradition with enormous reserves of manpower and indigenous materials, the architect still looks to the West for guidance and inspiration; it is not unusual to find contemporary architects still emulating the works*

*of Le Corbusier and Louis Kahn. But this is an aspect that does not bother Laurie Baker. Even today, at the age of 68, this gentle English expatriate continues to produce an identifiable Indian architecture.*

*His buildings have a distinctly local or regional identity, recognising intuitively the forces that give them shape. In his work concrete is used very sparingly, often in a folded-slab design with broken and discarded tiles used as fillers, thereby making the roof light and inexpensive. Innovative bonding techniques for brick allow him to build walls of only a half-brick thickness. In many cases they are stepped and curved for added stiffness. The interiors too are uncompromisingly direct and simple, devoid of superfluous comforts, expensive veneers or flashy details. Baker eliminates glass windows and frames, preferring to draw his inspiration from the vernacular. Small openings in brick, like the traditional jaali, fragment the harsh sunlight, filtering in a uniform glow and breeze. Where large openings are required Baker corbels in brick, securing the doors directly to the wall surface.*

*Perhaps one of Baker's most innovative contributions to architecture is his method of working. Eliminating the need for detailed working drawings, he improvises according to the situation, re-using material from a demolished building or adding a window in a wall already under construction. Some of his more important projects include: A Campus for the Centre for Development Studies in Trivandrum, St. John's Cathedral in Tiruvella, and the Krishi Vigyan Kendra at Velland.*

Q. *What is the philosophy that guides your work and the issues that are important to you?*

A. I ask myself: Who are we building for? I am mainly concerned with the lower and lower middle class, simply because they get left out. Previously they all knew how to do their own buildings, all the indigenous styles – the cottages, for instance, are very distinctive wherever you go, in every district. The people themselves took an active part in making them. Now they've lost their skills and they look outside for help. People who normally do architecture don't go near such people. Those who do anything for the lower strata – government, the Church and other organisations will pontificate on what they need but very rarely consult them.

So, I've always been more interested in working for people down at the bottom end – nothing fancy or saintly – but when I came to India during the war I became interested in leprosy for various reasons. There's an organisation called Mission to the Lepers. They were just realising that the old homes were out of date and what they needed were hospitals where they treated leprosy like any other disease. Here they had such homes, which they wanted to convert and I came out to do that. So right from the word go I was involved with the lowly, the small town people, the depressed, and the question was always of trying to make a little money go as far as possible. Whether I wanted or not, I got into low-cost design but I got more and more interested in it. And all the while I realised that although this was a specialist's bit of India, it (leprosy) was very little different from all the other forms of poverty, with its stigma and isolation, and the same thing applies to slums and housing. So I've never been interested in big high-rise buildings, or stadia for Asiad. Not that anyone would dream of asking me.

From this I also realised it was equally stupid to do all this low-cost housing only for the poor.

Nobody really has the right to throw so much money around when there's so much need. That's why at the same time I got interested in doing things for people in the upper strata who wanted to get their money's worth without unnecessary waste of material. And in that way all sorts of things came along including big industrial commissions.

Q. *One way of perhaps demonstrating to the poor that low-cost building doesn't necessarily mean poor quality is to do similar things for the rich, is that right?*

A. Yes! Why plaster, indeed, when you can get better effects from the actual building materials. So if I'm only building for "the poor" it would seem that I would not want to put the plaster on for them; but if Rajiv Gandhi wants a house then, of course, I'd put the plaster on for him. When I do it for people whom they aspire to imitate then they feel better about it. Actually I've never found the need to do this because they know the meaning of money, so they can understand the cost reduction principles better than the middle and upper middle class. I think the most satisfactory jobs for me are those for the lower middle class – the NGO's, accountants, teachers – people who do interesting jobs and are important for the country, but get paid miserably. And they're very open to new ideas, or adjustments.

Q. *Would that apply to the fishing village in Trivandrum?*

A. Well, that was an unusual project. Every year some village or the other in Kerala gets washed away and every year they get an enormous amount in compensation, money for clothing and blankets and maybe even some for the replacement of huts. For the amount spent year after year they could easily build *pucca* houses if they were put in sensible places. So I approached the Chief Minister to say, why waste Rs. 3,000 like this on compensation, why not build *pucca* houses? The C.M. agreed and we acquired land just behind the

beach. So we went ahead and did it. But it was very difficult. The fishermen are quarrelsome people and I didn't have much time to study the project or think about it.

I hate long rows, a colony of rows, so I staggered the housing in a way that (a) they catch the breeze; and (b) they get a view of the sea; at the same time leaving little private triangles of land in between houses where they could dry the nets and kids could play; they were all distressed over the storm damage and we had to get them up as quickly as possible and we mainly wanted to demonstrate that such permanent structures could be put up quickly. In some, they've taken out the *jaalis* and put windows, which is a good thing. I don't see why 800 houses in rows should all be the same; if one person wants widows, why not, if someone wants to plaster it and paint it blue and green, fine. Let them do it. It always raises this question: are you building a Laurie Baker building, a Corbusier building or are you building for the client? You should be building only what the client wants, but clients often have terrible taste. Of course, that only means it's something you don't like.

Q. *Have you ever been approached for a conventional project with limitless funding?*

A. No, I don't want jobs. I only take on what I find interesting and limitless funding I always find suspect and I'd probably tell them most of what they want is totally unnecessary anyway. It may have been a temptation 30 years ago. I had one such client – a missionary group in North Kerala approached me for a church. So I asked them what do you want and they said, "Actually, you needn't bother with the church at all. We've got an engineer who will do the church for Rs. 3/4 lakh and you can have Rs. 1 lakh to do a nice front." I met their committee and told them what I thought of their project. So of course they got an architect who did them a nice

front with pink and green and purple stripes and their engineer did do an asbestos barn behind.

Q. *You've been called the only "Indian" architect, why is that?*

A. Yes, I don't know quite what that means. I think very little of my foreign-ness shows in the buildings I do and I've never ever said, "We do it this way." In any case my clients have always been very Indian, I've not even had the foreign-returned to deal with since I work with the poor primarily. And my feeling as an architect is that you're not after all trying to put up a monument which will be remembered as "a Laurie Baker building" but Mohan Singh's house where he can live happily with his family. But there must be thousands of others. I don't know why I should be singled out for the honour of being the only Indian architect.

Q. *Partly perhaps because you're a foreigner, but more so because your buildings use elements that are essentially Indian – like jaalis and courtyards.*

A. Yes, but again these are not things that architects have sat down and designed. In Kerala nice curled-up roofs or nice *jaali* patterns were a slow evolution, an R + D and empirical development to meet your needs with limited means, to also suit the climate and the cultural patterns, to cope with wild beasts or wild neighbours. What we see in indigenous architecture is this response. That of course is very, very Indian and sometimes local to just one particular district. To me obviously an ordinary English window in a hot climate without winds and torrential rains can be a real horror.

So I learn my architecture by watching what ordinary people do; in any case it's always the cheapest and the simplest. They didn't even employ builders but families did it themselves. And it works – you can see it in the old buildings, wood *jaalis*, in particular, with a lot of little holes filtering the light and glare. I'm absolutely certain that

concrete frames filled with glass panels is not the answer. There are better alternatives. In places that are running short of wood and stone, there are other materials available and other principles to follow. Life-styles, living patterns and the availability of materials and skills do change, but the weather hasn't changed, the temperature hasn't changed, it still rains...but where we should have just improved what was not entirely satisfactory we've introduced something completely alien.

Q. *Now with the requirements for housing on such a large scale is it possible to build the traditional way?*

A. Well, yes and no, there are a number of things that have changed but the whole social pattern is changing as well. Kerala is very different from the rest of India. It's like a chess-board. Each square has one family. There are none of the dense village settlements of Uttar Pradesh or Madhya Pradesh. Except for the commercial development at the crossroads there are only paddy fields and coconut groves. Now this is changing and with larger numbers few can live off the land and with more people moving into the cities we have to make changes. Gulf houses have started appearing in the paddy fields.

Q. *Traditional architecture is very direct and simple in the way it solves a problem or is suited to a climate. At the same time it is rich and complex because it varies from region to region. Isn't this what we are really losing?*

A. I can never understand an architect designing 500 houses all exactly the same. It doesn't take much to put all the components into at least half a dozen other combinations. If only we didn't level sites and eliminate trees, instead plan to go around them. Then we wouldn't get the long monotonous rows. With variation of materials in Kerala nearly everywhere – well, either you have laterite and granite, or brick and laterite, or laterite and mud – it's

perfectly easy to mix up materials on any given site, so the possibilities for variety are endless.

I was doing a colony for civil servants, all from different parts of the country now retiring and wanting to settle in Kerala; they are honest people with not much money, so they formed a co-operative, got land from the government and divided it into different plots. They asked me to build because I build individually for a person. What I usually do is talk with the client, the family, ask what they want, what kind of building they are likely to be happy in. If they are fairly orthodox I give a straightforward plan. Then I'll do a plan that I think will be good for them. If I think they are more adventurous, I do an outlandish plan – a round one or a triangular one. And I present all three and leave it to them to make the choice. If they had their own individual plot I'm sure they'd have selected the simple unimaginative house, but because they're all together in a small colony they've all picked the outrageous one. Now there are circular houses, moon-shaped and heart-shaped houses...but all exposed brick outside with filler tile slab roofs.

The filler slab works out cheaper than the tile and timber roof and it satisfies this craze for being modern. With people in a thatch house wanting a tile roof, those with tile roofs want concrete, so they have their aspirations, but the wood and tile roof is still by far the best one.

Q. *But people can no longer build the traditional way because timber is scarce. Couldn't a government policy make it possible for some forests to be planted specifically of building species?*

A. Yes! I keep bringing this up at planning meetings, why we don't deliberately plant timber with quick-growing trees for building material. It's ridiculous that timber which is a renewable material has no clear-cut policy. We have some teak forests in Kerala but they are for commercial purposes, not for individual house builders.

Q. *That's rather lopsided, that industry can get bamboo and other material at a subsidised rate but a man who wants a few odd pieces for a house must pay market prices?*

A. It's very sad. My nicest work is in wood, big trusses in houses, halls, but I can't afford it anymore.

Q. *Do you admire a building for its exterior, the composition of its facade, or its proportions?*

A. I've never consciously used any system of proportion, nor for that matter does "architecture without architects". Really, a door is a standard, it sets the scale of a building, its shape and size is taken from the shape and size of a person, and the rest follows from there.

The age of the individual architect is gone. There are a few architects – Correa, Doshi among others. I've no great feeling for modern works. They are interesting as individual buildings, as feats of engineering. A lot of good modern buildings remind me of furniture. There's one particular one in Trivandrum that looks like a harmonium. About other buildings, I just don't know. I am completely outside the mainstream of current architecture.

Q. *People have started talking of mud housing as the great liberator, perhaps the only solution to the one-family, one-home idea. Do you see it that way, as well?*

A. People who can pay for their buildings, I usually sound them about compressed earth blocks. They always say, it's very interesting but, Mr. Baker, you've got to realise this represents my whole life's savings and I'd want the house passed on to my son, etc., etc.

It's very, very difficult to get clients for mud buildings. When it comes to the poor, who've already been living on mud, they know it only for its disadvantages. Their dream is a brick and cement home. A school I'm doing for the deaf and dumb near Cape Comorin is a mud building using compressed

blocks and concrete roofs. My client in this case is an Englishman married to an Indian. And he is a teacher and very keen on the rugged rural look. What I've wanted to do is a colony for fancy people. And I think we should do buildings in mud but the clients just don't come my way – they are just not prepared to take the risks.

Q. *Perhaps it should start at the top with the upper middle class, moneyed people, living in mud buildings.*

A. Yes, may be the Prime Minister's residence... that's why I hesitate when I am offered a commission, because what I've got left of a working life I'd like to concentrate on mud. Not something rural and folksy but proper decent mud building. My dream is to get hold of some realty industrialist who will produce a piece of land and allow me to put up a mix of housing all in mud and rent them out. I'm very keen to develop this idea of rental building; at the moment we have them only for offices; but say someone is working in the city he should be able to rent a mud apartment.

Q. *It raises a lot of questions about ownership of land in the city. After all, why should one man own an acre in the centre of town, the other nothing – it's not equitable.*

A. It's ridiculous for the government to announce "a house for everybody before the 21st century." They won't get it anyway. Of course my main interest in mud is not just that it makes better buildings but also how much energy is involved in producing the material. To me, if we are going to meet the challenge of 25 million needing a house in the 21st century, I'm sure it's not possible in the conventional way whereas I think it could be done in mud.

Q. *But it would require a lot of changes in building policy byelaws, etc.*

A. Yes. Mud buildings are not allowed in urban areas. There's a school that ASTRA (Application of Science

and Technology for Rural Areas) has done in Bangalore for the children of the Indian Institute of Science staff – a big complex of buildings using compressed earth blocks. In the city it was approved by the Bangalore authorities, which is a very big step. It works very well – after all, what more destructive clients can you have than children?

- Q. *A recent article suggested that your method of working is rather unique and that you spend your afternoons rummaging through junk, recycling waste.*
- A. A lot of material can be recycled, even if it's old fashioned. One of my clients pulled down an old house and we built a new house, bigger than the original and still had bricks left over. Of course in those days, people built thick walls and the bricks were much stronger. So we built nearly twice the floor area in about half the material. The old tiles and wood were all of superior quality.

Quite often clients do have old property which is difficult to upkeep. They are no longer living there – so they end up pulling it down and rebuilding at half the cost of the building. I think a lot of the need for new housing is exaggerated because a lot could be done to upgrade what's already there. Of course, the easiest thing is to bulldoze and rebuild, but less so now because of labour costs.

- Q. *When you were designing this room, for instance, what were the decisions that occurred on paper and which were spot on-site decisions?*
- A. I draw something mostly for the benefit of the authorities but on the whole I design as I go along (shows me bits of paper in pocket). What's the point of drawing everything really? Most of my drawings are done when I'm driving along.
- Q. *You make a number of decisions that most architects could never make without an engineer. At times it seems that you are almost testing or teasing the material – the thin brick walls, for instance – by*

*taking it to the very edge. The way Maillart did for concrete. Nobody could realise that concrete could be so delicate till he built all those bridges.*

- A. Well, I've been brought up with the idea that they (engineers) are people you can consult if you're in a hole or if you are designing something special. Now we think of air-conditioning as something you apply to a building. You run a duct through a false ceiling or stick a box in the window, but the architect no longer cares. He knows if he can't do something he can always fall back on the mechanical engineer.
- Q. *Do you change your method of working, design and construction when you build outside Kerala – in U.P. or Gujarat, for instance?*
- A. Oh, yes. Very much so. I have to go along with the local style to which I bring my own adjustments and variations. I think it's foolish to impose your own ideas when you're dealing with people who know what their problems are, and you can't know these till you've actually lived in a place. The soil may be riddled with white ants, or the wind may blow in a particular direction. Of course, if I see they are doing a lot of concrete boxes, and I can make something better, I'll demonstrate it to them. I don't expect any innovations to take hold for a long time. It's a very slow process. Now, for instance, in Trivandrum, I find a lot of *jaali* walls. When I first came (some 20 years ago) the flat concrete roof was everywhere; now the sloping filler tile roof which I do is becoming fashionable. Of course, it's taken 16 years.
- Q. *You are the adviser to the Kerala Government on housing. To what degree do you influence the design of new housing colonies?*
- A. I do get on these housing committees, but our interests are different. They don't want to cut down cost; I try to build cheaply, using elements from traditional architecture but updating them to 20th century technology and life-styles. So I go on and on, year after year; they listen and do just what they want.

## M. J. P. MISTRI – DESCENDANT OF MASTER BUILDERS

An interview with Smita Gupta



*M. J. P. Mistri's father, Jamshetji Mistri.*

*A little less than two centuries ago, an adventurous young Parsi by the name of Mistri undertook the arduous journey to Bombay from his native Navsari in Gujarat, lured by tales of this rapidly growing city. In the years to come, as the city prospered, so did his family. Today, his descendant Minocher J. P. Mistri, courtly and gentle, laments the rapid decay of the boom metropolis his forefathers helped to build. Sadly, with M. J. P. Mistri's generation (his elder sister, too, is an architect – she was, in fact, the first woman to join the profession in this country in 1936) his family's association with the building profession will die. None of the present*

*generation – despite the ready-made practice – has the desire to carry on the occupation of their ancestors.*

*Interestingly, Mistri and his sister are the first trained architects in the family. Their father, Jamshetji Mistri, sent all his children to England to study. While the two daughters were recalled after they had finished school, the sons stayed back. At the public school where he was studying, Dulwich College, M. J. P. Mistri found himself taking to fine engineering – machine designing – a subject which he hoped to pursue thereafter. His father, however, had different plans. He wanted him to become an architect and persuaded him to enrol just for a year at the School of Architecture in London (run by the Architecture Association).*

*In the course of that year, a holiday in France brought him in contact with the famous French architect Le Corbusier and Mallet Stevens. He immediately began to read everything that Le Corbusier had written, attended his lectures and even ventured to discuss things with him. And so M. J. P. Mistri became an architect. After working for a while in England, he returned to India in 1939, because his father's health was failing. His elder sister had already joined the family firm, after a stint at the Sir J. J. School of Architecture.*

*Mistri's career saw him building in Bombay, Karachi (where his father had established an office) and elsewhere in the country. He recalls with pride the low-income tenements he built in 1940, which still stand without a crack, and hospitals in Ahmednagar and Anand. Mistri remembers the time when the Emperor Reza Shah Pehelvi commissioned the firm to build the houses of*

Parliament and a large textile mill in Teheran. All the drawings were prepared and all the plans and specifications approved and eventually submitted in Teheran. But while the schemes were being processed in the country from which the Parsis fled in A.D. 650., turmoil resulted in the emperor's abdication.

*M. J. P. Mistri recently spoke at length of his family's association with the building profession. Excerpts from an interview:*



*Atas Behram,  
A fire-temple in Surat built by Jamshetji Mistri.*

Q. *How far can you trace your family's association with the building profession? What kind of training did they have and what materials did they use to build?*

A. My family has been engaged in the building profession for at least five generations, originally in Navsari. Before the advent of academic courses, people were trained as apprentices, with skills passing down from father to son. A certain amount of practical training went with their upbringing, particularly in carpentry.

In those days, building work was undertaken by *mistris*, in the capacity of both architect and building contractor. This was a practical proposition because the general line of building was of a simple nature. The style and character of architecture in old Gujarat was moulded by the use of local materials, requirements and the building techniques available. Almost all the work in Navsari was in wood in those days, right down to the embellishments – all those marvellous doorways, for instance. There was no concrete or cement but stone was used for spanning things and for floors, though not very much.

Q. *When did your family move to Bombay?*

A. Towards the end of the 18th century. One of my ancestors had heard a lot about this city so he and some friends made an expedition to Bombay. Remember, it was in the days before the advent of the railways and organised transport. He was so impressed by what he saw that he never went back – he was convinced there was a big future here and so he arranged to have his family join him.

Q. *How did he establish himself in Bombay?*

A. In a growing city, there was more and more demand for builders and he and his two sons did not find it too hard to make their way. At that time, it was possible to tender for big governmental jobs, even if they had been designed by someone else – military engineers, for instance. Professionalism had not

developed and it was not considered unethical. (Today, a qualified architect is not allowed to have any financial interest in a building operation he is connected with.)

So it was that my forebears came to build the Royal Mint (it was dismantled only in this century and on its old site near Flora Fountain stands the New India Assurance Building) and the Colaba sea-wall. But on both those jobs, my family suffered considerable financial losses, due to escalation in costs resulting from a war in which Britain was involved. Interestingly, the government had entrusted the charge of the execution of those two jobs to a committee of prominent Indian citizens, who eventually decided against the allowance of increased rates in order to establish the sanctity of contracts.

They decided in the family that these contracts were a risky proposition. Already, a new style of functioning was emerging with architects doing one job and contractors another. The difficulty was that there was a big debt to pay. So they continued to take contracts. It was only towards the end of my great-grandfather's life that the debts were finally settled. He retired and then his sons carried on.

Q. *Which part of Bombay did your forefathers settle in?*

A. The old family house is in Girgaum. Whether my forefathers lived anywhere before that, I don't know, but I doubt it. Most Parsis at that time lived in the Fort area or just a little outside it and Girgaum was one of those areas.

The house is on its last legs and could collapse any day. It was built by my grandfather, though there was probably a smaller house before that. In the middle of the last century when it was built, Girgaum was a very nice place – not the crowded area you see today. I have seen the plans of that time. There were only a few houses – *wadi* they used to call them. The area was full of coconut trees – from which toddy used to be tapped – there were a few

bungalows scattered about, and just beyond Queen's Road there was the sea.

Q. *Did the concept of the master builder end with your great-grandfather's generation?*

A. No, it didn't, except in my family. It was only later when professional ideas from Europe came in that it was more or less forbidden. Although my father and grandfather had stopped taking contracts, the practice continued probably till the turn of this century.

Q. *With the British ruling India, did your forefathers face any difficulties or discrimination?*

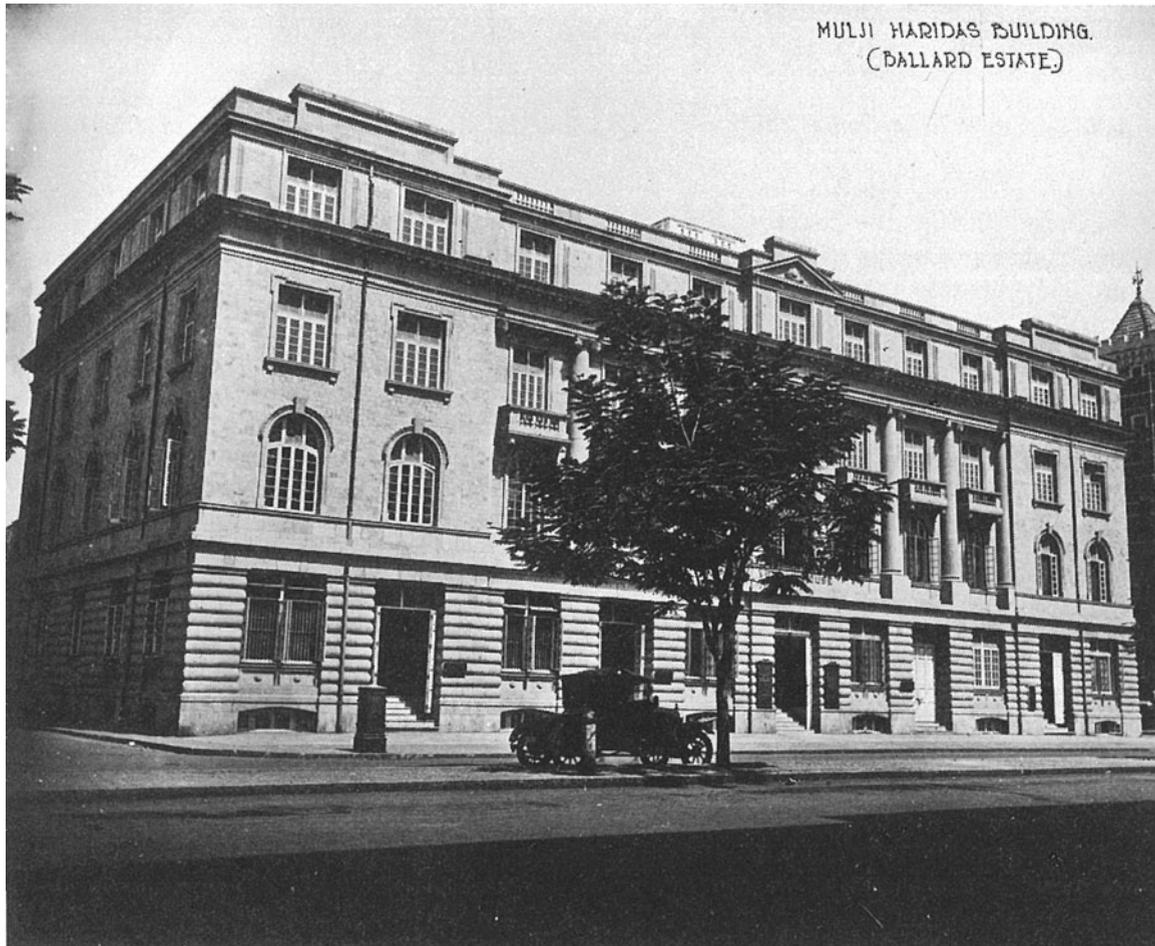
A. No, I don't think so. In professional circles, the British were very reasonable. In fact, as urban development increased apace, schools for training civil engineers were established. Much later, a handful of architects established a school for architectural draftsmen, upgrading them to professional courses in this century.

Q. *Where did your grandfather build and what were the influences in his generation?*

A. I should imagine that before my father began to build outside, it was probably only in and around Bombay, because transport and other facilities were not so readily available.

In those days apart from skills handed down from father to son, they used to teach themselves – read books, including those from the West. Work in the mofussil areas also influenced them, though in a place like Bombay there were more foreign influences. For business purposes, they built imitations of what was being built in Europe at that time because office buildings were coming up.

This imitation, I feel, was a necessity because we had a very evolved style of architecture right upto the Mughal period, an architecture suited to very different conditions of work, life and organisation of society. From this, we took a quantum leap, especially in the cities, into what one might call the



machine age. Now normally in a country, this evolution takes place over a long period of time in which it adapts itself to changing conditions. We unfortunately had no opportunity to evolve gradually. What we had was not readily adaptable to building cities and urban life. The British were there to show us what could be done. And they also had to adapt. They, too, were not capable of amalgamating their architecture with ours. And so there was a long period when we lost our way. I don't think we've found it yet.

Q. *Your father, I believe, was the first in the family to receive professional training.*

A. Yes. My father was born around 1860. After taking a degree in civil engineering from Poona, he was offered a government job – highly prized in those days – but he declined it because of a strong urge to practise. He set up his own firm a little over 100 years ago. Though he was a civil engineer by training, he was an architect by predilection. He soon established himself in a preeminent position in the profession, often siding with architects rather than civil engineers on professional issues. His advice was frequently sought by official bodies, individuals and even members of his own profession. He served on many committees, particularly those relating to Bombay and its development.

Q. *What did he build and were his activities confined to Bombay?*

A. In the course of his extensive practice, he built hundreds of buildings all over the country. His speciality was the building of textile mills in India and Ceylon, probably because the birth and the phenomenal growth of this industry coincided with the heyday of his career. Besides these, many of his factories, residential, office and school buildings, theatres, churches, mosques, temples and fire temples still adorn the streets of Bombay and other cities.

Among them are the Oriental Life Insurance Building in Calcutta; the Mohotta Palace, the Mama Palace and the Central Bank Building in Karachi; the Royal Palace and Guest House, the General Hospital, the Solarium (the first of its kind in India) and the Museum and Art Gallery in Jamnagar; the Yusuf and Ismail Buildings near Flora Fountain, Prospect Chambers, one of the buildings for the University and many more in Bombay.

An odd but interesting house built by him for an Arab client – Jassim House – still stands in the middle of Cuffe Parade. All the plans for this building were prepared just before the client went abroad. When he saw the plans he expressed great disappointment, since he had expected something in the Saracenic or Mohammedan style. The plans were prepared again and sent to him in London. He was very pleased with the revision and so the house was built.

Q. *Was your father's approach to building different from that of his forefathers because of his professional training?*

A. Yes, my father's approach differed a great deal both in theory and practice and aesthetics. The whole meaning of architecture was different for him. Previously, architecture tended to be dictated by the quantum of accommodation required, not by the pattern of living and working to be adopted.

Q. *How did your father establish his practice?*

A. My father was an extraordinary man. The little time I spent with him was an eye-opener. In those days, the textile industry used to go through frequent ups and downs. You had to be very careful to survive a depression. Now the owner of Swadeshi Mills in Girgaum wanted to build an additional two storeys without disturbing the working of the mill, because he couldn't afford to stop work even for a single day. He contacted several architects, all of whom expressed their inability to undertake the project. Then he spoke to my father, who was very new in the profession. He instantly agreed to do it. He improvised a cover and did the job.

Another time, in the early days of his career, the office of the Gresham Insurance Company of England at Flora Fountain was facing a serious problem. It was rapidly sinking. Several architects were contacted but nobody had any ideas on how to save the situation. Finally, the company sent for their architect in England. He too was perplexed.

Then someone suggested that my father, Jamshetji Mistri, be consulted. So the British architect called my father, who took a quick look at it and said he could stop the sinking by injecting cement mixed with some other materials under the foundation. When the British architect looked disbelieving my father merely said, "I'll do the job for you. You go back to England. Wait for a year and then pay my fees if you like. Does that satisfy you?" The man was impressed by that and asked him what his fee would be. Without a moment's hesitation – he was always very quick – he said, "Ten thousand rupees." It was a large sum of money but there was no alternative except to demolish and rebuild. So he agreed. The building is still standing today. It was things like this that helped my father build up a whopping big practice. You could say that he made a real contribution toward the building of Bombay.

*Jassim House on Cuffe Parade, Bombay.  
Embellishments were added to the original plan ►  
to suit the taste of an Arab client.*



## ACHYUT P. KANVINDE – DOYAN OF INDIAN ARCHITECTURE

An interview with M.N. Ashish Ganju



*Kanvinde discusses a point with Walter Gropius at Harvard.*

*With an architectural career spanning 45 years, Achyut Purushottam Kanvinde has been a key participant in the growth of modern Indian architecture. Born in a village near Bombay some 70 years ago, his early childhood was spent in the rural habitat. His father was a painter, and young Kanvinde became very fond of sketching and drawing. After school he naturally wanted to become a painter, but this was a period of economic depression, and he thought it wiser to enroll in the Department of Architecture at the J. J. School of Art, Bombay. From 1936 to 1941 he was trained here. His early apprenticeship was with the firm of Patki and Dadarkar in Bombay. This was a time, recalls Kanvinde, when opportunities for young architects were very limited. There were a few major architectural firms established during British rule in India, and these dominated the market.*

*Over his long architectural career – first with*

*the government and then in private practice – Kanvinde has found time to devote himself to the promotion of young architectural talent in the country. He was on the advisory councils of several schools of architecture which were grappling with the problems of establishing a suitable academic framework to meet the needs of an expanding Indian economy. The Indian Institute of Architects was simultaneously making great efforts to stabilise the codes of practice for the profession, and Kanvinde made major contributions to this area, eventually serving as President of the Institute from 1974 to 1976. He was also, from 1974 to 1979, Member of the Delhi Urban Arts Commission, the first such commission to be set up in India. Over the years Kanvinde's architectural idiom acquired a strength and individuality which exerted a powerful influence on the emerging young professionals, especially from the Delhi School.*

Q. *You were probably one of the first Indian architects to study abroad, weren't you?*

A. Yes, in February 1946 I joined the architectural programme of the Graduate School of Design at Harvard University. As I remember it, Harvard was at this time a focus of intellectual and creative energies which had been suppressed during the second world war. Here, under the guidance of Walter Gropius, I encountered the thinking and teachings of the European masters of the Bauhaus – Albert Bayer, Moholy Nagy, Marcel Breuer, and the Swiss-American architectural historian Siegfried Giedion. Some of my fellow students here were Paul Rudolph, I. M. Pei and John Perkins.

Q. *What was Harvard like in those days?*

A. The school atmosphere was very liberal, with student activity going on continuously day and night, and a quiz being held every week. There were well organised reading lists given to the students. The classes in History of Architecture exposed me to mediaeval European architecture leading upto the development of Venice. Modern architecture was studied with particular emphasis on developments during the previous 100 years, including the great exhibitions which brought to light the major technological advances of that time. It took me almost six months to orient myself to this new atmosphere; I think that this period of training was for me an intense learning experience.

Q. *When did you return to India?*

A. I came back in the latter half of 1947, and joined the Council of Scientific and Industrial Research, one of the Central Government organisations responsible for the development of science and technology in India. Here I was involved in the design and setting up of new research laboratories all over the country. I had to liaise between government departments and private architectural firms who were commissioned to design the National Physical Laboratory, the National Chemical

Laboratory, and such others. It was during this period, that I had to tackle the problems of flexibility, growth and change, and the criticality of functional usage in planning and building design. My own architectural contribution came with the design of the Council of Scientific and Industrial Research headquarters in New Delhi, the Central Building Research Institute in Roorkee, and the Central Engineering Research Institute in Pilani.

Q. *But you left government, didn't you, to set up on your own?*

A. Well, not on my own, but I established a private practice partnership with Shaukat Rai, a civil engineer and structural designer, in New Delhi in the 1950s. I think we were both charged with the ideas of the Bauhaus teachers, and fired by the vision which seems to have gripped the minds of powerful policymakers in India at that time – that science and technology held key to the growth of the nation. In the next few years our firm – Kanvinde and Rai – executed several important commissions. These buildings, it has been said, helped to establish the International Style in India.

Q. *Did your ideas meet with any opposition?*

A. Oh yes, they did. There was a strong lobby resisting the straightforward adoption of the International Style, with Claude Batley (who had established the Department of Architecture at the J. J. School of Art) as one of its leading protagonists. They held that traditional Indian character and motifs in building had to be expressed in contemporary work. I was faced with the task of resolving the divergent ideologies when I was asked to design the headquarters for the Indian Council for Cultural Relations in new Delhi, some time in the mid-1950s. I had to try to reconcile several forms of expression – and I think the effort was successful. You see, the planning rationale for the building as well as its volumetric composition is derived from the Bauhaus tradition; yet in its treatment and finishing there is

a blend of modern technology and traditional Indian motifs. Reinforced concrete shells were used to refer to domes and arches, while precast concrete sun-breakers echoed the stone *jaalis* of earlier periods.

Q. *What would you say are the main elements of your architectural philosophy?*

A. Over the years I have come to believe it is imperative that an architect develop a sensitivity to human nature and a respect for human values. This, after all, is at the very core of his work. In India the search for a new architectural expression must continue – and this must go beyond the satisfaction of matter of fact functional needs. I think the designer’s sensibility here must become aware of the accumulated wisdom of generations, but this should go together with the idea of progress reflected in the evolution of technology. In my own case, I must acknowledge my tremendous debt to Gropius – it was he who really exposed me to the power of technology on the one hand and the psychological dimensions of spatial organisation on the other. Actually my present concerns and realisations are all reflections of my earlier preoccupations: as a student at the J. J. School in Bombay my thesis was on “Architectural Composition and its Application to Indian Architecture”.

Q. *Have there been any marked departures in style during your long career?*

A. I think the decade of the 1960s brought a new phase of self-discovery. I see now that the large slab blocks and clean lines emerging out of a strict orthogonal geometry – characteristic of Gropius and the International Style – began to break down and I was searching for a more human scale. Take my design for the residence of Jaykrishan Harivallabdas, the Ahmedabad textile magnate. My overriding intention here was to generate a spatial organisation responsive to climate. So I created a cluster of modules in relation to the garden in which the house is placed.

The idea was to avoid the use of mechanical air-conditioning by skilful use of cross-ventilation currents through the interior of the house, and by ensuring that all the rooms were related directly to the garden outside.

Q. *What are your observations of vernacular architectural styles here?*

A. I have travelled all over the country and observed the variety of settlements in different parts of the land. And I am always struck by the purposefulness of the building design, the extremely simple means used to express a richness of experience. I remember especially the plasticity of mud buildings in the Punjab and other inland plains; and the coastal areas like Kerala where there are large overhanging eaves to keep rain off the walls. All these are examples of a technology known to man, and the expressiveness of a vocabulary which had stood the test of time.

Q. *I would like to ask you about the decade of the 70s, when the firm of Kanvinde and Rai received major commissions, many for large institutional campuses?*

A. Yes, during this period our projects were certainly increasing in size and complexity. I had to work with specialist engineers to resolve the needs of sophisticated structuring and services which came with the spread of the industrial culture in India. One of my most challenging assignments was the Dudhsagar dairy plant at Mehsana in Gujarat, which was completed in 1974. Here I worked with the engineer V. H. Shah, a dairy specialist, now the managing director of a major milk cooperative in India. I used the slope of the site to evolve a multi-level design which ensured the principle of gravity feed for the plant operation. Another critical problem here was the dissipation of excessive heat generated in the plant area. I had to resolve the requirements of movement, structure, and mechanical servicing and I did this by composing

clusters of vertical ventilation ducts rising above the plant area. The milk receiving section of the building became a reinforced concrete deck for the movement of trucks at a higher ground level, from which it could be gravity-fed to the processing areas at lower levels. My aim was to synthesise a fairly complex industrial process into a powerful building form, with the minimum use of mechanical aids.

Another major project was the office of the National Dairy Development Board in New Delhi. For this I developed a design vocabulary which responds more directly to the needs of the interior spaces of the building. The external form becomes an assemblage of rooms, balconies and other parts of the building, composed around the structural frame and the vertical circulation elements. There is greater use of colour, and there is variety in the external finish with the aid of plantation features on the balconies at upper levels of the building.

- Q. *What contribution do you think modern Indian architects have made towards solving the twin problems of mass housing and urban development?*
- A. I don't believe that a full expression has yet emerged in this arena. While tackling urban problems the major benefits have been acquired by the industrial/

commercial interests, and by the middle men along with white collar bureaucrats, who have ignored the role being played by the real contributors to the urban system – the mass of the people. The process of urbanisation is a major opportunity of, on one hand, generating economic benefits for the industrial and commercial sectors; while on the other hand, the real potential benefit – which is not being effectively recognised by the leadership – is of using the urban resources to effectively help develop man in terms of education, culture, recreation and leisure, which essentially contribute to overall human development.

We have in our country a large section of the population living and working below the poverty line. I feel that the real challenge of our time is to synthesise urban strategies in a way that both the well-to-do elite and affluent class of population, as well as the downtrodden, have common sharing of urban social structures. This would ensure a realistic future for the emerging new citizen. Equally important is to cherish the past and recognise the importance of conservation in relating the new urbanisation with inspiration drawn from our ancient heritage. The third important concern is to keep the situation open-ended for providing all-round contribution and development for posterity.

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Imtiaz Dharker

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Hasan Shaikh  
Acme Film Services

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Direction:  
Imtiaz Dharker

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Production assistance:  
Romilla Mukherjee  
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Multivision

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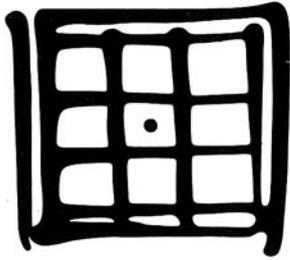
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Vistara-  
The Architecture of India

Excerpts from the Audio-Visual  
Storyboard : Imtiaz Dharker

Visual



Description

A sweep of sky. Dissolve to  
 a range of mountains:  
 The Himalayas.  
 Superimpose title.

A drop of water becomes a  
 waterfall. Water flows downward  
 across the screen, dissolves to  
 an aerial shot of a great  
 river, winding across plains.  
 Mix in sculpted images:  
 Ganga, Varuna.

People begin to appear,  
 spreading clothes by the river,  
 using water in various ways.

Man drinking water.  
 Village well.

Caption

(Audio)

(SFX: wind)

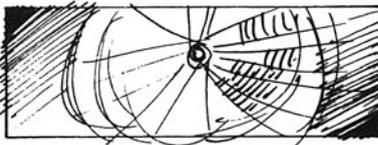
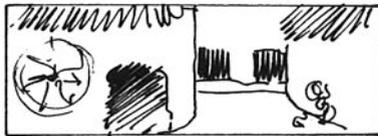
Vistara-  
The Architecture of India

(SFX: water drop  
 rushing water,  
 water flowing,  
 lapping )

(Clothes being  
 washed,  
 clinking pots,

water pouring,  
 the creaking of a well)

Visual



Description

Dissolve in slowly, a village,  
as if it has materialised out  
of sand.

People at work, using spaces.  
A child appears in the window.

Community living; well.  
Open cooking area  
Use of 'otlas', space outside  
the houses.

Exterior: decoration on walls.  
Interior: details of construction  
Men and women at work.

Wood-carving.  
ceiling details. Circular 'gul'  
motif.

Relief work in clay,  
on walls, granaries.  
Motifs repeated

Children wearing jewellery.  
Circular patterns repeated.

Hands close-up doing  
embroidery. Patchwork embroidery  
dissolves to 'patchwork' aerial fields.

Caption

Banni district  
A desert settlement

(A child begins to sing  
quietly, as if to itself)

Man as the measure

In a warm climate,  
space itself is a resource.

Here, the builder  
is the user

Motifs are repeated,  
in wood, ...

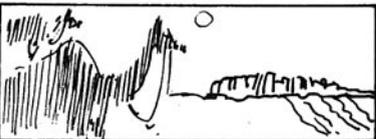
clay ...

jewellery ...

embroidery ..

(Music change)

Visual



Description

Aerial view changes to hillside and greenery. Assamese village: hill dwellings. A man constructing his house.

Details of woven bamboo: patterns on house fence, boy's hat, basket, bridge.

Dissolve from greenery to water. Kerala waterways. People living on the water.

Kerala: nets

Dissolve sea to sand. Camel caravan. Out of the desert, Jaisalmer Fortress walls, streets, facades. Unity of building style, use of stone, details, carved motifs.

City walls. Change to street, shaded by balconies. People using the street.

Caption

Audio

Assam region

Men build as naturally as birds build nests

Bamboo used for a variety of purposes

(SFX: water)

Kerala - living on the water

(lapping water)

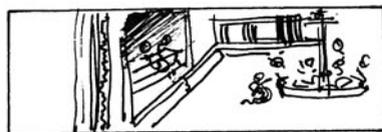
(heat haze)

Jaisalmer - an oasis town on the caravan route from Central Asia.

A single building material - stone.

Sheltered from invaders... and from the elements.

Visual



Description

Change to a city skyline.  
Look down on traffic,  
rickshaws, horse-carts.  
Tilt to look down to Pols,  
lanes.

People using spaces in a way  
reminiscent of the village,  
sitting in front of houses,  
around courtyards.  
Community worship.

Change to squatters'  
settlement, rooftops.

Use of tin, plastic for  
construction

Yet as we move down lanes  
and into courtyards, we  
are reminded of earlier  
images: courtyard, pottery,  
shrines, tubs, women at  
pump. Insistently, signs of  
'modernity' appear: Use of  
plastic, loudspeaker, TV aerial.

Caption

Audio

In a metropolis  
(SFX: traffic)

A traditional pocket-  
the Pols of Ahmedabad.

Age-old patterns recur...  
(SFX: an assault  
of voices,  
sounds)

A squatters' settlement,  
Dharavi, Bombay.

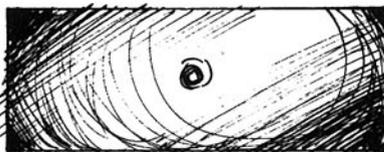
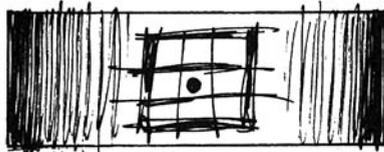
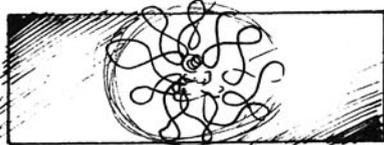
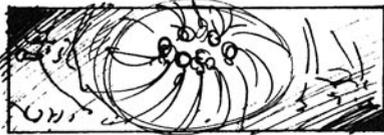
Building materials-  
the waste products  
of industrialisation...

Yet the underlying patterns  
are those of another past...  
Side by side with traditional  
values... (SFX: bell)

new myths are appearing-  
(SFX: radio).

signs of 'modernity'!

Visual



Description

Housewife decorating floor: 'rangoli'. Pattern on doorway. Woman wearing 'bandhni' sari, repeating image of centrality. Pattern repeated in painting.

Raasmandala: pattern of feet during dance.

Devgana ceiling: Man and the subjugation of the ego.

All circles dissolve to 'bindu'. From the 'bindu' build up a mandala 1-9.

The mandala explodes into a yantra... emerging...

and returning.

Caption

Audio

What is the pattern ... connecting craft ... art ...

dance ...

sculpture ?

An underpinning order ...

the emerging mandala.

(SFX: heartbeat)

A magic diagram of the non-manifest, which underlies the manifest world around us...

## LIST OF ACKNOWLEDGEMENTS

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### 5. DRAWINGS

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11. SANCHI STUPA
12. NALANDA
13. ELEPHANTA
14. KAILASA, ELLORA
15. SRIRANGAM
16. MODHERA

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17. CROSS-SECTION OF STEPPED WELLS
18. DAI HARIR
19. ADALAJ
20. SABALI KUND-VAV

## ISLAM

21. TAJ MAHAL
22. PARADISE GARDEN
23. HUMAYUN'S TOMB
24. QUTB MINAR
25. CRAFTSMANSHIP

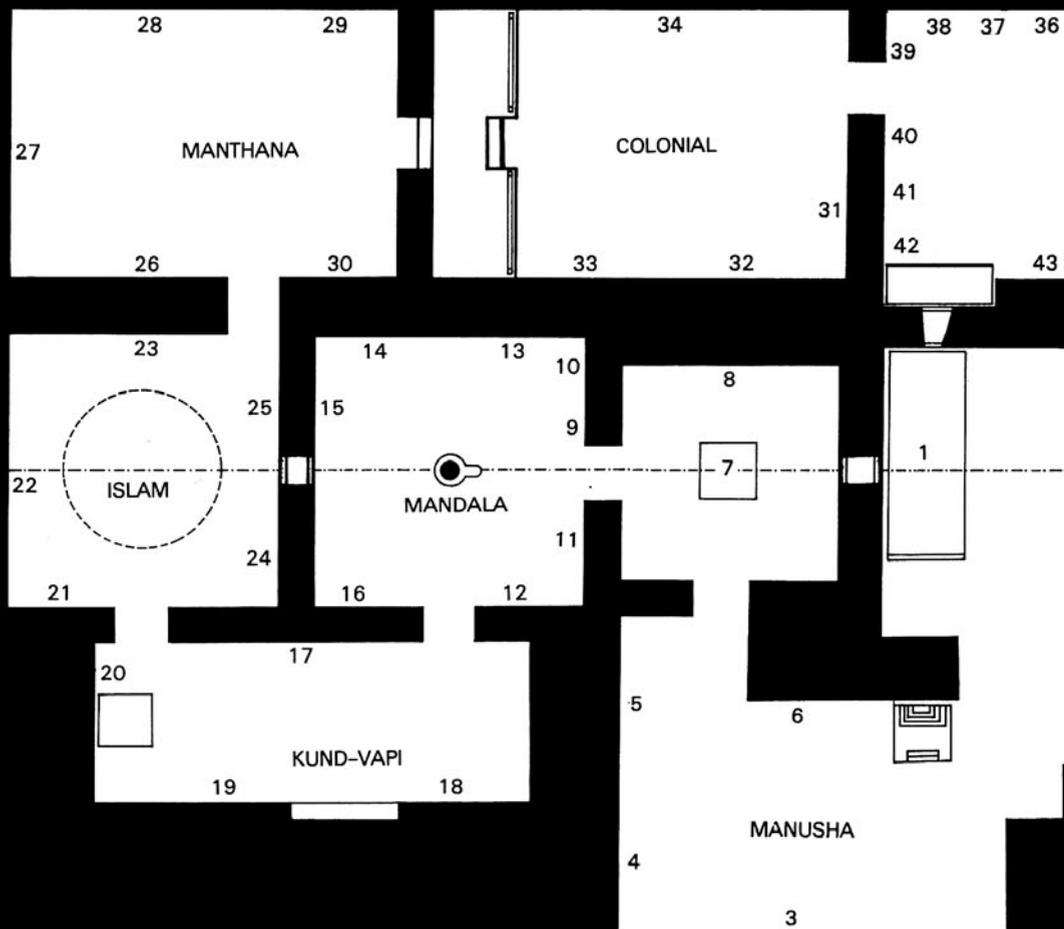
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42. GOLCONDE
43. THREE OPTIONS

# Plan of Exhibition



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59. INSTITUTE OF FOREST MANAGEMENT
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61. HALL OF NATIONS
62. SEMI-CONDUCTORS
63. ESCORTS FACTORY
64. MEHSANA DAIRY
65. ADVANCE MILLS CANTEEN
66. INDIAN EXPRESS
67. KANCHANJUNGA
68. ASHOKA ESTATE

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69. KALAKSHETRA THEATRE
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71. MAULANA AZAD MEMORIAL
72. BANDODKAR MEMORIAL
73. RAJGHAT
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