

# AVEI NEWSLETTER



*Dome in the Masjed e Jame Mosque in Isfahan*

## IN THIS ISSUE

- Satprem's Visit to Iran ..... **page 2**
- New AVEI Publication on the Composition of Arches ..... **page 3**
- Celebrating AVEI's 30th Anniversary ..... **page 4**
- Implementing Tadelakt in an Apartment Renovation ..... **page 5**
- Making Spherical Ferrocement Planters ..... **page 7**
- Latest Earth Pigment Art from Muthu ..... **page 8**
- Recent Training Courses ..... **page 8**
- 2019 AVEI Training Course Schedule ..... **page 9**

This August, the Earth Institute celebrated its 30th anniversary! Looking back, the Earth Institute has come a long way from its inception as the Auroville Building Centre - Earth Unit. It has expanded into a full fledged institute for the development of earthen architecture, specializing in research, training, and construction.

Then in 2006, it became the Representative and Resource Centre for Asia of the UNESCO Chair "Earthen Architecture, Constructive Cultures and Sustainable Development". And over the past three decades, the Earth Institute has received 16 national and international awards, worked in 36 countries, and trained over 13,000 individuals from 88 countries.

The numbers continue to rise, and this newsletter issue particularly illustrates the impact of the Earth Institute's training courses and its on-going efforts in research and dissemination.

Please feel free to share this newsletter with your friends and colleagues as we spread the knowledge of earth architecture to the world!

Earthily yours,  
The AVEI Team



*A renovated guesthouse in Esfahk, an abandoned village, and the Ternav Bridge which dates from the Safavid Period*

### Satprem’s Visit to Iran

In July, Satprem was invited by Pouya Khazaeli and Behnaz Motarjem of the Esfahk Mud Centre to come to Iran to visit their center and give an AVD course for students in Tehran. During this five-day AVD training course to 22 Iranian university students, who proved to be the best group that he has ever taught.

While visiting the Esfahk Mud Centre, Satprem had the opportunity to visit a number of beautiful sites of Persian vernacular earthen architecture around South Khorasan Province, demonstrating the implementation of adobe bricks, subterranean rooms, courtyards, and wind towers for indoor comfort in the hot desert climate. Sadly, some of these villages have been abandoned due to the unwillingness of the government to connect the villages with

public infrastructures and damage from earthquakes.

Pouya and Behnaz also took Satprem to the city of Isfahan to visit some stunning examples of Persian architecture featuring complex arches and domes, including the Khaju Bridge, the Hasht Behesht Palace, Shah Mosque, Sheikh Lotfollah Mosque, Ali Qapu Palace, Chehelsotoon palace, the Old Bazaar, Masjed e Jame Mosque, and Zorellian-Polsheer House. ■



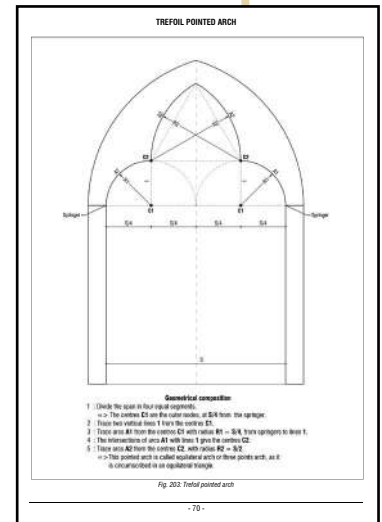
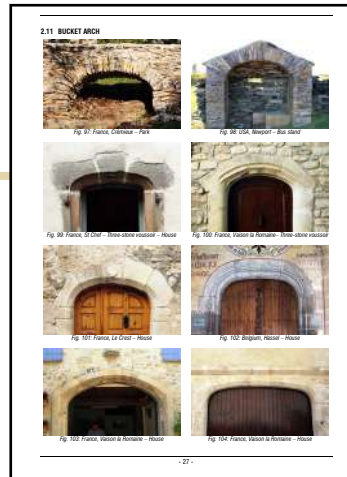
*The vaulted and domed ceilings of the Masjed e Jame Mosque and the Shah Mosque in Isfahan*

**New AVEI Publication on Arches**

As a result of his two-week visit to Iran to conduct an AVD course and visit several noteworthy earthen architecture sites, Satprem received a rich collection of Iranian publications and CAD drawings on arches, vaults, and domes, particularly from Behnaz Motarjem and Pouya Khazaeli of the Esfahk Mud Centre. After having analyzed the composition of the multitude of arches diagrammed, Satprem was inspired to create a new Earth Institute case study publication called *Diversity of Arches and their Geometrical Composition*.

This publication is composed of a pictorial section showing photographs of types of arches from around the world, a section with diagrams and instructions for common arches, a section with diagrams and instructions for Iranian arches, and an informational section for the general geometrical exercises needed to compose the arches.

This publication has already been greatly appreciated by the members of the earth building network who have reviewed it. It can be purchased from the Earth Institute.



UNESCO CHAIR  
Earthen Architecture

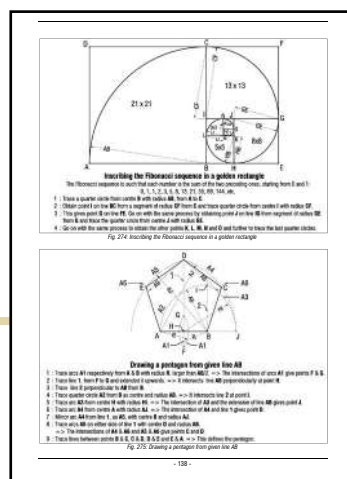
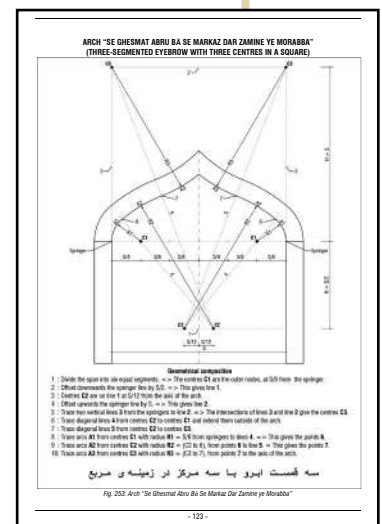
**AUROVILLE EARTH INSTITUTE**

**DIVERSITY OF ARCHES AND THEIR GEOMETRICAL COMPOSITION**

Auroshipam, Auroville 605 101, TN INDIA  
Email: earthinstitute@auroville.org.in

http://www.earth-auroville.com

Tel: +91 (0) 413 - 262 3064 / 3330  
Fax: +91 (0) 413 - 262 3080





*Biryani lunch at the Earth Institute in celebration of its 30th anniversary*

### Celebrating AVEI's 30th Anniversary

At the end of August, the Earth Institute celebrated its 30th anniversary with a big biryani lunch and cake for the entire team. The Earth Institute marks this particular date because it is the day in 1989 when Satprem first arrived in Auroville to work on the construction of the Visitor Centre, a project which had been undertaken by Suhasini Ayer as a showcase of sustainable building methods with funding from HUDCO, Government of India.

The celebration was also a beautiful testimony to the number of team members who have also dedicated the majority of their working years to the Earth Institute. Many from the

team can recount working on Earth Institute projects dating back to 1990s and early 2000s, participating on construction sites in Auroville as well as traveling to some of the Earth Institute's distant projects like the Al-Medy Mosque in Riyadh, Saudi Arabia or the Dhyanalinga Dome in Coimbatore, Tamil Nadu. ■



*Above and right: Satprem cutting a cake from the Auroville bakery*



## Implementing Tadelakt in an Apartment Renovation

In July, the Auroville Earth Institute team undertook a first experimental application of tadelakt as a coating for bathroom walls and other surfaces during an apartment renovation. Tadelakt is a traditional lime-based plaster technique that has been used for hundreds of years, as a waterproof wall coating, most notably for the walls of the Moroccan bathhouses, or hammams. The plaster is applied to the surface and smoothed and lightly compressed with a flat stone with rounded edges. Before the lime carbonizes, one must also rub in a coating of black soap (traditionally made with olive oil), which then reacts with the lime to give the plaster its waterproofness.

The Earth Institute had first conducted research into using locally sourced limes for tadelakt in February 2017, when leading French tadelakt expert Solène Delahousse visited Auroville (see **Newsletter Issue 33** for more information about that visit). With the proven durability of these 2017 samples, the Earth Institute has gone forward with new trials to gauge mix consistency, drying speed, and color.

A series of tests were done on the Earth Institute campus to finalize a mix ratio for an earth tone tadelakt and a pale green tadelakt colored with green and yellow oxide. One of the Earth Institute's masons, Mani, used the earth tone mix to plaster a wall-mounted desk and bench. After the successful completion of these two elements, the Earth Institute's four skilled masons all



joined to apply the pale green mix for the bathroom walls. The floors were completed a day later using oxide flooring with the same green-yellow oxide ratio.

Rather than use an olive oil-based black soap, Satprem developed his own recipe using neem oil, which comes from the abundantly available South Indian neem tree and which has antibacterial and antifungal properties as well.



*Mani applying the earth tone tadelakt mix and compressing the tadelakt with the stone*

However, one challenge was applying the tadelakt on ferrocement and cement plastered surfaces. As the apartment had been built using conventional construction techniques, the walls were made from cement plastered fired brick, in contrast to the stabilized rammed earth walls that the Earth Institute had plastered in previous tests. The ferrocement and cement plastered surfaces therefore had to be thoroughly scratched to create a rough surface for the tadelakt to adhere to.

Differences in consistency could also be noted in the earth tone tadelakt mix, as the soil content seemed to react with the lime, causing it to dry out more quickly. While usually, leftover tadelakt can be stored in an airtight container for eventual repair purposes, the reaction between the soil and lime made it unfeasible to store that mix.

The result of this experimental tadelakt renovation has been quite stunning. Some small micro cracks could be observed on the surfaces, which is to be expected with this technique, but they did not impact the waterproofness and added to the visual character. After two months of use, the tadelakt is performing well and living up to its reputation as an elegant surface coating for moist environments. ■



**From top to bottom:** *mixing the green tadelakt, applying the plaster on the shower and bathroom walls, rubbing in black soap with the stone, the tadelakt walls with matching oxide flooring drying, and a detail of the tadelakt in the shower*



### Making Spherical Ferrocement Planters

In August, the Earth Institute began a small project to make a set of ferrocement planters for an elliptical xeriscape garden on the north facade of its laboratory and dorm building. Rather than make the usual rectangular shape, the team decided to experiment with a more advanced spherical shape.

The framework was constructed using concentric wire circles welded to vertical wire elements, and the entire structure was then covered with chicken mesh. Starting from the bottom, the ferrocement mixture was firmly pressed into the framework with a trowel. By pressing a polypropylene woven cloth against the exterior face, the shape of the framework was maintained during the plastering. Then once the base coat had set, the masons applied a thin top-coat made of white cement and red oxide. The surface was then burnished with a smooth granite stone in a similar manner to the tadelakt technique.

These new planters have not only beautified the entrance to the campus, but also opened up possibilities of new developments for the Earth Institute's ferrocement curriculum. ■

*From top to bottom: preparing the wire framework for the planters, the framework covered with chicken mesh, applying the ferrocement mix with a trowel, adding a thin basecoat and burnishing it with a stone, and one of the completed planters curing*



**Latest Earth Pigment Art from Muthu**

We are happy to announce that Muthiah Kasi, who worked with the Earth Institute from 2017 to 2018 updating the AVEI graphic logo and promotional materials, has recently completed a beautiful series of triptychs for RKN Grand Hotel in Pondicherry. Muthu, who not only is a graphic designer but also a gifted painter, was inspired during his time at Earth Institute to start experimenting with earth-based pigments in his artwork and his early works were displayed during an exhibition at Kala Kendra in Auroville (see **Newsletter Issue 38**).

He has since devoted increasing time to developing this art



*Muthu with his earth pigment triptych*

form and has developed a stunning repertoire of colors and textures using soil and other natural pigments. This latest project takes Muthu's art to a

whole new scale, with a 8' x 10' triptych depicting an earth-tone seascape. Congratulations on this beautiful work!



*Trainees practicing bond patterns during a recent CSEB Masonry course*

**Recent Training Courses**

This summer has been a busy season for training courses, and the Earth Institute has given seven weeks of training courses on campus in the past three months. July began with CSEB Design, which attracted 27 students, and was followed by two weeks of CSEB Production and Masonry, with 37 students in attendance, primarily from India, but also one from Sweden. In September, the CSEB Masonry and Production courses were offered again, with





28 students participating from India, the Netherlands, the US, Argentina, and the UK. These courses were directly followed by two weeks of AVD Theory and Masonry. Twenty-one students participated from India, Australia, Portugal, Spain, the UK, and Japan.

The next training course will be the two-week Bioclimatic Earth design workshop, scheduled to take place 14 to 28 October. ■

### AVEI Training Course Schedule for 2019

October  
14th to 28th : Bioclimatic Earth

November  
4th to 9th : Wind Generator

December  
2nd to 7th : CSEB Intensive  
9th to 14th : AVD Intensive

### AVEI Newsletter

Issue 45 - July-September 2019  
© Auroville Earth Institute

Editorial Team:  
Hilary D. Smith  
Lara K. Davis

Auroville Earth Institute  
Auroshilpam  
Auroville 605 101 T.N.  
India

Tel.: +91 (0) 413 - 262 3330  
/ 262 3064

Fax: +91 (0) 413 - 262 2886

[www.earth-auroville.com](http://www.earth-auroville.com)

[info@earth-auroville.com](mailto:info@earth-auroville.com)  
[training@earth-auroville.com](mailto:training@earth-auroville.com)



*A glimpse of Satprem's recent bike trip to Spiti Valley, Ladakh, and Zaskar: at ~5100 m altitude on the Shingo La Pass*