

# ARCHITECTURE + DESIGN

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**ROMI KHOSLA**  
Kaleidoscopic Journey

Planning and housing  
patterns in Chandigarh

Design Milestone  
An Artist's Studio  
A Kerkhian

**Kaleidoscopic  
Journey**

col images and associations from divergent  
patterns as an architect searches for  
contemporary cultural directions in his work



# Kaleidoscopic Journey

reflected images and associations form divergent patterns as an architect searches for contemporary cultural directions in his work

**H**AVING studied economics at Cambridge, Romi Khosla was doing chartered accountancy in London, when his friendship with architects who had their office below his living quarters lured him into architecture. On his return to India, after receiving a diploma at the Architectural Association in London, he established in 1974 his own practice under the name of *The Group* (*The Group for Rural and Urban Planning*). Khosla's outfit now has two directors besides himself—Narendra Dergle and Anil B Jain, and in 1982, when they set up an office in Muscat in collaboration with Sencac Pvt Ltd., renamed themselves *Group India (P) Ltd.*

*Adventurism*, a term which has been applied to Khosla's style of architecture, extends to Khosla's personal interests. Having spent most of his childhood in the hills and since been widely travelled, the spirit of exploration takes him trekking and skiing every year in the mountains. An extensive period of travel and research led him to author the book *Buddhist Monasteries in the Western Himalayas*.

Khosla is one of the international correspondents for *MIMAR* magazine and also a technical assessor for the *Age Khan Foundation award*. He is the Managing Editor of the two-year old quarterly *Journal of Arts and Ideas*. He is also closely associated with the *Kasauli Arts Centre*, an organization which holds regular camps and workshops for persons associated with the creative arts.

Projects completed and on the drawing board of *The Group* include a commercial centre, housing, multi-storied buildings and, for the first time, an office interior. In a discussion with A + D Romi Khosla talks about his design ideas and his work.

*How do you justify the use of modern philosophy as well as what one would call post-modern philosophy in your work at the same time?*

**Khosla:** What I'm trying to say in my work is that we, in India, are passing through a very complex stage of our development in which we've got traditional and modern culture existing simultaneously. We've got satellites, we've got beggars. What happens when a country is beginning to industrialize is that all these value systems that we are used to, go into the melting pot. So, in architecture, it would not be correct for us, if we wanted to reflect our times, to base our architecture on any one value system which is permanent in any way. In our country today, there are a lot of sub-cultures. You go into a village, you're making houses for the landless poor, then you go to a science institute and you're making something for the future. Each of these requires you to do buildings in completely different ways. So inevitably, if you're working in this kind of a situation, your work is going to reflect the tremendous changes in the lifestyles and sub-cultures which coexist in this country. You may get away with boxes in the centre of Bombay but you can't build for a village like that.

*Would you say there is a thread of continuity in tracing the development of your particular style of architecture?*

**Khosla:** As in all architectural practices, work starts on a small scale on simple buildings, and as the architect develops, his concerns and interests expand. For in-

stance, when we started, we worked for a mission in Bihar for whom we did low-cost buildings within the tribal belt of Bihar. This was our mainstay of work for almost five years. We were concerned with our work within that sub-culture. Our work was totally enveloped by this environment of building in the village. We're still very interested in doing village projects but that is not the only context of architecture in India. Architecture is also urban and it is also multi-storied. We cannot take a position and say that high technology should not be used in urban areas—that would be incorrect. When our concern and our work moves into urban projects, we cannot connect it up with the concerns that dictated the low-cost village projects. Any link in style is difficult. I think architects evolve, and we should not pretend that architects are supposed to be consistent in style.

*Perhaps contradictions are natural, but there are some principles of design which are just as much applicable to the Taj Mahal as to the village hut, and it is gradually the evolving of those principles of design that one looks forward to in an architect's work, certain constants which are being applied.*

**Khosla:** The modern movement gave us certain constants. We were all brought up and taught architecture through the modern movement. When I was at architecture school my teachers were what are called 'modern' architects—Richard Rogers, Norman Forster and Peter Cook amongst others. There was a consistency of approach and style, which were the absolutes





*I make a distinction  
between the intellect and  
consciousness as a primary  
source of design*

in their architecture. But today we are finding out that many of the absolutes of modern architecture are being very seriously questioned. One can argue and say that buildings should reflect the spatial requirements of the client but these are going to change tomorrow and the next chap who comes into the building is going to have totally different requirements. I think that almost all architects will find that the buildings they were asked to design are being used differently from what their brief stated. If you're doing a government building, you only need a change in the director for its uses to change. I think the absolutes in architecture are concerns. Concerns about craft or concerns about how you could achieve a sense of beauty in a building, but even these could change. For the architect himself, I find it very difficult to name constants. In my work there are no constants.

*By talking of constants we are referring to principles of design. The Taj Mahal is beautiful for certain principles; St. Paul's Cathedral and the Parthenon are similarly beautiful because of certain principles of design which they uphold.*

**Khosla:** What are those principles? I think you are talking about the fact that the great buildings of the world have got something in common between them. But this is something that you see in hindsight. You can't put that down as the principle of your design, or the principle of your concern. Those things happen if you are a creative architect and when you can reach that height. You're not consciously trying to do

so. When I say there is no constant in my work, I mean at the conscious level. I'm not trying to carry through a certain principle from one building to another. I'm saying that my position may shift in all probability.

*But where will this shifting of positions, in a seemingly contrary fashion, ultimately lead to? What inference or reference do you expect professionals to draw from your work? Or is it just a whimsical search?*

**Khosla:** No! I won't call it a whimsical search. I'll say the modern movement was concerned with creating an architecture which was primarily dominated by the intellect. In other words, an intellectual idea was the primary concern of the building and that's how you analysed and designed the building. You formed a diagram and made a function around it and it was an architecture emerging from diagrams because that was the intellectual process that you felt was correct for designing a building. What I'm saying is that it's not the correct method as far as I'm concerned. I would like to use the 'consciousness' and I make a distinction between the intellect and consciousness as a primary source of design. So that when you get into a sub-culture, whether it's an electronic sub-culture or a tribal sub-culture, first of all it is your whole consciousness that has to be affected and only then can the building solution emerge. This is not a rational process. The Tibetan National Library was the first building I did, as a student where the requirement of the Dalai Lama was that we should make the

building in Dharamsala, which would evoke a sense of identity, and be a centre for the Tibetans. It therefore had to be created within the Tibetan sub-culture, with which I was very familiar, so it was fairly easy for me to enter into that kind of consciousness. On the other hand, if I take a building like the school for the Spastics Society, I am almost rejecting the modern movement because here the primary concern was to try and get one's consciousness into a state of understanding of how this building would be used by the children.

The space programme given was of very minor significance and instinct played a much more important role in the design. I was trying to explore ways which depict the Asiatic mode of thought which is very different from the European way of thought. The European way of thought is sequential—one which goes from one thought process logically to another and you begin a search and find a solution in a linear method. I think the Asiatic mode is to travel from one layer to another layer and at each layer there is a reality. That's a different way of designing a building and I'm struggling towards that. Whether I will be successful or not, I really don't know.

*Are you striving for a search within yourself in the time-old Indian tradition, or are you wanting to produce good buildings for clients?*

**Khosla:** You can't disconnect the two, because an architect does find himself in the process of creating his buildings. It's a dual process. In reflecting the client's requirements, you are also finding yourself.



*The Spastics Society*

**“THE STAFF** was concerned that they should be able to function in a building which did not present a hurdle to them in the day-to-day running of the school, so I would say that most of their concerns were administrative and functional. My overall wider conceptual was to give a very powerful psychological environment for the child, a specific environment that had to be evocative and uplifting. I think that it had to have a feminine comfort in many ways. It also had to substitute

Left: The right-hand facade of the building with the circular ramp enclosure.

Facing Page:

Left: Entrance to a classroom from the inside courtyard.

Right: Beginning of the ramp—not a Corbusian element, but a road full of wonder and mystery for the children.

You mention in one of your writings that you have taken a facade of a *chaitya* hall as your idea for the facade of the Spastics Society School. Where is the connection?

**Khosla:** There is no direct link as such. What I'm trying to say is that in our subconscious, there are images of architecture which have to do with our own historical past. And if we create a building today, we should not cut ourselves off from whatever there is in our subconscious about our own architecture. When I made that reference between the *chaitya* hall and the Spastics Society school building, at a very subconscious level one was trying to say that there is a flavour and taste of something which has already happened in the past. The Spastics Society School building, in fact, contains a lot of associations from the past, because the building is supposed to have a kind of a mythical quality to it, specifically for the children, because children are told stories with values about the past, about good and evil, and they

have associations in their subconscious with the stories that link the present to the past. So I hoped that the building would help bring these out on to the surface. It is purely at the image level, not very specific, it's just a hint, an evocation.

*What is the intention of a hint which the child might or might not ultimately grasp from your interpretation. Nor can an architect understand it until he looks at the section. This is making it so abstract that no one gets the message unless one reads your writings. Is the intention of architecture constantly to be explained by writings?*

**Khosla:** There are two aspects to architecture—a public one and a private one. There are generalizations about a building; it also has personal associations, and those may have to be explained in writing. It's also important for an architect to write and to explain his buildings particularly to people who don't understand architecture, and who are not aware of the

concerns of architecture. We know that films get written about a lot, paintings and drama also get written about, but architecture never does, and yet it's one of the oldest arts in our country. Nobody writes about it unless it's of historical interest. I personally feel that it is very important for a contemporary architect to explain his position, because we don't have architectural critics.

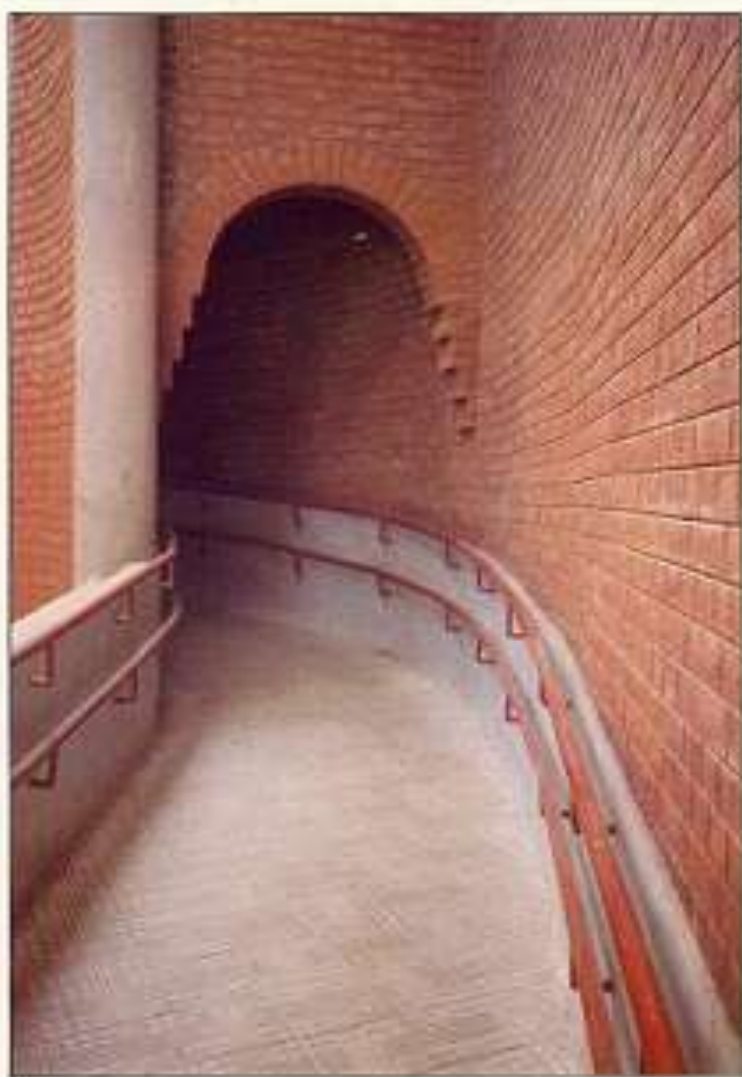
*Architecture is totally different from all these other disciplines because it is there for everyone to see. There is, you say a public and private aspect to it, but the public aspect is paramount. However in your work, one feels there is a predominance of private thoughts being expressed through means provided by others.*

**Khosla:** No, one is not using public means to express one's private concerns. It's simply that when you make a building there are certain associations which are private to you as an architect. Perhaps you are deep-



for a lot of the outside world which the handicapped child cannot experience. What one was trying to do was to intensify signs and symbols which would trigger off their imagination in a way which perhaps a normal child would not require because he was going out and about in the world in the normal way. In many ways I was trying to draw a larger world into this building than in other buildings and the image of the cave rock temple which I have referred to was a way of drawing a kind of parallel between a celibate monk who withdraws from the world and yet imagines that the whole

universe is still about him. There was a lot of symbolism attached to the ramp in the building which was not apparent in the drawing. I had to see it at the functional level where the wheel chair itself could go up and down, and yet to try and make the experience a joy rather than a tiresome problem. The broader aspect of the commission was not really discussed with the client. In that way I had the fortune of giving them what they wanted at the functional level but also of carrying it to a higher level, and that is where, to my mind, the imaginative role of the architect comes in."



ly concerned about the way in which a space should work, and you have been developing through five or six of your buildings. Now, that is really forming part of a private concern that you have. It may not necessarily be understood by the public, because it's an idea that you work through in two or three buildings. You are gradually refining it. For the public who visits the building it will be a space; they may not be familiar with your earlier buildings, so they may not see the link. In that sense it is private. I don't think it means that there are certain parts of the building that nobody understands at all and which are very strange or weird. There may be a private motif used somewhere. You may use an arch or a balcony that you associate with your private experience of a building. Sure, the user may not understand why you put it there or they may not even notice it. When you mould your buildings, some of your private concerns must be there, because that is how you are progressing as a creative architect. You know that you

yourself have taken ideas through from one building to another. The ultimate test is of course that the private and public aspect must merge into a whole which is universal—beyond the specific.

*You've written a book on Tibetan Buddhist monasteries and have been very interested in the subject. What bearing has this interest had on your work?*

**Khosla:** It is very important for an architect to study in depth some aspect of our traditional culture. I spent about 10 years studying Tibetan type monasteries in Ladakh and Spiti in great depth. I was totally obsessed with them during those years. It has given me a knowledge and a kind of understanding of traditional India which just visiting places would not have given me, because I had studied the Buddhist religion, the methods of painting and the philosophy, which is of course very much a part of the Indian culture. For me, in hindsight, it was an exercise that I did

in depth to understand, at close quarters, the Indian reality of the past. India consists of so many cultures—there is the Buddhist culture, the Islamic and Hindu culture, there is the Dravidian, Aryan and so many tribal cultures. It's very important to study at least one in depth once in your lifetime, so that you do get really down to the very core level of our Indian traditional culture.

*Wouldn't you say that some of the continuing motifs in your work are from that period of understanding?*

**Khosla:** It's quite possible, though it's not been done consciously but probably at the subconscious level... One is not sufficiently detached from one's work to be able to see that.

*Are you presently doing any work of a low-cost nature?*

**Khosla:** Yes, we are just getting into a



*Tibetan National Library*

township of low-cost housing near Bombay. But it's at a very early planning stage, and that work certainly interests us. Unfortunately, the problem with low-cost work is that there is no way in which you can keep on getting it. They are always one-off jobs—without continuity, because there is no organization which is constantly commissioning low-cost work. When we were working with the Mission, we did low-cost work for five years, but after that they stopped building. That's how our low-cost projects suddenly evaporated. Then later we had enquiries from other agencies—the UP government asked us to do some mud housing which we did. So if it comes to us, it always comes from some stray quarter. It is difficult to seek it. If you talk of very low-cost work, it's with the government only. Even mission work is not mere mud construction, but *parce* structures. If you consider it, frankly even the government isn't really doing much low-cost building. If the government were really interested in

solving the housing crisis there would be an enormous amount of work at low-cost level, and one could really tackle the problem of scale which is the real problem. Now and then we get a community hall to be put up in some village or a *barwad*, and whenever we have been asked to do that, we always do. If you take the proportion and the quantum of low-cost work that is going on in the country and you compare it with urban projects, the latter are far greater. My own experience has shown that the level at which an architect can innovate in a very low-cost structure is minimal. I mean, there are no aspects of design that an architect has evolved which are going to be able to help you to lay millions of bamboo roofs. Look at the exercise we did for the UP government. We had to build a room which was 4.6m long and 1.9m wide, and the materials we were given were mud, tiles and bamboo. That was the limitation of the brief. Obviously, you can't bring in a tremendous amount of innova-

tion. You can bring in innovation if you are planning a total village environment, or if you are evolving new construction systems. I think you have to be quite clear about the kind of expertise you can contribute. You're not just contributing your labour. That's what we found, basically, in the mud house programmes. We were redundant. The Mobile Creche building was designed by Vasant Kamath who was with us at that time. That was in an urban context, and it was a building put up with low specifications. When you talk of low-cost buildings, it means that you can build an urban building and not give it finishes. That reduces your cost. But when you have done structural innovations or you've given the sort of finishes which haven't been tried out before, then you've really broken new ground.

*You have admired the Belgian Embassy designed by an artist, Satish Gujral, for a number of reasons. Specifically how does*





FRONT ELEVATION



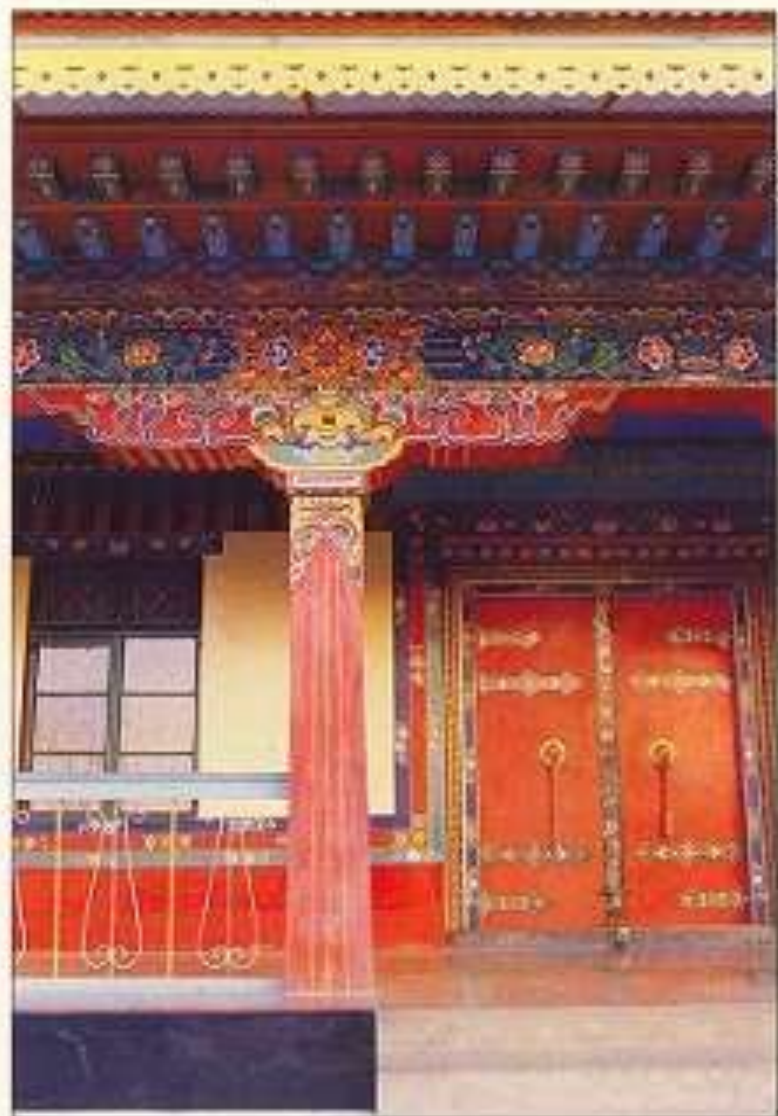
FIRST FLOOR



GROUND FLOOR



- 1 ENTRANCE
- 2 RECEPTION
- 3 STAIRS
- 4 MANUSCRIPT ROOM
- 5 OFFICE
- 6 STORE
- 7 TOILET
- 8 LOADING
- 9 READING ROOM



*this building fulfil any of your design aspirations or aesthetic values?*

**Khosla:** Satish Gujral has attempted to do something in architecture which very few architects do, which is to get involved with the details of crafting the building. It's as meticulously detailed as one of Joseph Allen Stein's buildings and one misses that in contemporary Indian architecture. Just purely at the technical level, a lot of shoddy work is done. For some reason, most architects don't take sufficient care to get involved at close quarters. Satish was totally involved in the Embassy building. He was possibly just doing that project only and nothing else. Day in and day out he was on the site. I think when an architect gives that much to his building, it's going to show. The other thing is that Satish, not being an architect, was not concerned with the broad historical tradition of architecture. We, as architects, have a certain training, we have a certain consciousness about

the history of architecture and we would very much like to work within that tradition, and I think that's how trained architects should work. But Satish, being a painter and a sculptor, entered the field, and left in it, a mannerist kind of building. It's full of self-expression and that is very refreshing. Very many contemporary buildings are very dull, very boring. The Belgian Embassy is an exciting building. When you go inside there is so much happening. He has made a very classical plan but in three dimensions; he has made it into a sculptural object. It's one of the many approaches to architecture and, in contemporary work, it's exciting, although as I said, I don't think it's the only way to do architecture.

*Isn't the availability of abundant finances also a crucial factor?*

**Khosla:** Yes, for many of us, the gestation period for a project is so long that you can't

possibly go and sit at the site, because you may well find, as with many projects, that this one too will be abandoned. Projects take so many years to materialize that in such a situation it is very difficult for anyone to be continuously involved deeply. As and when the client has got money, he starts the construction and then you have to be available to go and pay attention to the building. That's probably the reason why we don't get involved sufficiently deeply. We never know till the building is complete whether it is going to be complete in the way that it was designed. Satish was very lucky with the client he had. His freedom was a very important precondition to achieve that kind of high quality work. If you have an indifferent or wavering client, you cannot possibly achieve that level of quality and conception.

*Coming back to your own buildings, the Springdales School in Delhi is one building*



*Springdales School*



*in which your images are brought across without your having to write about them.*

**Khosla:** Yes, you're right. First of all, the building is only part of a complex. Eventually it's going to have nine blocks, and only two have been built so far. My central concern was not to make it an institutional or anonymous building, but one which can be broken down into units, and the concept of sloping roofs and the balcony projections have really been designed to try and project the image of a house.

When you're designing there are certain buildings in which there is no struggle going on within yourself and there are other buildings in which you are tentatively exploring new ideas and there is much more internal struggle. You are trying to break new ground. In that sense, Springdales did not have that inner struggle. I would not give it to you as an example of a building that has broken fresh ground at the ideas level. Whereas in the case of the Spastics Society school building I was involved in much more of a struggle of ideas in evolving that building. The final design was the third or fourth attempt and each of those schemes were very different from the rest.

*Which has been your most satisfying work?*

**Khosla:** I think the Semi Conductor Complex and the school for spastic children were both very satisfying. Yes, the semiconductor building is a glass box, but glass boxes can be lovely. It's got courtyards inside and all kinds of things happening. The image that it conveys is deliberately Californian.

*At this particular stage of your development, what is your inner struggle or thought that guides your work?*

**Khosla:** Unless an architect has contradictions in the way he works or speaks, he is not alive. He is not subjecting himself to questions. Yes I contradict myself, in my work and in my statements, but that is how I am, and that's how things are here—it is a constant struggle all the time. Today I feel, this is right, so I try it; tomorrow I realize I'm wrong so my position has changed. I don't think it matters, because in the end you have to be judged by the work that gets built. I am constantly trying to battle with myself and prevent myself from straying here and there in my work. The problem is to define what is contemporary in architecture.



# Holy Cross Institute Housing

Hazaribagh, Bihar

**I**N DESIGNING the layout of the 6 acre site, both climatic and environmental factors have been taken into consideration. The houses have a north-south orientation to provide for summer and winter

needs. Environmentally specific areas were landscaped and designed for wells, a children's playground, a community centre and parkland. The area given to access roads has been reduced to a minimum as it is intended that the whole complex have a pedestrian nature separated from the occasional motor traffic which is safe for children and women. At the southern end of the site, room has been left for a fruit orchard.

There are 34 houses in the

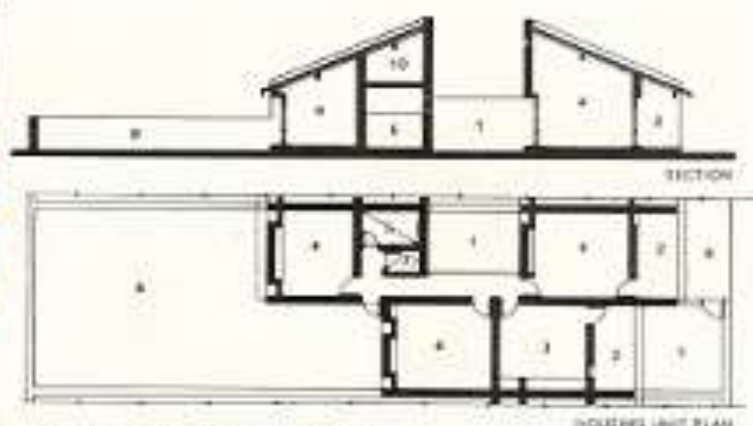
whole complex, each with four rooms and a separate bath and WC. There is also an additional internal courtyard. Each house is set in a plot that has space to grow vegetables and fruit in the back portion. There are two verandahs and a courtyard in the front. As the houses are for the employees of the Institute, the low cost aspects of design were kept in mind. Mangalore-tiled sloping roofs, which blend with the local architecture, allow a roof-vent for the escape of hot air

during the summer. Doors and windows have been kept to the minimum with wooden shutters without frames to economize on cost.

Owner Holy Cross Institute, Hazaribagh  
Architects Romi Khosla, Narendra Doshi, Pavan Kumar (design team)  
Consultants Prabhu  
Construction Department  
Covered area 76.5 sq m per unit  
Cost Rs 16,100 per unit (approx)



Above The sloping tile roofs are the most obvious image of village housing and in low-cost schemes.  
Centre The village school. Rural images evoked through pyramidal forms with roof vents and tiles.  
Below Holy Cross Village.



- 1 OPEN TO SKY COURTYARD
- 2 VERANDAH
- 3 KITCHEN
- 4 ROOM
- 5 BATH
- 6 STREET
- 7 WC
- 8 REAR GARDEN
- 9 COURTYARD
- 10 STORAGE LOFT



- 1 GATE
- 2 PARKING
- 3 SHOPS
- 4 HOSTEL
- 5 COMMUNITY CENTRE
- 6 SCHOOL
- 7 WELL
- 8 HOUSING
- 9 OTHERS PROPERTY



# United Breweries

Bangalore

**T**HIS IS A building for a corporate head office housing the various administrative functions of the company. The site covers about half an acre at the south-west corner of the Breweries' premises on Grant Road, Bangalore.

The location of the building on the site was dictated by the presence of existing bore-wells, pump houses and a water tank, a large tamarind tree and a storm water drain.

A novel system of environmental control has been conceived for the building, which takes the form of an 'environmental skin' (an octagonal screen wall 4 floors high) which is wrapped around the cruciform building, but separated from it by a gap of

about 3.6m to create spaces between the inner building and the outer skin. This provides for a system of solar control whereby the screen permits openings in eight possible directions, and by controlling the direction of openings light is admitted only from the desirable orientations. Also, the large slab projections at third and fourth floor levels (in phase one) perform the same function as smaller sunshades at every floor. They also provide an effective cover against

rain penetration and allow windows to be kept open for ventilation during the monsoon months. In the hot summer months, heat is transferred by conduction and radiation to the transition spaces which are open to air movement between the outer screen and the inner building. A farther cooling effect is achieved in the hot, dry months by evaporation from the plants grown in the spaces between the outer screen and the building skin.

The light which is admit-



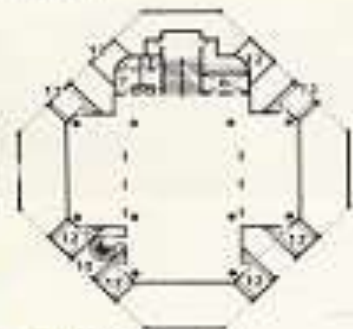
*Above* Openings in the screen give views of the glass-wrapped office work.

*Right above* Trays of dark glass and exposed concrete in the space between the screen and internal offices.

*Right below* The fire escape in steel outside the office space connects the roof to the ground—perhaps a controversial image!



SECTION



SECOND FLOOR



FIRST FLOOR



GROUND FLOOR

- |                |                   |
|----------------|-------------------|
| 1 ENTRY PORCH  | 7 TOILET          |
| 2 CORNER       | 8 LIFT WELL       |
| 3 WAITING HALL | 9 KITCHEN STORE   |
| 4 STAFF DINING | 10 FIRE ESCAPE    |
| 5 KITCHEN      | 11 DINING TERRACE |
| 6 VERGIL       | 12 TERRACE        |





ted into the building through the screen will have a soft, subdued quality because much of it will be indirect light, bounced off the screen walls. The planting will also help to diffuse the light. This thermal and day light control permits the glazing of almost the whole perimeter of the inner building skin, thus providing a large degree of flexibility in the internal planning.

The structural system provides a column-free internal space, allowing for a large

degree of flexibility. Large spaces such as the conference room on the third floor and the general office spaces on the first and second floors, as well as smaller offices of varying sizes are accommodated with ease within the system.

The main structure is a series of 'stiff plate' concrete coffered slabs resting on peripheral columns. The coffer grid of 0.9m provides a convenient internal planning module. The service core on the north accommodates shear walls to

resist wind forces on the building. The outer screen is a non-load-bearing element, tied back to the main structure at various points. The screen consists of a concrete frame.

All services have been centralized in a compact service core which contains the lift, the main staircase and the toilets. Vertical shafts in the service core carry all the sanitary and water supply pipes as well as the main electric supply lines. A separate fire-escape staircase has been

located at the other end of the building which was designed as a four-storeyed structure initially, but could eventually grow to eight storeys to accommodate future needs.

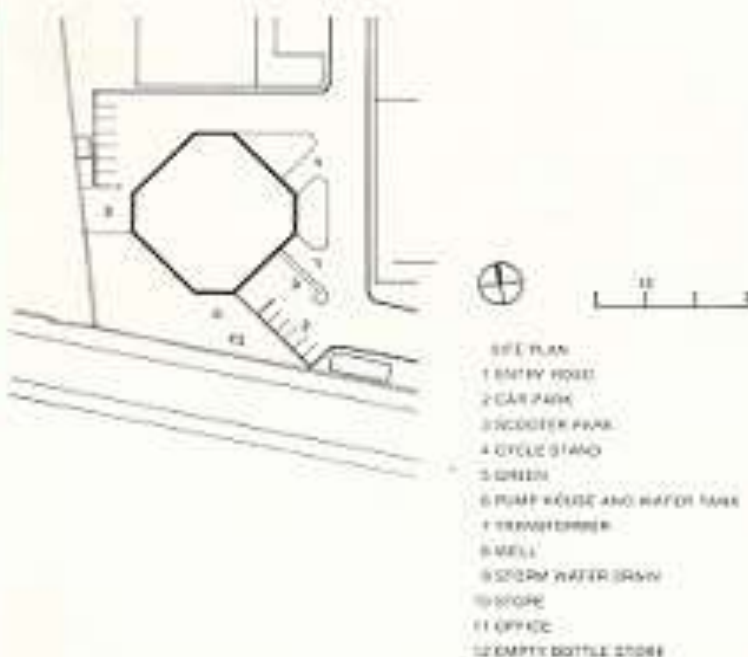
**Owner:** United Breweries Ltd  
**Architects:** Romi Khosla, Narendra Deshpande, Vasant Kamath, Sanku Kapre, Maya Roy (design team)  
**Consultants:** Sencor Pvt. Ltd, Delhi  
**Prime Contractor:** Commandat, Bangalore  
**Covered area:** 1,467 sq m  
**Year of completion (Phase I):** 1979  
**Cost (Phase I):** Rs 20,00,000



View from a third floor terrace looking outwards through the screen

*"In this project I was trying to experiment with a duality, where one had separated out the function and the image. One was concerned with trying to see how one could change the image of a building and play with it without necessarily affecting the function. The screen is one very obvious answer. Very early on in the design process where the screen went through a number of changes, the inside core of the office space remained unchanged. It was really towards that kind of unified approach*

*to architecture that one was striving in the United Breweries Building. I personally don't regard this as an extremely successful building because although the image comes across, if you look at the building, as it is built today, although it makes a strong architectural statement, it has been that of many of the complexities that one had in mind for it. So it has turned more into a kind of late modern building than the kind of building that one is doing now."*





# Semi Conductor Complex

Mohali

**T**HIS complex is located 8 km away from Chandigarh in the satellite town of Mohali. This public sector company which is under the

Department of Electronics began construction in 1982 on a 51-acre site. It is primarily engaged in the design, research and development, and production of large-scale integrated units.

The construction programme commenced with under-ream piles and the whole of the process area was made in structural steel above the pile caps. The columns and N girders and trusses were erected

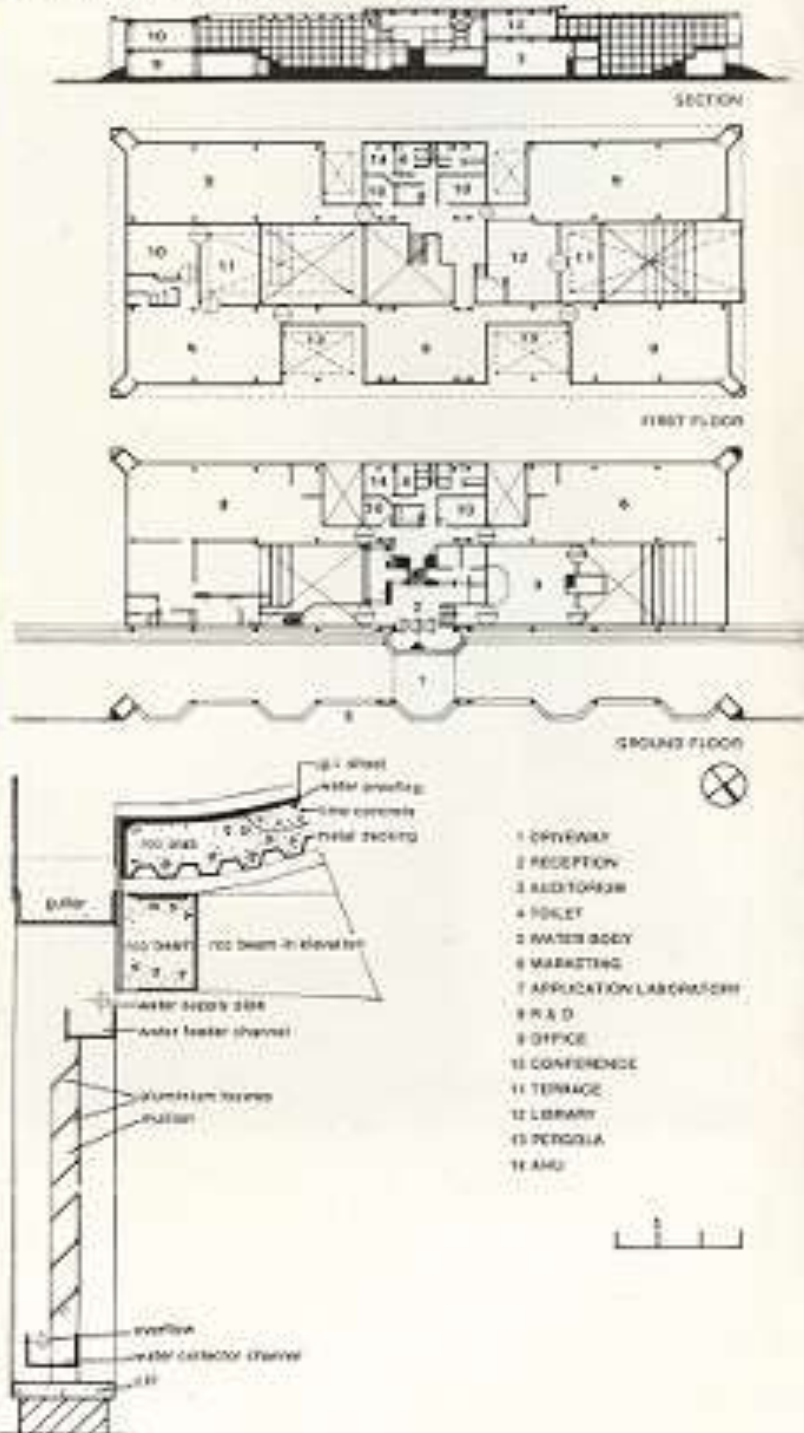
simultaneously, bay by bay, and once the entire hall was erected, the roof was laid. The roof consists of steel decking, light-weight concrete and a thin layer of nominally reinforced concrete. Normal seven course waterproofing was carried out on top of the cambered slab. The construction took less than 6 months.

The design of the complex envisaged protection from heat, dust, humidity, noise and

vibrations. All sides of the process area therefore had to have a series of protective layers. Underneath there is soiling, sand fill and polythene sheeting followed by an RCC slab on ground beams, finished with seamless PVC flooring. The sides of the building have an aluminium slatted water curtain followed by a brick wall and then a service corridor. All the internal walls are made of stud and skin partition using a



Driveway along the water with overhanging offices. Flying structures emphasize the lightness of a massive building.





laminated board for the skin. The false ceiling consists of a laminated board, followed by a timber-floored attic containing the services. Over this there is painted asbestos sheeting covered by the steel decking. The core of the process areas such as the yellow rooms and mask fabrication rooms are totally isolated with 3 micron dust cleanliness. Micro-technology is too new a discipline to dictate hard and

fast design principles. Designs for services are particularly more taxing since they account for more than 50 per cent of the budget.

To avoid planning problems and innumerable changes in design and equipment layout, a special design cell was opened in a secluded place. Architects, engineers and the owners all worked together. Brain storming sessions were held till the early hours of the

morning and in a short span of 16 weeks, almost all the working drawings were prepared and issued to site. The planning of the operation was meticulously controlled and there were hardly any changes once the drawings were completed.

**Owner** Semi Conductor Complex Ltd  
**Architects** Romi Khosla, Narendra Dangle, Anil B Jain, Vinay Kapoor, Susil Kumar (design team)

**Consultants** Sener Pvt Ltd (structure & plumbing), Monick Dassar (electrical and lighting), Velas Ltd (air-conditioning)  
**Contractors** B P Sethi & Co, Delhi, Builders' Conchise Chandigarh, Collaborators' Construction Co, Delhi (civil), Anur Electronics, Bombay (electronics), Forma & Services, Delhi (partitions and ceilings)  
**Covered area** 7,422 sq m  
**Year of completion** 1992  
**Cost** Rs 21,00,00,000



*Above: The Research Centre across the water. A contemporary environment for sciences.*

*Below: Factory room inside process area— Clean, particle-free interior. Right: Facade of Research Centre. Dark glass combined with architectural elements evoke an image for science in the future.*



