

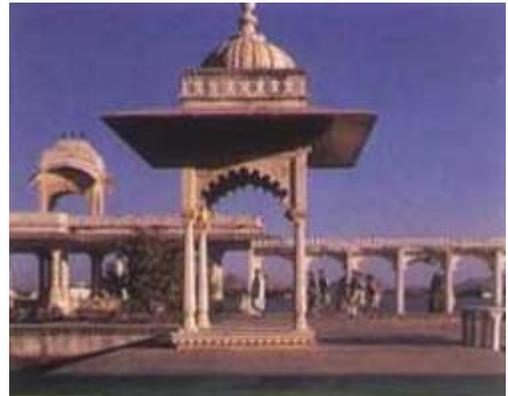
THE BLESSINGS OF THE SKY

Charles Correa



Throughout human history, the sky has earned a profound and sacred meaning. Man intuitively perceived it as the abode of the Supernatural. Hence to climb a path to the top of the hill, where the Gods dwell, is a paradigm of such mythic power that it has been central to the beliefs of almost every society, since the beginning of time.

Thus the great Hindu temples of South India are not just a collection of shrines and gopurams, but a movement through the open-to-shy pathways that lie between them. Such a path is the essence of our experience – it represents a sacred journey. A *pradakshina*, a pilgrimage. And this sense of the sky extends to the architectonic vocabulary as well: as witness the walls around Rajasthan palaces and Moghul forts, crowned with patterns that interlock builtform with sky – and the wonderfully evocative *chattris* (umbrellas) along the roofscape, capturing fragments of the infinite heavens above.



Rajasthani chattris

In India, the sky has profoundly affected our relationship to builtform, and to open space. For in a warm climate, the best place to be in the late evenings and in the early mornings, is outdoors, under the open sky. Such spaces have an infinite number of variations: one steps out of a room. . . into a verandah. . . and thence on to a terrace – from which one proceeds to an open courtyard, perhaps shaded by a tree . . . or by a large pergola overhead. At each moment, subtle changes in the quality of light and ambient air generate feelings within us – feelings which are central to our beings. Hence to us in Asia, the symbol of Education has never been the Little Red Schoolhouse of North America, but the guru sitting under the tree. True Enlightenment cannot be achieved within the closed box of a room – one needs must be outdoors, under the open sky.

These open-to-sky spaces have very practical implications as well. To the poor in their cramped dwellings, the roof terrace and the courtyard represent an additional room, used in many different ways during the course of a day: for cooking, for talking to friends, for sleeping at night, and so forth. And for the rich, at the other end of the income spectrum, the lawn is as precious as the bungalow itself. Thus in traditional villages and towns all over India, such open-to-sky spaces are an essential element in the lives of the people. Examine, for instance, the village of Banni in Kutch, where the



The Lord Buddha at Borabudhur



Guru under the tree



House in Banni village

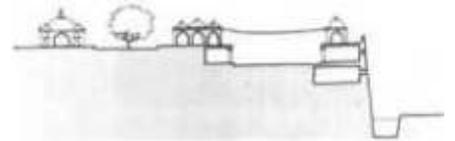
Houses consist of a series of circular huts around a central courtyard. Each hut has a specialised function: one for visitors, another for storing grain, a third for sleeping, and so forth. The family moves from one hut to the next, depending on their need, the time of day, etc, in a nomadic pattern of astonishing style and natural sophistication.

Then again, consider the Moghul Emperors in their magnificent Red Forts at Agra and Delhi, living in a similar poly-centric typology. On the roof terraces of these forts, we find truly elegant patterns of free-standing pavilions, placed in immaculate gardens, inlaid with fountains and channels of running water. As in the village of Banni, these pavilions are differentiated as to use: the Diwan-l-Am for receiving visitors, the Moti Masiid for prayers, the hamams for bathing, and so forth.

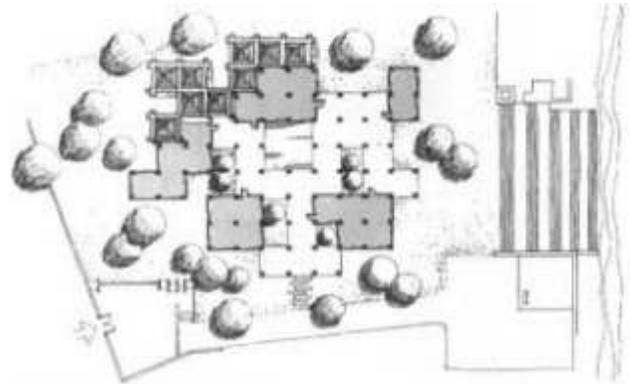
Given the cold winters of North India and the annihilating heat of its summers, how did the Moghuls manage to live in such a disaggregated pattern of pavilions? The answer lies in the sunken courtyards, which give access to a lower level of rooms in the early morning of the summer months, a velvet shamiana (canopy) is stretched over the rim of the courtyards, trapping the cold overnight air in the lower level of rooms. This is where the Moghul Emperor spends his day. In the evening, the shamiana is removed, and the Emperor and his court come up on to the gardens and pavilions of



The Red Fort at Agra



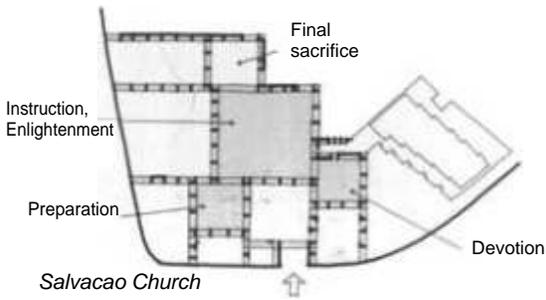
Diagrammatic section of Red Fort



Gandhi Smarak Sangrahalaya

The terrace level in the cold but sunny winters, this pattern is reversible: the terrace gardens being used during the day, and the lower level of rooms at night. The result is a brilliant re-invention of the desert tents of Central Asia from whence the Moghuls came. These Moghuls generated a life-style as royal as Versailles – but with truly aristocratic finesse, their palaces are built on the scale of a tennis court, not a paring lot.

The typologies revealed in these examples are astonishing: flexible and incremental, achieving great spatial richness through minimalist means. They exercise a seminal influence on many of the projects in these pages – starting with one of the earliest, the Gandhi Smarak Sangrahalaya (1958-63) at the Sabarmati Ashram in Ahmedabad. This memorial to the Mahatma is a museum and research centre where scholars come to study his letters, books and photographs. These are housed in a disaggregated plan connected by covered and open areas – a pattern which not only allows for more flexible growth but also gives to the users areas of visual quiet where the eye can rest and the mind meditate.



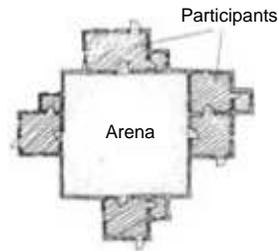
Jama Masjid, Delhi

Another example is the Salvacao Church (1974-77) in Bombay which speculates on what church typology might have been if Christianity had not been headquartered in Europe, but had stayed in Asia where it originated. Yet another is the Sen Farmhouse (1972, unbuilt) outside Calcutta which has four caves (living, sleeping, cooking and washing) placed around a pergola-covered courtyard; at different times of the day, this courtyard can be used in conjunction with any particular cave, depending on the activity. The same principle also generates the Patwardhan Houses (1967-69) in Poona, where the sleeping and cooking functions are housed in square masonry boxes, grouped in a pattern which creates breeze-ways for the living areas.

These typologies were further developed into a pattern which might be termed the Inside-Out Sock. An example is the project for a mud Farmhouse for Mrs. Indira Gandhi (1972, unbuilt) – a concept which re-surfaces again in the Kapur Guesthouse (1976, unbuilt) to accommodate participants in a high-powered think-tank discussing India's future. Here the main arena is a square courtyard made of earth, defined by a high mud wall – with the rooms for each of the visitors as appendages on the other side of this wall. Each suite of rooms has a door opening on to the courtyard, in the centre of which the discussions take place – surely a configuration which should serve to wonderfully focus the mind! What is crucial here are not the formless rooms that lie on the other side of the wall, but the clarity of the central core – hence the analogy of the sock turned inside-out.



Archaeological Museum

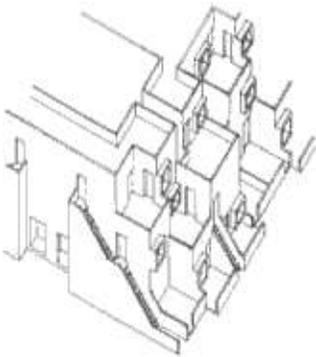


Kapur Think Tank

This concept has also generated the Museum of Archaeology (1985, unbuilt) Bhopal, where the system of courtyards is first clearly defined by a continuous masonry wall, and then the exhibition galleries are built separately and incrementally on the other side of it. This typology of the inside-out sock can also cope more easily with the constantly fluctuating budgets and time-tables of an economy like India's, since the basic architectural statement – the wall – is completed in the first instance. It places the highest emphasis on open-to-sky space – as do the great Islamic mosques, like the Jama Masjid in Delhi, which is really just a large open courtyard with enough builtform around the periphery to make one feel one is within a piece of architecture.

COURTYARDS & TERRACES

Open-to-sky space is also of vital importance in housing where it can make a decisive difference between livable habitat and claustrophobia – particularly so for the lowest income groups. Even in reasonably dense housing, individual terraces and/or gardens for each family can be provided – as in the Jeevan Bima townships (1969-72) in Borivli and Bangalore (1972-74), and the low-income housing (1971-72) for the Gujarat Housing Board in Ahmedabad.



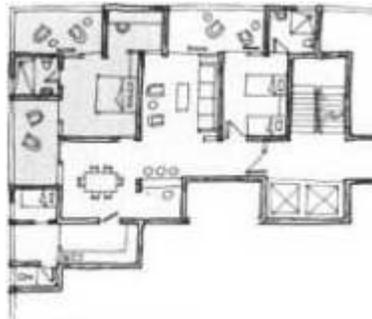
Low-income housing;
Gujarat Housing Board



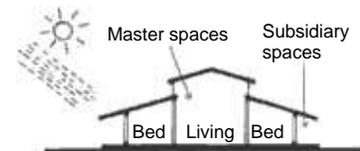
Kanchanjunga



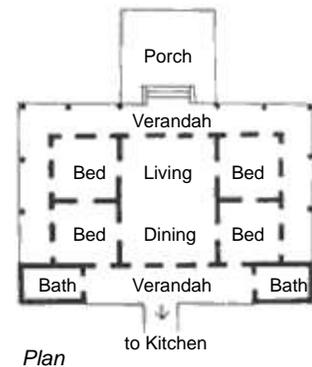
Jeevan Bima Nagar, Borivili



Rallis Apartments



Colonial Bungalow

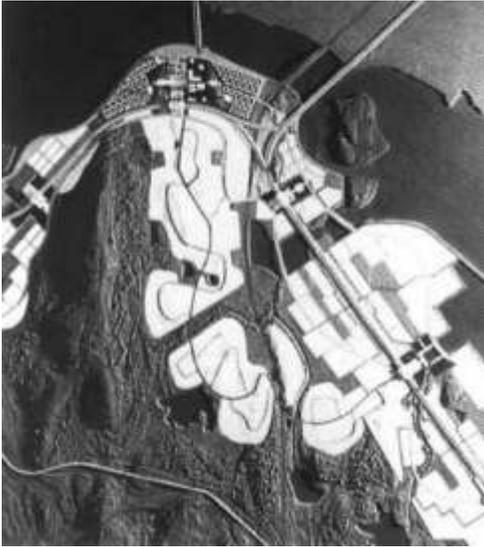


Plan

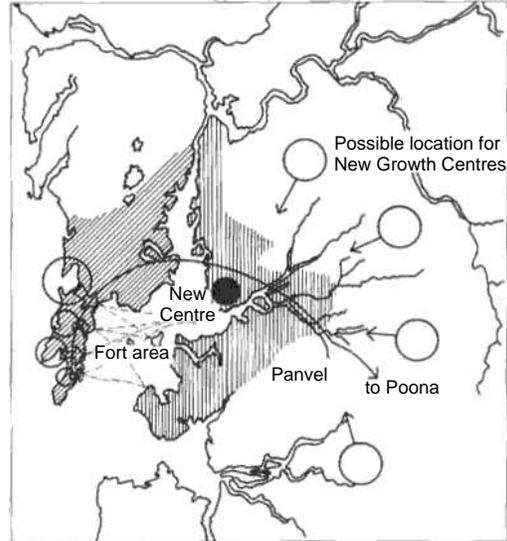
Such open-to-sky spaces not only improve living conditions, but can also have considerable economic value in a developing economy like India, where families augment their income by keeping chickens, or goats (or even a buffalo!). Usually such activities are not encouraged in company-owned townships, but the Malabar Cements Corporation township (1978-82) was an exception. All the families, including those at first floor levels, connect directly to a small piece of land for their exclusive use.

These principles are viable also in the high-rise buildings of Bombay, where the issue is compounded by the hot humid climate. An east-west orientation catches the prevailing breezes, and also the best views in the city, but it also exposes the building to the blistering sun and the monsoon rains. The old colonial bungalows solved this problem intelligently by locating the main living areas in the centre, protected by a continuous verandah running along the periphery - a concept used in the Sonmarg Apartments (1962), the Rallis Apartments and later in the DCM Apartments, where a belt of verandahs, studies and bathrooms forms a protective zone around the main living areas.

Another variation that this buffer zone can take is to turn the verandah into a garden – preferably of double-height. This was the genesis of the Cosmopolis Apartments (1958, unbuilt) in Bombay, and later of the Boyce Houses (1962, unbuilt) in Pune. Finally came the opportunity to actually construct this concept : Kanchanjunga (1970-83), a condominium of luxury apartments in Bombay where the large terrace-garden in the corner forms the central focus for the whole apartment. Double-height terrace gardens are also the focus for each family in Tara Group Housing (1975-78), a high-density complex of maisonettes in Delhi. Here the terraces are covered by a light pergola, since sleeping under the night sky is an age-old custom in the hot dry climate of North India.



Ulwe: The CBD of New Bombay



Planning for Bombay

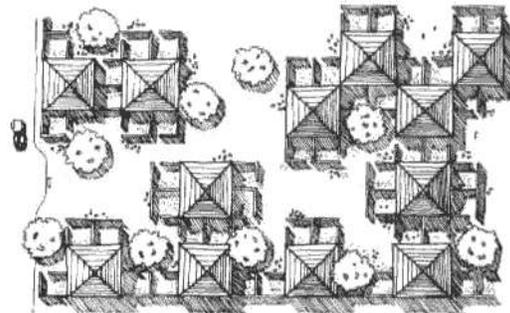


Belapur Housing, New Bombay

URBANIZATION

Such open-to-sky spaces are of course of crucial importance to the poorest inhabitants: the squatters. For the great wave of distress migration that is engulfing our cities in the Third World poses not just the issue of poverty (in actual fact of course, rural poverty is worse); it is really the brutal and de-humanizing patterns that this poverty takes on in the urban context. Obviously there is an appalling mismatch between the way our cities have been built and the way we use them today. For a whole family forced to live in a small all-purpose room, open-to-sky space is truly essential for all the activities for which they cannot find place indoors.

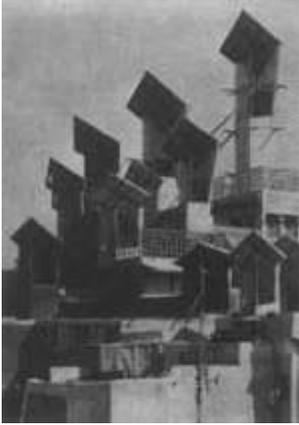
Hence the Squatter-Housing (1973, unbuilt) in Bombay, in which 4 units are clustered together under one roof in a pattern which generates such a continuum (ranging from the most private to the most public) of open spaces. This was further developed in the incremental housing at Belapur, New Bombay (1983-86). Here the housing units are closely packed (at a density, including open spaces and schools, of 500 persons per hectare). Yet each unit is separate, so that it can grow, quite independently of its neighbours. Though the housing typologies provided here cover the entire range of income groups, the plot sizes differ only marginally – thus introducing the principle of Equity (an issue of the greatest political significance to the Third World) – as well as other equally crucial principles, such as: people's participation, income generation, identity, pluralism, and so forth.



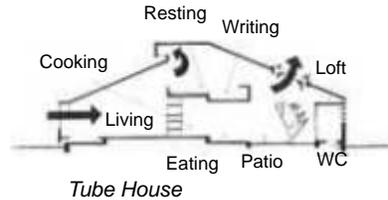
Squatter Housing

Because such patterns of low-rise housing can be reasonably dense (particularly in Third World cities where occupancy per room is extremely high), the overall land needed by the city does not increase very much. In any case, since only about one-third of a city's land is devoted to housing, even doubling this area necessitates only a marginal increase in the overall size of the city but it can make a decisive difference to the lives of the people, particularly of the poorest.

How do we increase the supply of urban land? The section Planning for Bombay, outlines some possible strategies for restructuring the city. Also discussed is the development of Ulwe (1990), the Central Business District of New Bombay, which seeks to establish affordable housing typologies and coherent urban form for the entire spectrum of our urban population, including the poorest. In short: by opening up the supply of urban land, one is using Space as a Resource – a principle of fundamental importance to our urban centres.



Windscoop houses, Sind



Tube House



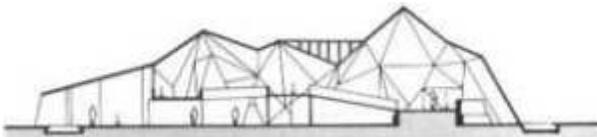
Parekh House



Ramkrishna House



Correa House



Hindustan Lever Pavilion

THE MACHINE FOR LIVING

Another equally critical parameter: Energy. In this century, architects have depended more and more on the mechanical engineer to provide light and air within the building. But in India, we cannot afford to squander resources in this manner – which is of course actually an advantage, for it means that the building itself must, through its very form, create the "controls" which the user needs. Such a response necessitates much more than just sun-angles and louvres; it must involve the section, the plan, the shape, in short, the very heart of the building.

Thus the wonderfully inventive wind-scoop houses of Iran, or the Alhambra in Granada – where the courtyards and water pools are not just arbitrary ornamental decorations, but crucial passive-energy devices serving to make this exquisite palace at least 10 degrees cooler than the surrounding countryside. In such examples indeed, the challenges of a difficult climate have triggered off architectural responses that are not wilful and trivial, but are generated deep in the wellspring of the human imagination. Consider that fundamental typology: the house around a courtyard. To cross a desert and enter even the humblest such abode is a pleasure beyond mere photogenic image-making. Architecture as a

mechanism for dealing with the elements (truly, a machine for living!) this is the great challenge and opportunity of the developing world.

In this, the old architecture – especially the vernacular – has much to teach us, as it always develops a typology of fundamental sense. For instance, in the hot dry climate of North India, most houses are narrow units with common party walls. The two long sides have no heat input, all ventilation and light enters from the short ends and via interior courts. An interesting variation of this pattern can be used to develop a section which modulates temperatures through convection currents: as the heated air rises, it moves along the sloping surface of the ceiling, slipping out through a vent at the top, thus drawing in new air from the lower level to replace it. This principle, first developed in the Tube House (1961-62) also forms the basis for the Hindustan Lever Pavilion (1961) and the Ramkrishna House (1962-64).

The idea progresses further in Cablenagar (1967, unbuilt), a township near Kota, Rajasthan, for which we developed two pyramidal sections, Summer and Winter, to be used at different times of the day and seasons of the year. The Summer section (for the daytime) entraps and humidifies the dry air, thus cooling it; the Winter Section (for early morning, and at night) opens up to the sky above. These formed the basis of the Parekh House (1966-68) and the Correa House (1968, unbuilt). In order to "open-up" the narrow spaces usually generated between the parallel walls of row-housing, we developed for the Gujarat Housing Board (1961, unbuilt) interlocking units which create varying dimensions internal dimensions – an idea later expanded in the Previ Project (1969-73) in Lima, Peru.



Administration Offices,
Vallabh Vidyanagar



ECIL Offices, Hyderabad



MRF Headquarters, Madras

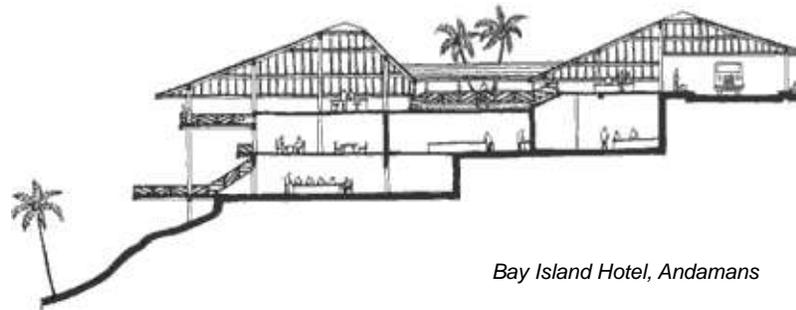
WORK SPACES

Are these concepts relevant to other building typologies, as for instance, work spaces? Earlier attempts to deal with solar protection involved various forms of brise-soleil – as in the Administration Offices (1958-60) for Vallabh Vidyanagar University at Anand. One soon discovered that this kind of concrete louvre, while providing powerful visual imagery for the builtform, can be counter-productive. The concrete heats up during the long hot day and then acts as an enormous radiator in the evening, rendering the rooms unbearable.

So the ECIL Offices (1965-68) in Hyderabad, tries to develop a workspace in which the very pattern of the builtform itself creates a special micro-climate. Through this and other similar efforts, gradually a kit-of-parts came into existence: the section which facilitates convection currents, the internal zone of micro-climate, the stepped terraces, the pergola roof. Variations of this kit-of-parts were used in the MPSC Office Building (1980-92) in Bhopal and the LIC Centre (1975-86) in Delhi. Other examples are the MRF Headquarters in Madras (1987-92), the Nuclear Power Corporation in Bombay (1988, unbuilt) and the LIC Centre (1988-92) in Port Louis, Mauritius, where the pergola becomes a huge urban gesture, protecting the builtform within and at the same time creating a much-needed sense of public space in the very heart of a crowded city.



Section through
Padmanabhapuram



Bay Island Hotel, Andamans

LEISURE

Another marvellously inventive example of natural ventilation is the Padmanabhapuram Palace in Trivandrum – the oldest wooden building in India. Here, in the hot and humid climate of southern India where cross-ventilation is essential, we find a truly remarkable section where the pyramidal form of the plinth rises parallel to the slope of the tiled roof above – thus minimising the need for enclosing walls to keep out the sun and rain. From within the pavilion, one's line of vision is deflected sharply downwards to the grass around (a cool fresh green, blissfully therapeutic on a hot day).

This principle formed the genesis of the Bay Island Hotel (Andamans, 1979-82) and the Dona Sylvia Beach Resort (Goa, 1988-91). The inner spaces in both these projects are protected not by enclosing walls but by very large sloping roofs. For centuries, sloping tiled roofs have been part of the indigenous architecture in most of South-India in fact, in most of South-east Asia. And they occur throughout these projects, from the Sadiq Futehally House (1959, unbuilt) in Bombay, the Mascarenhas House (1964-65) in Bangalore, and the Kovalam Beach Resort (1969-74) in Trivandrum, to the L&T Township (1982-88) at Awarpur and the houses along the Mandovi river at Verem (1982-89).

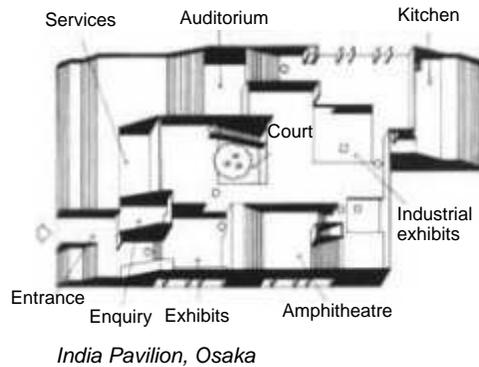


The Acropolis at Athens

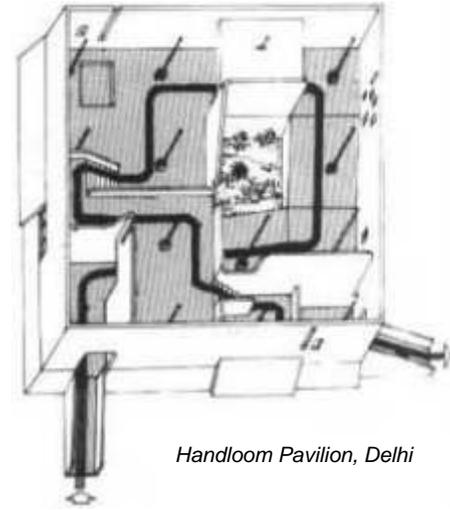
THE RITUAUSTIC PATHWAY

Padmanabhapuram is important because it is the key to typologies (and to Architectural syntax) quite different from those developed in the cold climates of Europe and North America – where life must be protected throughout the long winter by a sealable weather-resistant box. Thus though the wealthy English travelers visiting the Parthenon in the 17th and 18th Centuries must have been profoundly moved by the sacred pathway up to the top of the Acropolis, they soon realised that the only thing they could really take back and re-cycle within the hostile environment in which they lived were the marble columns and pediments which were rapidly turned into surface tattooing (mere wallpaper!) to decorate the outside of the sealed boxes they had to build.

Now a box generates a very simplistic architectural equation. One is either inside this box or outside it. The transition from one condition to the other is through a precise and clearly defined boundary: the front door. Inside and outside co-exist as opposites, in a simple duality. How very different from the pluralistic and subtle variations of air and light conditions generated by the open-to-sky spaces we have been discussing! The old architecture of the warm climates of this globe – from the acropolis of Athens to the pyramids of Teotihuacan to the temples of Kyoto were generated by an



India Pavilion, Osaka



Handloom Pavilion, Delhi

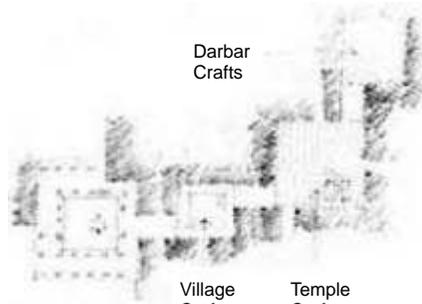
understanding of the Subtleties and ambiguities of such spaces. The irony is that the very same cultures, which produced the original typologies, are now happily importing the closed box model (complete with wallpaper) from the “advanced” countries of the north, to fill up their towns and cities from Athens to Singapore to Tokyo to Sao Paulo.

Fortunately, in India one cannot build a closed box (unless one can also afford the air-conditioning that will make it habitable). Thus this issue was intuitively addressed head-on, right from the first project undertaken, the Handloom Pavilion (1958) in Delhi. Though generated by a precise and disciplined plan of sixteen squares, it actually creates a highly ambiguous space, neither quite covered nor quite uncovered, containing a series of platforms in an ascending – and then descending – spiral. At some distance above is a “sky” of handloom cloth, separated from the peripheral walls by a gap all around. So also the Kasturba Gandhi Samadhi (1962-65) in Poona, where the memorial consists of a gently descending path defined by a series of parallel brick walls, on a shifting axis, culminating in the Samadhi itself.

Other variations on this theme of pedestrian path, shifting axis and low-key builtform are the Gandhi Darshan (1968-69) in Delhi and the India Pavilion (1969, unbuilt) at Osaka, Japan. Here the pathway is extended to also cover the root surfaces. Architecturally, the form is a kind of “non-building”, given scale principally by the flights of external stairs (echoing the bathing ghats of Benares).



Gandhi Darshan at Rajghat



National Crafts Museum, Delhi



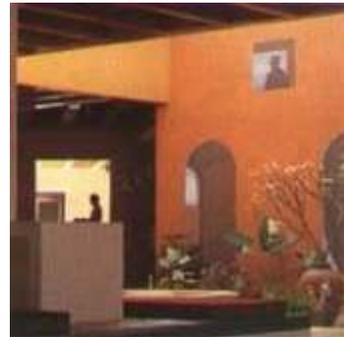
Corb and Mies at the Kala Akademi



Bharat Bhavan, Bhopal

This processed unfolding of spaces, some enclosed, some open-to-sky, is also further developed in Bharat Bhavan (1975-81), Bhopal – which is a re-interpretation of the old Pleasure Gardens which are still the most popular spot for Indian families in the cool hours of sunset and in the early dawn. In the JNIDB in Hyderabad (1986-91), the pathway moves like a river through the building, conceding the teaching areas to the Library and Faculty Offices, and up to the hostel rooms on the sloping site, while in the National Crafts Museum (1975-85), it becomes a continuous pedestrian spine running through the heart of the museum – a metaphor for the Indian street, taking the visitor from village to temple to palace.

In the British Council Headquarters and Library in Delhi (1987-92), this pathway becomes a formal axis, running down the centre of the site from the entrance gate right up to the rear boundary. Along it are located three mythic paradigms that have generated the history of this sub-continent, recalling the historic interfaces that have existed between India and England over the centuries. The large square cut-outs on the street facade not only encase the Hodgkin mural like a proscenium but also, from within the building, act as “urban windows” framing views of the city outside – a visual and gesture that recalls the double-height terraces



Cidade de Goa

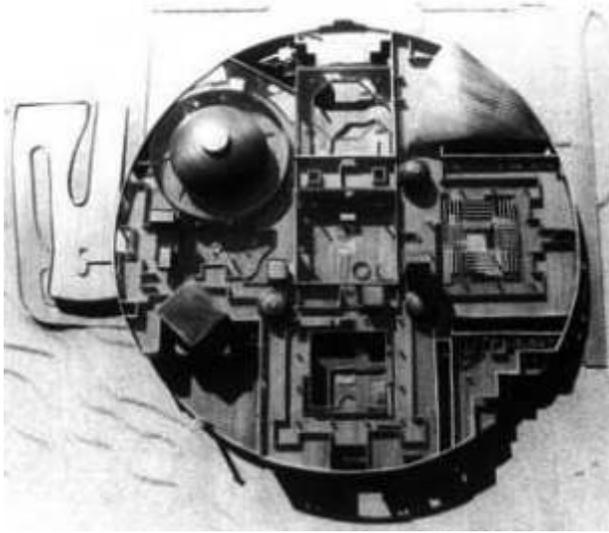


Urban Window, Mexico City

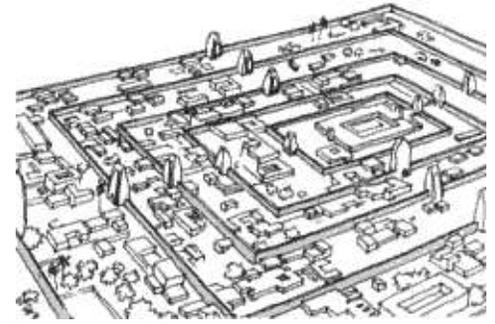
of Kanchanjunga, suspended high above Bombay, which act as “urban windows” framing the city. Another example is the office building in the Alameda Park project in Mexico (1994 - to date) which uses these urban windows (floating just above the tree tops of the historic park) to recall the great tradition of public art in Mexico City.

METAPHORS

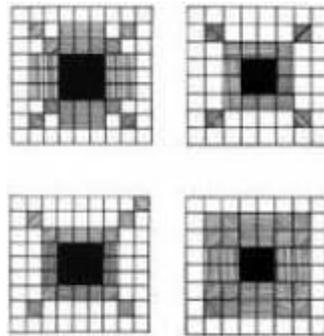
The relationship of architecture to the other arts is a crucial one. In the Hotel Cidade de Goa (1978-82) at Dona Paula, for instance, murals and sculpture are used not just to provide references to local traditions and events, but really to bring back into balance the spatial tensions generated by the builtform. This is also attempted in the Kala Akademi (1973-83) in Panaji. These projects, both sited in Goa, use elements from the kit-of-parts developed together earlier with abstract colour and realistic images, setting up a dialectic between builtform and visual imagery – a complex interaction which can add layers of metaphorical and metaphysical dimensions to architecture.



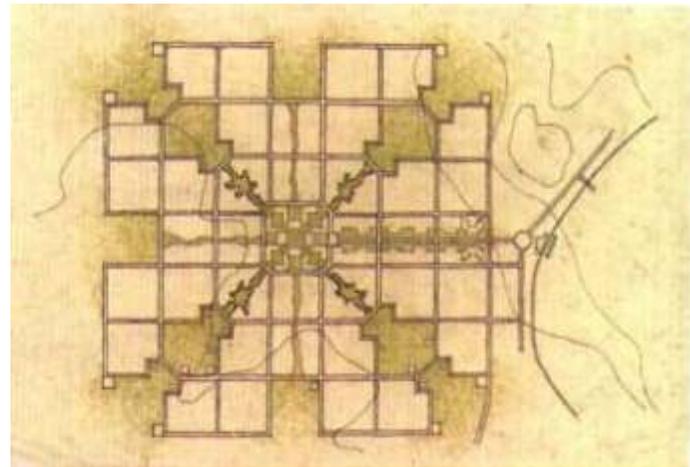
Vidhan Bhavan



Temple town of Srirangam



Vastu-purush-mandalas



New Bagalkot

Such dimensions are an essential part of the old architecture we see around us. These buildings possess not only an extraordinary beauty of proportion, materials, etc., but they also project, with astonishing force, polemic ideas about ourselves and our relationship with the Non-manifest World. Strange indeed that since the beginning of time, Man has always used the most inert of materials, like brick and stone, steel and concrete, to express the invisibilia that so passionately move him. Today our architecture is banal – partly because of contemporary existence is so, but also perhaps because we do not seek to express anything profound (or deeply felt) about ourselves, or the society in which we live.

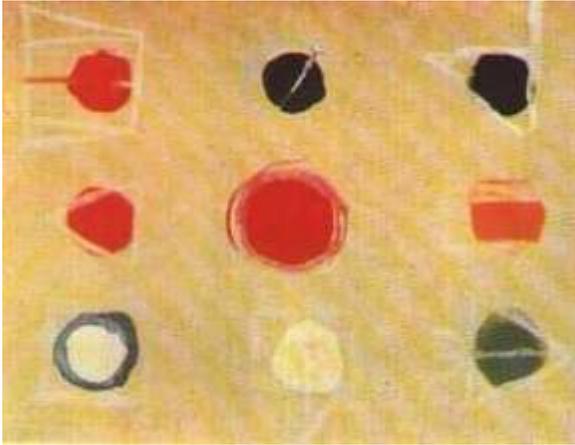
The next few projects are really but faltering steps in that direction, metaphors for our relationship to something outside (and beyond) ourselves. The first is the Vidhan Bhavan (1980 - to date), a highly complex interlock of pathways, builtform and open-to-sky spaces for the new State Assembly of the Government of Madhya Pradesh. It is a citadel of democracy – built in a circular form determined by its location (on top of a hill in the centre of Bhopal),

by its proximity to the Buddhist Stupa at Sanchi nearby, and by form of the Parliament in New Delhi.

The second is the town of New Bagalkot in the State of Karnataka. Here the principles of equity, affordability, job generation etc., (discussed in the section on Ulwe) are developed within an overall urban form which has deeper cultural relevance, recalling Srirangam – the ancient temple town on the river Cauvery, built as set of concentric rectangles, in the form of a Vedic mandala, depicting the non-Manifest World.

The third is the JN Centre for Advanced Scientific Research at Bangalore (1990-94), the new campus for the Indian Institute of Science. Here the centre of the site is occupied by a forest, with the scientists' laboratories, seminar rooms and living quarters on the other side of the stone wall encircling this forest. Scientists (truly the new rishis!) crossing through the stone wall to enter the open-to-sky space in the grove of trees, recall metaphorically the withdrawal of the ancient sages into the forest in search of wisdom and enlightenment.

Metaphysical aspects of the sky are also addressed in the next two examples: the Jawahar Kala Kendra (1986-92) in Jaipur and IUCAA (1988-93) in Pune. These two projects, seemingly so different



Navgraha: the symbols and colours of the nine planets



Galaxy in an Expanding Universe

in form and function (one is an art centre, the other an academic institution), are not so dissimilar after all. Both seek to project Architecture as a Model of the Cosmos – each expressing a transcendental reality, beyond the pragmatic requirements of the programme that caused them to be built. In this sense, they are quite symmetrical.

The first, the Jawahar Kala Kendra in Jaipur, is double-coded (like the plan of Jaipur city itself), a contemporary construct based on an ancient perception of the non-Manifest World, as expressed in the vastu-purush-mandalas – those sacred Vedic diagrams that have been of seminal importance to Hindu, Buddhist and Jain architecture over many many centuries.

The second, IUCAA (the Inter-University Centre for Astronomy and Astrophysics) at Pune, seeks to express a totally different mind-set, viz., our own 20th century notions of the Expanding Universe in which we live – an understanding generated by the extraordinary scientists (Einstein, Rutherford, Hoyle, and others) who in making the Universe comprehensible, have helped generate our own contemporary sensibilities.

The Cosmos as it was comprehended thousands of years ago and as it is perceived today. These two projects seem to be based on two very different mind-sets . . . or are they? For astonishingly,

the central paradigms through which the ancient vastu-purush-mandalas (with their emphasis on the centrality at the vortex) are not so different from contemporary scientists' notions about the Black Holes of Outer Space. Is this mere coincidence? Or is there a far more fundamental explanation? After all, both theories have been generated from the same human mind . . . which, over all these centuries, has not changed. And just as the pragmatic and pleasurable qualities of open-to-sky space that we discussed earlier seem to have remained undiminished, so also its metaphysical and mythic qualities as well.

Perhaps the reason is not so hard to fathom. The sky, all said and done, is the source of light - which is the most primordial of stimuli acting on our senses. And across its face, every day, passes the sun – the origin of Life itself ! . . . Small wonder then that man has always perceived the sky above to be the abode of the gods, and that down all these many millennia, it has exerted such extraordinary power on us and on the architecture we build.

Bombay, January 1996