RESEARCH ARTICLE

UNIVERSAL TOWNSHIP OF AUROVILLE, INDIA - A UNIQUE EXPERIMENT

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Manuscript Info	Abstract
……………………. *Manuscript History* Received: 21 April 2022 Final Accepted: 24 May 2022 Published: June 2022 *Key words:-* Auroville, Universal Township, Aurobindo, The Mother, Experiment, Peace, Humanity, Spiritual Well-Being, Architecture, Planning	……………………………………………………………… Auroville came into existence about forty years ago in the state of Tamilnadu in India. Initially, it was just a barren piece of land, on which now stands a global township consisting of almost two million trees, home to many animals, birds, and insect species, and over three thousand people living at present, from 60 different nationalities, in peace and harmony. This paper studies morphological aspects of Auroville, including the genesis of the idea of the universal township, philosophy, and the vision of shri Aurobindo - a spiritual reformer, and his disciple - the mother, unique planning and development, ecology and architecture and the process of evolution. Auroville has given a new idea of 'Universal Township' based on the vision of peace, humanity, and spiritual well-being to the world.

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Introduction:-
Auroville is a universal township dedicated to humanity. It has been created with a need to respond to the environmental concerns of humanity, sustainability and globalization, transformation of lifestyle, and most importantly, the need for spiritual well-being. Auroville is recognized as the first and only internationally endorsed ongoing experiment in human unity and transformation of consciousness, also concerned with sustainable living and the future cultural, environmental, social, and spiritual needs of mankind. Auroville is created to be an organically growing community based on a central ideology of spiritual growth. This paper studies the morphological and physiological aspects of this planned community and aspects of community living are discussed in terms of evolution of settlement.

History and the beginning
Sri Aurobindo had a dream of spiritual gift from India to the world. He had a vision of an alternative world of peace and humanity and higher consciousness. His spiritual collaborator, The Mother, picked up this seed and created a physical manifestation in the form of Auroville. Sri Aurobindo has written about Indian culture and architecture, in which he defends and explains it in detail. Following is a small excerpt from his essay on Indian cultureandarchitecture:

"Indian sacred architecture constantly represents the greatest oneness of the self, the cosmic, the infinite in the immensity of its world-design, the multitude of its features of self-expression, laksana, and all its starting point of unity in conception, its mass of design and immensity of material, its crowding abundance of significant ornament and detail and its return towards oneness are only intelligible as necessary circumstances of this poem, this epic or this lyric – for there are smaller structures which are such lyrics – of infinite." Sri Aurobindo.[1]

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Philosophy and vision
The Mother had elaborated on an alternative expression for a new way to live and to be. She described a new society: balanced, just, harmonious, and dynamic. At the time she saw that "*the earth is not ready to realise such an ideal*" and therefore called it 'A Dream'. Auroville was founded on 28 February 1968, based on the philosophy of Sri Aurobindo, named after him. Its founder, The Mother, created the Auroville Charter consisting of four main ideas which underpinned her vision for Auroville. Aurovilians apply the ideas of the Auroville Charter in their daily life, in policy-development, and decisions, big and small. 'The Auroville Charter' thus forms an omnipresent referent that silently guides the people who choose to live and work for Auroville.

The Auroville charter is as follows:
1. *Auroville belongs to nobody in particular. Auroville belongs to humanity as a whole. But to live in Auroville, one must be the willing servitor of the Divine Consciousness.*
2. *Auroville will be the place of an unending education, of constant progress, and a youth that never ages.*
3. *Auroville wants to be the bridge between the past and the future. Taking advantage of all discoveries from without and from within, Auroville will boldly spring towards future realizations.*
4. *Auroville will be a site of material and spiritual research for a living embodiment of an actual Human Unity.*
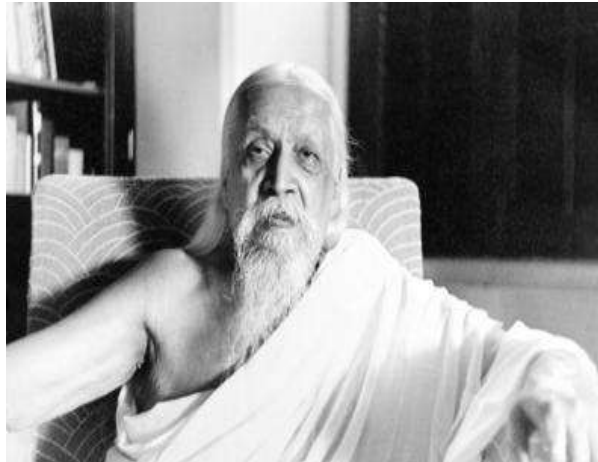
The Mother explains how to live in the world and – for the divine – at the same time. She said about being true Aurovilian, "…The first necessity is the inner discovery... At the centre there is a being free, vast and knowing, who awaits our discovery and who ought to become the active centre of our being and our life in Auroville... One can achieve inner discovery only in peace and transparency... The Aurovilian should lose the sense of personal possession... Work, even manual work, is something indispensable for the inner discovery... To establish order around oneself helps to bring order within oneself...One should organise one's life not according to outer and artificial rules, but according to an organised inner consciousness... The only true freedom is the one obtained by union with the Divine. One can unite with the Divine only by mastering one's ego..." [2]

Aurovilleis visualized to be a place for the needs of the mind, body, and spirit, to submit to the purest joys of life. Human relationships based on greed are replaced by collaboration and brotherhood. In 1972 when the construction began, the land was just a barren plateau, but now a land of more than two million trees. There is no place for material wealth, social standing, or physical needs of extravagance here. Auroville is a place to express oneself. Here nobody owns anything, everything belongs to Auroville, and everything belongs to humanity. It is based on the yogic spiritual philosophical principles of Sri Aurobindo (15 August 1872 – 5 December 1950), who was an Indian nationalist, yogi, guru, poet, and philosopher.He was a spiritual reformer and introduced his visions on human progress and spiritual evolution. Aurobindo's close spiritual collaborator, Mira AlfassaRichard(21st February -1878 17th November 1973), came to be known as *The Mother*. She wasborn in Paris, a French national. Along with her husband, Paul Richard, she went to Pondicherry on 29 March 1914 and finally settled there in 1920.

After 24 November 1926, when Aurobindo retired into seclusion, he left it to her to plan, build and run the ashram, the community of disciples which had gathered around them. Sometime later, when families with children joined the ashram, she established and supervised the Sri Aurobindo International Centre of Education with its experiments in the field of education. Sri Aurobindo died on 5 December 1950 after contribution to Yogic philosophy and the independence struggle. After his dimise, she continued the spiritual work, directed the ashram, and guided disciples.

The Mother dreamed of universal township where no nation could claim as its sole property, a place where all human beings of good will, sincere in their aspirations, could live freely as citizens of the world, where the needs of the spirit and the care for progress would get precedence over the satisfaction of desires and passions, the seeking of pleasures and material enjoyment. A place where children would be able to grow and develop integrally, education would be given for enriching the existing faculties and bringing forth new ones. In this place, titles and positions would be supplanted by opportunities to serve and organize. Artistic beauty in all forms, painting, sculpture, music, literature, will be available equally to all. This would be an ideal place where money would play no important role at all, but individual merit will have a greater importance than the value due to material wealth and social position. Work would be a means to express oneself, develop one's capacities and possibilities, and not for money. In brief, it would be a place where relations between human beings usually based almost exclusively upon competition and strife, would be replaced by relations of emulation for doing better, for collaboration, relations of real brotherhood. [3]
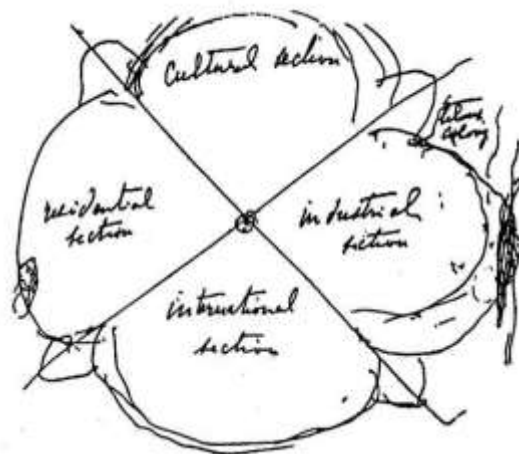
Figure 1:- Visionary Sri Aurobindo, Source: [2].

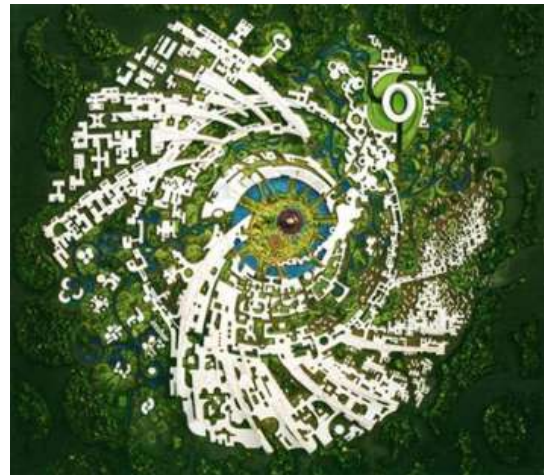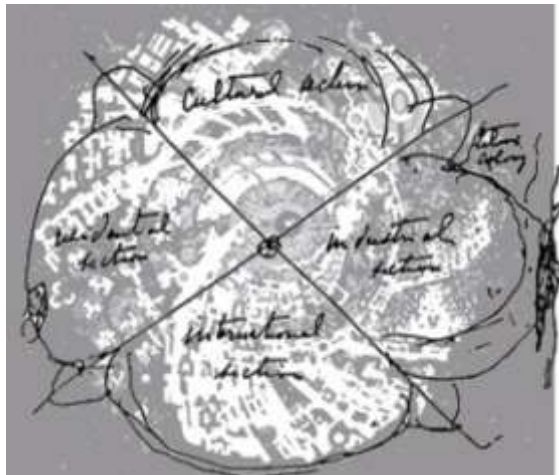**Figure 2:-** Founder, The Mother-Mira Alfassa, Source: [4].

Figure 3:-Barren land with a banyan tree at the center of the proposed development, Source: [2].

Figure 4:- Conceptual sketch of Auroville, based on the galaxy concept, Source: [4].

The concept of Auroville - an ideal township devoted to an experiment in human unity - came to the Mother as early as the 1930s. She envisaged the city as a laboratory, wherein to work on a change of consciousness, where the urban planning and architecture would embody this fusion of matter and spirit, past and future, a cradle for the new human society. In the mid-1960s the Sri Aurobindo Society in Pondicherry proposed to her that such a township should be started. She chose an architect tovisualize her ideal city who, after working through several ideas and concepts, inspired by a 4-petal flower like plan drawn by her, came up with "galaxy concept, on which the master plan and the designs were done by French architect Roger Anger. The concept was then put before the Govt. of India, who gave their backing and took it to the General Assembly of UNESCO. In 1966 UNESCO passed a unanimous resolution commending it as a project of importance to the future of humanity, thereby giving their full encouragement.

Figure 5:- The Mother's sketch superimposed on the image of Galaxy concept by Architect Roger Anger, Source: [2].

On 28th February 1968 about 5,000 people assembled near the banyan tree at the centre of the future township for an inauguration ceremony attended by representatives of 124 nations, including all the States of India. The representatives brought with them some soil from their homeland, to be mixed in a white marble-clad, lotus-shaped urn, now sited at the focal point of the Amphitheatre.

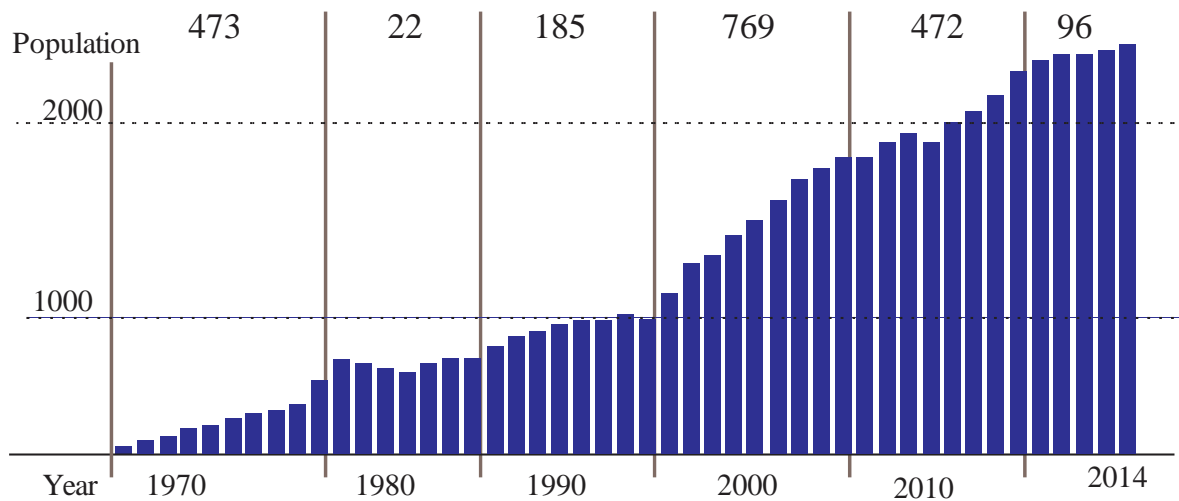**Figure 6:-** On the day of the ceremony, Source: [3].

Figure 7:- Construction work for Matrimandir, Source: [3].

Population

In Auroville, an individual and the society come together and grow together. It is like building a ship while sailing, says a resident. It is a process, and one is an integral part of this process. Here the Karmic law works against the gravity of human habit of wanting more, it basically works on the survival economy and cause of humanity. Every one that is part of Auroville has a different story, a different purpose and different desire and capacity to serve the humanity. One is encouraged to serve the self, contribute toward the growth of self, and then the society. The thought behind that is, unless you serve yourselves, you cannot serve the society. People who are part of Auroville have inculcated the habits of real-life training of awareness. They have created a layer of environment with mature green activities with the very basics of environmental sustainability.

Here, people come from about 60 nationalities, from all age groups (from infancy to over eighty), from all social classes, backgrounds, and cultures, representing humanity. The population of the township is constantly growing, and currently stands at around 3305(Census 2022) people – according to the most recently published figures by the visitor center, of whom approximately one-third are Indian. According to the census data, the population of Auroville has been growing steadily over the last five and a half decades.
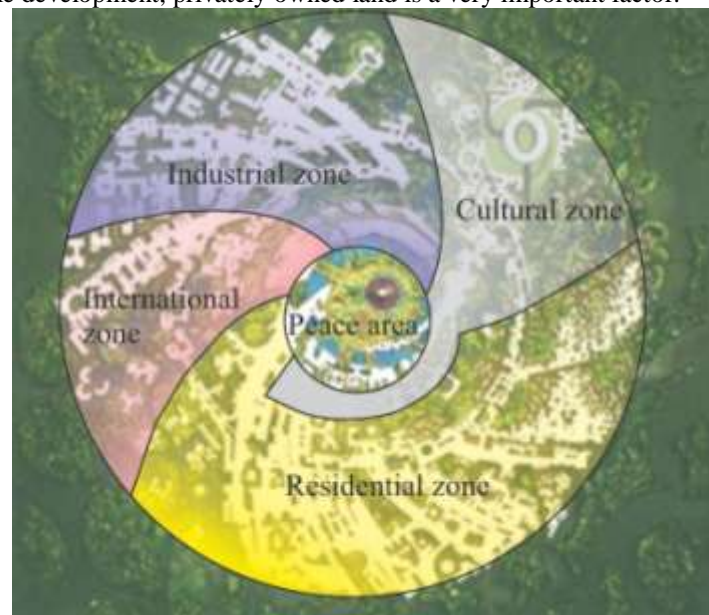
Figure 8:- Population growth of Auroville, Source: [2].

According to an architect (he did not want to be named) who has been an Aurovillean for about twenty years, the forms have to be reinterpreted and cannot be very rigid. The growth has to be allowed to be organic and cannot be forced. The conflicts start when the growth is forced in a certain direction, and that is what is happening with Auroville. The population was expected to cross 50,000 by the year 2012 according to the mother's vision, is at less than 5% of that number. As the population growth chart shows, the population in the first year of its existence was only 36 and in the year 2014, it has grown to 2333. The data at adisplay in the visitor center shows the population in 2015, at 2100.In the past few years the permanent population growth has been actually negative.
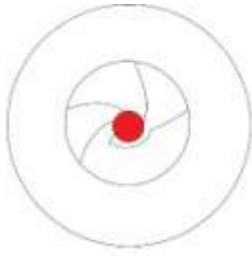
Planning

Auroville, an experimental township to realize human unity with encouraging diversity, is in the making for an expected population of up to 50,000 people from around the world. The central city area of about 8 sq. km. is divided into five zones – peace area, industrial zone, international zone, cultural zone, and residential zone. This city center is surrounded by a green belt of 1.25 km width all around.

Planned surface area of Auroville is about 20 Sq. Kms. (about 4932 acres), of which only 40% or 8 Sq. Kms. is owned by Auroville. Rest 60 % or about 12 Sq. Kms (about 2965 acres) of land is owned by the local villagers. While planning the whole development, privately owned land is a very important factor.

Figure 9:- Overview of conceptual zoning, Source: [2].

Peace area:
The nucleus of the whole township is the peace area, with a banyan tree is at the geographical center. In this area the divine Matrimandir (Temple of the mother) and surrounding twelve peace gardens are constructed. A huge amphitheater flanks Matrimandir with the urn of human unity that contains the soil of 121 nations and 23 Indian states, and a lake to help create an atmosphere of calm and serenity and to serve as a groundwater recharge area.

Geographical center or Auroville, the banyan tree.

Amphetheater with the urn of human unity.

The Matrimandir.
Figure 10:- Peace area, Auroville, Source: Author.

Industrial zone: The Mother envisioned industry and commerce to be an integral part of life in Auroville and a means of financially sustaining the economy of the Auroville community. A 270-acre area to the north of Matrimandir, is dedicated for economic activities of Auroville. This area contains small and medium scale industries, training centers, arts and crafts, and the city's administration. The economy of the entire town is generated through this area. Industries in Auroville are mainly small-scale and pollution-free. Many of them deal with handicrafts. These 'business units', as they are called, either provide the basic material necessities for the residents of the community or generate income for the general maintenance of the township, while also sponsoring other projects for the community and in the neighbouring villages.

Boutique at the visitor center

Clothes making unit at Auromode

Wood working unit.

Auroville Earth Institute.
Figure 11:- Business units in Industrial zone, Source: Author.

Residential zone:

Spread across 467-acre area, the residential zone comprises of various residential buildings, community meeting spaces, crèches and lower age group educational needs, work studios, first aid centers, parks, playgrounds, landscaping elements, eco-friendly parking areas, kiosks and convenience stores with green areas and parks surrounding them. Main access to this zone is through the crown road, which further divides this zone into sectors of increasing densities. This area is designed to have low as well as high-density accommodation with environmentally appropriate designs supportive of easy communication between residents.

The adjacent Crown Road area is planned for dwellings and city level retail stores, display areas, communication and recreation centers, restaurants, libraries and reading rooms, health centers, essential utility needs, city management sub-offices for services such as fire, water, sanitation and post/telecom, parks & green areas, and eco-friendly parking.This area is planned for the future guesthouses, department stores, some small professional offices, utility maintenance centers and essential transport related infrastructure and conference facilities.

Figure 12:- Some examples of residential units, Source: [2].

International zone:

A patch of 183 acres to the west of Matrimandir, hosts national pavilions of different countries, grouped by continents. Its central focus is to create a living demonstration of human unity in diversity through the expression of the genius and contribution of each nation to humanity. International zone represents an opportunity for the countries of the world to work toward and express in a concrete way, a nucleaus of the worldwide unity.

International house

International pavilion

Tibetan Pavillion

Bharat nivas

Figure 13:-International zone, Source: Author

Cultural zone: Planned on 230 acres of land to the east of the Peace Area, the Cultural Zone is a site for applied research in education and artistic expression. It houses the infrastructure for an education which will not be given with a view to passing examinations, but rather to support the growth of the soul and facilitate the discovery of the inner unity between human beings. Facilities for cultural, educational, art and sports activities are also located in this zone.

Community discussion

Sports

Workshop

School

Figure 14:- Cultural zone, Source: [2]

Green belt:
The central city area is surrounded by the green belt of 1.25 km width. This zone caters to the farming, dairies, orchards, forests, and wildlife. It acts as a barrier against the urban encroachment, provides a safe habitat for natural wildlife and serves as a source for food, timber, medicines, and many other needs. This area also acts as a recreation area for the inhabitants. Presently an area of 405 hectares, the Green Belt stands as an example of successful transformation of wasteland into a vibrant eco-system. Its further planned extension with an additional 800 hectares will make it into a remarkable demonstration site for soil and water conservation, ground water recharge, and environmental restoration. As lungs for the entire township, it will complete the healing process that Auroville started several decades ago.

Figure 15:- Green belt, Source: [2].

Evolution of the master plan:
Over the years there have been two very different approaches to building the city. At one extreme are those who believe that the essentials of the city have already been laid out in the original 'Galaxy' plan, which was drawn up by Roger Anger and approved by Mother, and that the Aurovilians simply need to build it. At the other extreme are those who say that everything has to be discovered, that nothing can be imposed but that planning solutions will emerge 'organically'. (AV today, 2009)

One approach is to focus on reinterpretation and implementation of the original plan, take guidance and simply follow it, considering this 'Galaxy' master plan has been approved by Mother after putting in much philosophical insights and deliberations. The difficulty with this approach is that if rigidly followed, the natural organic growth of the town would be forcefully redirected to implementation of the original master plan. According to Sauro, the planner, the main point of dispute is the roads. The newly made 'crown road' and 'ring road' are not proposed originally and they break the dynamic lines of the Galaxy. These roads have been constructed because of emergence of the need from subsequent development. Also, according to the master plan, about 40,000 people are going to live in the residential zone alone. Some people feel that the population should be spread and evenly distributed.

The other approach implies that the 'Galaxy' master plan should be taken just as a starting point, and the subsequent development should be allowed to grow organically."Good things happen organically, and bad things happen forcefully, and Auroville is a perfect example of that", says an architect and an Aurovilian(who did not want to be named) for about twenty years, a civil engineer by training and a designer of various buildings in Auroville. The idea of a "Galaxy" master plan was a great idea. When it started to be forced upon, it conflicted with the larger vision. The abstract idea of a galaxy master plan was an excellent idea, complimenting the vision and ideology, but when it came to implementation, it was taken too literally. Certain buildings had to be of a certain height and shape to fall in place with the master plan, or the roads had to be of certain widths and had to be of certain radius. This was not possible in many cases because of real difficulties, such as the buildings or roads would fall into some one's existing farm, or functionally the building needed to be of a different height, or a different shape. Then the conflicts would start between the planners, the building designers, and the town development council.

There are distinct groups within the community with different ideologies. As there is no central authority to approve or disapprove of ideas and everyone is a leader, the decision making takes too much time. The whole community is involved in the smallest decision, so many times the issues do not get resolved at all, and if they do, it takes a very long time. Another example of a conflict is that according to the master plan, "Aurodam" comes under the high-density area, and people are debating about this issue, says Lalit Bhati, an Aurovilian for sixteen years, an architect and planner by training and involved in planning and training activities at Auroville.

The land originally acquired for Auroville was made up of many existing villages. In the master plan, these villages are not shown separately, so the question is of the existence of the villagers who continue to stay there. The master plan assumes it as all one land without any divisions or natural landmarks such as water bodies etc., they do not appear on the master plan. When one considers the existing villages, population and the landmarks, the master plan looks different. So, the question is of the validity of horizontal planning as well. The vertical massing as proposed does not seem to work because the mass shown in the master plan may need to be different, in reality. There are many such issues regarding the planning of the town. Also debatable is direction of physical translation of the vision, if it is going towards contemporary urbanization or Auroville philosophy has been able to restrict that, if not exclude it altogether as intended.

Figure16:- Current Google earth image of recent development overlapping the conceptual zoning, Source: Google maps.

Transportation within the campus
Auroville aspires towards a safe and pollution-free transport system. Efforts have been made to keep central areas free from heavy vehicles. The internal roads are not designed for large motor vehicles, although Auroville is spread across a circle with a diameter of five kms. Residential zone where most people live, and industrial zone where most of the business units are located, are diagonally opposite and the distances between the home and workplace can be quite long, making it impossible for them to walk to work. The zoning does not permit the residences and workplaces near each other, because they have their dedicated zones. Because of this kind of planning, and the density distribution, the distances are not easily walkable, hence people use motor bikes or motor vehicles for transportation within the campus. People either have to hire a motorized vehicle to go from one place to the other, even staying for a day or two. This is against the philosophy of environmentally sustainable development. The pollution has not increased yet because of the lesser population and the greenery around, but if this continues, then whole purpose of alternative world is lost, in the author's opinion.

Architecture
The dream of building a new city for the future on a clean slate with the purpose of promoting research and experimentation and integral development, has been attracting architects and researchers from all over the world. Not having predefined bylaws or being bound by the conventions of human society has allowed a lot of experimentation which has shaped Auroville as it exists today. Multiplicity of architectural styles and typologies reflects in the cultural, ideological, ecological, and socio-economic diversity of the residents over four decades.

The soul of the city is Matrimandir. The Mother describes it as the 'symbol of the Divine's answer to man's aspiration for perfection', and as the 'central cohesive force' of Auroville. It is huge gold disc clad sphere which looks like rising from earth, symbolizing the birth of a new consciousness.

Figure 17:-Matrimandir and amphitheater, Source: [4].

There has been wide range of experimentation in building design, technology, materials, climate responsive designs, integration of natural elements and eco-friendly architecture. Experiments with rainwater harvesting system, wastewater treatment plants, renewable energy systems, building infrastructure etc. are widely known and appreciated. Auroville has adopted and experimented with mud bricks, compressed earth blocks, bamboo, ferrocement, palm leaves and thatch, casuarina, timber, lime, stone and bricks and many other materials with ease. Experimentation with traditional and vernacular building forms such as arches, vaults, filler slabs, skylights, staircases, columns, and roof forms have been very popular with architects and students, and they attend workshops based on these themes conducted in Auroville. It has become a popular place for applied research in the area of building design and technology.

Brick arches

RCC beams

Wood and wire railing

Filler slab

Brick horseshoe arch with corbelling

Bamboo construction

Glass bottles for wall   Vault construction for ceiling

Figure 18:-Experiments with materials, forms and designs, Image Source: Author

Architecture of Auroville is contributed to by a lot of Aurovilian architects. Many architects gained fame because of their work in Auroville. Many are now renowned in India and abroad, such as Anupama Kundoo, SuhasiniAiyer, Satprem Maini, Pieroand Gloria, Dharmesh Jadeja, Andre Hababou and many more. All of them have developed their own style of architecture and work with the basic philosophy of Auroville in mind. All the architects work in their own styles, which sometime creates disharmony on a larger scale, which is not very noticeable so far because of the distances between the buildings. The later projects by younger architects are heavily influenced by the western styles and materials. A lot of students of architecture and allied fields, work there to gain valuable experience in alternative technologies, materials, and management practices. Auroville gives an experimental platform to not only architects but to a lot of allied construction professionals.

Ecology
Aurovilleis located in south of India, mostly in the State of Tamil Nadu with some parts located in the State of Pondicherry, a few kilometers inland from the Coromandel Coast, approximately 150 kms south of Chennai and 10 kms north of the town of Pondicherry. It is included in the sub-humid tropics and situated on a plateau region with its maximum elevation of 32 m (105 ft) above sea level located in the Matrimandir area. The annual rainfall average is 1,200 mm (47 in) mainly from the SW monsoon (June to Sept.) and NE monsoon (Nov to Dec) with a dry period of approx 6 months. The average maximum temperature is 32.2 °C (90.0 °F), average minimum 20° C (68° F). (auroville, 2014)

There was no cultivable soil in on ground when the land was earmarked for Auroville. It had been washed away because of deforestation and other reasons. It was a sub-stratum of pebbles and stones which form about 40-60% of the soil. Below that there was an impermeable clay layer which prevents the rainwater from going underground. This created a lot of erosion during the rainy season. This is representative of a very common condition in India, according to Deepika and Bernard Chercheurs who have worked on organic farming and agricultural development in Auroville for about forty years. Sadhana forest uses termites to advantage of growing large trees on rocky lands. They plant a seed or a sapling and put the coconut hair around it and then water it. In turn, termites start eating the coconut hair and make the land very porous. That's how the roots of the tree penetrate deeper into the ground, letting the big trees grow in a healthy manner.

Energy in Auroville is produced by the renewable methods of windmills, biogas plants, solar systems. When it is not possible to produce due to rainy or cloudy days, they have designed systems for producing energy from the gymnasiums, where people cycle and produce energy. Development and use of rainwater harvesting techniques has raised water table of the area considerably within few years. 2004 Tsunami contaminated the ground water, and so water purifying techniques for drinking water were developed, improving the health of the villagers. Nothing in nature stands on its own, it's all integrated. Auroville follows the same principle and works towards making all the connected systems work well together.

Conclusion:-

The Mother created Auroville, a different world for an alternative way of life, for everyone to realize that they are small part of a much bigger universe. Auroville is the vision is for the future of humanity, in a form of physical manifestation of a dream of a new world. She has laid the guidelines for the new society and the new world, how to live for the divine and the self at the same time. Her spiritual guidance and view on humanity have been followed by many people outside and everyone inside Auroville as a way of life.

Many researchers wonder about how a place which gives complete freedom to live, does not promote or follow any religion, creates a fertile, creative, and supportive background for what one wants to do, and one wants to be. The central idea of humanity defines all the pieces of the puzzle and puts it back together. Auroville thrives on the idea of integral sustainability which motivates desired planning. Education, economy, resolution, creation, and governance are five important aspects of sustainability which is at work in Auroville. Auroville has given a new idea of 'Universal Township' based on the vision of humanity and spiritual well-being to the world and the world is looking at it with encouragement and inspiration.

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