Technology
Automated Parking Solutions
Home Automation Systems

Sustainability
An Urban Experiment - Auroville

Design
Industrial Architecture Defined, Part-I
S.K Nandi, Partner, C P Kukreja Associates
An Urban Experiment
Auroville
Founded in the year 1968, Auroville near Pondicherry in South of India is an international township recognized by the Government of India under special Act of the Parliament passed in 1988. The city is governed by an autonomous institution, the Auroville Foundation. Auroville is guided by its own Charter laid down in 1968 by its founder, The Mother a French woman Mira Alfassa, collaborator of philosopher-yogi Sri Aurobindo Ghosh. Out of necessity in the first years and later out of a growing awareness for the environment, building construction in Auroville lays emphasis on sustainability. In fact, right from its inception, the residents have experimented with natural materials and construction processes for building eco-sensitive built forms. To understand the architecture followed in this universal township of inhabitants from about 50 countries of the world, Sapna Srivastava, on her visit to the city, spoke to Aurovillian architect Mona Doctor-Pingel who runs an independent architectural practice in Auroville.

Auroville conceived for 50,000 inhabitants from around the world is located on a low lying plateau on the south east coast of India, some 10km north of Pondicherry in Tamil Nadu. At the centre stands the Matrimandir, a place for individual meditation and spiritual concentration. Radiating from this90ft high, gold disc-clad sphere are four zones, the industrial (North), the cultural (Northeast), the residential (South & Southwest) and the international (West). Each zone focuses on an important aspect of the township life. Surrounding the city area is the green belt consisting of forested areas, farms and sanctuaries. Mona says, “While many other experimental cities/communities across the world have not been able to survive, Auroville has grown from initial handful of (couple of hundred) residents to about 2,500 today and is still growing with new members joining every day. It is not a city based on a fixed ideology, geographical, economic, political or religious factor, but is a city that aims to be a living embodiment of an actual Human Unity. The activities of the inhabitants are multifarious including afforestation, organic farming, medium and small scale businesses,
education, building construction and other services. The architecture of the place too is the reflection of its society and has a symbiotic relationship with the landscape. Every building is an example of the owner’s endeavor to create something special in his or her own way. There are no fixed ideas, techniques or parameters to tell how to build and thus residents are encouraged to experiment with materials, designs and construction."

Auroville Development

Auroville Master Plan is in the form of a circle of 2.5 km radius encompassing 20sqkm with its development inextricably intertwined with the surrounding villages. Most of the land is generally of poor quality for agriculture and the entire area was identified as a backward area back in the ‘60s. There are a number of village settlements located within and in close proximity to the township. Thus, its development is closely linked with the development of the surrounding villages. The improvement models evolved in Auroville township, be it plantation, regeneration of land, water harvesting, education, building technology, etc., are benefitting the entire region. Giving a larger picture of the mutual interaction and challenges, Mona says, “When the foundations of the city was laid by architecture pioneers like Roger Anger from France, Piero & Gloria Cicionesi, Italy and Poppo Pingel from Germany. They set standards from which future generation of designers could take inspiration. The buildings of early years ranging from curvilinear and innovative shapes of Anger, ‘Aspiration’ huts by Piero & Gloria made using local knowledge in a modern way to low cost yet detailed buildings of Pingel, set examples for the Aurovillians to follow in the coming years.

AFSANEH guest house, 1984-2008 by Ar. Poppo Pingel

Matri mandir
work at Auroville started, the land was eroded with very few trees and vegetation. Everyone living around came to work for building the spiritual centre Matrimandir, not as labourers but as an equal stakeholder in the path breaking initiative. Also, with Auroville and the surrounding villages sharing the same environmental challenges, the Aurovillians worked closely with local communities to conserve water, restore wasteland and promote biodiversity. Locals were absorbed within the Aurovillian way of living and many became the first Auroville residents with access to education for children and skill training in handicrafts, farming etc. for themselves. As the town is growing, more land needs to be acquired but we are not a for-profit or political entity and decisions are taken by inclusive consent. However with economic development of the country and Auroville attracting a lot of visitors, land value of villages has gone up. Many villagers have sold their land to investors from Chennai and other places which has become an issue. It presents a challenge in urban planning and in maintaining the integrity of village communities which are in and around Auroville master plan. Since Auroville never went in for acquisition of land but rather negotiation, Auroville holds only 80% of the land within the city and 40% of land in the surrounding Green Belt

Architecture & Building construction

In the first decade, the city adopted the vernacular building materials of casurina, keet, palm leaf and thatch. The builders took these materials of construction to high forms of self-expression and imagination, and worked in close interaction with the local artisans. At the same time, the push to experiment for ‘community living’ as a step towards the future city, gave rise to ‘Auromodèle’, designed by architect Roger Anger, an area which still remains an architectural exposition of forms and shapes that break the mould of the conventional principle of ‘four walls and a roof’ habituation. The creative freedom of the 70’s and the early 80’s in experimenting with building materials, technology, design and life-styles resulted in present day serious applied research offering advances in ferro-cement technology for roofs and interior fittings as well as compressed earth blocks for load bearing structures.

Mona gives a brief account of the Auroville architecture and building innovations, “Not having pre-defined by-laws or being bound by the conventions of human society has allowed a multitude of expressions to manifest in Auroville’s development. We believe in the experiment of changing the people and the society at large by the process of building a city that is the natural extension of the quest for the new. The architecture here, in its multiplicity of styles and typologies is an expression of its core values and reflect the socio-economic, cultural, ideological, ecological and climatic factors of the location.”
Technology plays an important role in the pursuit for sustainable living. The word generally misconstrued as advanced engineering and materials is also learning from the past, using the basic materials in a most innovative ways and building structures that are user friendly and sustainable in the long run rather than being iconic buildings with no relevance to its context, natural surroundings and the user. Several research institutes at Auroville are working on innovative processes by modifying and integrating new and existing technologies. More than 40 architects are working in Auroville and there is no competition as everyone who comes here finds work, big or small. Since decisions at every level of planning are taken by consensus, it necessarily means that the pace of working is measured and slow. Therefore designers do not take up many projects simultaneously. The focus for every designer here is to learn something new, test new concepts and create sustainable buildings rather than count the number of projects.”

The Planning Committee of Auroville is the body in-charge of organizing the resources and policies within the city. Rather than act as decision makers, its members are seen as facilitators that ensure that the direction of projects are geared towards the Auroville vision. It also works on developing and encouraging cross-sector integration. Many research projects, design processes, and infrastructural developments are initiated in response to sustainability challenges. “Aurovillians create their own context and constraints guided by the personal leanings. The client is not just the paymaster, the architect not just a supervisor and the craftsmen are not reduced to labourers. Each is a respected part of the building process working closely to experiment and develop details with local materials and new techniques,” sums up Mona.
Architect Mona Doctor-Pingel graduated from the School of Architecture, Center for Environmental Planning and Technology (CEPT), Ahmedabad and did her Masters on Appropriate Technology from Flensburg University, Germany. She started her design practice in Auroville in 1995. Her firm Studio Naqshbandi offers a personalized approach to holistic design solutions with focus on Baubiology (Building Biology), sustainability and activating the five senses through architecture, interiors and landscaping.

In 1987, in her third year at CEPT, Mona came to Auroville for training with another student. At that time not many trainees were taken in by architects of Auroville. Mona recounts her experience, “I had no plans of joining big design firms. My interest at that time in college was on low cost housing and I happened to meet architect Laurie Baker during the NASA in Chennai in 1986. He suggested the name of architect Poppo Pingel in Auroville who had done a lot of research on low cost buildings, for joining as a trainee. This I can say was the beginning of my journey into an unexplored territory of architecture that comes from life’s inner aspirations and the context of the landscape around.” Not surprisingly, Mona kept coming back to do projects in Auroville and finally settled here in 1990.

The Work

There is an unspoken policy of using locally available materials in Auroville. One for the reason of keeping the built form practical and sustainable and secondly, the nearest city Chennai to procure specific building materials is 160km away. Talking about her work Mona says, “I like to work with vaults and domes for roofing because of their inherent structural advantages, thermal cooling benefits, use of locally available materials, labour intensive technology, reducing the use of reinforced concrete and scope of natural ventilation that they offer. Many a times, we experiment with building materials using traditional recipes and often custom design building materials on site as per the project requirement. For example, to make a vault with exposed compressed mud bricks in a school building, we moulded conical bricks at site to give a finished look with minimum joints when seen from below. However our testing of mixing alum, egg yolks with the shell lime for waterproofing of domes did not work out as after four-five years, the surfaces started showing fungus due to humid weather. The use of second quality broken tiles instead on outer surface of domes and vaults is a success and provides a good reflective surface to reduce internal the solar radiation. We have also experimented with bio-concrete using locally available limestone as concrete aggregate instead of the usual granite chips. The architects as well as the residents here are willing to experiment and learn from their mistakes which offers a great opportunity to young architects to develop their skills, work with their own hands and open their minds to unconventional ideas.”

Studio Naqshbandi sees a continuous stream of young architects and trainees who work with Mona in
When an outsider comes to Auroville, he gets introduced to the unique concept of the city. On the other hand, the city too opens itself to the outside community for questioning its work, philosophy and way of working.

experimentations and exploring of new facets of architecture, interior designs and construction techniques. Her work is considered sustainable and modern yet sensorial and rustic; simple yet rich in details. The liberal atmosphere of Auroville gave her the opportunity to apply concepts like optimum use of solar energy, reduction of electromagnetic fields at places of regeneration, waste water recycling, rainwater harvesting and landscaping with indigenous and water-resistant plants in a holistic manner. These are not add-on features, but are an intrinsic part of her designs.
Mona elaborates, “The inside-outside relationship does form an important part of my practice since I like to see the built form with its surroundings rather than in isolation. Another key guiding principle in my work is the creation of buildings which are healthy (building biology, sick building syndrome), taking into account factors like electromagnetic fields, use of natural materials and earth energies.”

The architects of Auroville generally do not believe in publicizing their work, which in a way sieves out the designers who sincerely want to learn something different. “Trainees come here because they have either heard about Auroville from their seniors, seen the kind of work done here or have been recommended by their professors to me. As I take only one or two trainees, it is important that they should be comfortable with the idea of living away from the city in an unconventional surrounding and lifestyle. Most of these young architects are here as they are driven to hands-on experimenting with design and materials and this is...
something that continues to attract students from all over. To work in my studio they have to get their hands dirty” says Mona.

The Projects

Mona’s projects include individual houses in Auroville like the one where she has constructed walls of load bearing un-finished lime stones randomly set in lime mortar. This offers not only an organic look but also keeps the indoors cool in the hot and humid climate of the region. Another of her works is her own office which incorporates a high vaulted ceiling and deep projecting canopies. The openings near the ceiling and the shaded entrance porch with water feature in the front provides cool natural ventilation. The landscape though carefully planted to add finishing to the project, seems completely animate and natural off-shoot of the site. Local plant varieties are used creatively in the open spaces needing minimal maintenance, while fishes in the water pond near the entrance keep the standing water clean.

The Temple Tree Retreat designed by Mona and her team at Auroville for Nalin Patel and his wife Gabriella is a six bedroom guest house designed with an open plan architecture. The modern style finished concrete structure, in spite of its engineered look creates an elegant atmosphere devoid of any industrial feel. The 1000sqm retreat includes luscious tropical gardens with individual porch and garden for each room, spacious common lounge and veranda area for interaction with other guests as well as hosts. Architecturally a blend of Western and Asian influences, the low lying building is set in a green surrounding with lily ponds with fountains, a roof garden and a small swimming pool. Temple trees, bamboo, Bougainville vines and other greenery are framed through open doorways, creating a myriad of Zen watercolors. The natural breeze passes over the encircling fish pond that cools the air before entering indoors, keeping the temperature in the residence comfortable all day through. Rough granite stepping stones allow guests to enter the house through the pond. Functionally, the beautiful pond also prevent crawling insects from entering the main structure. The large sliding folding glass doors connect the inside with the outside, extending the living area on to the deck of the water pond. In the bedrooms, the beds are placed against a free standing wall which acts as a divider for the dressing and toilet area behind. The wall with bright texture finish forms the focal point on one side and offers wardrobe space on the other side. A semi-private garden and an open-air courtyard rock garden with two temple trees are a pleasant addition. The adjacently placed meditation and Ayurvedic massage
rooms are also surrounded by the fish pond and designed in such a way to allow for privacy but with wonderful ventilation. The garden is watered from the biologically treated grey and black water and solar water heaters provide all the rooms with hot water.

Another project, The Cottage restaurant in Pondicherry is a poetry in concrete. From the busy market street, a discreet entrance in a concrete wall leads to a ramp that opens up to a quiet green oasis in the midst of a noisy city. The single story structure is built around a central open to sky courtyard with bamboo plants. The concrete was intentionally used not only for longevity but also to provide a buffer from noise pollution outside.

“Most of my work is in and around Auroville as I would rather take up challenging and interesting projects here than regular construction work that does not excite me. I am currently working on a project in Surat, where I am involved with designing an Integral Yoga Centre of a management university and a residential project in Bangalore. My current field of exploration also includes teaching at various architecture schools and hands-on workshops for design students.”

Research & Writing

Mona is also part of a U.S. - India collaborative research programme to promote innovation in building energy efficiency contributing to significant reduction in energy use in both nations. She is the only practicing architect in the group with rest of the members either researchers or professors from prime institutions like IITM, IIMA, CEPT, University of California Berkeley, University of Carnegie Mellon, etc. Mona’s focus area in the research will be on performance evaluation of naturally ventilated buildings and the specific strategies employed.

Currently, she is working on a series of Monographs on the works of pioneering architects of Auroville, who have dedicated a major part of their life and work to Auroville. Mona strongly feels that the quality, innovation and perfection that Auroville stands for today owes a great deal to the early pioneers who came and worked relentlessly to create the physical basis of Auroville. They set standards from which future generation of designers could take inspiration.

The first in the series of these Monographs released at CEPT University by B.V. Doshi is the monograph of Poppo Pingel’s work, spanning his career till date, analyzing the influences that formed his personality as well as his contribution to Auroville. Next monograph in pipeline is on the works of Piero and Gloria Cicionesi.

“There is no comprehensive literature available on Indian architecture by Indian authors and specifically about Aurovillian architecture. Innovation and experimentation have become synonymous with Auroville. Thus, the body of projects here demands serious documentation and archiving for future reference, relevance and possible replication in other regions,” says Mona on a concluding note.