THE INDIAN INSTITUTE OF ARCHITECTS

IIA

R E F L E C T I O N S

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EDITOR'S NOTE

The Theme for the January issue is **REFLECTIONS**.

Architectural Design represents an architect's reflections on his or her relationship with society, culture and environment. Discussions and debates are vital in the field of architecture to keep up with changing trends and new developments in the world. This is required to keep our profession adapting to the changes and to stay relevant.

Education is a concern for all of us knowing about the steep dip in the demand for seats in architecture. We need to reflect on the reasons for this shift. Is the profession of architecture not attractive enough to pursue a decent living? But then, it was one of the most sought-after professions until recently.

Why the sudden lack of interest? If this trend continues, our profession can be hijacked by others who are looking keenly for the right opportunity.

We need to innovate and think of ways of marketing our profession to reach out and appeal to the younger generation. Surely the Council of Architecture and the Indian Institute of Architects will come forward and initiate a robust road map.

This issue sees Ar. Kurian George in dialogue with renowned architect C.N.Raghavendran.

The new avatar of JIIA is completing the milestone of the first twelve issues in February 2022.We invite suggestions for themes from our readers for the next twelve issues based on the letters in the word ARCHITECTURE.

We invite Design features, Research Papers and Articles for publishing in the Journal.

Sometimes the smallest step in the right direction ends up being the biggest step in your life.
Steve Maraboli.

Ar. Lalichan Zacharias
Editor

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PRESIDENT'S MESSAGE

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Dear Members,

As the New Year dawns, let me wish you all a progressive year in thoughts and deeds as we grapple with the emerging situation, where the virus spread is more but subdued and manageable as it becomes muted with time.

The cloud of uncertainties is slowly clearing and let us hope for a renewed approach to resuscitate ourselves. It is incidental that some of our programmes have been rescheduled and . . . we hope they will be back on track again.

The just-concluded 10th IIAPL organised by the IIA Kolhapur Centre of Maharashtra Chapter was an event to behold with meticulous organisation, in spite of uncertainties and its challenges. The formatting, venues, logistics, accommodation and hospitality were appreciated by all. The credit goes to Chairman, IIA Kolhapur Centre, Ar. Vijay Korane, Ar. Satish Jagdale, Convener & Jt. Hon Sec. Maharashtra Chapter and the entire organizing committee amply motivated by the IIA Sports Committee Chair and Jr. Vice President, Ar. Jitendra Mehta- appreciate IIA Maharashtra Chapter and Ar. Sandeep Bawdekar, Chairman for facilitating the same.

Visiting Ar. Shirish Beri was an experience in itself to witness his pragmatic practice of sustainable architecture blending so beautifully with the natural surroundings. In these days of extensive commercialization, these stand out along with the works of many peers who have dedicated their practice to truly sustainable architectural styles that withstand the test of time.

IIA's initiative of recognizing the best outgoing students of the Institutions affiliated to IIA has received nominations but more are expected. The medals will be presented by the respective Chapter Chairpersons in coordination with the Institution. The Students Newsletter is proposed to be released shortly and the Committee is making a good effort to bring out features that are participative and beneficial to the students.

The revised DCRs of several states need to be studied by our respective Chapters and provide a feedback to the authorities on the various parameters which sometimes are changed as per the demands of some stakeholders but are not in consonance with the National Building Code.

Let us look forward to eventful days ahead.

Ar. C. R. Raju
President, IIA

Ar. C.R. Raju
President, IIA
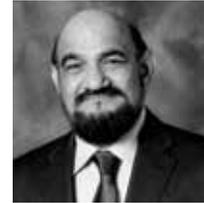
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COMMENTS

I caught up a few days ago on the last ten JIIA journals. Nice change.
Good work from the team.

Ar. Rahul Mehrotra
Mumbai

We welcome your comments and suggestions.

Please write to us at **jiiaeditorial@gmail.com**

THEME

REFLECTIONS

Architecture is the very mirror of life. You only have to cast your eyes on buildings to feel the presence of the past, the spirit of a place; they are the reflection of society.
I.M. Pei

Somewhere between the messiness of the building site and the puzzles of architectural theory lies the profession, discipline and art of architecture. It is always under construction.

Architecture is built through the development of ideas as much as through the erection of buildings. What is the role of art and architecture in society? How can one learn more about history through art and architecture?

These apparently simple questions encapsulate a series of complex responses that could easily fill several volumes. Since antiquity, these questions have been catalysts for the development of philosophical, aesthetic, societal and architectural theories. A helpful strategy to respond here is to touch upon the work of 20th-century thinkers who have elucidated some of the issues raised.

I believe that architecture, which is primarily associated with the basic notions of shelter and functionality, possesses other characteristics and operates at many other levels; unfortunately, these are often relegated to oblivion. Examples include architecture's experiential impact on all our senses and its symbolic possibilities. These categories account for the production of extraordinary works throughout the ages. It is through the symbolic and sensorial criteria that we can discuss architecture's expressive quality, hence its relevance as art.

Architecture has always grown with reflections of the past, be it changing architectural styles or its theories. It not only symbolizes that architecture is ever-changing but also proves that it has been growing like all living things.

Recent years have seen depletion of the environment, which gave us sustainable architecture. This shows that 'necessity is the mother of invention' applies to architecture as well.

Whenever there is a need, architecture has always opened its arms to create and accept the changes brought by its people, surroundings and materials.

Earlier, stone constructions used to be the particular style of design, this shifted to brick and cement to concrete to steel and glass. Every construction is the reflection of the trend prevailing at that time- be it through material, by technique, by workmanship, or by the style of architecture.

So, to conclude we derive a harmonious equation between reflection and inspirations from the past and present to create a sustainable and healthy future of architecture.

The Louvre, Paris
(Source: https://www.architectureanddesign.com.au/features/list/louvre-pyramid-im-pei)

Ar. Tushar Sogani
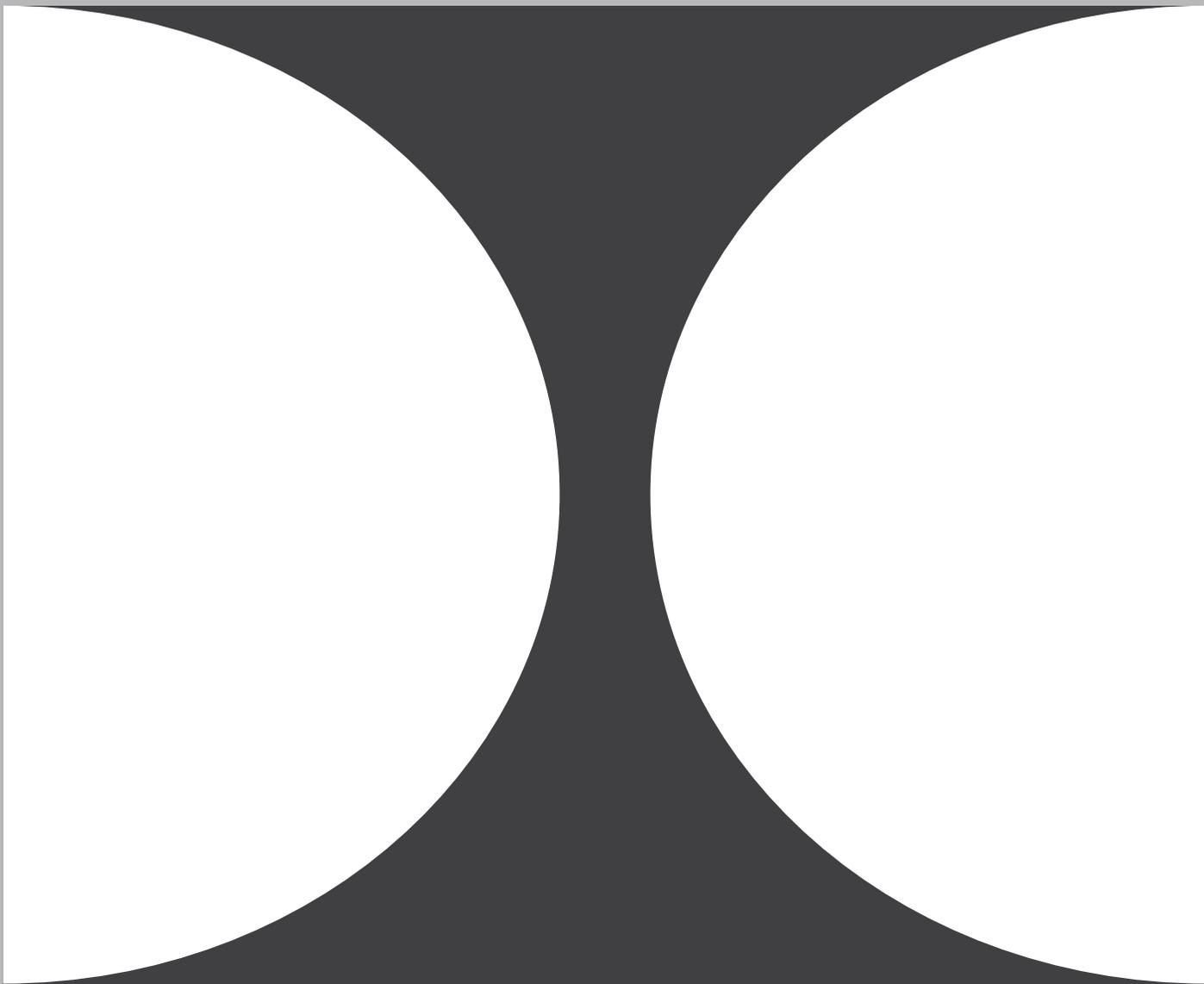
RESEARCH

**Role of Parametric Design in designing Architectural Elements
An Experimental Approach in a Graduate Architectural Design Studio**
Kalyani Kulkarni, Smita Ogale, Vasudha Gokhale

●

Enhancing Social Resilience in Post-Cyclone Housing Reconstruction
Anam Nasim, Aniruddh Sharan, Sharon Sabu Mathews, Veeresh Angiras, Chaitali Basu

ROLE OF PARAMETRIC DESIGN
IN DESIGNING ARCHITECTURAL ELEMENTS

AN EXPERIMENTAL APPROACH IN A GRADUATE ARCHITECTURAL DESIGN STUDIO
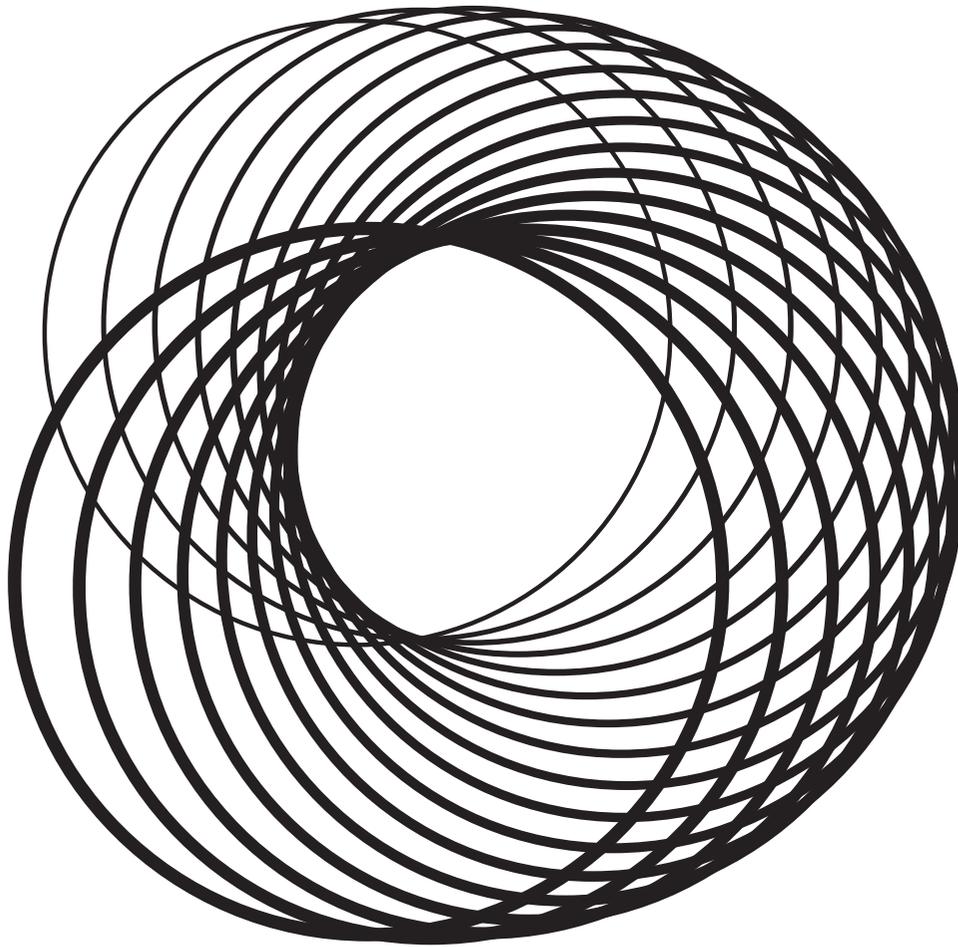
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ABSTRACT

Parametric Design (PD) is a new specialist design method where computer algorithms provide design solutions ranging from generation to iterative solutions for design and detailing. PD involves exploring numerous solutions to Architectural Design (AD) with the use of the PD concept. This design begins with the conscious or subconscious attribution of values to parameters describing functional requirements and the constraints that limit the range of possible design solutions. This research presents a pedagogical experiment of introducing PD in a graduate studio for AD.

It demonstrates the efficiency and effectiveness of designing a simple building element using parameters and with software like Rhinoceros 3D with the Grasshopper plug-in. The analysis revealed that building components could be iteratively designed using parametric software by investing very little time and energy compared to the time consumed for remodelling and redesigning using the traditional design methods. Furthermore, the efficiency of this design process facilitating 3D printing of complicated geometries for formative assessment purposes and at an accurate scale surfaced. Finally, it is emphasized that the advanced knowledge of this technology and this approach will help students in their design endeavours in further education and profession.

Keywords: *parametric, computer algorithm ms, construction industry, digital tools*

1. INTRODUCTION
1.1 Background

The parametric architectural design represents an application of advanced digital technologies in architectural design projects that facilitate the changeability and adaptability of architectural solutions at all the design stages. Parametric architectural design gained prominence in 2008 in the wake of advancements in digital media and the subsequent introduction of tools facilitating digital design, that spread all over the globe with an astonishing speed manifested as the digital revolution (Al-Azzawi& Al-Majidi, 2019, pp. 1-15). The design process, with parameters, involves describing a dynamic process that a set of parameters can change to produce variations as the output. The use of various computer technologies and digital tools construction and design of complex structures and forms is evident in history (Phillips, 2010, pp. 24-28). The phrase "parametric" was reportedly used by Luigi Moretti, an Italian architect, in 1960 for a stadium. However, the first building project using parametric systems without using computational methods is the Philips Pavilion by the architect Le Corbusier and Iannis Xenakis for the Brussels World's Fair in 1958 (Alvarado & Muñoz, 2012, pp. 107-118).

Currently, PD possesses a specific place amongst different digital architecture approaches as it offers variety, spatial richness, and sensitivity to specific contexts (Gallas, Jacquot, Jancart, &Delvaux, 2015, pp. 149-157). The application of parametrics is beneficial in AD that initiated with conceptual design articulating the broad outlines of the project concerning the function and form. It is significantly challenging stage, including designing experiences, processes, interactions, and strategies. The conceptual design generates and explores the maximum possible design solutions tested and evaluated against predefined criteria. The parametric approach to design helps to materialize creative ideas efficiently within the stipulated time (Abdullah &Kamara, 2013, pp. 333-342). The process of design involves adoption of several computational generative systems. However, most of them cannot modify the original design and recreate it with a different configuration, attributes and parameters. The PD approach overcomes these limitations generating numerous options in a short period.

1.2 Parametric Design Concept

'Parameter,' a word of Greek origin, means a 'measurement' of the attributes of an object, and 'parametric', therefore, relates to a parameter, i.e., to a measurement. However, historically PD involving parameters is evolved from simple computer script generated models providing design variations. It was evolved from simple models capable of generating design iterations by using simple strategies of varying the measurements at each instance of the program's execution. The parametric model's development has reached a stage where they can assess tree structures as complicated and varied as parent-child relations and hierarchical dependencies (Hernandez, 2005, pp. 310-324). Parametric design represents a computational method acting as a generative and analytical method during design exploration. It is an act of designing an object and the designed object as an output of the design act (Leach, 2009, pp. 32-37). PD can generate and analyze simultaneously, making it a powerful tool in architectural education, research and practice. It is both, the means and the end simultaneously since both are interdependent.

It is a popular approach to Computer-aided Design (CAD) because of its capability to create unusual forms, dealing with complex geometries resulting in non-routine designs with increased technical sophistication (Lee, Gu, Jupp, &Sherratt, 2012, pp. 1-20). Conventional CAD tools primarily represent the final design relying on the single-state design. However, parametric modelling is a method that permits the diverse domains of design by exploring many alternatives of an algorithmic model. It facilitates a designer to revisit various design alternatives to enhance the design during the design phase itself (Dino, 2012, pp. 207-224).

1.3 PD thinking

In this digital era, the process of design is increasingly influenced by digital design mediums functioning through computational processes. This aspect has made it critical to study exploring the interrelationship between cognitive skills and computational processes. This inter-relationship is the subject of much current design research (Oxman, 2017, pp. 4-39). Design thinking, by definition, is a set of creative strategies (Visser, 2006). Recently it is acknowledged to simultaneously be explorative and creative in all domains of design (Dorst, 2011, pp. 521-532). Integrating digital tools and the PD thought, supported by computational processes, has received importance in design education in Architecture (Lyche, Berg, &Andreassen, 2018). Creativity is a major cognitive activity in design studies, and various theories on design thinking acknowledge this aspect by and large (Boden, 2004, pp. 1-25).

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Designing an architectural project is a complex phenomenon that demands a variety of options formulated on the basic design idea. PD and various generative methodologies comprise an innovative method termed 'Parametric Design Thinking.' Besides, it combines the viable design facets and parametric design to overcome the limitations in the overall design approach. This system includes the following parameters: geometry, topology, representation, material, environment, mathematics and human factors (Jabi, Soe, Theobald, Aish, &Lannon, 2017, pp. 96-114).

PD thinking represents an exploratory, heuristic, and empirical system where the thought process relies on rules, experience, human feeling, and intuition. It is an activity of relating intangible and tangible sub-systems by digital tool specificity into a design proposal. It establishes relationships between properties within a system (Chokhachian, 2014, pp. 50-56). The design thinking in PD includes analysis, synthesis and evaluation. Encoded domain knowledge linked to 'rules' about climate, structure and composition created an innovative exploration and design thinking of the architectural discipline (Lee, Ning, & Williams, 2014, pp. 263-282). Although parametric thinking is analogous to the conventional design approach, its structure differs as PD emphasizes initial explicit assumptions which were otherwise dealt with tacitly (Sanguinetti& Kraus, 2011, pp. 39-48).

1.4 Advantages of PD
Research is generating newer parametric languages and scripting techniques, thus enabling parametric design systems to encompass more diverse design domains (Hudson, 2010, pp. 60-65). It also facilitates varied generative approaches to design and with topological relationships (Oxman, 2006, pp. 229-265). Diverse design disciplines such as architecture, industrial design and fashion design have now come under the umbrella of PD given their command over the topological and formal design features.

PD thinking deftly weaves together abstraction, mathematics and algorithms, thus inserting the computation and analysis loop into the traditional intuitive design process. Furthermore, production rules, called 'rule sets', take over as the critical design procedure of arriving at three-dimensional design outputs. This act frees the design thinking process allowing an explorative approach without investing too much time in arriving at an informed design solution (Holland, 2011, pp. 131-140).

Modern PD allows the rapid generation of a palette of iterations while simultaneously assessing the design output concerning its performance (Bollinger & Vierlinger, 2014, pp. 610-618).

Standardized parametric models as a tool in traditional CAD programs are over and above imminent. It facilitates design changes without going through the cumbersome process of redrawing and deleting- something that was completely unheard of before. The feedback loop between the parameters utilized in designing or the

engineering analysis thereafter facilitates informed modifications and allows re-modelling of existing products (Myung & Soonhung, 2001, pp. 99-107).

1.5 Parametric tools in Architectural Design (AD)
During the past few decades, algorithmic design has gained prominence as the central principle of AD, as it enables increased computational command over the design geometry. Moreover, it has spawned new explorations on the connection between generative principles, computation, and design cognition (Gero, Yu, & Gu, 2015). Informed with a computer programming language, parametric operations computer programming language facilitates the exiting parameters and constraints without transforming the topology or geometry and their interrelationship (Agirbas, 2018, pp. 40-54).

The designers construct a logical explanation around parametric dependencies and relationships, using digital tools to generate and demonstrate their design ideas. For all entities a point is the first step in space in parametric applications, allowing analysis of architectural conditions in a 3D environment instead of the 2D or layering techniques. As parametric modelling relies on data, variables, and their interconnection with the other components, allowing variations of input design data (Schnabel, 2007, pp. 237-250). This aspect renders parametric tools appropriate for AD. The PD approach represents the application of parameters to institute relations between design elements to obtain various formal alternatives. Hence with the use of this concept architects can operate the design process more efficiently (Zarei, 2012, pp. 4-5).

2.METHODOLOGY
This research is an outcome of a design experiment that includes creating a simple building element - a railing having balusters - using the software Rhinoceros 3D with the Grasshopper plug-in as the parametric tool. The aim is to showcase the efficiency and effectiveness of designing with geometric parameters. Two kinds of balusters were created using Rhino and Grasshopper in different experiments. The first demonstrated the simple form of a cylinder as 3D geometry. The second demonstrates the competence of Rhino as software for generating complicated curvilinear or non-linear forms using the Grasshopper plug-in. The experiment starts with creating a script using the Grasshopper plug-in in the computer software Rhinoceros 3D. The script empowers the designer to build generative algorithms to produce innovative and complex shapes within Rhinoceros 3D.

2.1 Design Experiment -1
The first experiment involves designing a railing with a newel post and balusters, having a simple form. The first step is creating a newel post with the 'cylinder' component, with B as the base plane of the cylinder, R as the radius, and L as the height (refer Fig. 1). Both R and L are controlled by a number slider facilitating alteration of dimensions to obtain different slenderness and configurations without redrawing or remodelling the object. The software, being parametric, allows modifications of these measurements at any design stage. The geometry is terminated by capping the cylinder as
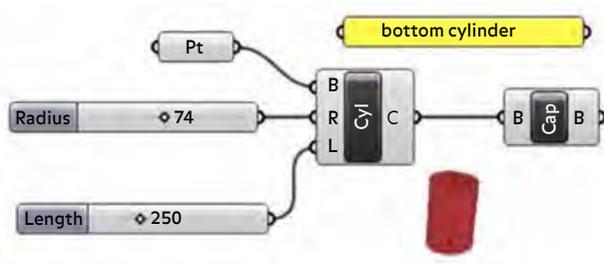
Fig.1: Illustration of making a base cylinder for the newel post
(Source : Authors)
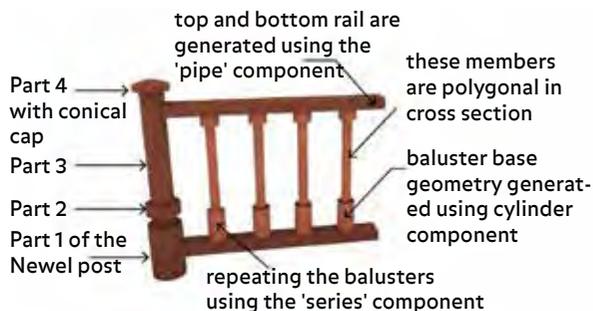
Fig.2: Simple newel post and balustrade design
(Source : Authors)
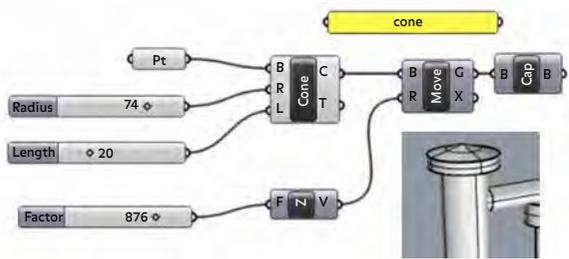
Fig.3: Illustration of making a cone at the top of the newel post
(Source : Authors)
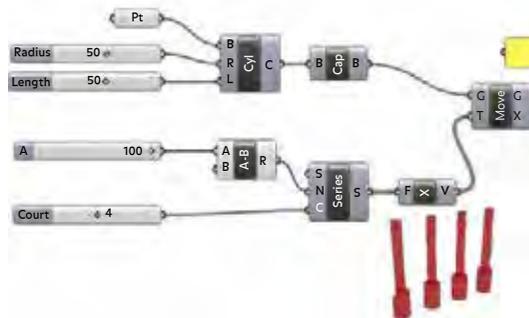
Fig.4: Illustration of making a polygon in series for balusters
(Source : Authors)

seen in Fig. 1. The other part of the newel post, a cylinder of a smaller radius (refer Fig.2) is similarly generated, with the base point/ plane coinciding with the cap of the bottom cylinder.

Whenever the length of this cylinder is changed using the number slider, the starting plane of the subsequent cylinder also changes accordingly, thus establishing the relative positions of both the components and saving on modelling time. The third cylindrical part is fabricated similarly. The fourth part, which is slender, is created with the cylinder command and capped with a disc and a conical cap (fig.3).

Creating a balustrade
In this step, the base and top of the baluster are generated using the cylinder component, using the same procedure as followed for the newel post. The central slender part of the baluster may be a polygon or a circle in cross-section. The polygon command makes it possible to modify the number of sides and the polygon's size at a mere change of the numerical slider, making it highly time-efficient to try out and assess various geometries (refer Figs. 2 & 4). A single baluster is replicated using the 'series' component. This component facilitates alterations of the spacing using the number slider, controlling the baluster's number without redrawing or remodelling. The replication direction and the interval can be specified. The upper and bottom parts of the rail are created with the 'pipe' component in the software.

Baking in Grasshopper
With the 'bake' command, all the components transform into objects in Rhinoceros software, terminating their inclusion in the parametric grasshopper definition. At this stage, the object's numbers and dimensions cannot be modified. The sliders in the grasshopper definition facilitate changing the measurements of any component to generate several iterations. The outputs can be "baked" and converted into Rhino components and evaluated as seen in Fig. 2.

2.2 Design Experiment-2

The second experiment demonstrates the form generation of a curvilinear newel post and balustrade using Rhino 'NURBS curves'. Surfaces with curvatures in two directions are defined as 'doubly curved surfaces', such as the sphere and the saddle.

The cylindrical base of the newel post is created similar to the experiment one. Several methods are available to create the curvilinear portion of the newel post. Fig. 5 demonstrates one of the methods. The Grasshopper software provides the flexibility for choosing a two-dimensional curve drawn in Rhinoceros software. Through the 'revolve' component in Grasshopper, this curve revolves around itself at 360º and is capped. The axis of revolution 'A' is specified as a line 'Ln' as reflected in the diagram. Fig.6 shows the design of the railing with doubly curved elements. The method of generating these doubly curved railing elements is exemplified in Fig 7. It is created using mathematical expressions, 'graph' and 'range' at hand in the software.

A line starting from the newel post's cylindrical base is divided using the 'divide' component: CNK, where C is the line whose length is defined with the slider and N is the division's count required. Each dividing point is the circle's centre, whose radius is controlled by the graph (refer to Figs. 7 & 8). The 'range' gives the flexibility to change the circle's diameters as per the input fed into 'range'. The top part is prepared by extruding a rectangle surface selected from pre-existing graphics and extruded in the y-direction. The change in height can be done using the number slider. Several iterations of the curved newel post can be created by dragging the points of the graph or by selecting another graph type. The types of graphs can be accessed by right-clicking on the graph image (refer Fig. 9).
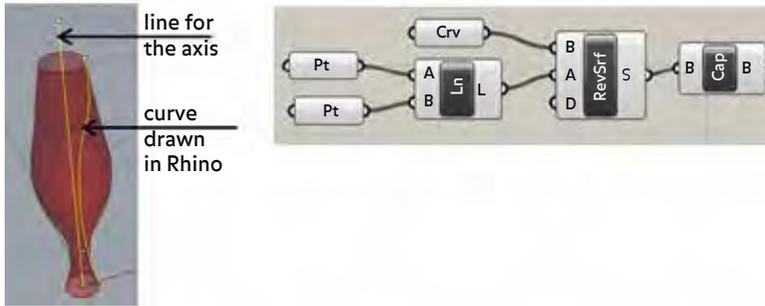
Fig.5: Revolving a curve around an axis (Method 1) *(Source : Authors)*

line for the axis

curve drawn in Rhino

Fig.6: Creating doubly curved railing elements (Method 2) *(Source : Authors)*

Length 500

Steps 10

graph type : bezier curve
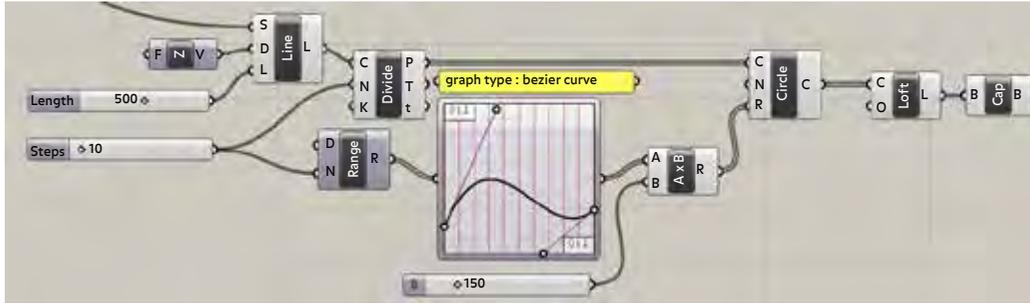
Fig.7: Illustration of making a parametric curve using graph (Method 2) *(Source : Grasshopper definition adapted by Authors from graph mapper online grasshopper tutorial)*

Points dividing the line with the 'divide' component

Base of the newel post

circles of varying radia controlled by the graph Each point is the center of a circle

A smoothly curved from using the 'loft ' component
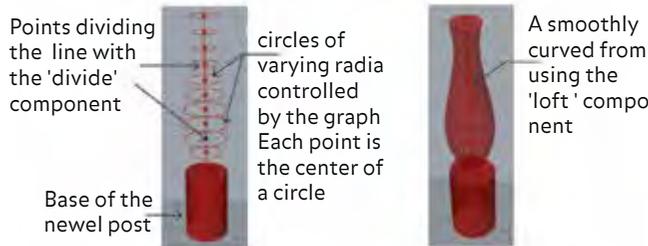
Fig.8: The model generated by the grasshopper definition in Fig. 7 using the Bezier curve in the graph *(Source : Authors)*
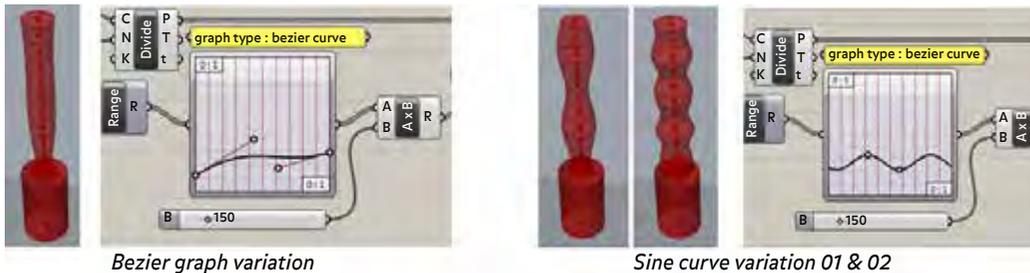
Bezier graph variation

Sine curve variation 01 & 02
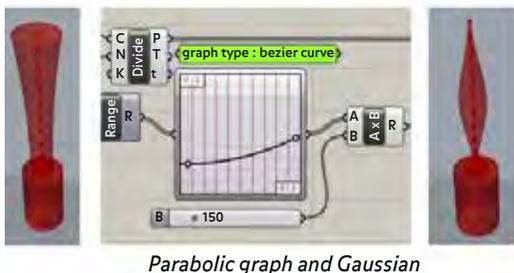
Parabolic graph and Gaussian
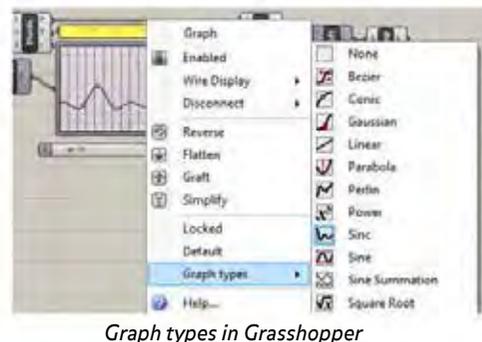
Graph types in Grasshopper

Fig.9: Variations of the newel post can be obtained by modifying the points in the graph and the graph type *(Source : Authors)*

Creating the Balusters

The balusters are designed with the use of the 'series and the 'revolve' command (see Fig. 5). The 'pipe' component generates the upper and lower part of the rail. The cross-sectional profile of the rail is a curve drawn in Rhino, and the curve can be replicated with the series command and capped. The entire geometry is baked producing the railing design, as seen in Fig 6.

3. RESULTS AND DISCUSSION

Two categories of parametric railing designs have been generated through these design experiments. One is a straightforward design with a 'cylinder' as the geometry. The parametric software enables dimensional changes to any railing element at any and every stage while designing, thus facilitating design iterations with varying dimensions.

The second experiment involves a doubly-curved configuration for the newel post. Here too, dimensional changes can be done with the sliders. Additionally, geometrical form variations can be introduced through generative elements available in the parametric software. Apart from saving time for designing, the software facilitates rapid prototyping of these formal iterations. Such iteration may be assessed, and the appropriate one can be selected for taking ahead. Grasshopper being a parametric software, dimensional changes and variation in design in the railing components can be quickly executed without having to redraw anything, thus saving much creative time.

4. CONCLUSION

This research demonstrated the PD application, in which the parametric tool processes the input design parameters to produce the best solutions. It is established that the software facilitates architects to explore various forms and creative options with some adjustments to the input. It is stressed that architects can utilize this technology to materialize an aesthetically appealing building concept into megastructures with less effort and time. Besides, it empowers architects to give a personal visual touch and create architectural vocabulary by adapting the design tool. The design method is relatively simple, allowing quick revisions and assessing their effect on the entire structure.

In AD, the design and modification of components such as windows, doors, etc, is a tedious process that can be simultaneously accomplished, thus saving vast amounts of time. PD is proficient in blending complexity and variety, thus overcoming homogenous utilitarianism in designing an architectural entity. It considers all design elements interdependent and adaptable. As parametric tools use algorithms, they are helpful to produce intricate designs with ease and accuracy. This research advocates the broader use of PD and postulates that experimenting with these concepts will democratize AD.

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ENHANCING SOCIAL RESILIENCE
IN POST-CYCLONE HOUSING RECONSTRUCTION
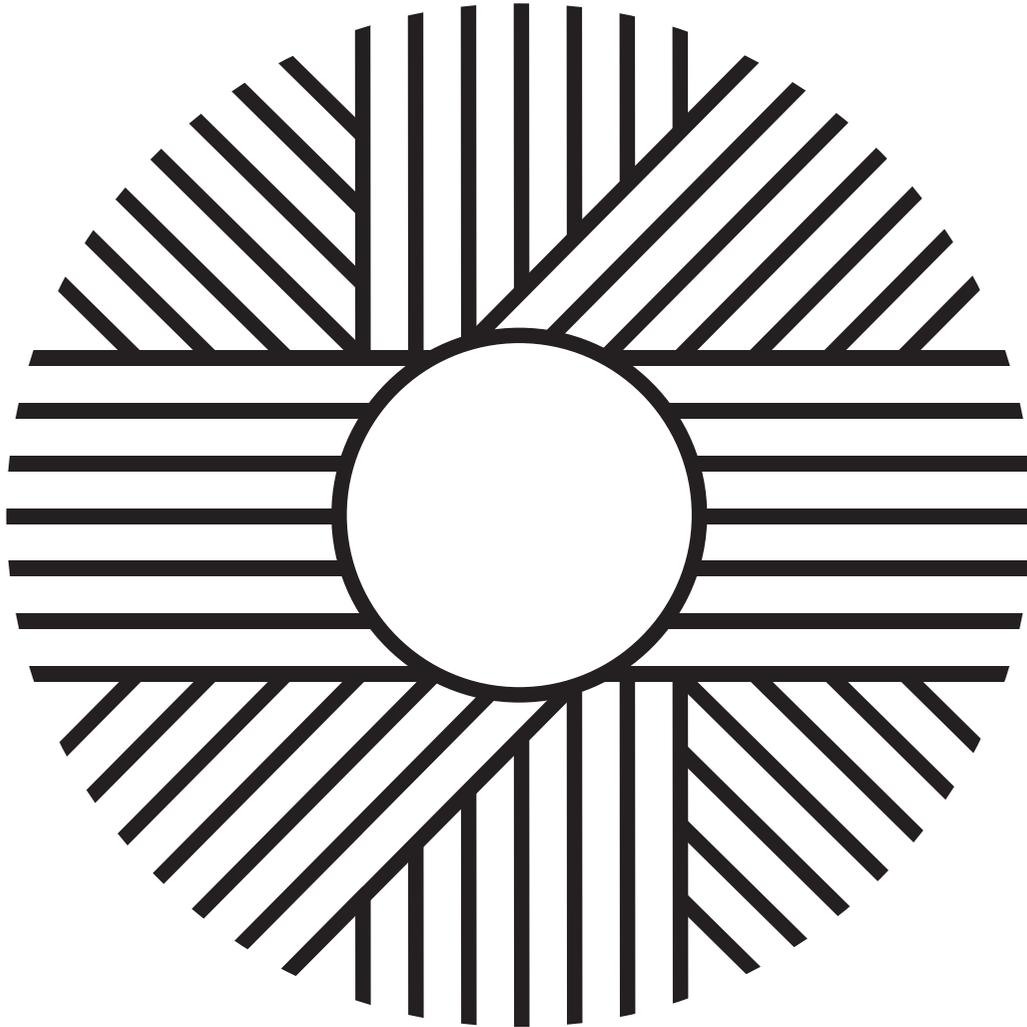
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ABSTRACT

Extreme weather events (EWEs) have been on the rise over the past few years globally, underscoring the need to improve the resilience of both physical infrastructure and social resilience. This paper is a study on how post-disaster reconstruction provides an opportunity to build resilience in both buildings and communities and brings attention to how the latter is rarely emphasized upon in the course of reconstruction sanctioned under various government housing schemes, oftentimes disregarding the diverse requirements of the affected communities. Through discussions with academic and practising experts working in the field of post-disaster reconstruction, this paper highlights that beneficiary-driven reconstruction and a participatory approach to planning are most effective in encouraging social resilience in housing reconstruction. The efficacy of these approaches is further highlighted through case studies from Southeast Asia that demonstrate various models of building social resilience through post-disaster housing reconstruction. Additionally, the designer's role is identified as that of a facilitator who draws upon inputs from affected communities to deliver a holistic solution or help the communities create solutions for themselves. Finally, through a case study of recent cyclones in Odisha, the paper identifies the gaps between theoretical solutions and their practical translation.

Keywords: *social resilience, post-cyclone reconstruction, social engagement, beneficiary-driven reconstruction, participatory design.*

1. INTRODUCTION

1.1. Background

Over the past few decades, climate change has caused an increase in the intensity, frequency, and unpredictability of weather events (Solomon & Qin , 2007, pp. 3-10). The unpredictable nature of these events in comparison to traditional weather events has caused them to be termed as 'extreme weather events' (EWEs) (Walsh, 2014). According to the report of the Ministry of Environment and Climate Change, Government of India, "In the financial year 2018-19, nearly 2,405 lives have been reported to be lost due to extreme weather events." (PTI, 2019 d). Additionally, as per the INFORM index (a global hazard and risk exposure index), India can be classified as a 'high-risk zone' due to its vulnerability to multiple natural disasters (INFORM, 2019). These facts and figures highlight the urgency to find technically sound and resilient solutions to withstand various extreme weather events in the long run. Typically, a disaster response strategy consists of the following two-fold approach:

a) Immediate post-disaster responses through relief resources and aid, and
b) Preparedness to withstand such calamities in the future and to recover from them as soon as possible.

The latter refers to resilience — the capacity of systems, societies and communities to recover quickly and effectively from the effects of the hazard that they are exposed to in an efficient and timely manner (UNISDR, 2009, pp. 1-35). Measures that ensure preparedness are a crucial part of improving the resilience of a community towards a calamity. Experts have quoted that resilience-building does not just include physical reconstruction, but also economic growth, mental and emotional upliftment of the community and improvement of their knowledge base to make them self-reliant in the face of a disaster. Thus, apart from creating sound technical solutions that are physically resilient, the consideration of social resilience - the ability of a community to respond quickly and effectively to a disaster - is an important part of disaster preparedness and management.

The aim and objectives of the study are as follows:

1.2. Aim

This paper aims to study ways of improving social resilience in the process of post-cyclone housing reconstruction, and to identify the practical implications of these methods in a particular region.

1.3. Objectives

a) To study various approaches of integrating physical and social resilience in post-cyclone housing reconstruction
b) To study various models of encouraging social engagement in post-disaster reconstruction processes.
c) To study the reconstruction and social resilience-building programs employed in a selected region frequently hit by cyclones.
d) To identify gaps between these programs and on-ground realities after recent disasters which have affected these regions.

2. LITERATURE REVIEW

The literature review intends to explore the first part of the paper's aim that is, identifying ways of improving social resilience in post-cyclone housing reconstruction (Figure 1). First, to demonstrate the significance of social resilience in housing reconstruction, an example of a successful post-cyclone reconstruction programme in Southeast Asia is discussed. Additionally, models of building social resilience in post-disaster reconstruction

Figure 1: Structure of literature review
(Source: Authors)

in Southeast Asian countries are studied to identify lessons that may be applied in post-cyclone housing reconstruction projects in the Indian context.

2.1. Cyclone-resilient housing reconstruction

Appropriate post-disaster housing not only focuses on disaster risk reduction but also addresses the psychological, economic and social needs and expectations of the community in the longer term (Tas, Cosgun, & Tas, 2007, pp. 3418-3431) and therefore, largely impacts the social resilience of the community. The following example from Southeast Asia, of a successful post-cyclone reconstruction programme, illustrates how reconstruction has to be a multi-pronged solution to be successful, centred around the requirements of the communities they are built for and focused on both physical and social resilience. It also shows how such solutions can help inculcate social resilience in these communities.

Patuakhali, Bangladesh

Bangladesh is ranked as the sixth-most disaster-prone country globally due to the frequent incidence of tropical storms and cyclones in the region. In 2009, the coastline of Bangladesh was destroyed by Cyclone Aila affecting more than 500,000 houses and impacting the lives and livelihoods of more than five million people. Since Aila, the Bangladesh Rehabilitation Assistance Committee (BRAC) has worked with local communities to develop comprehensive strategies and policies for cyclone resilience.

One of these projects included a model village of disaster-resilient homes in Patuakhali, a district that has faced massive losses of lives, property, and livelihoods due to cyclones. The cyclone-resilient model homes were designed to withstand strong winds and resulting floods, mainly comprising terracotta-roofed houses elevated on structural columns. Additionally, the new owners adapted this basic design principle to their advantage, extending the footprint while erecting additional columns as well as cultivating produce in their attached courtyards to generate additional income. The semi-open ground floor provided the inhabitants with enough space to rear ducks instead of the typically-grown cows and goats, which require comparatively lesser space and resources to grow (Figure 2). Such

instances of frugal innovation demonstrate how affected communities can come up with effective solutions built out of available resources and their needs when faced with extreme circumstances. These behaviours over time may formalize in an adaptive mindset, which in itself is a crucial part of resilience.

2.2. Models of building social resilience in post-disaster housing reconstruction

While the contractor-driven post-disaster reconstruction process has been considered as to be the quickest way of providing post-disaster housing, this approach can be detrimental to the long-term resilience of the impacted community. These houses often follow standardized designs, disregarding the diverse socio-economic conditions existing within an affected community (Jha, et al, 2010, pp. 181-239). These housing units are often designed in isolation without community spaces for gathering. Another issue arises when these units are abandoned by rehabilitated populations in half-completed stages, because of the unavailability of skilled labour needed to complete and maintain them (UNDP India, 2015).

However, certain examples of post-disaster housing programmes have been well-received in their communities. The three approaches to these successful models may be applied to various post-disaster reconstruction programmes with modifications as per contextual needs, as follows, and also shown in Figure 3:

i) Adopting vernacular techniques
ii) Community participation
iii) Involving local leadership

i) Adopting vernacular techniques: A case study from PoK, Pakistan

Field studies conducted after the Kashmir earthquake of 2005 discovered that buildings constructed using traditional methods withstood the effects of the quake better than many "modern" structures. Two types of these vernacular structures were tag (timber-laced masonry bearing wall) and dhajji dewari (complete timber frame with a wythe (a thickness of a single brick) of masonry-forming panels within the frame). Although the infill faced substantial damage, the structural frame withstood collapse, protecting the lives within (Jha, et al, 2010).

Figure 2: Cyclone-resilient housing, Patuakhali
(Source: BRAC)
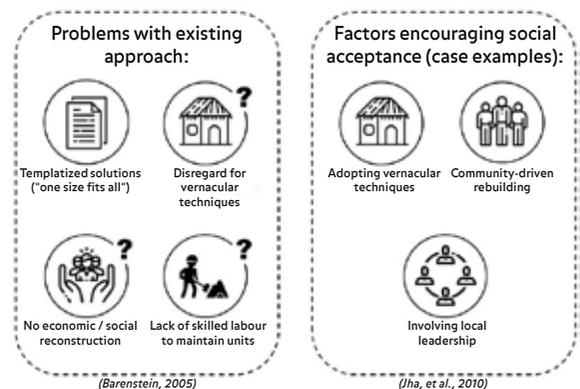
Figure 3: Problems with existing approach to reconstruction; factors encouraging social resilience in reconstruction
(Source: Jha, Barenstein, Phelps, Pittet, & Sena, 2010)

Figure 4: A local mason fills mortar within a *dhajji dewari* wall
(Source: Jha, Barenstein, Phelps, Pittet, & Sena, 2010)

Post-disaster reconstruction in these areas, which followed an owner-driven approach, promote and facilitate the use of the dhajji dewari technology (Figure 4). Rapidly accepted by the affected community, people reported a high degree of satisfaction with these structures. They had other advantages too: they were structurally resilient to earthquakes, made use of local materials, and were endemic to the housing culture of the region. After observing how existing structures responded to the earthquake, Pakistan's Earthquake Reconstruction and Rehabilitation Authority formally approved these construction methodologies. The reconstruction programme was successful for these three reasons:

- Utilizing a vernacular construction methodology for its structural resilience.
- Locally relevant solution and high degree of acceptance among the community.
- Adoption of a vernacular construction method that is already part of the local housing culture- skilled masons in this method are available locally and can help maintain and carry forward the typology.

ii) Community participation: A case study from Java, Indonesia
The 2006 earthquake in Java, Indonesia was an enormously destructive event, damaging around 350,000 residential units and killing 6000 people, mostly from the collapse of non-engineered structures. The Indonesian government, however, responded quickly and effectively from their past experiences by efficiently using resources from international organizations. Through facilitators, villages elected boards of trustees, who were instrumental in community organization and supervision. Their key activities are listed below and detailed out in Table 1:

- Identifying beneficiaries and prioritizing the most vulnerable
- Creating housing groups of 10-15 families, who chose a treasurer and group leaders
- Developing detailed plans for how each group would use the construction grants
- Opening bank accounts for each group
- Obtaining plan approvals, disbursement in tranches, and group procurement, construction, and bookkeeping.

Local workers and community members were trained in earthquake-resistant construction, who then developed plans together to rebuild homes and village infrastructure. Communities conducted self-surveys, prepared thematic maps, analysed needs and disaster risks, agreed on priority programs, and established procedures for operations and maintenance. To ensure good targeting and plans, accountability, and social control of implementation, an adequate understanding of rules and a sense of ownership within the community were essential. It was found that involving women increased accountability and enhanced the appropriateness of technical solutions. This approach to reconstruction became the model for the much larger government-financed reconstruction and rehabilitation programme, under which more than 200,000 houses were rebuilt in Java.

iii) Involving local leadership: A case study from Tamil Nadu, India
In the days following the 2006 tsunami that struck Tamil Nadu and Kerala, the Government of Tamil Nadu decided to follow a public-private participatory approach to post-tsunami housing reconstruction in where land and resources were allotted while NGOs would engage in on-ground construction. *The South Indian Federation of Fishermen Societies* (SIFFS), a local support organization comprising 150 village-level fish marketing societies, played a major role in this approach, as they could leverage their long-standing relationship with local fishing communities and utilize their knowledge to devise appropriate housing strategies.

Through a series of planning and brainstorming sessions, SIFFS devised a strategy to customize the houses for all house owners in a participatory manner (Figure 5). While fulfilling the community's livelihood requirements and safeguarding them against any potential future calamities, SIFFS incorporated the following three elements to ensure the project's social acceptance:

- Ensuring the participation of house owners in early design stages and throughout the construction process.
- Taking into account people's social and cultural needs while planning their houses.
- Ensuring a feeling of ownership in the new homeowners.

Figure 5: Various house models created by the South Indian Federation of Fishermen Societies (SIFFS) with community members
(Source: Sukumaran & Datta, 2009)

480 km

ORISSA'S COASTLINE:

30

DISTRICTS AT THE HEAD OF THE BAY OF BENGAL

98

NUMBfR OF CYCLONES THAT HIT ORISSA SINCE 1891

Figure 6: Overview of cyclone activity, Odisha
(Information source: Ramesh, 2018)

3. METHODOLOGY

In the literature review, the post-cyclone housing programme in Bangladesh highlights the need to build physical and social resilience in the reconstruction process, while the examples of participatory approaches to post-disaster reconstruction demonstrate methods to help build social resilience through the reconstruction process. Along with the review, a secondary case study of cyclones in the state of Odisha was conducted as a means of understanding the process, stakeholders and challenges involved in enhancing the social resilience of an affected community faced with a recurring disaster. This information was supplemented with semi-structured, in-depth interviews conducted with a purposefully sampled group of experts working in the field of post-disaster reconstruction and disaster resilience:

a) *Dr. Suman Kumar Karn,* consultant at the United Nations Office for Disaster Risk Reduction for reconstruction and recovery programs.
b) *Dr. Prabir Kumar Das,* an architect specializing in community-driven construction projects within post-disaster housing programs.
c) *Prof. Dr. Sanjukta Bhaduri,* Professor of Urban Planning at the School of Planning and Architecture, Delhi, and external consultant for community-led disaster risk reduction programs.
d) *Mr. Anshu Sharma,* architect and co-founder of SEEDS, an organization focused on building community resilience through practical built solutions for disaster readiness, response and rehabilitation.

Discussions with these respondents have also led to an improved and holistic understanding of the various theoretical solutions studied in the literature review; moreover, they have shed light on how these solutions have been translated into ground reality.

3.1 Case studies

Despite several theoretical solutions and case examples offering different approaches to encouraging social resilience, most of them get lost in translation into reality, and the case of cyclones in Odisha demonstrates that. Common reasons for this gap include the extent of damage, the scale of the reconstruction project, or the challenges presented by the local conditions of the project and the community involved.

i) Cyclones in Odisha: An overview
The eastern coast of India is highly vulnerable to cyclones and tropical storms because of the region's extreme wind patterns and a flat topography that allows winds to move inland easily. In 2018, three severe storms battered the eastern coast in just three months—October's cyclone Titli, November's cyclone Gaja and December's cyclone Phethai (Bahinipati, 2014, pp. 1997-2007).

Located along India's eastern coast, Odisha is the region's most cyclone-prone state, having faced 98 of the 103 several cyclones to have affected the coast between 1891 and 2000. (Ramesh, 2018). During the late twentieth century and the last decade, the severity of these occurrences was relatively higher (Figure 6), causing significant loss of life and property in the state (Bahinipati, 2014, pp. 1997-2007).

ii) Agencies involved in Reconstruction
The post-disaster reconstruction process is a multifaceted process that could involve multiple agencies and organizations. The Disaster Management Act of 2005 in India led to the creation of a *National Disaster Management Authority* (NDMA) and a *National Disaster Response Force* (NDRF). It also resulted in the formation of similar *State Disaster Management Authorities* (SDMAs), *District Disaster Management Authorities* (DDMAs) - each with their own response forces and funds for disaster response and

Figure 7: Technology demonstration unit built by the Shelter Project, Rahana, Odisha
(Source: UNDP India, 2015)

Figure 8: Damage of houses after Cyclone Fani
(Source: The Hindu, Biswaranjan Rout, 2019)

mitigation (Disaster Management Division, Ministry of Home Affairs, 2005, pp. 1-30).

Following a major disaster, these organizations come into action, mobilizing funds and organizing first-hand aid. The government often seeks external support, first from the humanitarian community and then from international financial institutions including World Bank and *United Nations Development Program* (UNDP). Apart from financial support, these organizations also provide technical support and support during the implementation of post-disaster reconstruction programmes, in the event of both large and small-scale disasters. Governmental organizations are also joined by other stakeholders such as engineers, architects, contractors, masons, academics and members of the affected community.

iii) Case Studies
Case study I: The Shelter Project, Odisha
One such multi-agency reconstruction programme carried out by the UNDP in Odisha is the Shelter Project, which effectively introduced new building technologies to a specific region and ensured the region's sustainable development by using these technologies in the programme's planning and implementation (UNDP India, 2015).

a) Project Context
The devastating 1999 Odisha Super Cyclone claimed over ten thousand lives and destroyed over twenty lakh houses, mostly belonging to rural low-income groups. To accommodate homeless families, the government passed a grant to build over 600,000 houses through its national affordable housing program, Indira Awas Yojana (IAY). However, a study conducted two years after the Super Cyclone showed that most IAY houses remained incomplete and the communities affected by the cyclone continued to live in transition shelters (UNDP India, 2015). Further findings revealed a deficiency in the number of master masons in the region to oversee the completion of these houses. Because of lack of funding and proper planning of expenditure, many recipients were unable to complete the structures that they began building (UNDP India, 2015)

In response to the situation, the *United Nations Development Program* (UNDP) partnered with the Swiss Development

and Cooperation Agency (SDC) and Care Today to launch the Shelter Project to support appropriate disaster mitigation and sustainable livelihood construction technologies in Odisha from 2000 to 2007. The project aimed to fill in technological or economic gaps within the initial construction models proposed by IAY and to identify suitable solutions for a sustainable and cost-effective model of reconstructed housing, called Technology Demonstration Units. These units were built using funding from the SDC to demonstrate alternate building technologies in various project sites and to train local community members in these methods (Figure 7).

b) Construction of Technology Demonstration Units (TDUs)
Most of the losses recorded after the cyclone were of physical infrastructure, primarily houses, as local/ vernacular buildings were not designed to be structurally resistant to cyclones. These houses were built using conventional building technologies and typologies due to their ease of application and a lack of awareness about other options (UNDP & MIPPA, n.d.). To make the Shelter Project more technically and culturally sound, the following four steps were taken:

- Indigenous materials, skills and technologies were mapped and filtered for cost-effectiveness and applicability in various building typologies, where technical soundness of these reconstruction methods was combined with conventional building techniques to create the TDUs.
- The United Nations Volunteers (UNV) team, comprising members of the community, along with partner NGOs were trained to use the proposed materials and technologies for the TDUs through practical training workshops (Table 2).
- To ensure culturally-appropriate designs that took the communities livelihoods and lifestyles into consideration, the UNV organized community meetings to agree upon a common floor layout for the TDU in terms of room orientation and functions.
- The participants received continuous technical assistance through all stages of producing the TDUs.

c) Project Implementation and Lessons Learnt
The Shelter Project is a successful example of a multidisciplinary team of engineers, architects, planners, NGOs, government agencies and locally affected communities collaborating towards developing the

TDUs. The project's success can be attributed to the following factors:

i. It helped provide alternate livelihoods to the affected community and created a team of masons who could continue to use this technical knowledge in future constructions.

ii. It helped to show the merits and demerits of using appropriate construction technologies to communities (UNDP India, 2015).

iii. It was a comprehensive and holistic approach that built upon people's latent skills and capacity to successfully develop social and economic linkages.

iv. While mindsets have changed in favour of owning a substantial brick and mortar house, the financial capacity to afford to do so through loans has not.

v. The greater the involvement and participation of the households from design to completion, the more functional the house will be. The sense of ownership of both the house and the process will also be much greater (World Habitat Awards, 2007).

Case study II: Cyclone Fani – A reality check

While the Shelter Project reaped its benefits, it also remained limited in its adoption. In our discussions with architect Prabhir Kumar Das, who worked on the UNDP TDUs, it was found that the TDUs continued to be model units that could not be replicated on a mass scale. Thus, most of the structures built after the disaster remained vulnerable to the destruction caused by Cyclone Fani which occurred in May 2019, causing widespread damage to physical infrastructure.

a) Context and response

Cyclone Fani had been the most severe cyclone that affected Odisha after the super cyclone of 1999 (AFP, 2019). By implementing a timely evacuation plan, the state government and the Odisha State Disaster Management Authority (OSDMA) played a crucial role in mitigating the cyclone damage. Using a location-based alerting system helped the OSDMA drastically reduce the number of casualties (Seetharaman, 2019; PTI, 2019 b).

However, the cyclone resulted in the catastrophic damage of housing, destroying 5,08,467 houses (PTI, 2019 a). In response to the disaster on the housing stock, the state government sought the central government's support "to sanction five lakh houses under the Pradhan Mantri Awas Yojana (PMAY)" (PTI, 2019 c). The government also provided some immediate financial support to the victims. Rs. 95,000 was given to every family whose house was fully damaged while others received Rs 500-2,000 in cash (Figure 8).

b) Shortcomings of the solutions post-Cyclone Fani

i. Lack of support for loss of livelihood

Apart from the loss of houses, many locals also lost their means of livelihood. Volunteers of *Civil Society Responds to Fani* (CSRF), an initiative by a group of state-based not-for-profit organizations, reported that "hundreds of small vendors, most of whom live in slums, need support in the form of material and make-shift sheds and stalls to revive their lost sources of livelihood." (Mahapatra, 2019). Little support was provided by the government schemes to address these issues.

Figure 9: Newspaper articles showing the response after Fani.
(Source: Hindustan Times, Times of India, PTI)

ii. Poor construction practices

A major cause of concern is the lack of improvement in Odisha's construction practices. Reports of the steel sheets of Puri Railway Station causing immense damages during cyclone Fani highlights the adverse impact of poor construction (Roychowdhury, 2019). In the absence of regulatory frameworks, haphazard construction practices continue to take place in vulnerable regions increasing the destruction caused by the cyclone.

A study of alternative building designs and materials needs to be undertaken to address this issue. It is important to keep in mind that low-cost and sustainable alternatives such as thatch and bamboo are widely available in Odisha. In essence, it isn't the choice of material, but poor workmanship and lack of local knowledge of the efficient usage of the material – be it RCC, brickwork or thatch – which has resulted in poorly constructed buildings (ibid.).

iii. Ignorance of caste and societal realities

A major factor that is often overlooked in the post-cyclone solutions is the social politics existing within the community that the solution is being designed for. Reports of several Dalit victims unable to erect makeshift houses and remaining stranded in community centres for a month after the cyclone sheds light on this issue (Barik, 2019). Bimal Pandia, a member of a voluntary organization named OXFAM says "Disaster does not spare people along caste lines, or as rich and poor. But after cyclone Fani-ravaged Puri district, a clear pattern has emerged that the vulnerability to disaster among the socially excluded [Dalits] is high, while resilience is very weak." (ibid.).

The operation of caste politics isn't something specific to the case of cyclone Fani. In the past, several post-cyclone rehabilitation programs have also faced this issue, like after the 1999 super cyclone, when many Dalit families were restricted access to community shelters (Hughes, et al, 2011). Thus, there is a need that economic vulnerabilities be considered along with diverse social vulnerabilities (stemming from ethnicity, caste, education and place of residence) while devising post-disaster reconstruction programmes (Gupta, 2010, pp. 1-27). Hence, it is vital to structure different solutions keeping in mind the different needs and vulnerabilities of the communities while devising post-disaster models of rebuilding structures and communities. (Figure 9).

4. RESULTS AND FINDINGS

Despite a wealth of resources on cyclone reconstruction, best practices, and models of community engagement, reconstruction programmes have not managed to respond satisfactorily to the requirements of the affected populations. According to Prabhir Kumar Das, standardized solutions by government agencies are implemented without accounting for the needs and social structure of the beneficiaries and without any collaboration with the affected community. This approach largely involves replacing traditional construction with pucca houses, which beneficiaries struggle to complete building due to a lack of funds. Delays in the initiation of the reconstruction process also pose an issue, because of which affected populations return to their non-resilient structures again. He also lamented that the inclusion of women, lower-caste members of society and older people in the process of design and construction are also very limited.

Similar concerns were reiterated in our discussions with expert Anshu Sharma. He stated that the bulk of reconstruction activities after disasters is sanctioned under several government housing schemes, which have standardized processes for selecting beneficiaries and disbursing funds and standard unit designs that are largely inflexible to changing demands. This was stated as a major flaw of government-led reconstruction which has resulted in solutions that have limited impact in increasing the social resilience of communities (Johnson, 2019).

According to Prof. Sanjukta Bhaduri, governments tend to adopt a top-down approach to post-disaster reconstruction, without considering the opinions of local communities. There is often no post-occupancy evaluation to ascertain whether their reconstruction programmes respond satisfactorily to the needs of the affected community. Experts working with NGOs stated that this is inevitable, as governments are under pressure to provide mass housing as quickly as possible while being equitable simultaneously. Consequently, they find it difficult to engage communities along with NGOs which are working at grassroots level at a much smaller scale. They also stated that in some circumstances, local governments may choose to minimize third-party involvement from NGOs and international organizations, thus maintaining the status quo.

Other important considerations highlighted by the experts include the location of the reconstruction projects, which should not relocate affected populations to vulnerable regions or to areas with no opportunities for livelihood recovery. Enforcement of guidelines and laws governing resilient infrastructure and development is another important factor that is lacking and a reason for poor physical resilience (Figure 10).

5. DISCUSSION: BRIDGING THE GAP BETWEEN THEORETICAL SOLUTIONS AND EXISTING APPROACHES

Our discussions with experts revealed that theoretical solutions have various problems when executed in real-life scenarios. No theoretical solution can be applied

Figure 10: Reasons for the gap between theoretical solutions and on-ground realities
(Source: Author, expert respondents)

directly into any environment, without adapting the solution to fit the requirements of the context. One of the experts highlighted the significance of local teams in this process of "localization", as they will have insights that only people who have been repeatedly affected by disasters will have, which can help guide the direction and priorities of the reconstruction programme.

Experts also quoted that a trade-off between quantity and quality becomes the reason for not adapting many theoretical solutions, as better-designed houses would contribute to increased costs. Here, they stressed upon educating decision-makers on why such investments are important, as they can go a long way in increasing the resilience of a region's physical infrastructure. In the words of expert Suman Kumar Karn, "Investing one dollar today in making a house resilient will save a person seven dollars in post-disaster reconstruction." - a sentence that highlights the significance of investment in long-term resilience.

Ar. Das stated that public and civic institutional buildings in rural areas generally employ RCC construction, which, for local communities, translates as a sign of growth or progress. He stated that for a return to vernacular and alternative technologies in post-disaster reconstruction, it has to be built into the aspirations of people, by encouraging community and political leaders to build public and civic institutional buildings using the same techniques.

They also stated that differences in scale and project size is another important reason for the difference between theoretical solutions and ground realities (especially in the execution of owner-driven reconstruction programmes), as governments are under pressure to provide mass housing at the earliest while being equitable at the same time.

6. CONCLUSION & RECOMMENDATIONS

One of the major factors encouraging social engagement, and thus social resilience, is beneficiary-driven reconstruction. Involving people in design and construction stages and putting them at the helm of management inculcates a sense of ownership amongst them and improves their knowledge of cyclone-

resilient construction, thereby extending physical resilience to social resilience. Such a participatory approach ensures that the community's needs are met while helping them recover from their traumatic experiences. The lead disaster agency, in coordination with other agencies and affected community members, can identify opportunities for participation and decide how to support and empower this community through financial assistance, physical resources, or skill training (Jha, et al, 2010, pp. 181-239).

Government-led mass reconstruction can also adopt a consultative approach that derives on inputs from the affected community and technical experts. The best way to execute this is through a combined approach, wherein governmental organizations become the authorizing agencies and points of financial support while private technical experts can tailor standard solutions to local realities.

It is also vital to note that housing reconstruction does not only include physical reconstruction but also socio-economic reconstruction, also taking into account livelihood opportunities, the cultural context, and economic opportunities to ensure a speedy recovery process.

In this process, the designer's role becomes that of a facilitator who builds upon existing knowledge.

Communities have great insights in the form of acquired wisdom, accumulated over centuries of residing in the same locale, which can greatly influence design decisions. Educating them in the design and construction of resilient homes can play an important role in ensuring social resilience. One way of utilizing this acquired wisdom is by employing vernacular techniques of construction and traditional wisdom and retrofitting them to make them structurally resilient. Apart from training local masons and engineers in cyclone-proof construction methods, the setting up of demonstration units and rural production units can revive rural construction practices and the implementation of cost-effective alternative technologies in the process of reconstruction. Educating local communities about modification of vernacular technologies for improved structural integrity can help them integrate these technologies into future construction at a large scale and in a safe, hazard-resilient manner.

There is an increasing need to educate governments and communities on the importance of resilience with a need to invest in risk reduction as a part of long-term planning. Better foresight and planning risk reduction can greatly reduce recovery times and make communities more resilient.

Table 1: **Types of activities carried out with community participation and the community's level of involvement**
(Source: Jha, Barenstein, Phelps, Pittet, & Sena, 2010)

Type of participation	Role of affected population	Level of control
Local initiatives	Conceives, initiates, and runs project independently; agency participates in the community's projects.	High
Interactive	Participates in analysing the needs and in programme conception, and has decision-making powers.	
Through the supply of materials, cash, or labour	Supplies materials and/ or labour needed to realize an intervention or co-finances it and helps decide how these inputs are used.	
Through material incentives	Supplies materials and/ or labour needed to realize an intervention. Receives payment in kind or as cash from agency.	
By consultation	Asked for its perspective on a given subject but has no decision-making powers	Low
Through the supply of information	Provides information to agency by responding to questions but has no influence over the process.	
Passive	Informed of future plans or what has occurred.	
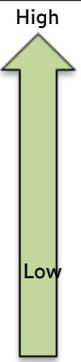
Table 2: **Overview of selected technologies used in Technology Demonstration Units in Odisha**
(Source: UNDP India, 2015)

Building Element	Building Materials	Building Technology
Foundation	Reinforced cement concrete (RCC) or bricks	Pile or well foundation or stepped footings in brick and cement mortar with 25 mm DPC
Walls	Bricks	Rat trap bond with reinforcement and 1:6 cement mortar
Roof	Mangalore tiles & concrete	Filler slab with Mangalore tiles as filler material
Lintels & Openings	Bricks	Brick lintels and arches (reinforced)
Doors & Windows	Wood or ferro-cement	Doors without casings
Parapet	Bricks	Brick jaali work

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SEASHELLS TO LIME
A VERNACULAR METHOD AND NEEDS FOR REVIVAL

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Fig. 1 : Seashells
(Source: https://images.app.goo.gl/H3LprpWhS8S8qp2S6. Accessed : Dec. 2020)

ABSTRACT

Lime is a versatile mineral. Various forms of lime are used in environmental, metallurgical, construction, chemical or industrial applications and more. Lime has been used as a primary ingredient in masonry mortars for centuries and this important use continues to the present day in both historic and contemporary applications. Lime is usually obtained from limestone. Places like Kerala where limestone is scarce, lime is majorly obtained from seashells so they developed their own traditional method to extract lime. Shell lime was one of the major components in construction of most of the houses, temples, bridges, dams etc. in Kerala during earlier times. People used shell lime not only as a replacement to cement but also as a plastering agent which helps reduce temperature in building interiors. This dissertation is a retrospection into the vernacular method of making lime mortar from seashells by visiting the workspace. The study also intends to analyse the challenges faced by this method and provide with necessary recommendations.

As an initial step, an analysis is conducted on the history of lime, additives used in lime mortar, types of lime, preparation of lime using lime stone with the help of various existing literature journals. These aided to identify several advantages of lime in construction. A questionnaire survey was conducted among architects and people aged between 21 and 30 to probe how familiar they are about this material and method. The documentation of the process is completed to include detailed analysis of each and every step involved in the preparation of lime and also exploring the challenges faced by this method. Live case studies are performed to analyse the advantages of shell lime construction by visiting buildings constructed using shell lime instead of cement. As a final step, few productive guidelines are proposed which aims at the revival of this method and give utmost importance to not only the end products but also the process and human skills.

1.1 INTRODUCTION

Our history creates a great impact on shaping our future. In early times there was an ecological balance maintained between human beings and their natural environment. They believed in amalgamating nature with the building to create a picturesque scenario so they did not harm the natural beauty of the environment. India has been recognized worldwide for its variant culture and its contribution to the same. If each and every heritage structure is taken in account, a common factor that seems to be distinctive is its construction technique and structural stability which ensures its existence even till today in spite of witnessing calamities, manmade disasters and negligence.

While searching our past we can see many such techniques which are developed specifically for their respective regions and use locally available materials. The main advantage of using such technique is that these methods are widely used and have been proven for hundreds of years.

This article documents the ancient technique of making lime mortar from seashells and the need for the revival of this process which was regularly used in the past and is gradually getting extinct.

1.2 NEED FOR THE STUDY

In its holistic definition, India's built heritage assumes a significant and dominant position and necessitates a deeper and holistic understanding from architects. In the current scenario there is more emphasis on the end-product represented by buildings, building complexes and settlements, while it offers minimal exposure to processes and human skills

and the knowledge and wisdom embodied in India's built heritage. It is essential to record the traditional knowledge carried by craftsmen who have contributed to the magnificent architecture of India. This reinforces our sense of identity and helps us to understand where we have come from.

Fig. 2 : Spreading wood coal on the floor *(Source: Author)*

Fig. 3 : Layer of seashells *(Source: Author)*

Fig. 4 : Mixing of seashells and wood coal *(Source: Author)*

Fig. 5 : Creating fire inside the round furnace *(Source: Author)*

Fig. 6 : White smoke coming out from furnace *(Source: Author)*

Fig. 7 : Adding mixture to furnace *(Source: Author)*

Fig. 8 : Mixture kept in the furnace *(Source: Author)*

Fig. 9 : Quick lime changing to lime powder *(Source: Author)*

Fig. 10 : Quick lime changing to lime powder *(Source: Author)*

Fig. 11 : Quick lime changing to lime powder *(Source: Author)*

Seashells are the waste products generally used as fertilizers (Fig. 1). Its use in making lime mortar was discovered and this technique was widespread in the past due to its abundance and sustainability. Even though these methods were popular then, we are unaware of such processes and hence it is important to document them before they are completely lost.

The aim of this study is to study and document the vernacular method of making lime from seashells and analyse the opportunity of its revival. The objectives are as follows:
a) To understand the process of making lime from seashell in the traditional way by visiting the workspace.
b) To analyse the advantages of using lime mortar in buildings through live case studies.
c) To establish the opportunity of its revival.
d) To understand the requirements for traditional extraction of lime from seashells?

The scope of this research looks at the traditional knowledge and wisdom about this method which is only known to the craftsmen. It is of utmost importance to document and

identify the potential of using this method. It is essential to make this technique popular among the common man. The study is limited to only one material. No literature studies are available about the vernacular method.

2.PRIMARY STUDY

2.1 CASE STUDIES
A total of four live case studies were conducted to understand the advantages of using shell lime in construction :
(i) Vadukannathan Temple (ii) Varikassery Mana (iii) Kadavathuparambil Residence (iv) Tirur Munsif Court
The externals walls of Varikassery Mana and Kadavathuparambil Residence clearly show the perfect finish obtained from lime mortar. The 110-year old Tirur Munsif Court was constructed using shell lime instead of cement and the walls were plastered using lime. None of the walls exhibited any weakness till date. We can experience the temperature difference inside the building even in our first visit. Likewise, all the other buildings have never experienced any structural issues due to the usage of lime.

2.2 QUESTIONNAIRE SURVEY

A questionnaire survey was conducted among 23 architects and 100 common people to find out their opinions about shell lime construction and how aware they were about this method. This helped understand the challenges faced for the survival of this construction technique. From both the surveys, we understand that most of the people including architects are unaware of this method. Majority of the architects are interested in doing projects with shell lime but the lack of skilled labourers and unfamiliarity with this method is making them hesitant. In case of the common people, they were interested in knowing the process of making lime and understand the need for this traditional knowledge to be preserved and the need to spread awareness about it.

2.3 INTERVIEWS

Devan, a 63-year old man (Fig. 12) who is pursuing this profession for past 45 years clearly remembers earlier times when people constructed their own houses using locally available materials, without causing harm to nature and even exploring their own methods in construction. Due to the use of cement and other materials which are easily available, the use of local materials and traditional techniques has been all but forgotten, which requires skilled labourers. "I am pretty sure that the new generation have no idea that a method like this exists and that the dams, bridges etc. which they still use were made by these materials" says Devan.

By interviewing craftsmen, the original practice of this method was understood and documented. They also explained the various changes that were incorporated along with the benefits and drawbacks of this process. He strongly recommended the revival of this method which has several benefits including the lack of environmental impact created by cement, which is one of the main producers of carbon dioxide - a potent greenhouse gas. Sea shell lime in contrast generates lesser energy and wastage in the production process.

2.4 KEY FINDINGS OF THE STUDY

Summary of the research findings based on the objectives of the research conducted.

1) Table 1 shows the process of making lime from seashell in the traditional way was understood by visiting the workspace. Each and every stage in the process of preparation of lime was explored, along with the materials and equipment used. The study also helped in identifying the additives used in the making of lime mortar. By interviewing the craftsmen, the original practice of this method and contemporary changes were understood.

2) The advantages of using lime mortar in buildings were analysed through live case studies. The four buildings mentioned above were constructed using shell lime which show very little or no degeneration.

3) It was possible to establish the guidelines for revival of this method. The challenges faced by this technique were seen to be lack of skilled labourers, unawareness of this method, lack of marketing, lack of modern inputs, unavailability of raw materials and time consumption. Recommendations for the identified problems were provided as shown in Table 2.

Fig. 12 : Craftsman Devan near his workspace *(Source: Author)*

Table 1: **Documenting vernacular method of extracting lime from seashells**

Step	Description
1	A portion of the workspace floor is cleaned to mix wood coal and seashells. Wood coal is spread first and water is sprinkled on it, and then overlaid with a layer of seashell above it, topped by a layer of wood coal. Wood coal and seashells are mixed in a ratio 1:2. Here 7 basket of wood coal are used to mix 14 basket of seashells. The larger pieces of wood coal are kept aside which is later used in for firing of the round furnace. (See Figs. 2 & 3)
2	Mixing of wood coal and seashells are done using a wooden spade. The materials are mixed properly and are kept for some time. (See Fig. 4)
3	Fire is generated using coconut husk in the furnace, along with large pieces of wood coal that helps to uplift the fire. To this is added one basket of mix of seashells and wood coal. (See Fig. 5)
4	The motor provides sufficient oxygen for combustion. White smoke from the furnace indicates that the seashells have started burning. In earlier days when there was no electricity, this process was done by rotating the spinning wheel manually. (See Fig. 6)
5	The mixture is added from four sides at frequent intervals of 15-20 minutes to the furnace. It will take almost 2.30 hours to complete the entire process. (See Fig. 7)
6	Once the entire mixture is added to the furnace, the next step is to lay jute over the mixture to accelerate the rate of burning. This will increase the smoke emission. The mixture is kept burning for 4-5 hours, after which the mixture is left as is overnight. This completes the calcination process. The entire process is usually carried out at night.
7	In the morning, when the mixture of quick lime is cooled, it is packed and sent for various purposes. (See Fig. 8)
8	Water is added to quick lime to produce lime powder. (See Figs. 9 & 10)
9	To obtain lime mortar suitable for construction, jaggery, fat of the snakehead fish and pulp from the cactus plant is added to this mixture. (See Fig. 11)

3. CONCLUSION

Lime is eco-friendly comparing to cement. Combined with sand and surkhi, both, a plaster and mortar is obtained, which is every bit as satisfactory as cement mortar and often with more advantages. Yet, we have allowed this plentiful sustainable product and technique to almost disappear from the construction industry altogether. Very few people realise that the cost of establishing a cement factory is a hundred times that of starting a similar-sized lime factory, which uses seashell as raw material. Furthermore, there is in fact no advantage in building very huge lime-producing factories. Small inexpensive production units can be established at comparatively very little cost and spread over wide areas to simplify labour distribution and cut down transit and delivery costs. We have already forgotten that many of our big old irrigation dams, railway bridges etc., which still serve us efficiently, were built with this lime mortar and knew nothing about cement. By developing economic, simple, wide-spread lime production units we could solve many unemployment problems and produce fine, efficient, versatile building material which is a much greener option for society. This gives us a chance to preserve our ancestral skills and expertise before it is completely lost.

Table 2: **Challenges and recommendations in the vernacular method**

Challenge	Recommendations
a) Lack of skilled labourers	• Skilled labourers are mandatory for the production of shell lime as it requires careful handling and accurate mixing. • Training programmes should be conducted to make people and workers understand every step of this method and encourage them to follow it. • Implement improvisations in labour-oriented technology which in turn will benefit the betterment of the society who work in this field. • Government incentives for constructions using this method, as it is eco-friendly and promote environmental sustainability will attract more people to learn these skills.
b) Unawareness of this method and material.	• Educate clients and spread awareness of this material and method. • Create awareness about the benefits of this method. • Marketing, publicity and awareness programmes can increase the use of this product. • Use of this method in public projects can increase the value of the product. • Curriculum in architecture schools can encourage students to document vernacular ways of construction processes and usage of traditional building materials. This will help improve the visibility of this method among the new generation
c) Lack of Marketing	• Tie-up with contractors and architects to encourage them to use this material will accelerate the reach of this method. • Reduced tax rates for such products can increase the market value so that it can compete with cement in case of economic feasibility • Advertise the benefits of this method with the help of media influencers to create publicity.
d) Lack of modern inputs	• Make workers aware of changes in the field of architecture like the introduction of technology, equipment etc., so that they can experiment with modern methods, which are simple and ideal.
e) Unavailability of raw materials	• Tie up with suppliers who provide these raw materials currently, in order to widen the area of distribution.
f) Time consuming	• Analyse the areas in this process which can be improved with the help of modern technological advancements and implement them.

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DIALOGUE
WITH
Ar. C.N. RAGHAVENDRAN

Ar. Kurian George

Ar. C N Raghavendran, Padma Shri awardee, with over 50 years of experience, is a practising Architect and Managing Director of a reputed 75+ year Architectural Firm, C R Narayana Rao (CRN) in Chennai. He has successfully delivered a wide variety of landmark projects across the country & nearby countries and has won awards & accolades of national & international repute. His Design commitment in practice of Green Building Concepts resulted in according him recognition for the Leadership by IGBC and USGBC, besides recognition by IIT Kharagpur as Distinguished Alumnus and by the IIA with an Award for Excellence in Design and by IIA (Northern Chapter) in admitting to Hall of Fame. He has also contributed himself to teaching, social and community works

Amazon building

Counted among the more sought-after architects today, Ar. C.N. Raghavendran, is a partner at CRN. Deftly navigating the width and depth of the rapidly-changing construction industry, he has contributed an expansive body of work. Despite his extremely demanding professional commitments, Ar. C.N. Raghavendran has an amiable and modest disposition and is always approachable. He has always made time in his busy schedule for the IIA Chennai Centre and has readily extended active support to it. Ar. C.N. Raghavendran [CNR] shares his insights and perceptions in his conversation with Ar. Kurian George [KG].

Kurian George [KG]: CRN is one of the most acclaimed firms practising architecture in the country. Last year your firm crossed the 75 years' mark from its inception in 1945. Would you render the story of the beginnings of the firm?

C.N. Raghavendran [CNR]: CRN, short for late Mr. C.R. Narayana Rao, my father who founded a single-man firm 75+ years ago, is continuing to evolve, grow, learn and adapt in its professional journey with a focus on the context of our times, now as in the past and our relevance in an overall sense.

Never would have the founder ever imagined that the firm would morph into a multi-disciplinary practice with a footprint of works planted across the continents, including, as an example, being awarded a globally-contested award for "Intelligent Building of the Year" in 2005 for a project promoted by the governments of India and Mauritius for an IT software and hardware park in a 150-acre signature location near the Mauritian capital, Port Louis. The lesson that I have learnt is that each project, each context and each fulfilment is an opportunity of a cycle of learning and a cerebral challenge to a designer from concept to completion.

Like most pre-Indian Independence endeavours in India, CRN's journey bears a close parallel to the evolution that our country has witnessed during the path of development of human potential, vitality of the economy and immeasurable social transformation. Though not perfect in each sphere, we all have much to be thankful for - both on a national scale and the tiny-micro efforts of a bunch of professionals. The national influence has been direct, proportional and consequential on all enterprises. CRN has witnessed the trajectory and has been a reflection of it.

CRN, as before, continues to stay ahead and future-ready. Given the turbulent times that have constantly thrown up challenges and opportunities and stimulated our growth from a single-man operation to a large multi-faceted and multi-disciplinary architectural firm that delivers integrated design solutions to a wide spectrum of project typologies.

Focussing on the fulfilment of the end-user's project aspirations, CRN has taken the design objectives to a higher plane by a self-driven commitment to environmental and occupier wellness along with integrated contextual technology integration. CRN, all through the time, has always aimed with an unwavering focus on being in the forefront in enhancing design relevance to the wellness of people, places and context, emphasising the integration of creative architectural design, sustainability and appropriate technology as an interdisciplinary collaborative nucleus.

Have we done it all, done the best? No. We are still learning and adapting in this world of endangered environment, fast-changing technology and the human drive to go farther.

KG : It is true that children of involved and inspiring architects are naturally enthused to follow in the footsteps of their successful parents. However, beyond the generalities, there is always a very interesting story. Would you tell us why you chose to study architecture?

CNR : My father started his architectural firm in the early 1940s and as a school kid of ten years or so in the mid-fifties, I used to sit in my father's office with draftspersons chatting and while away my summer holidays. I became curious how a series of pencil lines on tracing paper actually represented someone's ideas and

International Instruments, Bangalore, mid '70s

Kalakshetra Auditorium, Chennai, late 70s

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State Bank of Mysore, Esplanade, Chennai, mid '50s

Chinmaya Viswa Vidhyapeeth University, Kochi

that these drawings will be used for real construction. I wondered how they knew what lines were to be drawn where or made out whether they represented a house, a school or whatever else. It was mysterious and I could not quite understand this transformation and the curiosity turned into a desire to understand how. This was to me, a completely new language. I got interested in trying out and experimenting on and off with this process. This interest perhaps reduced the extent of prodding my father would have done to get me into architectural education, that too in IIT, Kharagpur. I was fortunate to be exposed to fantastic learning experiences both at IIT and later at Berkeley. I really owe it to my parents first, but cannot leave out the humble draftspersons of the late fifties in my father's office and the teaching staff with fellow students at IIT and Berkeley all through.

KG : Your involvement in the building industry spans in excess of five decades. The firm CRN has been actively involved in the making of built environments since 1945. You have seen several shifts in the practice of architecture and attitudes involved in the design of built environments. Would you briefly render the history of architecture in this part of the sub-continent as you have personally witnessed and participated in? How have you seen your work changing in response to the effects of climate change?

CNR : In a way- yes and no. The basic academic exposure in IIT Kharagpur with a very strong Climatology programme, thanks to Late Prof H.D. Chayya and Prof Kanade, opened the door to what was reverently referred to as 'tropical architecture'. The influence of Le Corbusier on his masterful works in India was discussed avidly with equal vigour on the works of Jane Drew, Maxwell Fry and Pierre Jeanneret in Chandigarh, Africa, Iran and Ceylon, as it was called those days. In fact, my ambition in the early days at IIT was to enquire more deeply into tropical architecture at the Architectural Association School of Architecture in London, where Jane Drew and others wielded lots of influence. But it did not work out that way, as going to the US was more exciting in days, and I ended up, without any later regrets, at the College of Environmental Design at the University of California, USA for my Masters. Berkeley was a great place, then as it is now, with opportunities to interact with Christopher Alexander, Sim Van der Ryn, Charles Moore, Joseph Esherick amongst others. Later, during my professional employment in Boston, I saw the complete irreverence to climate. The thinking in most architectural firms, then as they are even today, is to treat environmentally-empathetic building design is not for architects to design, but to 'call-in' engineers to solve heating, cooling and ventilation issues who will provide add-ons to the design as a fitment. Those days, among most non-academic and insensitive architects, worrying about the environment was for the 'hippies'.

A couple of events stand out in my mind of what I tried in my works in the seventies and early eighties. The first was a design of the Officers' Quarters for the Reserve Bank of India at Urur, Besant Nagar in the early seventies and in a Urur Kuppam that was clean, open and on the beach- dream-worthy in those days. Here the client was not driven by FSI and so on, but wanted to create the best living conditions on a frugal budget and spartan requirements for the 400 or so apartments - almost the first ones in Besant Nagar those days. Ample open community spaces interwoven with built space, passive design for thermal comfort and an eye for cost control without 'under-spec'ing resulted. Also, what I do remember is that several of the long-time residents told me after decades that they enjoyed these flats for the airiness, natural lighting, active community events, attributing 'health-giving' buildings to the hands of architects. This is from simple people, rooted in the ground, years ago and not a recent research study that links architecture to occupant health.

The second was the design of the Kalakshetra Auditorium in the late seventies. The 400-capacity auditorium had to respect the divine adoration of traditional Indian performing arts and culture by the inspiring leadership of the institution. As a designer, I had to spurn the intervention of electro-mechanical solutions to meet the high expectations of acoustics and natural ventilation, and avoidance of an air-conditioner, and thus create a comfortable indoor space conducive for the intended purpose.

The third is a speech I wrote on 'Humanity and Environment' for a close friend of my father's to be delivered at an international conference in 1982. My limited research took me to dwell on climate change that is going to engulf the world due to unmindful acts by humans in the name of technology and development and how these would come back to haunt us one day. That day was here sooner and more damaging than my limited awareness allowed me to express.

I have today been awarded the Green Building Leadership Award by the Indian Green Building Council (IGBC). I have been involved with the US GBC, as well as the IGBC- this from the start, including being Chairman of the Committee who drew up the first rating system for new green buildings in India and I continue to be involved in their upgrades.

KG : In what way would the COVID pandemic have a lasting impact on the nature of architecture?

CNR : A prelude is required before I answer this question: this pandemic has manifested all of a sudden and predictably thereafter. It has inflicted immense damage in every sphere of life at all levels. Everyone, irrespective of their avocation, has to analyse and derive from it, guidelines for themselves and those they interact with. This is easier said than done for the reason that we only have limited knowledge of the cause and effect of the pandemic. The fact that pandemics, in some mutation or other, may well become an order of the day in the future. Also, the general feeling is that the governments in various countries, world bodies and societies are only reacting post-attack and not pre-emptively before the attack. Ignorance, inconclusive and open-ended research and stupendous logistics in testing, vaccinations and the strained healthcare infrastructure, financial limitations, organisational nightmares and worst of all disbelievers may well keep us guessing for several years.

Yet some very basic things are emerging as common good practices. This is what architects should pick up as a 'must design input' : good ventilation, higher rates of air-changes, less density, reduction of proximity in public places, ease of access to hand wash facility in multi-people facilities, improvement of the indoor environment - clean and healthy filtered air, water and good liquid and solid waste management system; also- touch-free fixtures, half-empty rooms, low-density occupation, particularly the usually crowded area like cafeteria, assemblies, cinemas etc.

These are some cliche guidelines that many were already incorporating in their designs. Educational facilities, healthcare buildings, offices, entertainment places present specific problems and there is a need to be better aware now at the design stage itself. Integration of even minute thoughts is essential. At the urban and city levels, the integration

Tamilnadu Pavilion, Pragati Maidan, New Delhi

Infosys MWC

Tata Housing

becomes much more complex. Transport hubs perhaps are tough challenges to design and operation. Pollution of every form of natural resources and consequently of everything we eat, drink, breathe, touch and wear become a potential threat. Vaccines are new and evolving but evolution for natural resistance, if at all possible, will take some millenniums.

In general, following most or all green rating measures help in improving the wellness of occupants. In fact, IGBC's major focus is on wellness and net-zero for energy, water, waste or all of them.

KG : How do you propose architects should design to achieve resilient cities?

CNR : Let us face it hard and square. Architects, in the present context, are not taken seriously by the powers-that-be for inclusion automatically amongst the most sought after set of professionals when it comes to consultations and solutions for any urban affairs or challenges. Even as a think-tank, we are not that readily recognised or sought after, even though we believe that through design perception and design solutions, most issues can be overcome, with perhaps the exception of a few. At best, we may be conceded with a certain level of sensitivity to the physical planning of urban built spaces and form. It is time for governments and local bodies to recognise the capabilities and fresh directional thinking that architects can bring on board. On a day-to-day level, it is the architects who use and are exposed to the limitations of the tool of regulations for buildings in reference to the site, neighbourhood and community around. The city managers use the same tools for regulating and controlling urban development. There are huge gaps between the intention and reality of the effects of using this tool with all its inflexibility coming into play. I believe that the city managers should use architects as allies in bridging this gap and should institutionalise joint efforts.

Yet we see all around the extreme vulnerability that the urban built-environment and infrastructure in the face of any hostile natural or man-made phenomenon hits us with. Are we in a position to anticipate ahead and prepare, or in the event of a surprise occurrence of such an event? Here again, it is cross-disciplinary collaboration that counts and as architects, we should seriously think and prepare ourselves professionally and competently to join such a collaborative team. In short, we architects, have a meaningful role to play but it will remain a pipe-dream unless we prepare ourselves and advance our professional skills on this complex issue.

I realise that, as architects, we are trained to problem-seek and -solve, then to communicate our solutions. However, with the unique tools that we, as designers, possess we are rarely at the table in public policy and planning discussions and decisions.

KG : What is your design philosophy? Which two projects do you suggest best epitomise this?

CNR : Great design is more than just good aesthetics or just a well-functioning object or just for sensory emotional perceptions. Architectural design does not exist in thought alone in the mind-vision of a designer but has to be first well put together, serve the purpose of its time, be experienced and enjoyed in use and regretted when abused, re-morphed in a changing environment and the ethos impacted by societal or cultural changes. It can be expressive but not regressive to the extent of being junked, losing relevance with a short attention span or useful life span. It is reflective of the time it is made but today, time is changing at a feverish pace. Inspiration by an idea, a context, an ambition or a vision sparks the early design process and remains the focus through the entire process as a central binder of such spark.

As one progresses through the career, some youthful, enthusiastic idealism of generic nature gives way to find, going beyond the day to day elations and disappointments, what is deeply relevant in the works of architects to the community and environment as a whole. Architecture influences users over time and users adapt and adopt their lifestyle, adjust to interpersonal behavioural patterns and eventually, prove the dictum that "humans first make buildings and then the building make the humans'". This leads to a conviction that architecture has to be relevant to people, place and context. In addition, all stakeholders in the chain of designing and buildings, more so architects, have an increasing and urgent obligation to be climate-sensitive, high performance, eco-sensitive buildings that cause the least disruption to eco-balance, built with the least carbon footprint, promote indoor environmental quality for health and wellness of occupants inside, comply with all energy conservation and water efficiency, etc. Eventually, to design buildings that are net-zero in energy consumed, water-positive, low carbon footprint, zero waste, zero pollution, etc. and adopt all green features. The day is not far when buildings will become regenerative with net positives in energy, water, waste and pollution with high components of renewable energy, recycling of materials, zero-emission, etc.

Buildings, by design and without technological interventions, that cool passively in hot regions or reduce the discomfort of highly humid locations or create forms, roofs and facades to reduce radiation but admit daylight and ventilation through innovative solar shading, the play of solids, mass, apertures, internal courtyards, vegetation, water bodied and solar / wind towers; that cleverly use thermal mass taking advantage of the daily diurnal temperature range to create conducive indoor liveability, buildings that gain from rather than suffering from the sun, wind and rain, buildings that use local, recycled and low embodied energy materials, yet crafted by artisans to impress and please the soul, mind and emotions. Passive measures such as effective use of thermal mass as a response to climate, vegetative cooling, enhancement of daylighting through protected sides and top lighting, use of light shelves, enhancement of cross ventilation through built form and courtyards are the elements that architects design with. This is fundamentally an intuitive and not a prospective design process with sensitivity and deep understanding of external factors that impinge on our comfort simultaneously coexisting with environmental wellbeing.

Everything is measured and verified these days, not just physical forms or actions but even sensory things like pain, sleep, peace of mind, happiness and neural sensing in the deep brain. Not only this - how these things are wired to our surroundings, our environment is also possible to map and surely this kind of development will influence not just science and technology but also art and cultures in varying degrees. It is scary to think about but let us face it. Theoretically, there is a disappearing level of privacy or confidentiality even at national levels and intrusive influences are mind-boggling. This is not a doomsday alert but the next two or three decades will impact lives, unlike anything that has happened before. This is indeed a study that is engaging the best minds across the globe. In a more immediate sense, we may not continue to live, work or exist in a degree of isolated personal brilliance. So what will be the word to be used, say three or five decades later, to mean and convey what we have learnt as a personalised design philosophy? I do not know. But one thing is clear. Already, these processes will surely encourage architects to work responsibly, with accountability

Anna Centenary Library

GE building at Pune

TCS Siruseri

and adaptability- in a collaborative and collective integrated design process so as to craft and engineer buildings with sensitivity and science (building physics, for instance) to lead to a holistic design that elates senses but also performs in all manner that counts. Architects have to embrace collaborative work culture and also not think in silos.

The world is changing and becoming more complex and intertwined at a phenomenal pace and the rate of change is accelerating. Events that churn our life out of shape, push us out of comfort, inertia, and supersede the simplistic and predictable paths of societal change are happening sooner than what has been witnessed ever before. Philosophy anchored in design thoughts, perceptions and concepts as it was nurtured over decades may not remain cloistered in its pure form of yesteryears but may morph into wider and more inclusively of other fields that link to living, I think. We can see it clearly in the way internationally recognised architectural leaders over generations get to be recognised.

KG : What are the changes that you would like to see in the practice of Architecture in India?

CNR : Design actions are not for architects' own egos and professional grand-standing, but to stay connected to the quality of the built environment, physically, perceptually and environmentally. Without any prejudice to the conventional Architectural design approach, architects will have to adopt an Integrated Design Approach to explore and experiment with relevant inputs from other Building professionals that enable Architects to make an educated choice or decisions in design.

Architecture is like a stable and dependable four-legged stool on which the profession should stand to get the recognition it aspires for. The four legs give the stability that can be trusted and anything less is a risky business. This is what is fundamental to the making of a complete architect. Gone are the days when being strong in one or two and not so in others could still lend credibility and even recognition but with the whole design and building process becoming so complex and inter-wired with many other aspects and specialities, an architect has to be strong in sustainable design fundamentally to start with. Together, being strong in technology, project leadership and consciousness to fair and ethical practices demanded by the profession, the process of completeness is fulfilled. These four are the focus areas that architectural training at school and in the profession need to be infused for the practice of the future. Architects have isolated their relevance at a time when collaborative work holds the path.

KG : Is there anything else that you would like to add?

CNR : India is on the verge of growth after a difficult period and is projected to be the third-biggest economy, globally. At the same time, India will face the calamities of global warming. Architects are to be trained academically and professionally and the ecosystem shall evolve to make this an 'Architects Mission'.

All Photographs Courtesy: **Ar. C.N. Raghavendran**

Ar. Kurian George Vattakunnel, graduated from CEPT, Ahmedabad (1991) and apprenticed under Charles Correa, worked on low cost housing and set up practice in Chennai. Engaged in practising as well as teaching architecture, he is presently the Chairperson of the IIA Chennai Centre. kurian@kuriangeorge.com

NARI
GANDHI

Ar. Mrinalini Sane
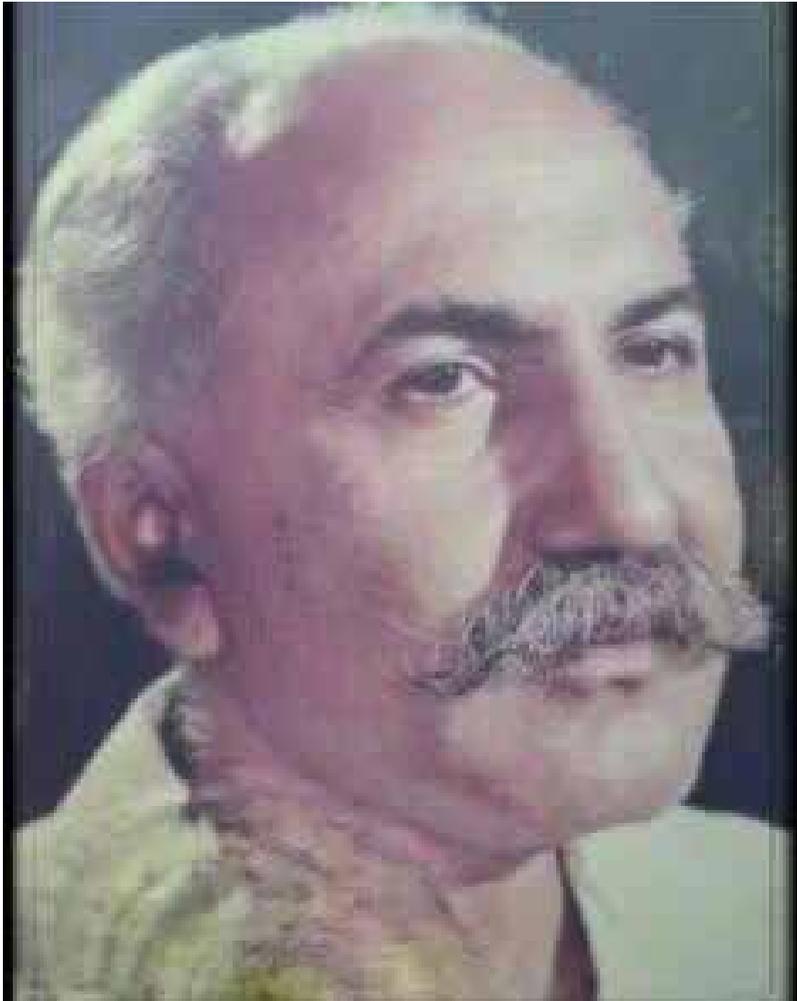
Moon Dust for Mr.. SH. Daya at Versova, Mumbai, 1969

Tunnel House for Mr. S.H. Daya at Madh Island, Mumbai, 1980

There are some stereotypes when it comes to architects in the minds of architecture students and even practising architects. Some try to emulate this image. Some believe that "inspired" imitation of imagery, will translate into a similar inspiration leading to improved creativity and sensibility. One typical image is of the suave businessman architect who has a large office and a practice to match and cater to his flamboyant lifestyle. The other image is of a khadi-clad, jhola-toting artist, too evolved to care about his appearance. Incidentally, a lot of effort goes into creating this "careless" look!

Nari Gandhi belonged to the category that defied any imagery. He belonged to a class by himself. A devout Zoroastrian, in plain white kurta-pajama with a flowing moustache, Nariman Gandhi was essentially an idealist. His brilliance lay in the fact that he could simply imagine the spaces and volumes that would occupy the site. The built form was clear in his mind. All it needed was the interface to transform from the idea to the solid - actually, rather than solid, one could say surfaces, textures, colours, materials and voids filled with different qualities of varying daylight.

Born on 2 January 1934, he completed his schooling at S.t Xavier's and then went on to study architecture. An alumnus of Sir J.J. College of Architecture, Nari Gandhi was unconventional even as a student. His teachers were taken aback by his ability to visualise. The conventional tools of plan, section and elevation were too simple for the brilliance of his ideas. Though he spent five years at J.J. College, he did not give his exams. Instead, he went to Taliesin, USA, to study under the great master Frank Lloyd Wright. He also studied pottery in Kent. Returning to India, he started working.

For a person – an architect - who believed in truth and its expression through architecture, it would be difficult to practise unless the client has complete faith in the architect. It was providential that Nari Gandhi met people who allowed this freedom, which his remarkable mind aspired to. He would spend time with the clients to understand their desires and then he would come up with the design that went beyond. Most clients were happy with the result; some were not. A few made changes in the design after they occupied the structure as there were some practical aspects that troubled the users. Nari Gandhi would not like or permit such changes. As a result, he did not do any subsequent work with people who did not appreciate his ideas or work. However, these were few in number.

Nari Gandhi believed in exploring and going beyond the boundaries of the predictable. His design was a literal work in progress on site. An interesting boulder, a tree, an undulation in the site, all these were incorporated into his design. He often worked with the actual stones and rocks that were present on site. A wall would be made of these rocks. Stone arches, brick paving in strange patterns, sloping roof profiles, walls without doors, level difference on the floors – these

Residence for Mrs. Usha and P.K. Jain at Lonavala, 1987

Residence for Mrs. Usha and P.K. Jain at Lonavala, 1987 – detail showing buttress and steel supporting elements

Residence for Mr. R. Mallik at Lonavala, 1990

elements often had a fairy tale look. Flowing spaces with low roofs, a bench of stone that looked like a ledge of rock in a stone cave, an unexpected skylight from a high domed ceiling – one wondered what will emerge next in this adventure of a building! Steps made of rough stone slabs – acquired probably from the same site itself, without a handrail – who needs a handrail in an escapade? He used glass but with a difference. Not necessarily as a windowpane, that is common . . . glass pieces would be the part of a collage. Inlay of precious stones was done to obtain a different, iridescent quality of light inside the room. Doors may have a frame, but the panel may be deleted . . . on the other hand, there would be a toilet with all the high-end paraphernalia . . . a contradiction of sorts, expect the unexpected!

The structures were difficult to construct in the conventional sense. Hence, Nari Gandhi trained his masons and carpenters and other specialised workers who could actually build as per his drawing – which was, many times, drawn on the soil on site with a twig! Verbal instructions were sufficient to get the idea across and executed. However, he also made use of steel trusses and engineered solutions to get what he wanted. He was also an avid gardener, who appreciated the role of landscape. He understood the importance of plants in making the structure alive. He had studied plants in Taliesin, USA. There were no boundaries to his structures – one wandered from a room to the outside garden, without realising the transition. In one

instance, the beds in the room projected into the terrace, thereby, giving the impression of sleeping under the stars in the open.

There was a careful precision in the work but it was disguised as an improbable fact. It looked impossible, but the reality of its existence defied its appearance of impossibility. The structure merged with the surrounding seamlessly, effortlessly. The design incorporated the inside and the outside in such a way that both seemed to intermingle.

Nari Gandhi was not registered as an architect. He had no office. On the practical front, one wonders as to how this wonderful, eccentric designer managed to get his plans sanctioned. His good and amiable nature had nurtured not only craftsmen but also fellow architects. Some of them became associated with him and helped with the preparation of working drawings, municipal drawings and leading him out from the morass of everyday conventionality. Dadi Banaji, Madhusudan Nene and Amritlal Thakkar are some of his colleagues who were associated with him in various capacities. He was, as expected, not interested in money or in the business side of his work. His clients used to request him to take fees for his design. They believed that his houses not only enhanced their life physically but also spiritually. In one instance, he completed five houses for one client.

Nari Gandhi lived life on his own terms. He had a love of all humanity and attachment with none, save his mother. He remained unmarried and was devoted to his mother. He was an ardent Parsi who prayed every day at the Fire Temple. His clients and colleagues used to pick him from there and then they would move to the site. He loved travelling and often visited temples and churches on his long travels. He was also keen on learning new arts and crafts. His innocence and childlike pleasure in learning would belie his own vast experience. It was a sad day indeed, when this man of wisdom and purity, this designer of fantastic structures and forms bid adieu to this world in a car accident in August 1993 near Khopoli. The world mourns the untimely loss but the sites he worked on, the sights he created, will continue to keep the memory and magic of Nari Gandhi alive.

Some of his well-known projects are Daya House, Gohai Mountain Lodge and Jain bungalow at Lonavala, the residence of film actress, Asha Parekh and the Metro Shoes office in Mumbai and Patel House in Surat.

DESIGN FEATURE

PAUSE

A temporary public enclosure to create collective awareness on the idea of sustainability

Ar. Leena Kumar

Fact File

Name of Project	▶ Pause
Function	▶ Temporary public enclosure to create community awareness on the idea of sustainability
Client	▶ ASSOCHAM GEM Karnataka & IIID Bangalore
Location	▶ M.G.Road, Bangalore
Design Concept & Execution	▶ Kumar Consultants
Area	▶ 144sq.m
Materials	▶ Plywood, plastic bottles, CDs, plants, thread, paint, pin-up boards, posters
Dates of installation	▶ 15 – 22 December 2021

A composition inside the space.

An earthworm's view of the public space
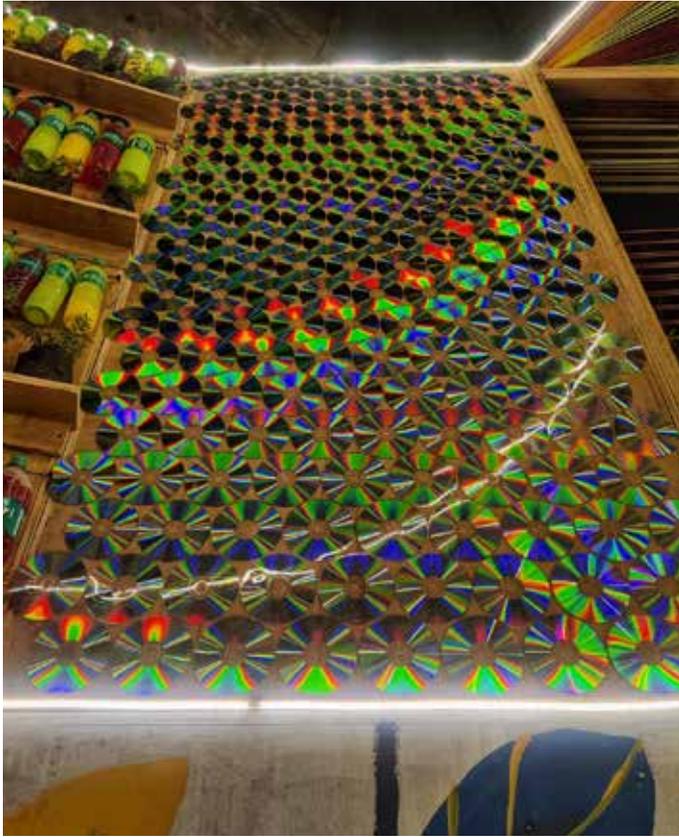
CD installation by students

Inside the installation

PAUSE- the last edits before the staging comes down

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March 2020 saw a year of change that also ushered in many creative ideas. Necessity became the mother of invention. Technology played its part to overcome the global pandemic. Architecture responded through adaptive reuse and caretaker structures that came up quickly whenever the need arose.

In December 2021, at the IIID Designuru Festival at Bangalore, we decided to examine this temporary structure and celebrate design through an installation hosted by Assocham Gem Karnataka, an organisation supported by the IIA. Our intent was to scrutinize the productivity of temporary installations in public spaces.

Along the stretch of the Design Festival held on M.G. Road, we erected this short term structure to be an informal enclosed public space for community interaction. We had pin-up boards for comments, panels for painting and writing, spaces for weaving, panels explaining the idea of GEM- Green and eco-friendly movement. Nicknamed PAUSE, we intended this space to draw in citizens to pause for a while, look around, engaged with the exhibits, and pen down their thoughts on the pin-up boards provided for the purpose.

Erected from a carpenter's backyard with strips of plywood glued together to form the structure, having infill plywood panels of standard sizes, we brought together this enclosure finished with plastic bottles, CDs, plants, coloured threads, all generated by city living. Through this, we wished to communicate the idea of sustainability.

From here, at the end of the week, when all was said and done, our temporary structure was dismantled and made its way back to the carpenter's backyard. It will now go through many cycles of use and re-use before it lived out its life and meet its end. We live from the earth, we live off the earth, and every man-made item must live its full cycle of life before it becomes a part of the earth again. To be sustainable is to use every item to its full life. To waste is to discard the item before it has completed its purpose of creation and fabrication. Re-use is to be creative and give life to discarded items until there is no energy left in it. On this, depends our tomorrow. We have enough for use, but not enough for waste.

Through the seven days, we had presentations and talks for students and passers-by at the installation. Four of them were by the rising generation in their thirties. Three young practices made presentations on their work - Sridevi from *Masons Ink,* Nikita Harikishan from *Kala Kutumbh,* Sahil Tanveer from *Red Brick Design Studio* and Vijithendra Thejaswi presented on *Bees and City Spaces.*

Our Master Speaker presentation, titled *Sensory Gardens,* was made by Dr. Prabhakar Rao, who spoke on the importance of landscaped spaces being designed to touch all the five human senses of eyesight, hearing, taste, touch and smell. Presentations made at the installation were curated by Nandhini Sunder. The public was drawn to the installation by its scale and presence. They engaged with the installation visually and looked around with curiosity, and we hope they

Painted panels, threadwork, CDs, comments by visitors to the installation.

Painting the panels inside the installation by young architects

Presentations at the installation

Presentations by young practices

PAUSE

Public participation in painting the panels

The installation being erected

The upper panel display

Under execution

took home some ideas that we had presented through this provisional space. Comments and messages on the pin-up board were mostly by students and architects. We learnt how people responded and we had to re-think our communication skills to engage effectively with the general public who were not architects and form the majority of our population.

At the end of it all, we hope they came in, paused, took a seat, and looked around, and that our installations and presentations left an idea in their minds.

Ar. Leena Kumar Leena is the principal architect of Kumar Consultants, Bangalore, a practice of more than three decades. She is presently the Jt. Hon. Secretary of the IIA National Council and the Chairperson, Assocham GEM, Karnataka.
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All Photographs Courtesy by: Mahesh Chadaga

DESIGN FEATURE

CNS OFFICE
BUILDING

By Studio Avocado

Exterior view of curtain
plants bringing one
closer to nature

Fact File

Project Name	▶	CNS Office Building
Location	▶	Kayamkulam, Alappuzha, Kerala
Area	▶	800 sft
Category	▶	Office building 990
Architect	▶	Ar. Yasin KM
Client	▶	Saleem Narayanan, Founder of CNS builders
Year of Completion	▶	2021

A welcoming view from the access road

The blend of nature and built form viewed from the site entry

The aim was to design an office space for CNS Builders, a 30 year old construction company. The office was an extension to the already existing old office. The requirement was a minimalistic contemporary design with glass walled spaces along with rich landscaping. The design process of the project was challenging as well as exciting. Adopting tropical architecture with the thought of blending in the built environment and the green-scape efficiently turned out into a beautiful and unique office space.

Design development started from a simple minimalist rectangular plan. A water body was introduced which runs around and envelops the rectangular plan. The office is designed in such a way that it floats above this water channel. It helped in emphasizing the lightness of the design and strengthened the concept of incorporation of landscape into the design. Another vital element which reinforced the concept is the vertical trailing plants dangling from the roof contributing to the greenery which is also reflected in the interior. This feature acts as a screening from the sunlight and is simultaneously seen by the users through the glass walls.

Another major feature is the five meters high brick wall of wire cut bricks built as a mass wall to shield the dust and noise from nearby carpentry workshop to the office. This wall is sunlit through the rectangular perforations of roof and the direction of light and shade cast on the wall constantly change according to the sun path. The roof is done in exposed concrete finish with chamfered edges in two levels, one at the height of brick wall and another at the height of the office bringing about depth to the form.

The floor floating above the water body is held by circular concrete columns and is defined as the support of the form. Materials and textures exhibits its truthfulness and sense of honesty. The Office comprises of a workstation and a conference room in which the glass walls merge the exterior greenery with the interior. Introducing koi fish into the water body amplified the idea of representing nature through the design. The water body can be accessed from both workstation and conference room, where one can experience a foot spa. The plain and simple vertical wooden paneling on walls and defined edge of furniture and exposed ceiling contribute in maintaining the minimalist theme and elevating the image of the work station. The full height glass walls and water body interact to set an overall green reflection which induces energy into the spaces. Inverted beams are provided in order to attain a continuous space and allow the flow of interior surfaces.

The whole site evokes a sense of walking through nature where the hardscape and softscape is balanced to create an exterior working atmosphere. Additive transformation employed on the hardscape encourages outdoor meetings where in between lies a 'tulasi thara', a classic element of Kerala
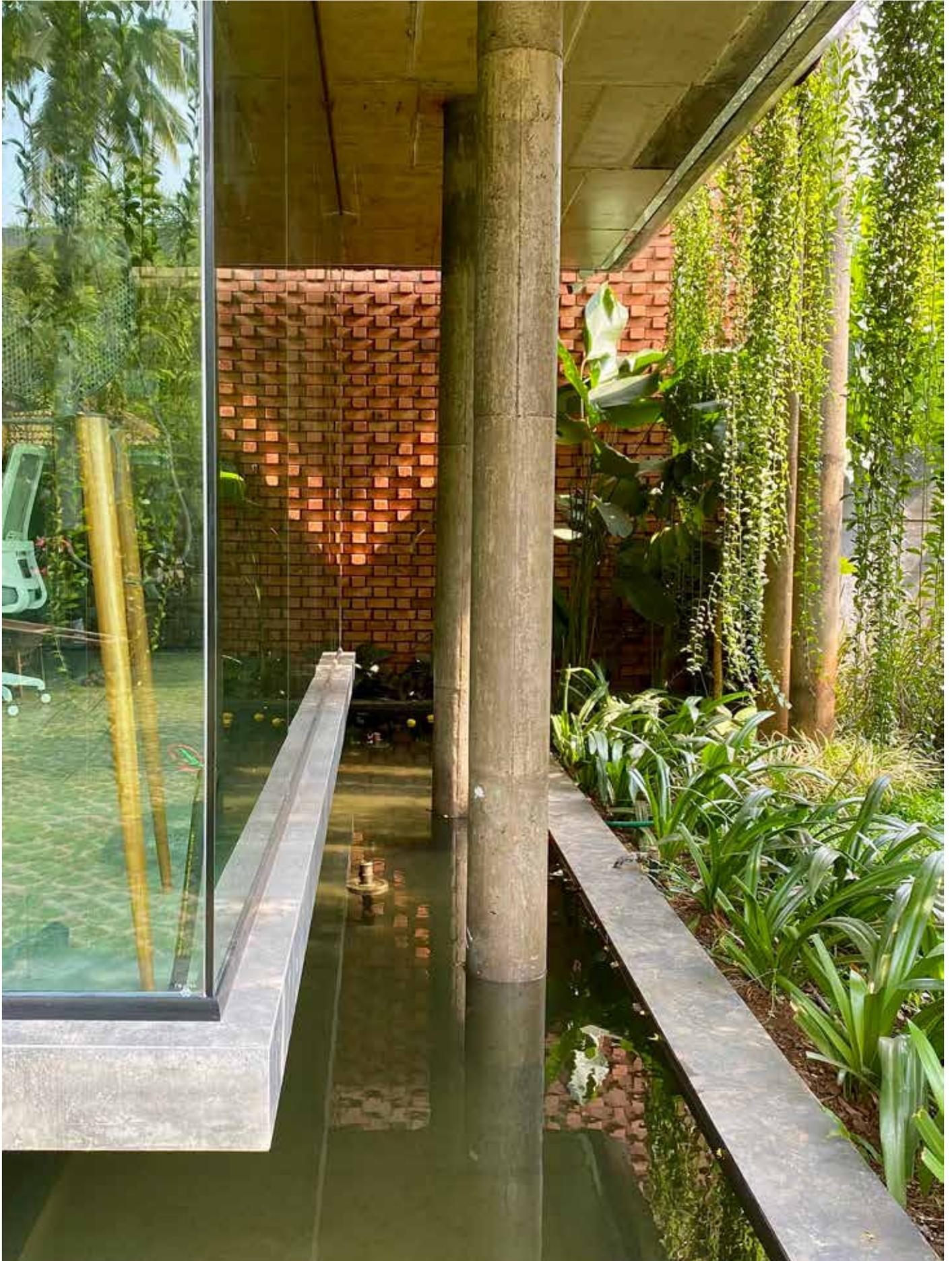
The rectangular outline of the office effortlessly floats over the water body

The conference room of the glass-walled office space in minimalistic, contemporary design

Front view of the office from the outdoor seating

The conference room where the brick wall, water body and glass walls meet

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Merging of interior and exterior- view from the conference room

architecture redefined with a simpler form. A wide range of cascading, spiky, irregular and mounding shrubs including tropical bloomers like red button ginger plant and bird of paradise is incorporated to break the monotony of green.

The aim of creating not merely an office space, but a place to feel comfortable, pleasant and energetic to work in, is achieved by the amalgamation of tropical and contextual elements. A wide exterior view of the design enfolded in landscape is obtained from both sides of the access road by shortening the height of the compound wall and providing the upper half with metal rails. Detail of the handrail above the compound wall is inspired from the floating circular pillars of the main structure. Entering the office through the bridge connecting old and new

office spaces bring in a feel of transformation through spaces and improving the visual as well as mental experience.

Studio Avocado founded in 2018 by Ar.Yasin KM is a Calicut based architecture studio established in 2020. He graduated in 2020 from Ranganathan Architecture College, Coimbatore. Following contemporary tropical style, the designs incorporate the play of vertical and horizontal elements subsumed with the individual features evolved from the site and context. Each works embrace minimalism comprehending tropical colors and suitable landscaping.
studioavocadoin@gmail.com

All Photographs Courtesy : Studio Avocado

DESIGN FEATURE

AN OFFICE
FOR SOLACE

Ar. Chintan Shah & Ar. Henil Jhaveri

Fact File
Client	▶ Mr. Kunjal Dalal & Associates
Design Team	▶ Ar. Chintan Shah, Ar. Henil Jhaveri and Suraj Prajapati
Year of completion	▶ 2020
Carpet area	▶ 340 sft
Cost Estimate	▶ 7.5 Lakhs
Photography	▶ Ar. Julie Vaidya

Waiting area
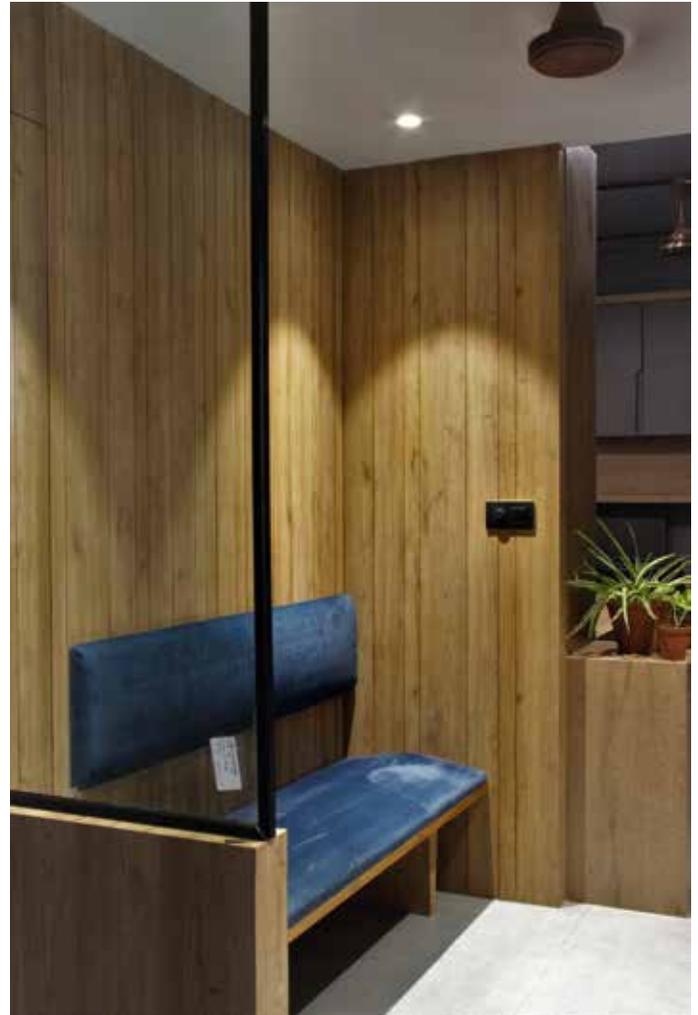
Waiting area from the main cabin

An office is a place to work and support our living but any work place which offers an interior environment that energises the user's mood and offers a setting which is responsive to their work culture is a place you always enjoy working in.

The pandemic lock down had forced people to stay in their homes for more than months. The situation had given certain level of mental sufferings to the people due to prolonged stay at one place. But as the situation started improving we were approached by the clients for the interior design of their 340 sq.ft. office space in a core city neighborhood of Surat city. In the first meeting, it became evident that he was in search of a space which gives comfort and relaxation to the professionals working there as they were mainly involved with the tedious work of company's laws and regulations.

The project is an office interior for the reputed Company Secretary of the city, Mr. Kunjal Dalal and his team of same profession. The client had two basic requirements: one was to organize spaces in a most effective way to accommodate maximum people in a meso-scale office of size 29'-6" X 11'-6" and the other task was to create the interiors that suited the sophistication of their profession. These challenges encouraged us to propose a plan with minimal circulation space so that the maximum space can be used for fulfilling the office's functional and infrastructural needs. Also, we ensured that it did not let the users and visitors feel congested while using the spaces.

Waiting area viewed from the staff section

Waiting area viewed from the staff section

Main cabin

Waiting area

Main cabin

View of main cabin from staff section

Staff section

The programme required main cabin for accommodating seven people for discussions and meetings; the staff section of eight people; a waiting area for three people and a small pantry. The office was designed with the idea of openness and transparency to draw visual connections and give elongated views. The waiting area at the entrance is a common space and connects directly to the main cabin, staff section and pantry. It has been purposefully kept open with staff section to give a feel of a larger space. It has been designed as a cozy space with gypsum false ceiling at a low height, with a visitors' seating on a navy blue sofa to emphasize its contrast with the backdrop of light brown wooden laminate. The staff area fulfils the need of work desk for eight people, file storages and other functional needs. The seating has been arranged in a L-form where each individual faces the wall and has its own pocket of work desk. The main cabin is a response to the client's personality of having simple yet elegant ambience. The furniture was designed to showcase reading materials of his profession and his achievements. The design of a large work table of white stone top and metal legs becomes the prime focus of that space.

The flooring selected for the whole office is a 2' X 2' vitrified tile of light grey colour and false ceiling is painted in a darker grey tone except for waiting area which is painted white. This creates a visual focus and highlights the finishes of the elevations. The electrical conduits are painted black and kept exposed on the ceiling to retain the original height of the office. The atmosphere of the overall environment is kept sober and relaxing with shades of grey and brown used for the whole project. This colour scheme tends to bring the boldness and sophistication of the Company Secretary's profession. As the office has little natural light from outside, 4k lights are used which impart the feel of natural daylight into the monochromatic colour scheme. The interior design of the project is an attempt by the designers to create a simplistic and formal office environment where the professionals get solace while using their work space.

Ar. Chintan Shah is an architect and has a Masters in City Design. He is the Principal of the design firm *Shodh Architects* and is also teaches at an architecture institute in Surat. His interests of writing and photography have won him several national competitions. Currently, his office is working on many small and large scales projects of different complexities.
arch.chintan@gmail.com

Ar. Henil Jhaveri is an architect working with *Shodh Architects*. He is a very active team member and works profoundly on interior design projects. He has a good understanding of creating interior environments that is responsive to the users and project's needs.

YOUNG PRACTICE

WHEN ARCHITECTURE
GOES BACKSTAGE

By Made In Earth Collective

The building of Samvada took a full four years to come to life. In many ways, the project is as old as us, give or take a few toddler years. As we write this today, the campus has been completed and we are running around tying up all the loose ends and realizing how deeply it has become a part of us.

The site is at the edge of Bangalore, in an unoccupied corner of the suburban maze of villages, at the end of a plotted development on an oddly-shaped land parcel nestled between a cliff and a patch of woods, sprinkled with tall trees. This unique placement became a balm to the pandemic. Driving through a maze of villages, as you take a turn onto the road leading up to the front gate of the campus, you will see roof structures rising up from the shoulder of the hillock. The setting in which Samvada is built introduced us to certain inevitabilities. The campus has terrible network connectivity. Unless you are on the end of the corridor on the last floor of the classrooms, you are cut off from the outside world. Any site visit takes almost a full day, often going into late evenings. Samvada couldn't fit into the crevices of a busy schedule. It took its space and our full presence.

In all of this, the site ensured that the years it took for the project to complete was punctuated with pauses. Every pause had its own flavour. In-between the many levels of the plinth, and the boulders that were refusing to budge, was the space beneath two trees, where we would sit down for lunch. As the artisans would cease their bustle, a comforting silence would unfold. We would unwind and unwrap the layered newspaper packets of fluffy rice, the banana leaves holding mudde (ragi balls), small parcels of flavourful boti (mutton curry), chicken fry, kadle (peanuts), and bussaaru (clear lentil sambar). The packets of food and areca plates would be passed around in the presence of eight or nine wistful dogs.

As the dusty morning wore off into the afternoon, Shivanna made the third natural paint sample of the day. He carefully measured out 3 grams of red pigment and 6 grams of yellow and mixed it into his soil slurry. The team was chasing a certain off-white. In the studio, we call this colour 'chukum' after a particular natural waterproofing agent found in Mexico. The bark of a tree is boiled and the resulting brown liquid is mixed with lime to make a waterproof stucco. We were obsessed with this colour. God forbid a cow to cross the road in front of us, "Look! a chukum cow!!!", we would cheer. The quest started with achieving this warm colour with pigments in a lime wash for the exterior, on clay paints in the interior, and on the IPS flooring. Days turned to weeks and milligrams of pigments turned to grams. Odd patches of colour cropped up across the campus. Ranging from browns to yellows and ludicrous pinks. We are still to understand how a few purples made their appearance.

Shivanna was a helper for the longest time. A helper's scope of work mostly stops at mixing mortar, shifting material and the occasional patch of rough plaster. He has been with us across four rammed earth projects now and is adept at assembling and disassembling rammed earth formworks. He knows how to pit, pug and make super-sized adobe blocks. He helps with sampling and is the point of contact on-site at any time of

Warmth of natural materials
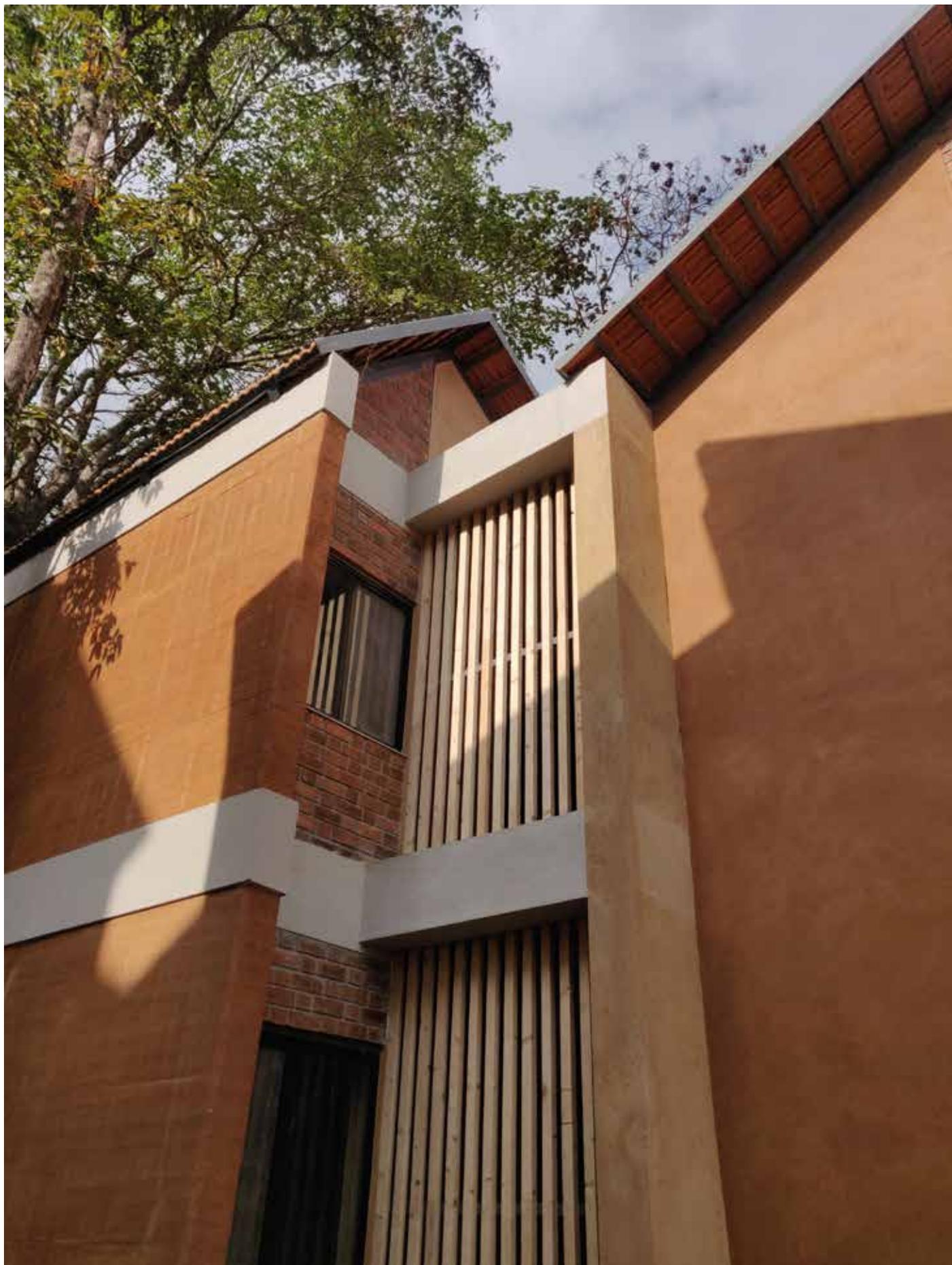
Campus is built with adobe, rammed earth and clay plasters

View of the main street of the campus

The much desired chukum colour in lime plasters and oxide flooring

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the day. He is the earthiest in our site team. As we stood there looking as dull as the yellows that were developing before our eyes, Bhagya came running around the corner, "Appa, Appa", she panted, "one of the wheels have come off". And in her hands, she cradled the complex assembly of a truck. It was an exquisite piece of woodwork. It had fully functional wheels, a little steering wheel, a carrier, even a small seat for the driver. All this was assembled from leftover blocks of pinewood on site. Shivanna's assembled truck had an abstract quality which made it more than just a toy. It was art. That day Bhagya had to lease out her truck for an hour as we mulled and mused over Shivanna's craftsmanship.

Younus wouldn't mind sitting down with us and the drawings to discuss his doubts. He is one of few who feel comfortable with drawings. Younus is our fabricator. He has been with us since our first project and has evidently grown in every aspect imaginable. On summer evenings, thick with warm breezes, we would sit below the honge mara (Pongamia pinnata) on site. He would go through his list of doubts and talk of gauge, gutter and girth. At the end of his doubts, he would always sit calmly with a faint smile, steeping contentedly in his own silence. One day while casting around for conversation in his deep silence, we hooked on to a particular interest we were not aware of. We spoke of a project we are building at the edge of a canal near the KRS dam near Mysore. His eyes lit up. From

when he was young he would take his boys up to the river in KRS or some of the other fishing camps around. He swiped through photos of his holding fishes, each larger than the last. We spoke of fishing in the scrub of Kollegal with whipping bamboo, and we spoke of fishing in France with fibre gear. He showed us his latest gear and spoke of his new Jeep. Slowly the conversation drifted to the days when all of us used to arrive at the site on different bikes: a Splendor, an Activa, a TVS Victor. He said in definitive terms that there was nothing more to life than this- that he welds, irrespective of how large his team grows - he welds. And he fishes.

As the arches were completed, Younus placed the large sloping roofs. Tirupati and Anwar worked day and night to plaster the spaces with clay and put in the thousands of square feet of oxide flooring. The building started coming together.

Anita, the executive director of Samvada, is one of those clients who are always the wind in your back. After multiple delays and the site being terribly behind schedule, we thought a fine Tuesday afternoon was perfect to call Anita on the campus to tell her that we were completely overwriting the palette of the campus. We had initially intended to have bright ochres, greys and deep sea greens of lime plaster on the walls. But somewhere along the way, our fascination for turquoises and greens and yellow had made way to subtler variations in the earth- grains,

A student of *Samvada* paints the logo of the campus

was the stuff of legend. We recounted the journey we took with the Samvada team to navigate making this dream a reality. We spoke of how when we closed our eyes, we remembered a hundred stories and a hundred smells of lunch. When Muthu, our site engineer, took the microphone, there was already a huge cheer. He had become the face of this project without even realizing it. He recounted his feverish disposition on the day an electrical pole had fallen. He pointed out that after his graduation, the four years that he had grown to be an engineer was through the lens of building this college campus. There was a drop of pride hanging at the edge of his eyes, and a lump of nostalgia in his throat. He said it felt rather strange to see the faculty of the college occupy the space. To lay claim to what was dear to him, a space he navigated through, thought of, solved and lived in for the last few years.

As our team stood on stage, all holding back tears, we realized Muthu had laid perspective to what we felt. We had grown here. Now, those to whom the college belonged, had come. And, come, they did in brilliant excitement. Laying flowers on the freshly flattened earth, singing songs into the night, dancing, and stepping on every square foot that we had drawn, built and loved. They seamlessly owned those parapet walls on which we spent the stillness of the lockdowns. They laid claim to the tirelessly burnished lime walls with brushstrokes of their own. Furthermore, they made the corridor their stage, and the stage their lunch space, the accounts' room became a flower sorting area, and the parking turned into their courtyard. In a matter of hours, every nook and corner of the campus was sniffed out, and their excitement engulfed our nostalgia.

Somewhere towards the end of the inauguration program that was titled 'An Evening of Gratitude', we were all sitting in a daze, lost along with the tunes of a song, when the familiar voice of a mentor leaned in and said "Hey guys, architecture seems to have taken a back seat in all of this, and it's wonderful!"

Again, here was someone succinctly putting into words what we were feeling so vehemently. It took us a while to come to understand that we were not working with just proportions, spaces and shadows or earth, mortar and bricks. Our first raw material was the dreams of the people we work with. The day we found the culmination of Muthu's dream was the beginning of someone else's, was also the day we realized that there were more stories and moments in this building than the number of bricks in the walls. In retrospect, the rising of the walls, the structure and the finishes are such a small part of the wealth we treasure as memories. As we take a deep breath and plunge into the host of other ongoing projects, we are left with one question: We are constantly moulding and shaping dreams into the physical realm. In many ways, this is our dream. But are we living every day as such?

Text by: **Agnimitra Bachi**
Photo credits of the remaining pictures: **Shruthi Ramakrishna**

golden glows and deep shadows. We had put together a range of samples from soft browns, deep terracotta to beaming chukums. After going through the palette with her, she said "I'm rather attached to the yellow floors." At most, we must have said "This chukum wrap will be magical too!" We believe that even if she did not visualize how the colours would exactly come together, even if she didn't have a drawing in front of her, she understood the fervour with which we were suggesting the change. And that was that. At the end of the meeting, Anita gave Shruthi a hug and whispered, "Thank you." A 'thank you' when you don't know what exactly it is for, emanates more warmth than the pleasant slanting rays of the winter sun. It left with us the ember of an acknowledgement. Something that would see us through to the end. Something that would drive us for months to come.

The evening of the campus inauguration was rather special. There was music and dance, and the air was thick with mixed feelings. The team of Samvada had made sure that each and everyone who had worked on their project was individually called on stage to be thanked and given a small gift. As each name was called, it resounded with applause, laughter and inner jokes.

We were unexpectedly asked to speak a few words too. We spoke of the first time we tasted the Samvada saaru. The curry

Made In Earth Collective is a Bangalore-based team of architects, engineers and artisans who work with earth. Their architecture is created with natural materials like clay, lime, wood, straw and stone and an understanding of climate and soil and local craftsmen. The practice is focused on creating contemporary expressions that are both elemental and eco-friendly.
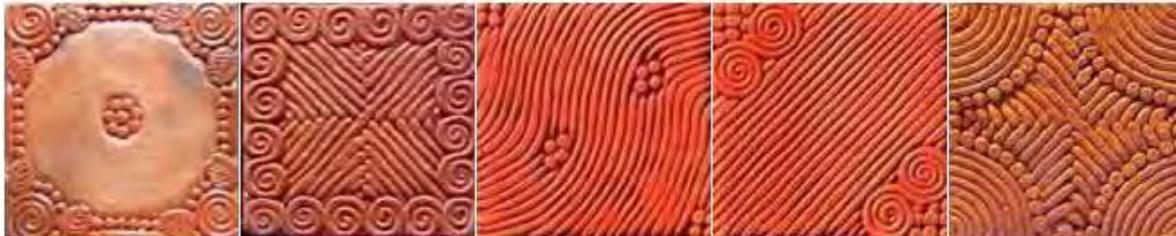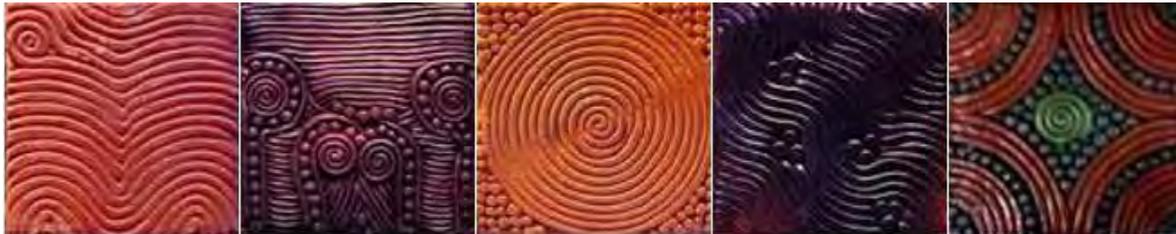
ARTICLE

AWAKENING AESTHETIC AWARENESS

Awakening the senses
Connecting to the context
Proposal for action research on re-thinking aesthetic sense education
Basic design/ Fundamental of design

Jinan K.B.

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Coil tiles designed by women and non-literate girls aged 13 to 15

FORM AND FUNCTION

Function is universal but the form or the aesthetics is contextual. We need a house to live but the kind of house is dictated by what is available to us in respective contexts. In the age of consumerism, when everything is available anywhere, this may sound ridiculous. But the distinctiveness that architecture and artifacts once had was based on this. In that sense aesthetics is the factor that defined, delineated and demarcated cultural boundaries. Here, aesthetics is not just the visual but related to all the senses. It is not just the artifacts and architecture that are distinctive but also the food we ate, the language we spoke, the dance we danced and even the smells we liked.

Culture is the result of how aesthetic sensibilities of people manifest in the things they make and how they live. These aesthetic sensibilities were awakened naturally in people while engaging with their contexts. The connection with the context is absolutely necessary for this to happen in us and in the modern context, right from childhood, the natural context is replaced due to several reasons- the most important being the formal institutionalization of knowledge and making learning a dependent activity.

PREAMBLE

This is both an essay and a proposal - to collaborate, to explore and to reflect on – aesthetic sense as the most misunderstood and ignored dimension in modern context. The essay has four parts apart from introduction and conclusion: The first is about how design and architecture education has homogenized aesthetic sensibilities, thus destroying cultural rootedness and diversity. The second is about the experiments and observations carried out by the author while working with traditional artisans where he found very original and authentic products being created. The third is his work with their children which revealed how they were able to create beautiful artifacts with no teaching at all. The fourth part is about the experiments in design and architectural schools in re-formulating some aspects of foundation studies based on his learnings from the way aesthetic rootedness is established in indigenous communities.

INTRODUCTION

The biggest threat of modernity is the homogenization of the human cultures. The visual experience of modern spaces all over the world is very similar today - products, consumption pattern, lifestyle, architecture, signage, hoardings, products, colour sense, food, eating style. All over the world, western products and sensibilities are being brought in through commerce supported by miseducation.

What is culture then? How does culture get transmitted? How is cultural diversity preserved?

About a century ago we had diverse cultures with distinct ways of life and aesthetic sensibilities that created contextually rooted architecture and artifacts. The learning processes that ensured this, needs to be urgently relooked at because modern education has created total homogenization all over the world. Design and architectural education can be blamed as one of the most destructive agents for destroying diversity, leading to a "look-alike" lifestyle. Courses taught from the experience of Western culture- Bauhaus, Ulm being the foundation of design education all over the world has

psychologically damaged human beings at all levels - apeing the west, inferiority complex, cultural insensitivity and other cognitive damages. This is true of art as well as architectural education.

The real issue is to understand how culture is formed and how to retain cultural diversity. In the modern world, students are not in their own living environment (context) and institutionalized education conditions and homogenize the sensibility of people through various subjects like art, architecture, design, etc. with total neglect of aesthetic sense right from pre-primary school: The same syllabus is taught all over the world!

Culture has a direct link with aesthetic sensibility, creativity and the respective ecology in which people live and interact/ connect. In fact, beauty is the link that connects people with their environment. Cultural diversity has been the result of diverse aesthetic sensibilities developed in people as a result of living in diverse ecological conditions. This act of authentic living is itself an act of knowledge-creation. The outer manifestations of any culture- architecture, craft, food, music, dance and ritual- are imbued with the aesthetic sense of the people who belong to that culture.

The real issue then is to understand how to retain cultural diversity and help the learners retain their original, authentic sense of beauty which is in a true sense based on the experience of the real context in which they lead their lives.

To understand this, we need to revisit some basic issues.
What is the purpose of knowledge in life? How do we cognize the world? What is aesthetics and what role does it play in our lives? Why and how did we have so much cultural diversity? It is also important to go deeper into some basic questions like what is creativity, what is culture, how is it formed.

Coiled clay murals by Thankamani and Shakunthala

Sculptures by Lakshmi who has never been exposed to books, art galleries, etc.

ART, ARCHITECTURE & DESIGN EDUCATION-INSTITUTIONAL CONDITIONING OF AESTHETIC SENSE

At design schools, the dichotomy is that the process of learning design is completely and clearly west-oriented. If one's sense of beauty is conditioned and colonized, then what is the meaning of culture?

Design education cannot be seen in isolation to address the issue of homogenization of our minds, because right from the time the child is born, homogenizing and conditioning goes on as the parents themselves are victims of modern education.

The modern educational process has ensured the colonization and conditioning of our minds. The very premise from which modern education has taken roots, has got the basics wrong. Schools were set up based on the need to 'teach' children without taking into consideration how children learn and what children learn naturally based on their biological propensities and processes. Adults thought they knew what to teach and how to teach and what environment to teach in. Thus schools, teachers and pedagogy came into being.

Thus, when students come to design schools, they have already gone through 12 to 15 years of mind-damaging schooling. The so-called good students go for medical and engineering studies and what architecture and design schools get are comparatively less damaged. Even then the Foundation Programme has to be set up to undo the damage of schooling and making students as free as possible. Even though steps are taken for bringing back creativity, the basic paradigm of Design Education remains rooted in the Western world view. The courses responsible for developing aesthetic sense like elements of design, composition, the various courses related to colour, form etc are still based on Bauhaus and even today it is taught more or less in the same manner.

Thus, as a student of design what I questioned is how do I become a true representative of my culture. And that led to asking: what is culture? What is the connection between aesthetic sense and culture - between cognition and culture?

REVERSING THE LEARNING PROCESS : LEARNING FROM THE NON-LITERATES

My journey into the world of the rural artisan communities was not with the intention of developing them or educating them. I went to them to regain that which I had lost in the process of being 'educated' : I went to learn from them. My strong feelings were that having escaped education and development, they were still original and authentic and were holding on to a culture and world-view, which had sustained them for centuries.

Nature as the source

THE DO NOTHING METHOD

One of the fundamental premises of the 'training' interventions at Aruvacode was the cultural, aesthetic and creative superiority of the trainees, compared to the 'developed' mainstream students of Indian society. Through the series of efforts at recovering creativity, realization also dawned that what was actually happening in the name of 'teaching and training' the rural and artisan communities, was the corruption of their sense of knowing. The basic attempt therefore at the training programmes was to help individuals regain their wisdom and confidence which lay embedded within their own communities and culture. My interventions at initiating creativity among the artisans proved beyond doubt that the interventions, if at all, need to be restricted to erecting a fence against outside influences that corrupt the genuine aesthetic sensibility and sense of perfection of the craftspeople. The 'do nothing method' accepted the fact that each person is creative and intelligent and therefore the need is only to initiate a process by which the trainees get inspired to use their latent potential.

Exploration of colour scale created by mixing six basic ones- white, black, red, blue, green, yellow- as I only had money to buy these.

In my interactions with the artisan communities, I began to set up opportunities for the artisans to develop new products with no interference at the level of form and aesthetics. As they were far away from the urban consumer I had to define and explain what kind of products would be required.

This kind of work debunks the prevalent notion about teaching and learning of art and aesthetics. Most non literate people were able to create quite remarkable products without getting into intellectualizing. The learning of the traditional artisan's is experientially-rooted and learner-driven. It has the quality of re-creating, re-inventing and re-living knowledge. The cognitive space ensures the first-handedness in these learnings and helps the learner to situate himself in the cultural environment of one's life. Can there be an education that is sensitive to such vital issues that retains diversity and authenticity?

The rural, tribal or non-literate communities seem to act holistically, endowing an aesthetic quality to their every act. What we understand as culture is a result of this collaboration. It is clear that in modernity this cultural distinction is totally absent. Therefore, the modern artist, architect or designer anywhere in the world appears to be creating with a uniform and almost regimented aesthetic sense. This insight opened up a completely new dimension in my search to understand the traditional and indigenous knowledge systems. In fact, delving a little further into the biological aspect of knowledge, I soon realized that all the games children play in the villages is a kind of a response to their biological needs. Senses play a very important role in the process of learning and establish communion between the outer world and the inner world. All the games children play in these communities have to do with sensitizing the senses, planning, balancing, guessing, developing the mathematical sense etc. This is the process of sensing, feeling and knowing the world. In a profound sense, it is a community's sense of beauty that delineates its culture. When a society or community loses its authentic sense of beauty or subjugates its sense of beauty to the corruption of alien influences, it loses its authentic culture.

Left is the original and right is the painted- again colours achieved by mixing basic colours.

Collage using dry leaves
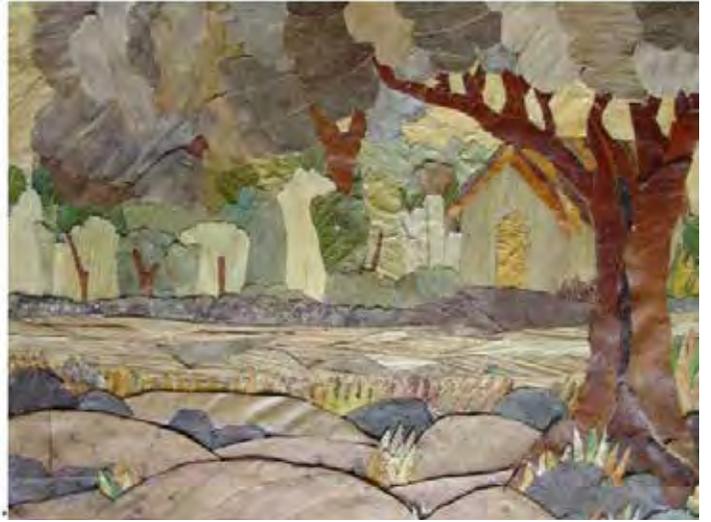
The children were given colorful magazines to make collages.

LEARNING FROM CHILDREN

Sensing Nature; Knowing Nature is a workshop I have been conducting since 2003 at Aruvacode, Nilambur during the summer holidays of April and May. The idea behind the workshop was to initiate a process of observation of the children's context. The activities were designed to enable the children to become totally aware of their surroundings and then reproduce that with the materials provided.

Here again, I followed the same principle of 'do nothing'. There was absolutely no guidance. Children were grouped into five or six groups and were left free to explore various attributes of nature. So, children explored lines, colour, texture in nature and using nature created very beautiful things.

COLOR IN NATURE

Children were asked to collect dry leaves of different shades and stick them in order. They then made the color by mixing the primary colours. This was repeated with various other colours in nature.

LINES IN NATURE

Drawing through observation is an important activity to get children to look at things around themselves acutely.

Converting three-dimensional objects into two dimensions is a very important cognitive act. The abstraction that takes place is quite remarkable and this is very difficult for the educated person to accomplish. It seems that children, before they are entrenched in the rational framework are able to see, without the need for thought, to first interpret what they are seeing. They are able to just observe and draw. The educated go through three steps: they see, think and draw and quite often they are not able to draw whereas children are able to draw quite easily because they bypass thinking.

The workshop is for awakening senses as well as for making children sensitive to nature. What they do during the workshop, or what the final outcome is, is less important than the process they go through, along with their total experience during the workshop.

From 2005 onwards I have been conducting courses and workshops in various design and architectural institutions in India where I was exploring how the aesthetic sense can be awakened in students rather than teaching them colour theories, rules of composition, exploring materials, exploring form, etc. The integration and synthesis of various aspects of design education was another focus of my work. Material exploration is separate from form exploration and is separate from the design process. This kind of compartmentalization is counter-productive. There are about six to ten courses that deal with aesthetic sense: Elements of Design (three parts), Colour (two parts), Composition (two parts) and Elements of Form are some of the courses. What I attempted was to let students explore these aspects as one integrated aspect and also as far as possible, to include material exploration also in this.

The basic lessons for re-imagination came from my experiences in working with artisans and children as well the personal transformation that I went through in the process of decolonizing, de-schooling and deconditioning my mind. Some of the most important lessons I learned were that traditional artisanry is not a result of teaching but of autonomous learning. Learning is as natural and choiceless as breathing and senses are the tools that enable learning. That the content of learning is the real three-dimensional world; that which we experience every day and we are biologically equipped to create knowledge.
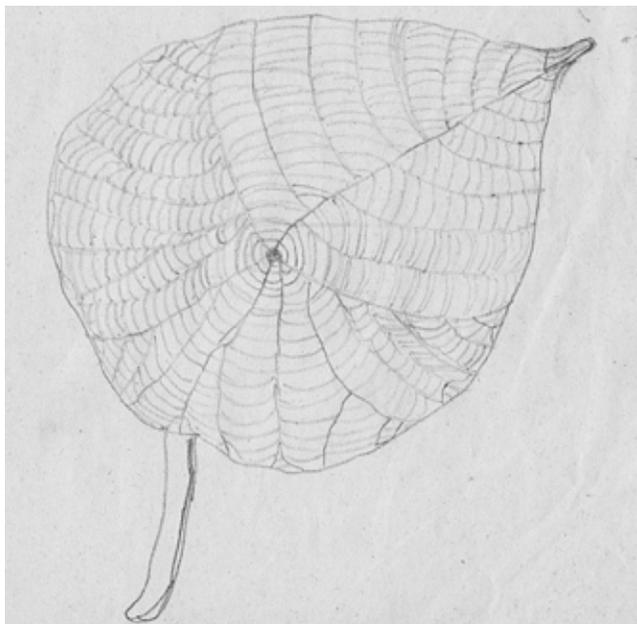
Children collected different types of leaves and drew them in detail. They also used regular day today objects like brush, chair, chappals, etc. to draw. They also drew portraits in various posture and also regular village scenes.
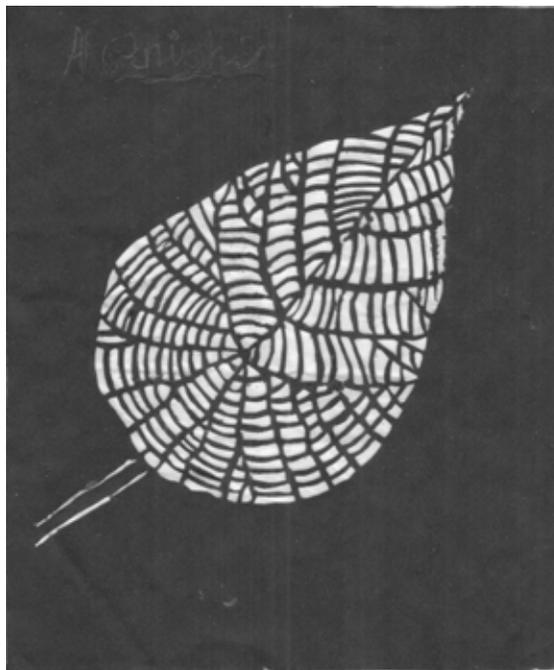
Cut-out work

Clay was used in order to recreate the textures and three dimensionality of form.

Forms and textures in nature

Exploring colour scale from nature
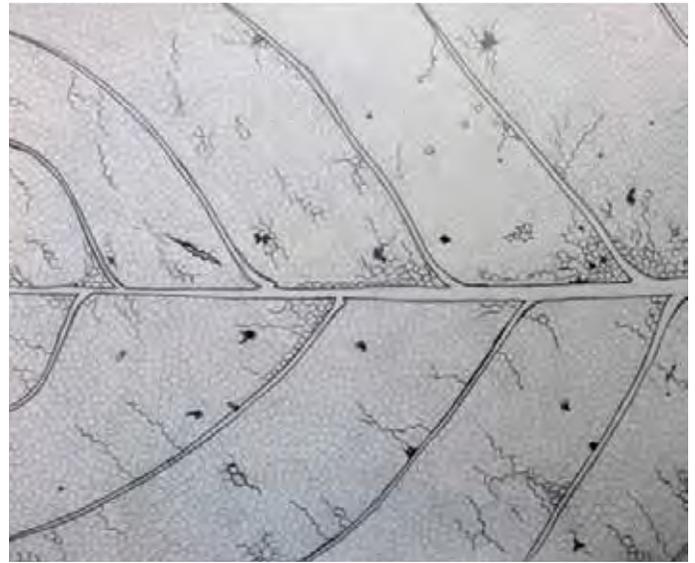
Exploring lines, dots, texture, shapes, form, etc.

Leaves collected from one tree

These kinds of possibilities have no place in our schooling paradigm. But architectural and design education do have the potential to bring back some of these ideas to some extent and that is what I was experimenting with. Both these disciplines lay emphasis on creativity, independent thinking and aesthetics. They encourage the student to bring real-life experiences as content but since these disciplines are still within modern teaching-based paradigm, the true possibilities have not been explored yet. But the real difficulty in working with the foundation students is that first and foremost the habits instilled by schooling needs to be undone, new cognitive habits or the unused tools has to be reawakened, behavioural change has to be initiated to make them to take total responsibility for their learning, etc.

Stone original/ painted and colures/ shades extracted from this stone

Form exploration and material exploration- recreating using clay

The content of their learning was the first aspect that I tackled and used nature as the basic inspiration to explore the elements and principles of design. So instead of just drawing dots, lines, shapes, texture, form, etc. the first task was to observe these in nature and draw it as it appears. So, the ability to observe is the first and foremost ability to be re-activated in childhood- this is the tool that nature has endowed us with which gets numbed due to schooling in childhood.

One of the key aspects of this kind of exploration is that first and foremost it has to be a personal journey. And in this journey of exploration, experiment, questions, doubts and playfulness, one can invite the students to become a co-explorer. They need not even walk the same path. They may

choose to go anywhere, along any path, but the static nature of our educational paradigm has nowhere to travel nor any intention to travel. More importantly this has to be achieved not by teaching but through thoughtful and honest sharing of experiences that would inspire them to explore - Teaching without teaching! This would require sensitivity, trust and indeed careful planning for the unplanned to happen.

CONCLUSION
The journey of this enquiry is most beneficial to the enquirer themselves as it totally transforms them into true learners-open, playful, compassionate and truly democratic. From decolonizing to de-conditioning is a long journey that needs shifting of gears and even going through completely
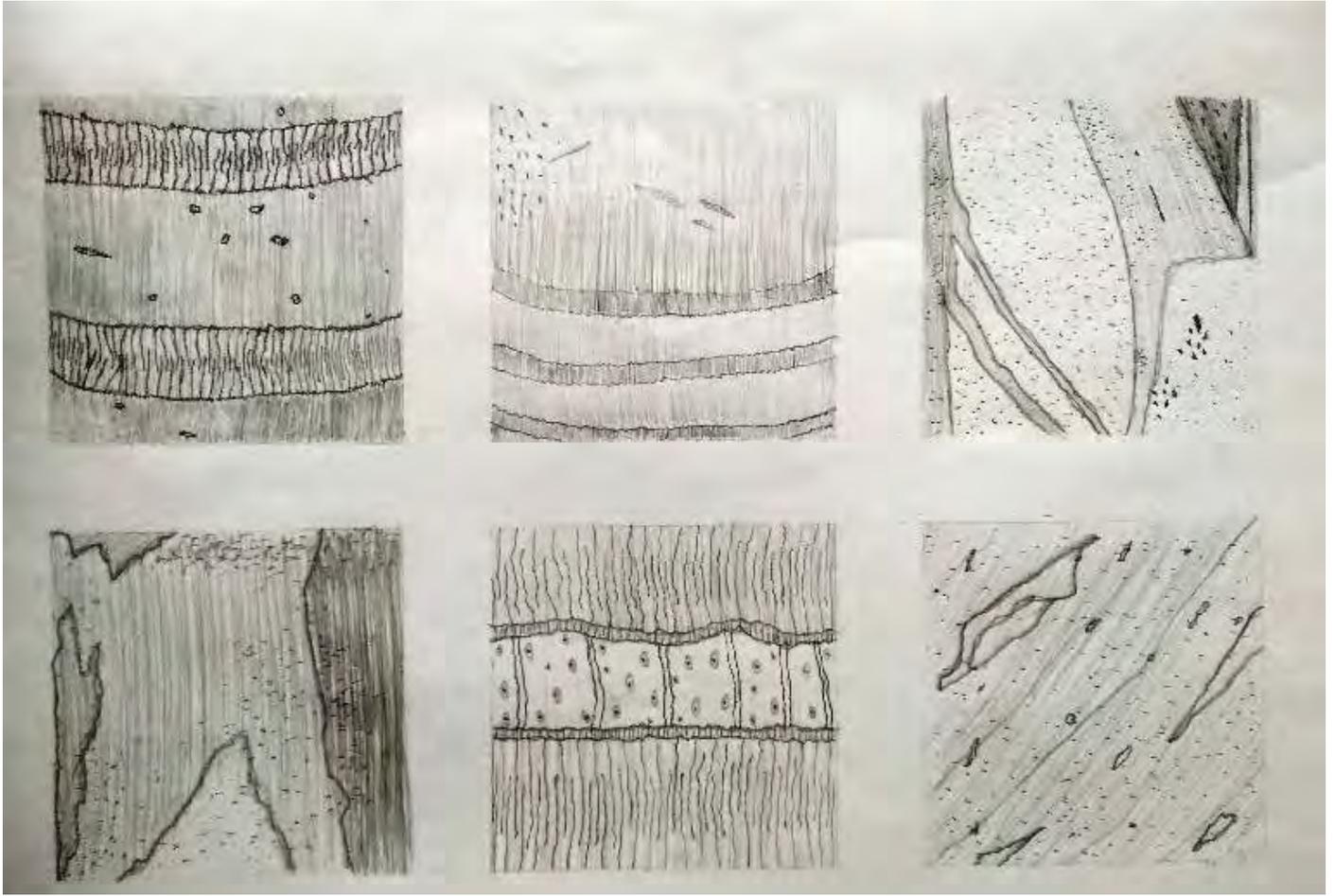
Texture extracted from a single palm tree

unchartered terrain. From a mere political question this became a deeper existential question that led me to 'understand' the biological roots of our being.

I draw the following conclusions from my various experiences:

1. Beauty is a biological aspect that is embedded in our body and 'beingness', and art is a psychological construct.
2. Beauty is not something to be developed separately but it is about 'present' in our being - which gets awakened in the process of engaging with the world.
3. Beauty is the most fundamental of human existence. It is what truly makes one authentic and binds us to the external world. It creates culture – the architecture, the food, the music, the artifacts, various dance forms and agriculture.
4. The process of de-colonization and de-conditioning is essentially the process of recovering one's authentic sense of beauty and reclaiming one's senses.
5. Rather than 'teaching', what one should do is to create situations for awakening aesthetic awareness.
6. Process of learning needs to be re awakened to recover various natural cognitive tools.
7. One doesn't create culture, but it is formed via our innocent and non- egoistic selves.
8. Human beings are, in some sense, the most helpless and with enormous capacity for self-deception.

Every generation needs to relive, relearn, recreate and reinvent certain aspects of its cultural sensibilities by engaging with the reality around them. Contextually rooted aesthetic sense is what once created the diverse cultures around the globe. The natural state of being is to be authentic and original. In that state, one is creative, is inventing, is discovering and is new - all the time. This brings in concrete and first-hand experience as the basis for creating and accessing or being in knowledge. Senses are tools that connect us to the tangible experience as well as our inner nature. This demands then, that we sharpen or sensitize our senses, as those are our primary tools for knowing. So, if aesthetic education is treated as awakening the senses by creating situations for connecting them to their actual context, it has the potential of making the learner authentic and original.

This authenticity will create diverse cultures.

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REFLECTIONS: LANDSCAPE
ARCHITECTURE AND THE
ECOLOGY OF DWELLING..

Ar. Rajesh George

Desert oasis planted with date palms

Our universe was created in the 'big bang', a gargantuan orgy of destruction. There is no creation without destruction, explicit or implicit. Destruction is the mother of creation. As architects, we are concerned with the creation of habitat – a sheltered cocoon, a niche carved out from the prevailing environment and rendered more suitable for human habitation. This act, of creating a habitat to dwell in, is inherently an act of disruption as well: modification of forces and processes that balance each other in the existing ecosystem; consciously skewing the equilibrium in a direction favourable to human habitat.

Because our evolutionary ancestors came down from the trees and adapted to a terrestrial existence on the flatlands of the African savannah, that is the environment in which humans feel most comfortable. Our primeval mind is 'at home', both consciously and unconsciously, when we are sheltered in a high refuge, looking out over the vast prospect of a metaphorical savannah. We need but a minimal modification of the environment, to exist in the raw in this ecosystem, as many hunter-gatherer societies did until the very recent past, and still do – the San, the Masai and the aborigines of Australia.

Elsewhere, in ecosystems unlike that of the cool Savannah, humans require remediation to render conditions more conducive to their existence therein. We create a cocoon micro-environment, 'island-ecosystems' within the eco-region, to dwell in. In the desert we plant out trees to create an oasis, in the rainforest, we make clearings. For humans, the act of dwelling demands intervention in the cycles and processes that comprise the natural ecosystem to render it more habitable. As architects, and therefore the creators of human habitat, we are the agents of such intervention.

Seldom do we realize this though, or engage in these inevitable environmental interventions consciously. Which are these natural cycles that we impact, often disruptively, in the dwelling?

The most obvious is our appropriation of space and resources through habitation, denying access to our living enclave for a section of macro-fauna. This exclusion is not always as dramatic as the bomas and kraals of Africa bulwarks against vast herds of grazing herbivores and the predators that follow them. We can see this also in the dwindling numbers of mongooses, foxes, monitor lizards and jungle-cats in our own peripheral suburbs, followed by an explosion in the populations of house-rats, bandicoots, snakes and feral dogs and cats that thrive in our living conditions, in the ecological niche we opened for them by the exclusion of their predators and competitors. The change in faunal communities is not merely visual; it affects our ecosystem and living condition in profound, yet subtle ways.

Our settlements have a different microclimate from that of their surroundings. Constructions of brick and stone trap and re-radiate solar energy as heat, giving rise to heat-islands

© Eric Lafforgue
Tribal village clearing in tropical rainforest

Boma in the savannah
(Photo Courtesy : Author)

A semi-enclosed courtyard in a contemporary Kerala home; paved and gravelled
(Photo Courtesy : Author)

New suburban community separated and made distinct from its verdant rural
setting *(Photo Courtesy : Author)*

A landscape of bare grassland in Kerala, where would naturally have been tropical luxuriance
(Photo Courtesy : Author)

Terraced landscape in the Western Ghats
(Photo Courtesy : Author)

Landscape levels created in a flat site in the coastal plain
(Photo Courtesy : Author)

Designing with the natural flow
(Photo Courtesy : Author)

Designing with the natural flow
(Photo Courtesy : Author)

and atmospheric phenomena such as inversion. Precipitation is quickly drained underground, leaving the atmosphere drier within our habitations. Gravelled yards and paved surfaces serve to increase aridity. At the other end of the spectrum, we have the walled gardens, the enclosed courtyards and the shaded streets of arid lands, which seek to ameliorate the dry heat of their harsh environments with shading devices, water and even fountains, where they could afford them.

We alter the vegetation, breaking its cycles of self-perpetuation – removing seeds and seedlings as weeds and litter. Replacing the native with what we consider desirable instead – coconut groves in lieu of mangrove banks, and deciduous flowering trees in place of evergreen forest giants. Succession is arrested in a permanent state of alternative climax, a savannah-woodland of lawn and trees, which would quickly have relapsed to its native eco-type had it not been for our strenuous interventions!

Human settlements can transform topography to extremes. In flat floodplains, we build levees, dykes and canals that deflect and redirect natural flows; even artificial hills as in the Ziggurats of Mesopotamia. Mountain slopes are incised into flat terraces to accommodate our homes, as at Macchu Picchu. The terrain is modified at the scale of the individual dwelling too: sloping sites are levelled by cut and fill. We

raise the plinth and gouge out channels to enable drainage in flat land. The entire hydrology is altered; new drainage patterns are created throughout, erstwhile sheet flows are now concentrated and re-oriented.

Our actions have an effect even at the scale of geological cycles. The processes of rock weathering and soil formation are hastened by the quarrying of bedrock for building material. Today, giant mechanical crushers directly pulverize rock into sand, expediting a process that nature takes decades, if not centuries to accomplish. Making of clay into brick or tile is the exact reverse; baking the soil into a near-rock-like formation with heat. These techniques have been with us since first we started building. Tools and human ingenuity speed up several-fold, the natural pace of geological processes.

However, the more significant of our influences on the ecosystem are less immediately obvious. Human habitations effect substantial change in sub-surface hydrology and regional groundwater regimes. Major parts of ancient Rome are built in drained marshlands; a network of underground drains used to turn the wetland ecosystem into a dry flood-plain. Cities and towns import water supplies from their surrounding countryside and then percolate it to the ground below, often in a greatly polluted state. This increases soil-moisture year-round. Sub-surface saturation therefore occurs

Manicured plantings and a surfeit of paved surfaces
(Photo Courtesy : Author)

Right Top: Tidal channel preserved and planted with mangroves and associates
(Photo Courtesy : Author)
Right Bottom: Run-off carried in swales planted with native wetland species
(Photo Courtesy : Author)

early in the wet season, slowing down percolation, and increasing urban flooding. The change in groundwater quality also affects the profile of soil-micro-organisms it supports, drastically skewing the sub-surface ecosystem.

Human habitation has an even greater import on soil ecology, albeit much less apparent. On the one hand, we bring in organic matter and its associated component nutrients as food for consumption, causing surfeit. On the other, we remove the vegetation that functions as a pump in the nutrient cycle, drawing in nutrients through their roots to create above-ground biomass, which falls to constantly replenish the upper layers of soil. Soil nutrient profiles can therefore be seen to differ in their entirety, between a pristine woodland, an agricultural field, a rural homestead and an urban lot. Associated communities of soil flora and micro-fauna, indeed the soil ecosystem itself metamorphoses in phase to a state of equilibrium distinct from that of the ecoregion in which it is situated.

We dwell, therefore, in a 'capsule' of our own making, a macro-terrarium kept distinct from its enveloping environment through human effort and endeavour. But like the foetus that needs to be connected to its mother through the placenta to survive, the systems and processes of the ecosystem that is human habitat, need to be linked with those of its environmental context. We need to connect dwelling,

Old native cycads trees, preserved and highlighted in a new landscape
(Photo Courtesy : Author)

back into nature's systems without impediment. Prevailing winds should dissipate urban heat islands, run-off should be effortlessly absorbed into the regional hydrology, nutrients and water should cycle uninterrupted between our habitat and its environment.

We need to be connected back, the workings underpinning our habitations integrated into wider regional systems and processes. Within the design professions associated with architecture, I believe that this role falls to the specialized discipline of landscape architecture. Contrary to the common understanding of landscape design as an exercise in stylistic composition, it is actually the landscape architect who has to ensure that the habitat functions as a living system. Landscape design should modulate processes, and direct the flows of energy, nutrients and water. Land-form, drainage, orientation and re-vegetation- these are all the concerns of the landscape architect. But over and beyond, landscape architecture should address also run-off, water harvesting, composting and even wildlife access.

The coverage from a single roof cuts off precipitation under it and concentrates it to its edges; it changes the entire soil moisture regime in its proximity. Percolation in the reduced infiltration areas no longer keeps pace with the rate of peak precipitation. Run-off increases exponentially during intense rainfall, compounded in urban regions by soils already saturated.

The landscape architect works in all four dimensions, including in time. Cycles and processes are periodic – diurnal or seasonal. The medium is alive, constantly changing in time, and also in space; design, therefore, becomes a choreography. Unlike that of other design disciplines allied with architecture, the scope of landscape architecture does not end with the creation of the spatial order as designed. It is a continuing process, rather than a single creative event.

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ARTICLE

…AND THEN THE PANDEMIC HIT US

When the lockdown was declared in India on Tuesday 24 March 2020, colleges of architecture were also taken as unawares as everyone else. Students at all levels, on the verge of their final submissions, were taken off their drafting boards and teachers and cast afloat on their own. This article has been written by three students, of the IES College of Architecture, Mumbai, in the First and Third years at the time, and one who was awaiting admission, with a footnote by a faculty member, relating their experiences of the last two years and coping with the teaching-learning experience.

Melissa Fernandes, Mayank Kanade, Abdulquadir Salik, Dr. Shilpa Sharma

It was the end of February 2020, when we started realizing that the crazy virus, we'd been hearing about for the past three months would possibly affect us too. But that realization didn't change anything for us except for a mask on our faces. It was still the end of the academic year for us, which meant deadlines were getting closer and we were buried in work trying, to complete our projects. We were still sleeping by 2 or 3 am each day and waking up by 6 am so that we can be in college by 8, so as to not lose attendance. Everything went on as usual until the outbreak started taking shape and was labelled as a global pandemic. The college was shut down and we were stuck at home. It was a few days before we started realizing the gravity of the situation. As the world shut down, our heads were still buried in work as we were anticipating the lockdown to end and examinations to be held anytime soon. But eventually, the exams were cancelled and for the first time in our academic lives, we did not have anything to do.

The lockdown also brought us an unexpected amount of free time that we never had before. Some of us took this opportunity to look at many interesting art forms, skills, concepts and tools that we couldn't explore earlier due to the never-ending chase for deadlines. And for a while, the lockdown seemed a blessing in disguise. Even though stuck at home with limited resources, we discovered everything that we always wanted, related to architecture and otherwise. From painting, cooking, reading to just Netflix, we all did what we desired. Amidst the chaos of the pandemic, we were counting our blessings and taking a much-needed break. And this break did wonders for us.

On the other hand, there were those eager aspirants who eagerly waited for the advent of architectural college in their lives, but the lockdown perpetuated their wait. The ones who eagerly awaited were too enervated by now to resist delayed entrance examinations. The admission processes created a challenge and were a test of patience, but they were eager to break away from the repetitious and now-dulled lifestyle of the lockdown to a more enthralling and inspiring field of architectural education.

Once online classes started, we were all very curious about this new method, which proved to be a blessing in the beginning because we were no longer getting up at 6 to catch a train or being broke due to stationery expenses. We were no longer tired and hungry. But this didn't last as we started to get bored and frustrated by monotonous routines. Throughout the online medium, we all faced various difficulties, especially in discussing and presenting our work. Slowly these setbacks became obstacles that we kept dealing with, and before we realized it, we were all wishing to go back to our hectic lives of being sleepy, hungry and broke.

The pandemic provided a huge challenge to all of us where we dealt with multiple personal and academic problems. Everyone had a roller coaster ride of emotions which can easily qualify as an experience of a lifetime. But this experience varied for everyone. What follows is an account from three of us, who are students who experienced the pandemic at different stages of their architectural education:

- Melissa had completed her Class 12 exams and entered her First Year straight away in the online mode. She has never attended architecture college physically.
- Mayank was just ending his First Year, where he had learnt only the basics of architecture in the physical mode.
- Quadir was similarly ending his Third Year, and was quite conversant with the technicalities and terminology of architecture.

Melissa Fernandes (Batch of 2025) : New to architecture
After the long wait after our 12th class board exams, and the uncertain process of entrance tests and admissions, we were more than anxious to join architecture college, if nothing else, to relieve the monotony of the lockdown, and experience the unexperienced and newer phase of studies. Once we finally entered the unknown academic world that revolved around architecture consisting of wide geographic and cultural diversity, when we least expected it, there was a challenge awaiting to test our willingness and passion for learning.

Transform your ideas, conceptualize them and sketch is an elementary exercise in the First Year, but being electronically connected didn't make it any easier. We could only picture ourselves in college studios, canteens, passageways, the quadrangle or on the streets. We had never imagined there would be a time when we would coalesce as a group virtually only through a screen, physically surrounded by the walls of our own homes. All our dreams of site studies and trips to support theoretical studies were replaced by the window of our computer screens that only allowed us a peek into the world of architecture for inspiration. Relying solely on technology hindered our holistic involvement where interaction and communication are an integral part of architectural learning. At the same time, it did open up a lot of possibilities and allowed for flexible learning and balancing your work with other commitments. Of course, it is a relatively cheaper mode of education in terms of the lowered costs of transportation, accommodation and the overall cost of institution-based learning.

Handling the T-square, set-squares and mounting sheets on the drafting boards at home was not less than an experiment for us. We were sketchy about rendering mediums or even knowing the names of different papers to being clueless about cutting a sun board for models, to creating our own design portfolios at the end of the semester- but the excitement of architecture kept us going.

But even after missing those first-hand experiences, we were fortunate enough to have interactive sessions with our mentors who incorporated tiny breaks that included class games, questionnaires, open-ended conversations, workshops, free music sessions, endless jokes and those stories that would never end, which made things better. However eventually, we realized that architecture is a powerful platform to bring us closer and impart a better understanding of things that revolve around us. Even if this online medium didn't bring us to the practical frontier, it enhanced our intellectual understanding.

At the end of every call, every lecture, we all just do hope for this time to pass away soon, and once again feel and experience our morning hustle of catching the train, extending our canteen breaks while we complete our sheets, playing cricket in the studio, hang out in the college corridors, and at last breathe in architecture.

Mayank Kanade (Batch of 2024): Experienced architecture college for a year before the pandemic

Going down memory lane, as we pen down the experience of transitioning from an offline mode of learning to online, we all could agree to the fact that it has been, indeed, a spectrum of emotions. It was impossible for us, back then, to connect the dots, looking forward as we were all, conscious, afraid and completely clueless about what the pandemic was to bring us in the days to come. But now, as we connect the dots backwards, we start to get the whole picture about how we overcame the challenge and realize the transformation in our routine lives and the physical and mental states of being.

For our class, the news of the nationwide shutdown landed on a more positive side. We had our Semester 2 final design jury scheduled in two days. This was supposed to be the first-ever design jury we would have and the studios at college were bustling with models, sheets, interactions and discussions. As students of First Year, it was our very first time, staying back after college hours to finish off the day's work, sit in the canteen to enjoy our meals and chats, rejuvenate ourselves with a stroll in the corridors and get back to work. Along with the faculty, we also had our seniors to guide us. It was a vibrant time and our nervousness increased as we approached the date of the jury without any of these mainstays around us now.

At the peak of stressful working hours and nervousness, a Sunday afternoon message from college, about the nationwide shutdown including our college for 28 days was a sigh of relief. The progress of work came to a halt as an immediate reaction. For students like us, who were cribbing for at least a day's extension to complete our portfolio, this was more than just news- it was a blessing.

The lockdown in its initial days was treated by us as a 'stay-cation'. Outstation students returned to their respective homes after about a year-long academic journey of their First Year in college. Most of us spent time sleeping and realigning our sleeping and eating schedules, while many binge-watched web series and movies that had been on our wish lists for a long time. The first scheduled lockdown gave us a much-needed break for us to do . . . nothing. In the First Year, we had realized the amount of effort and dedication required to study architecture and this forced halt was quite appreciated and thoroughly enjoyed. These 28 days also gave the institutions to figure out a temporary way of accepting submissions online and hence, our portfolio submissions were asked for after a long break of over a month.

The virus, unfortunately, continued to spread and the lockdown continued. Colleges stayed shut and were planning for online platforms for teaching. No academic learning took place for a while and students had a lot of idle time in hand. To kill boredom, we all resorted to pursuing our hobbies, spent time cooking, creating illustrations, dancing, following and even creating some of the social media trends. The college messaging group, where faculty shared information about deadlines and academic work, was now inactive, but the unofficial group was filled with images and videos of interesting activities that we all did at our homes. We also spent a lot of time on video calls with our year-old friends and reconnected virtually with our friends from school and junior college with whom we had lost contact over a year. This was also a time when some of us tried to upgrade our limited knowledge in architecture software through the internet or other social media.

The lockdown was now perceived as a fairly long-lasting necessity to get rid of the growing virus, and we too, unexpectedly, were tired of the rising boredom, craving for academics to restart and life to get back on track. Colleges had opted for the online medium and we all were asked to upgrade ourselves technologically. We were asked to get a good internet connection, procure a good laptop or a desktop PC in order to ensure a smooth learning experience in the then-new, online phase of learning. Some of us had a laptop or desktop PC but many of us didn't, as our first year had been completely about learning and improving hand-skills and the digital medium was new to many of us. Some of us were in rural places, where network connectivity was too poor to sustain online platforms. Electronic shops were closed. Purchases too were possible only online, and that too only in non-containment zones. Lockdown had been imposed for a considerable time now and some students were also going through financial instability making it difficult for them to invest heavily in electronics. But as the show had to go on, we purchased, rented, borrowed any device we could and the semester finally began online.

Academically, it is a big leap in the architectural syllabus from the First to the Second year. There is an increase in the number of subjects and their depth. Being online, we felt the leap harder. In the offline medium, we had had some breathing time to look around, roam the college premises, talk to friends or go to the canteen. All these informal, casual activities added to the (up to now-unrealised) relaxation of mind and aided our creative workflow. Now, we were online, sitting in front of computer screens for hours, working on assignments, confined to our rooms, with less or no interaction with the outside world. Some of us could sense their efficiency decreasing, while some, in this way could concentrate much better. We did get more disciplined in terms of meeting our submission deadlines, as the digital submission portal would close at the scheduled time and would no longer accept our work. But many also got anxious or afraid about the closing deadlines. In the First Year, load-bearing construction techniques and principles were taught to us through practical exposure at various sites and study tours. Now in the Second Year, we, unfortunately, had to learn crucial RCC construction methods through slide shares and PowerPoint presentations, without going on-site and physically documenting it.

We have never yet had a jury offline to date and we adapted to the new mode of presentations with a PowerPoint and not sheets. Some gained confidence in the comfort of their own space and presented their work in a much better way than they would have offline, while others took advantage of being behind the computer screens and taking neither lectures nor submissions seriously. We actually craved for the red marker remarks that the faculty used to decisively scrawl

on our neatly-drafted sheets, as we realized that those were the ways through which we could understand and remember our mistakes better. Students for whom travelling had been a major issue as they spent a significant amount of time and energy commuting to and from college, took this lockdown at an advantage and performed exceptionally well, sitting in the comfort of their homes and investing time and energy towards academics instead. Communication became a crucial requirement to sustain in online learning. Unlike the offline medium, the teachers could no longer measure us from our facial expressions as video cameras were mostly switched off. Rather now, the onus was upon us to ask doubts and clear confusions and concepts. Group work was more efficient and interactive offline rather than online. Lectures were recorded and saved and could be referred to again and again while doing the related assignments.

Soon our rooms took on the character of our design studios in college, in terms of their raw untidiness. Our parents knew the seriousness of our submission by the proportionate mess in our rooms. The drafting table sometimes became our dining table, our bed was a new workspace with drafted sheets spread all over, topped by the laptop and fragments of models in different corners of the floor, making the whole arrangement of the room very- user-specific, organic . . . - to be honest- just plain disorganized. Every week or after every submission we had to gather all our strength to clean up our rooms which made us realize the role of the caretakers and cleaners that worked after our working hours in college to ensure that we have a fresh and clean beginning the next day.

It now feels like a never-ending sleep. From bustling college premises, formal lecture halls, interactive design studios, endless chatters to the silent cocoons of our rooms. Our bills at the canteen are still due. The rush at the start of the day, to catch the earliest local train (so that we get enough space to sit with our kit) and the discipline of coming to college on time, is now transformed to a lazy start as we wake up right before "joining in" the lectures. Canteens and cafeterias, where memories were made, ideas were exchanged and junk food was complemented with healthy gossip were now substituted by fresh homemade recipes which could be enjoyed even during the online lectures. While to some, this may be a distraction, to others it was a luxury. Academic life during the pandemic times exposed us to a palette of experiences and transformation. The transformation back to offline is again a challenge, but with the right spirit, we shall sail through it!

Abdulquadir Salik (Batch of 2022): Quite accustomed to architectural education before the pandemic changed everything.

Having been an architecture student for almost three years, we were in many ways, already cut off from the world outside our college, assignments and deadlines. It was the year when we were supposed to appear for the Third Year University Exams which we were very anxious about. Even though stuck at home, we were continuously working to complete our projects and get ready for the exams. After all that hard work, the exam cancellation came as a disappointment for most of us.

As the world shut down, even we paused to catch a breath. Looking around at the chaos due to the pandemic, we counted our blessings and looked back at our previous years. It was difficult to believe that though stressed and burdened, we had yet enjoyed every moment at the same time.

By this time, we were trying to build a good portfolio because internship time was approaching. Therefore, during the break amidst the pandemic, some of us participated in architecture competitions while some joined classes and upskilled themselves. There was no pressure, no deadlines and we really enjoyed working with this free mindset. But at the same time, many of us couldn't complete the work we started. I guess this speaks for the fact that architects work best with deadlines.

Slowly when the college started, it was not a big shift for us in terms of working, since, by the third year, all of us had shifted to digital tools. All we had to do was share our screens on zoom instead of sitting beside a faculty to discuss. We also enjoyed many benefits due to the online medium where we could sleep more, eat home-cooked food and save a fortune on printing and stationery. As the internship period got closer, we started worrying about whether we would be able to attend the office offline. Fortunately, we got a longish window of offline working experience between the first and second waves of the pandemic. Now, eventually being stuck at home again after the internship period ended, we were now desperately wishing to go back to our college, meet our friends and attend our classes as we did before the pandemic.

After almost two years in the pandemic as architecture students, we've learnt a lot about ourselves and the significance of our learning methods. Architecture is a kinesthetic course and our time in the online medium has proved it. Although we enjoyed some superficial benefits, that enjoyment was soon taken over by our desperation to go back to the traditional, physical means. We missed running through the corridors to make the submissions in time which was taken over by digital portals. We missed our teachers scribbling on our sheets which were taken over by shared screens. We missed our college tours and site visits, which was taken over by google earth hoverings. And we missed holding pencils and cutters, drafting sheets and crafting models.

This pandemic has eaten up a huge part of our architectural education. Now in our last semester, we look forward to having that one last run for attendance, one last debate with the faculty, one last nap in our studios and one last hangout in our college canteen.

End-Note
Online vs offline education is a very subjective comparison. Online saves our time and energy of travelling that helps us to invest more time and effort in learning new things and improve our skills, while offline was very effective in terms of interaction and understanding. Through the online medium and digitization, our submissions and assignments were recorded and checked in a very organized and effective manner but we became more dependent on electronic devices and prolonged hours of working have caused several physical and health issues that may have long-term adverse effects on youth. Though the offline medium helped us get involved in other activities quite unknowingly, we had more to do physically, more human interaction and extra-curricular activities such as college fests which helped us rejuvenate and recharged us for the oncoming academic schedule. The use of electronics which had been for us a substitute in the offline mode, now became a prime necessity in the online, making the whole learning experience a bit more tiresome. Earlier, to bunk a lecture, a class had to be united for executing the plan strategically, but through the online mode,

we have lost that excitement as well. Distractions were bound to happen when we were muted with the video switched off but indulged in Netflix alongside.

Throughout this sudden and difficult situation of pandemic and online learning, there was primarily one thing that kept us moving: the constant support of teachers that inspired us to work efficiently each day. If we were able to cope, It was only because of their sheer determination and consistency. All faculty played many roles- from being mentors for our design ideas to solving our real-life crises, from pinching our ears (virtually) if we appeared distracted, to patiently listening to our endless excuses. On behalf of every struggling student, across all disciplines, we salute and thank all members of the faculty for their valuable teachings in and beyond the syllabus.

It is upto us to make it through with either our strengths or weakness and it is many times upon our present response to academics that our future experiences depend. If we work with determination and discipline, we will sail out of these challenging times smoothly, but if we surrender to distractions and procrastination, we will deviate from our goals. These times gave us the confidence to say, "Yes! We are adaptive beings and can adapt to challenging times and find solutions in order to survive through those moments of hardships and struggles."

Faculty Footnote
The pandemic was tough for all of us. There have been endless memes on the teaching-learning situation. The difficulties experienced by teachers of architecture, without exaggeration, probably transcended them all. When more than half of a teacher's job is unspoken – through his/ her expressions and behaviour, as well as reading those of the faces sitting in the classroom- talking to a blank screen was extremely torturous. When a raised eyebrow has been enough to quell unruly activity, in this situation, it wasn't even possible to know whether anyone was listening or indulging in some other distraction. Constant

verbal interaction seemed to be the only way, along with on the spot MCQs and drawing out students. Once they started responding and asking questions on their own, we knew we had conquered territory more than equal to Alexander's.

Teaching at both ends of the spectrum- the new First year-ites, as well as the Final Year students, I experienced varying levels of difficulty in reaching out effectively. With the senior students, it was easier as they knew the jargon. They understood our instructions and could translate them into drawings. However, the ease with which we could give feedback in the physical mode, was, of course, missing. On the other hand, it is always the most difficult, in my experience, to adjust to the new, young minds that come in each new year. Being in the physical mode renders this slightly easier for the teachers of this class, as much of the teaching is through physical demonstrations. Exercises had to be ingeniously designed to ensure that they assimilated aspects that would have taken half the time in a classroom. Kudos to all First Year faculty who invested time into putting all their efforts into imparting the basic skills required by them.

The new skill to be learnt by all, students and faculty alike, was presenting work or lectures through PowerPoint presentations. Instead of corrections on the drawing sheet, they had to be laboriously conveyed on the screen. Instead of relying on the blackboard and memory, lectures had to be imprinted upon slides and were recorded at that. We could attend webinars, participate in workshops and learn from experts without moving from our homes, and even bring them into our virtual classrooms. This went a long way in learning new things for both of us.

Network and electricity supply issues were perpetual on both sides of the screen. It became a matter of habit to have all teaching material uploaded on the cloud so that it was accessible to all even in such situations. There was the prime and overriding concern also of the health of the students and their families. It made no sense therefore to impose electronic deadlines. Instead, a personal connection to gauge the situation was essential at all times. Colleges even offered psychological counselling for those who needed it.

It has been a tremendous learning experience for all of us. For me personally, it was a steep curve to master the use of the online medium, with several advantages it brought along. Though, as all true teachers, I can't wait to "see" my students again in the real sense.

Illustrations have been conceptualised and drawn by: **Rucha Subhedar**

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AR. VAIBHAV SETHIA
STAND-UP COMEDIAN

I often get asked if I disliked architecture and thus chose a different path, to which I always respond, "I am still extremely fond of architecture, and I always will be. It's just that I liked doing stand-up more."

I stood in the audience watching the four comics get up on stage one after the other, and create what I could only describe as magic. They spoke and you could feel possessed with this urge to react discarding even the tiniest morsel of inhibition. It was wildly liberating. Yet, funnily, I was totally engulfed, by the catharsis. I was smitten by everything that was happening around me. It was the first live stand-up show I saw and I was already telling myself that I absolutely had to try this out.

I had always loved being on stage, and acting in plays was the only way I knew I could do that. Then I met stand-up, an unabashed and indulgent art, where you are the director, and the writer, and you alone play all the roles. All the applause and all the hate, it's all yours, only yours. You lay out yourself in words and the judgement is given out instantaneously. I've done this a million times time and I'm telling you it feels nothing short of a gladiator, one who's fighting all the dull moments that time could offer till the mic was in my hand.

My journey from graduating in architecture from IIT Roorkee to becoming a writer-comedian was not at all linear. Right out of college I did six jobs in five different fields within a year

before going up on stage for the first time. Through campus placements, I got a job at Schlumberger, as a cementing engineer. I was 22 and the robust oil-firm-salary was alluring. What I did not realise is that it came along with a very uneventful and uninspiring life on oil rigs, which were always located in remote areas. I quit that job in a couple of months and joined a friend's magazine start-up as a graphic designer, which was doing really well but unfortunately had to shut down. I then went back to architecture and did a couple of jobs in Mumbai, on course to becoming an architect. A month later, due to an injury, I had to go back to Kolkata, where after recovery I tried working at a third firm but had to quit again due to effects from the earlier injury. So with time in hand and an almost-depleted bank account, I decided I wanted to try meeting a long lost love - acting in movies.

Obviously, I couldn't just land myself a role right away, but I did get an internship at a production house where I was helping curate a horror show for a local Bengali channel. That helped me get another job as one of the assistant directors in a Bengali movie in which I worked as an actor too. Just before this was about to end, I saw an ad in the newspaper that Kolkata was having its first-ever stand-up 'Open Mic' and I immediately booked myself a spot in it.

This first-ever show that I was a part of is legendary in some ways. Open mics are basically testing grounds for seasoned comedians or trial grounds for new ones. Thus held in small cafes, they are usually not even ticketed. This one, unlike all that has ever been hosted in history, had a 1 lakh prize money for first-timers and was to be held in a 600-seater auditorium with paid tickets. Fifty people and three participants showed up. Anirban Dasgupta and I, who later on co-founded 'Comedified' with me, were two of the three. Neither of us won, and the winner never pursued stand-up beyond that day.

For a beginner, my performance was a not-bad-not-good one I'd say but it was enough to get me excited to keep at it. In the next few months, I got chances to perform small opening spots for popular comics like Vir Das, AIB and Cyrus Broacha, all because there was no one else to do it in Kolkata. Soon Anirban and I along with another Kolkatan, Sourav Ghosh, co-founded Comedified, which was purposed at organising regular open mics in the city. Stand-up comedy as a profession, in 2013, was almost unheard of. There were times when cafe owners simply failed to understand how people telling jokes is a show or even an event, or at times even asked *us to pay them* to allow us to perform. A year later Comedified was hosting five open mics every week and had created significant awareness along with ten regularly performing comics.

I soon realised that the only way to be better at stand-up was to perform more and thus I began travelling to Mumbai, Delhi and Bangalore. These cities had started out three years before Kolkata and thus had better comics to watch and learn from, who also helped get you some open mic spots at local cafes. Over the next year, I travelled almost every month. Pyjama Festival, India's first-ever comedy festival was announced to happen in Mumbai, which had *all* the then-popular Indian comics performing and I won the festival's open mic! It was amongst my happiest days in a long time, and before I could start dreaming of the commencement of a flying career, I was made aware of how my first decent paid show could still be at least a year away!
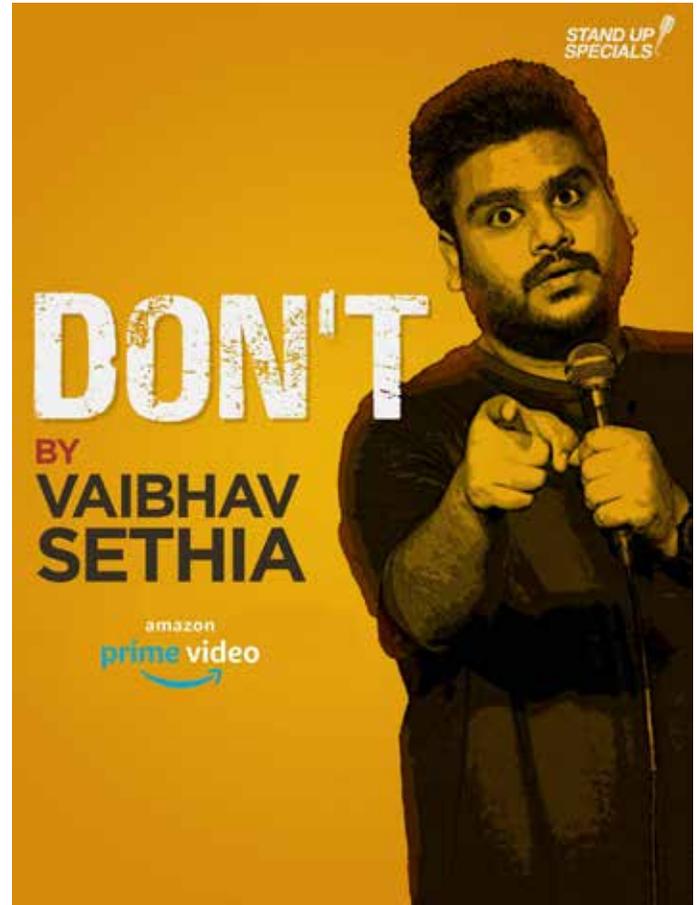
Around the end of my third year in Kolkata, while I continued gasping in the shallow well of debt and insecurities, I got a chance to do an opening spot for Biswa Kalyan Rath who eventually hired me to join him and write a web series for Amazon Prime, named *Lakhon Mein Ek.* The following month, I moved to Mumbai with this opportunity. Later, in 2016, I released some of my stand-up videos on YouTube which fortunately got views in the range of millions. All of a sudden I started getting frequent calls to perform at corporate events, colleges and private parties. I hired a company to manage my career and within a year I was offered an hour-long solo show to be aired on Amazon Prime Video, which I did in 2017, named DON'T. I went on to write and perform two more solos named "This One Time" and "Apple Is Red" after that, of which I still perform the latter at some live shows.

Like any other business, stand-up too required a few years of financial and professional investment, but I'm happy I could hustle through. I feel more than fortunate to have gotten to pursue a career that I so thoroughly enjoy. It challenges me every day and makes me smile every time I leave my home for work.

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BOOK REVIEW

DECODING AFFORDABLE HOUSING
.....THE WAY FORWARD

Ar. Jit Kumar Gupta
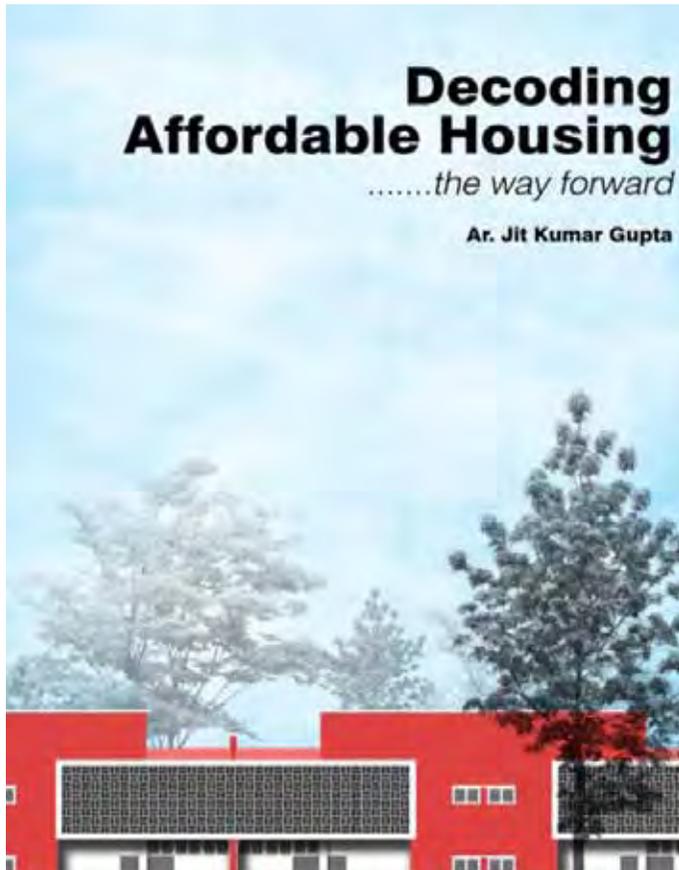
The Book titled, 'Decoding Affordable Housing- Way forward', is certainly a collection to have among the community of learned professionals, practitioners and researchers, engaged in the art and science of teaching and practicing professions of architecture, physical planning, urban development, urban management, construction and urban governance.

The contents of this book on Housing, initiates a thought-provoking dialogue among the students, professionals, researchers and readers who basically understand, appreciate, analyse and evaluate the complexities and intricacies of shelter in the context of human living and working in a holistic manner. In contemporary times, Housing which has been commanding global attention with several national governments engaged in working out strategies and options to improve the quality of housing being offered to its citizens is seen highlighting the Critical role and importance of qualitative housing come out in focus in the current environment/scenario created by Covid 19 in this book.

The author points out that Housing is being increasingly valued to overcome the grave challenges posed by the natural disasters. Government of India, has already launched,' The Prime Minister Awes Yajna', both for urban and rural population, with the objective of achieving housing for all by 2022, when India completes 75 years of its independence.

The Scheme has undergone major change by adding rental housing as a large component of providing shelter to migrants visiting and working in cities, in order to avoid a repetition of the situation caused by mass movement from cities, as has happened recently.

The book has complied various guidelines brought out by the Government of India related to various facets of housing including housing policies, planning, designing and promoting state of art globally recognized cost-effective and time -efficient, a model rent act in order to promote rental housing on large scale which is very well narrated in the book with the aspects of housing which remains most valuable, considering its multiple implications in defining life, liberty, dignity, quality and productivity of human living.

Housing as a prime land use remains central to development of individuals, communities, societies, states, nations and the planet, and considered as one of three basic human necessities, shelter has occupied and shall continue to occupy critical space in defining quality of life taking care of life and liberty, shelter remains major driver of economic development besides generator of large-scale employment which has been mentioned very well by the Author.

Planners and stake holders must read how occupying largest space in cities and having largest count in the built environment, which is housing, defines the personality and basic character of the cities. He adds on how Cities are globally known for quality of housing and quality of life they provide to its residents.

The author also has written on the points that have been mandated and valued, by United Nations in its various declarations, as one of the basic human necessities of life, 'providing housing for all', remains the universal agenda of all nations. However, providing shelter for all, remains the most challenging, gigantic and difficult task facing the governments of nations, since housing remains both cost-intensive, labour / resource intensive and time- consuming activity. Led by massive and uncontrolled rural-urban migration, rapid urbanization and families becoming structurally small and compact, housing demand always remain evolving, devolving, never static and never definitive/ finite.

Additionally, an estimated 100 million people worldwide are homeless and one in four persons are now living in harmful conditions posing threat to their health, safety and prosperity. Access to housing remains a precondition for access to employment, education, health, and social services. For addressing the current housing challenges, all levels of government need to put housing at the centre of urban policies by placing people and human rights at the forefront of urban sustainable development (UN Habitat). Looking at the physical, social, economic and environment connotations, housing remains both vital and critical for any society and community to remain safe and secure.

Housing the poor remains the most difficult and challenging task for all developing economies. The author adds saying despite best of the efforts made, housing for majority of the urban poor and slum dwellers remains a distant dream and a mirage. Despite being a major contributor to urban economy and employment, socially and economically disadvantaged section of urban pyramid, have never been considered integral and essential part of planning and development of urban settlements. Cities believe in exclusion and they are invariably at war and on the path of perpetual collusion with its poor citizens. Nations need to relook at the existing policies and programs and create supportive policies and enabling environment for empowering individuals, communities and parastatal agencies to create large stock of affordable housing in the urban areas. Rental housing, as an issue, as an option and as a strategy, for providing shelter to large section of urban population, would require serious consideration, evaluation and focused attention. Strategy should revolve around creating multiple options for housing in urban areas to suite the varied requirements of the heterogeneous social and economic segments of the urban population. For bridging the ever-widening gap between demand and supply and having a realistic and rational solution to the problem of affordable housing and achieving the universal objective of Housing for all, India must tread on to, 'Accept the right to appropriate shelter as the basic human right for its billion plus population, both existing and future, but it must move away from the concept and ideology of, 'creating ownership-based shelter in the domain of affordable housing'.

In the given context, this book makes an attempt to look holistically at the various facets of housing, including its role and importance in making human living qualitative and issues related to cost, land, slums, construction technologies.

Besides looking at the housing policies, followed locally and globally, the book also details out critical role played by various organizations and agencies including HUDCO, National Housing Bank, Building Materials and Technology Promotion Council, Housing Boards, Development Authorities etc. created at national and local levels, which are actively involved in making housing, possible and affordable.

Housing for All

In 2022-23, 80 lakh houses will be completed for the identified eligible beneficiaries of PM Awes Yojana, both rural and urban. ₹48,000 crore is allocated for this purpose.

The Central Government will work with the state governments for reduction of time required for all land and construction related approvals, for promoting affordable housing for middle class and Economically Weaker 10 Sections in urban areas. We shall also work with the financial sector regulators to expand access to capital along with reduction in cost of intermediation.

SPEECH OF Hon. MINISTER OF FINANCE NIRMALA SITHARAMAN, GOVERNMENT OF INDIA BUDGET 2022-2023 On 1st February 2022.

The author has addressed the problems of housing in India, which reflect the concerns emerging due to rapid growth of population, poverty and rural-urban migration which is seen as a most dynamic challenge facing humanity, communities, state and nations, ever evolving, ever devolving and never static and defined. Considering the complexity of housing, being both resource, capital and labour intensive, it will be rational and logical to look for new options and strategies to achieve the universal agenda of Housing for All.

'Decoding Affordable Housing-Way Forward, written by Jit Kumar Gupta', is seen to be making an honest attempt to look at the entire context of housing, existing, its relevance for human living, promoting economy, employment; bringing out various issues and roadblocks facing the housing sector in India and define options to create large housing stock for achieving the goal of housing to all.

Issues related to cost and options to make housing cost-effective over its entire life span, have also been addressed with clarity related to sourcing land for housing at most affordable price and tackling problem of slum, which have been appropriately addressed. Policies adopted at the national and international levels, regarding housing options which can be leveraged to overcome the problems posed by housing shortage have also been made part of the book to make it more inclusive and self-contained.

The book contains enough material and food for thought for professionals, faculty, students, researchers, administrators and agencies engaged in practice, academics in planning, designing and construction of housing, to look objectively and holistically at the entire gamut of housing for preparing a comprehensive and detailed document that may facilitate the most vital and critical aspect of human living - Housing.

The details of the book can be accessed with the Author
*Ar. Jit Kumar Gupta on 09041026414*

Ar. Jit Kumar Gupta holds professional, academic experience spanning over five decades; Fellow IIA; ITPI, Senior Fellow IGBC, Ex- Co-opted member working group Planning Commission, India ;Past Chairman BOS Architecture, Punjab Technical University, Jalandhar; Past Vice-President IIA, Chairman, Chairman, BE&A Chandigarh Chapter IGBC; winner academic, professional awards; Guest lectures USA, China; Kathmandu, Bhutan ,Switzerland; Member Jury ACA-19 awards; Guest faculty reputed universities/institutions; Team leader World Bank Project-CADS Gujarat; Consultant 8 Master Plans, *Authored over 300 technical papers* & Nine e-Books on Architecture, Planning. jit.kumar1944@gmail.com

BOOK REVIEW *by*
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BHRAMON BANKURA
THE TRAVEL THREAD

Ar. Anita Choudhuri

Pathar Darwaza
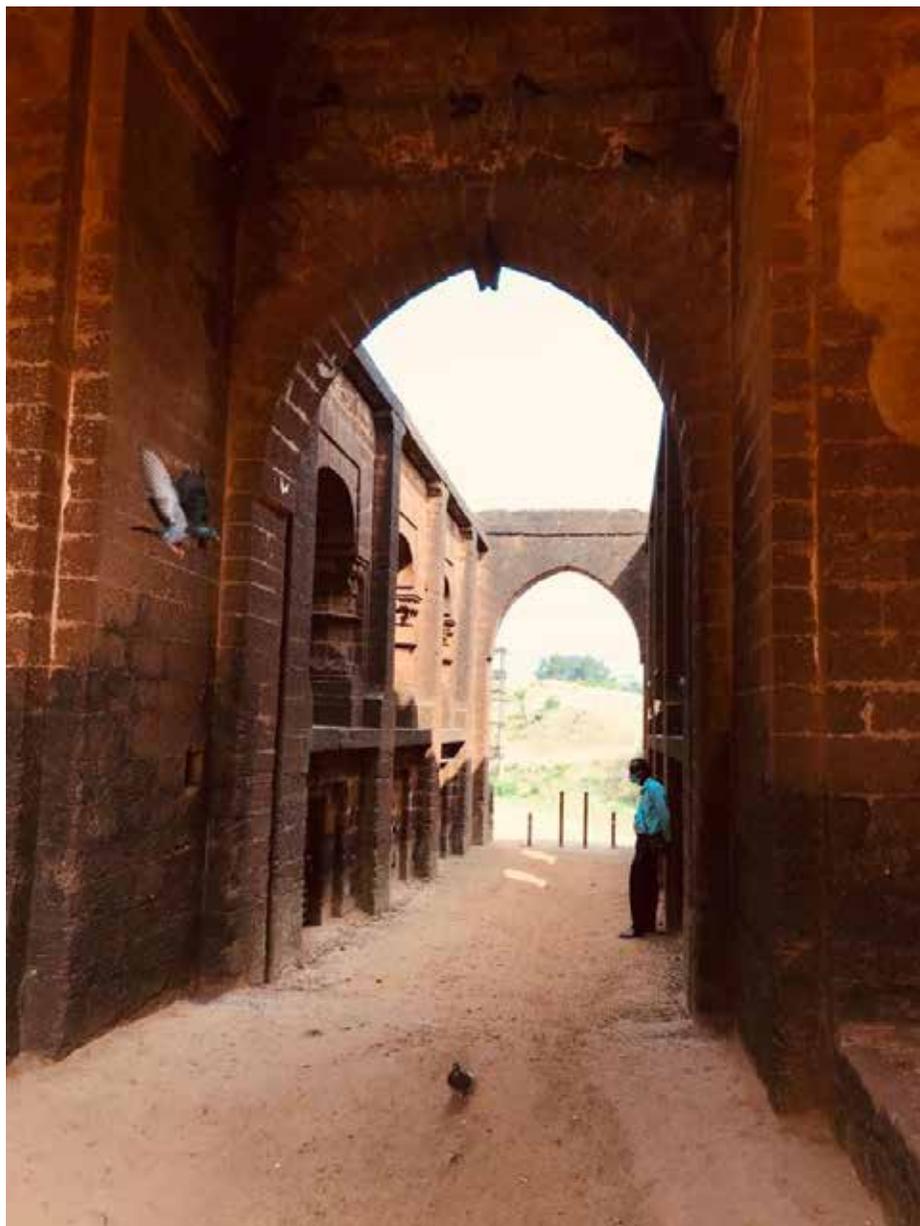
My sojourn to Bishnupur was delayed and overdue-here was a journey of discovery to the wonders created in terracotta and brick. Bishnupur lies in the floodplain of the Darakeshwar River, about 150 km from Kolkata. It is a sluggish village in the Bankura district of West Bengal, having an abundance of art forms and architecture. As one travels from Kolkata to Bishnupur one sees the endless paddy fields, maath (open playgrounds), chaash (cultivated fields) and pukurs (ponds or the water sources) of bucolic Bengal, untouched by the development of the urban neighbours but lyrical in its stance. Traversing the congested, throbbing and active alleyways of the village along with the aroma of shingara (samosas), luchi bhaaja (fried puris) and chaa (tea), with an occasional encounter with stray cow adds to the vibrant chaos, on arrival.

The region is famous for the Bankura ghora (horses) in terracotta and dhokra, an art form that has been transcending generations in this region. The Bankura horses were used for religious festivals often as a stylization of the horses of the Sun God in an iconic way. Typically characterized by an elongated neck and long ears with embellishments of royalty, this piece of art is moulded as separate pieces and can be easily assembled. The dhokra art form uses non-ferrous metals (nickel, brass and zinc) and moulds made of mud and wax. Jewellery, idols, sculptures and murals add to the art forms practised here and in the neighbouring Bikna village.

Marvels were created as terracotta temples here too, in the 1600s, courtesy of the artistic kings of the Malla dynasty who encouraged artists and were benevolent enough to permit art to be incorporated from the existing influences (especially Islamic and Rajasthani). Situated on the floodplain, the availability of clay allowed for the simple contextual logic of brick, terracotta and laterite as the building material.

The village still has homes that have the traditional roof form, the chaala, also called the Bangla roof, almost like a splayed dome. Vernacular derivatives are seen either as layers of thatch supported and reinforced with bamboo or simply mud roofs. Temple roof forms amply reflected this traditional style. The chaala roof, foliated arches, domes, jaalis, delicate filigree, terracotta panels with relief work speaks of a confluence of styles resplendent in artistic expressions.

Pathar Darwaza
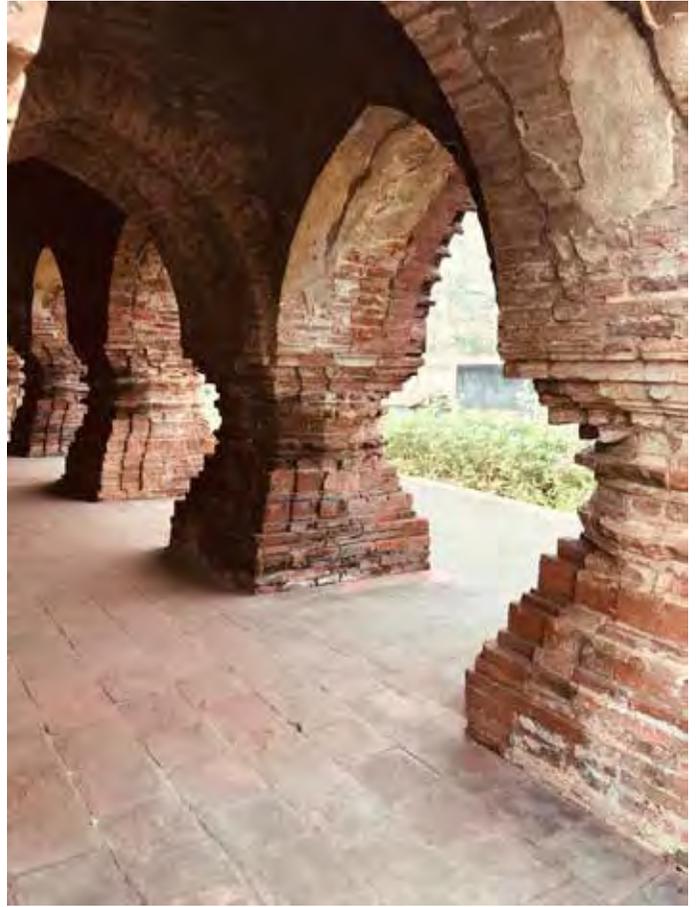
Rasmancha

Rasmancha

Rasmancha

The prologue to this journey was with the arched laterite gateway, the Patthar Darwaza. It was the entry to the royal grounds. Troops were housed here in the double-storeyed galleries. One is slightly surprised by the domes in laterite, which has survived the trials of time. The parallel walls have small openings about five-inch squares, diagonally built to allow for the gun barrels to be placed and also prevented the perpetrators from killing the soldiers- an intelligent and interesting combat methodology. Remnants of the moat around the Palace precincts are visible still.

The terracotta temples of Bishnupur are dedicated to Radha and Krishna, though secular in their abodes, (read 'architecture'). The indulgence of the dynasty allowed exchanges within the communities. One such structure was the Rasmancha, a temple that had a three-layered circumambulatory of arched galleries used to display panels from the surrounding temples, replicating an art gallery of yesteryears. A beautifully crafted brick structure, entirely load-bearing with strong Islamic influences. Bricks of size 5 x 8 x 1 ¼ inches and column bases of 40 inches created rhythmic foliated arches. Foliations were created by staggering the bricks. The key brick was recessed at the crown almost stating its importance. The play of light in the galleries accentuates the rhythmic treatment of walls and arches, in a hierarchy from the outside to the inside.

As one moves to the Lalji Temple, one sees laterite used as a block, lime-plastered walls and barrel vaults for the circumambulatory. The chaala roof with an embellished shikhara stands proud, creating an optical illusion. The interesting feature being a gentle curvature to the extended plinth, preventing stagnation of water as it protected the plinth edges. Corners of this plinths were decorated and the embellishments became more intricate in the years to come. Ventilation in the central sanctum was through air holes following different geometries. The remnants of the dilapidated kitchen block boasts of arch systems that defied logic. For one who has seen Nalanda, a sweeping similarity to the brick masonry is noticed.

The Radhe Shyam Temple built around the mid-1600s had relief work. Low relief work and stucco with ample depictions from the epics along with a lot of geometric representations showed an amalgamation of styles. The plinth curvature, decorative motifs continued to be carried from one temple to the other with improvisations.

The exquisite relief work at the Jor Bangla Temple ('jor' meaning joined –this temple had two chaala roofs joined together) influenced many an artist in the years to come. Painter Jamini Roy responded to these relief works with different expressions in paintings. The foliated arches gave way to simple pointed arches but richer in the relief work over the years.

The culmination of refinement of this style of the Malla dynasty is witnessed at the Shyamrai Temple. One views a pancharatna brick temple, standing on a low plinth, with delicate carvings with a strong Mughal overtone. The replica of the haveli darwaza, that one sees inset, is a fixed terracotta panel influenced by Rajasthani architecture. This delicate jaali work in the terracotta panels reminds one of the exquisite filigree relief work one sees in the Taj Mahal.

Rasmancha

Rasmancha
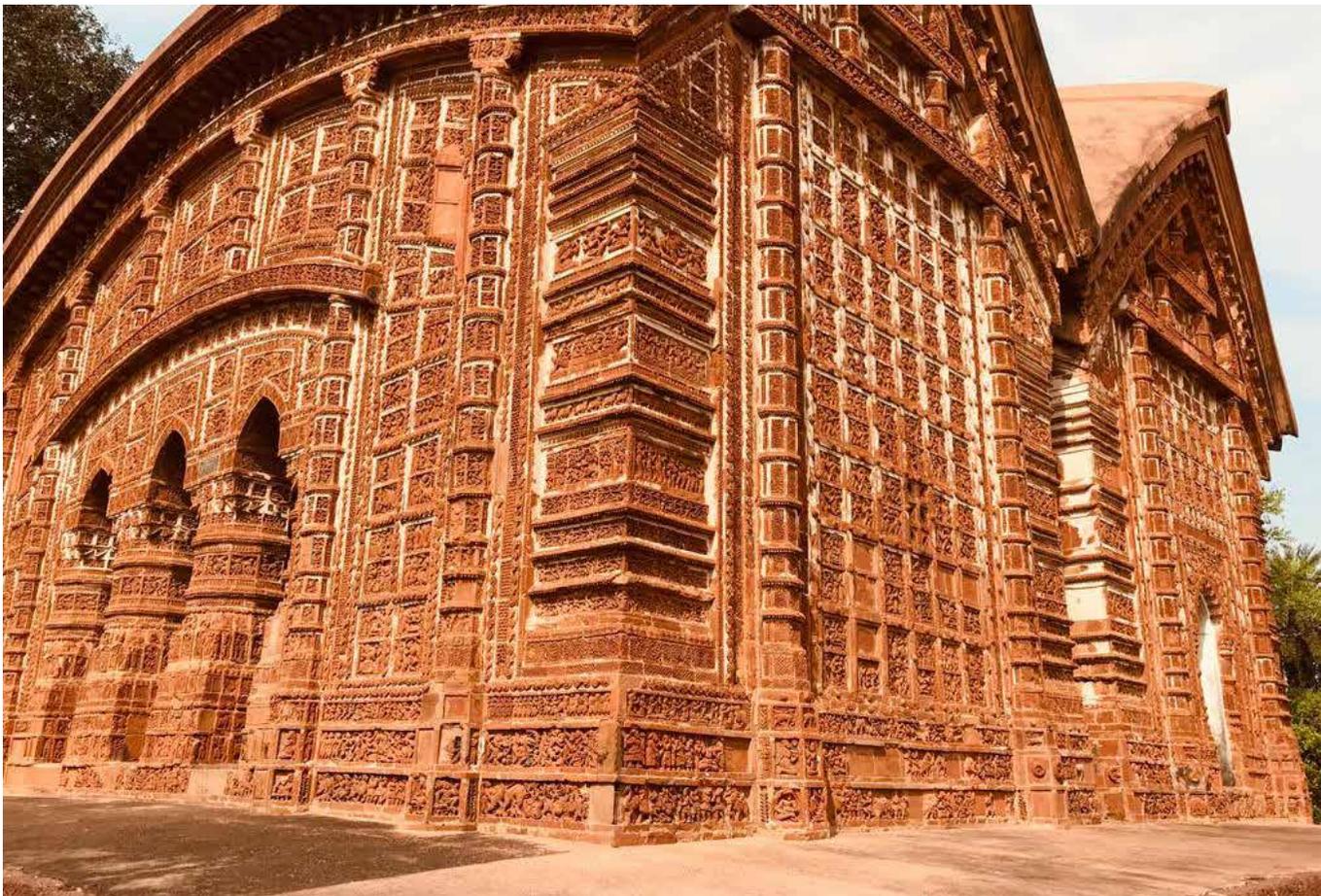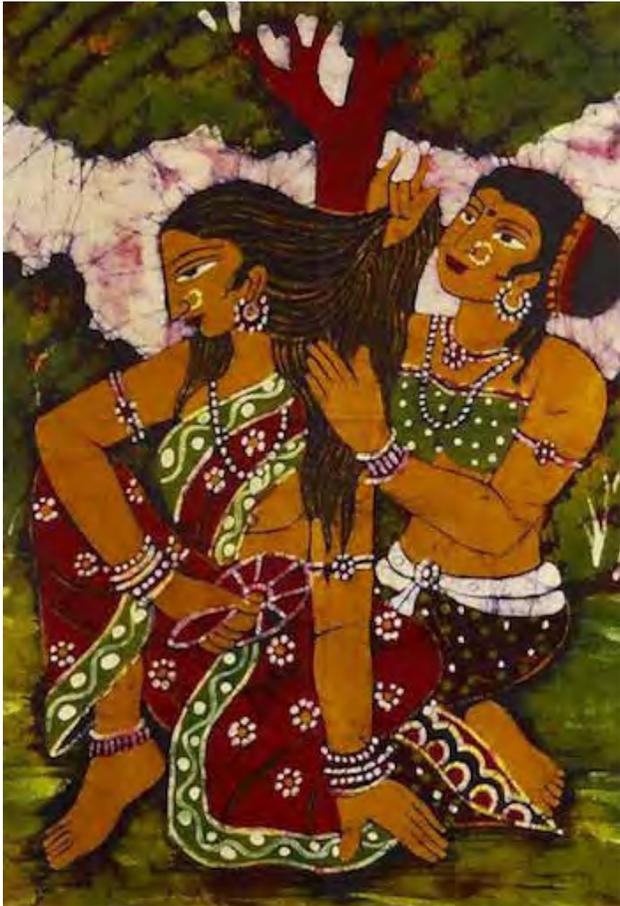
Lalji Temple

Lalji Temple

Jor Bangla Temple

Radhe Shyam Temple

Jor Bangla Temple

Jor Bangla Temple

Jor Bangla Temple
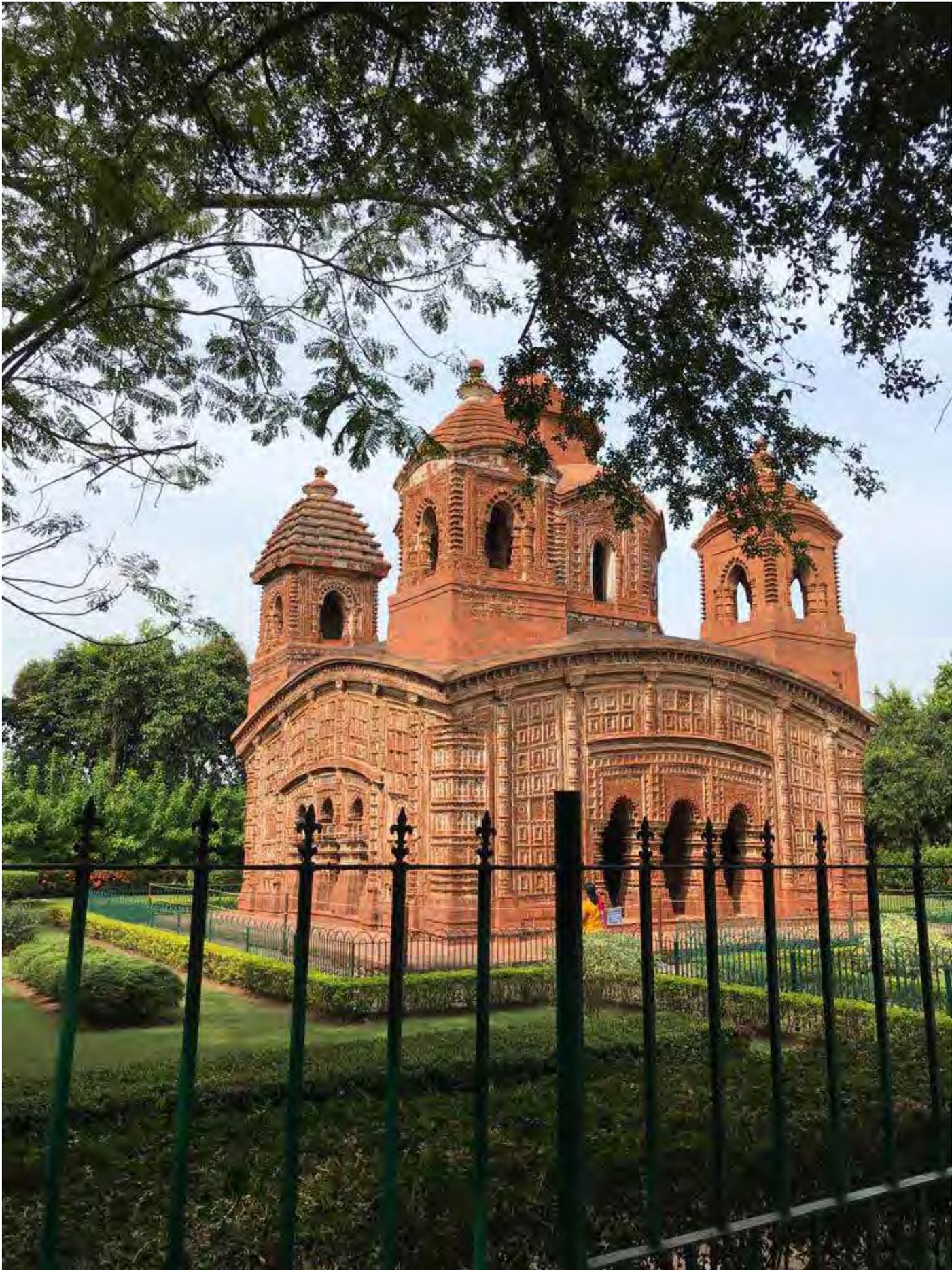
Shyamrai Temple

Shyamrai Temple

Shyamrai Temple

The deep rootedness of cultural and traditional practises in architecture and art, the stories and poetry in brick and terracotta at Bishnupur leave one overwhelmed. A journey through time, well-rewarded. One can't but recall what Gustav Flaubert said, "Travel makes one modest- you see what a tiny place you occupy in the world."

Photography by the Author (unless mentioned).

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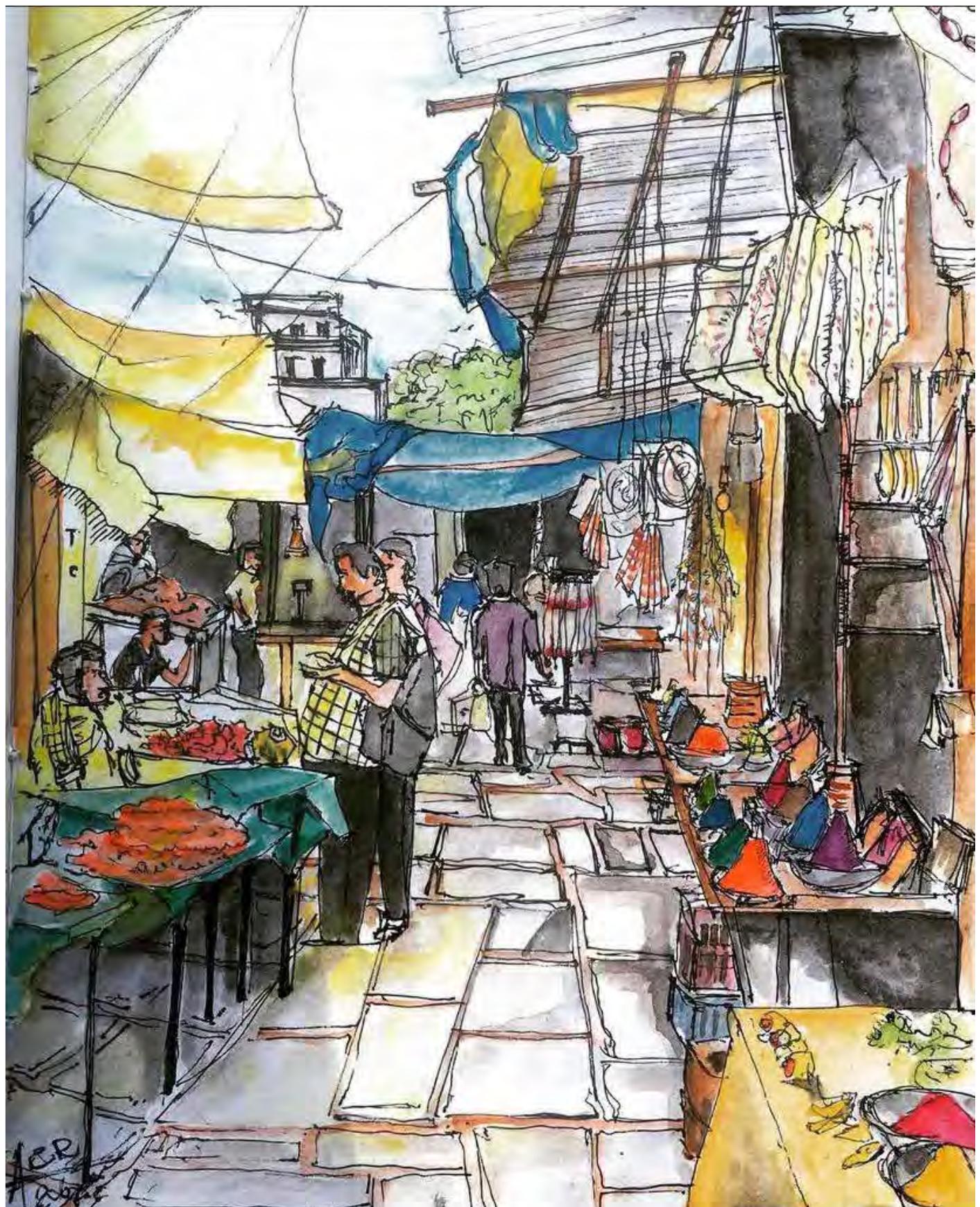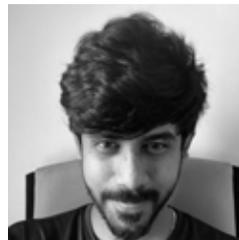
Shyamrai Temple

SKETCHES

Akash C R

CHICK GADIYARA MYSORE.

DEVARAJA MARKET MYSORE.

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CITY ON
THE FEET

Ar. Tarun R. Walecha

Necessity may well be the mother of invention, but boredom, restrictions, anxiety and at times even fear have a considerable role to play when it comes to pushing our mind to its creative boundaries. In February 2020, most of us were entwined in our mundane lives, reeling in the routine, relishing dogmatic schedules. March 2020, we didn't how the next hour was to be, uncertainty had doomed us and doing what you would otherwise do every day, seemed to be a luxury.

It has been close to two years since it all started. It brought about many challenges and redefined almost everything we would do normally, in an unprecedented manner. It did bring about opportunities to some, but to many, it changed the basic premise of their lifestyles. One of the things that were affected most, is travelling. Sealing the borders, restricting human movement, proscribing non-essential travel - were rightfully considered to be one of the most effective measures to rein in the pandemic. While there were options for those who needed to travel for an imperative purpose, but for those hoping to travel for leisure or explore the world around were left stranded with no plausible solution. Boredom, anxiety, frustration were some of the feelings faced by that lot. With restrictions coming on and off, there was still fear looming large. But as I always say, these are the exact feelings which at times can push one's creative boundaries beyond their limits.

Let's run the City

I'm based out of Delhi and have lived most of my life here, barring my graduation years in Manipal and short travels otherwise. In all these years, as much I have known my city, I've always felt there's so much more still to be unearthed. These being my sublime thoughts, coupled with the anxiety of a person who likes to travel, I was looking for some ways to satiate the explorer in me. My other passion being fitness, I have been into long-distance running for over a decade now. So when my friends were looking for a new route for their Sunday run, I couldn't help but propose them a run around the town. I was excited as here was an opportunity to interweave the two things I love most. The plan was to run 21 km, a distance of a half marathon, and I thought of embellishing it with 21 noted historical sites of Delhi. The moment I had the thought, it didn't take me long to get down to marking out probable sites en route.
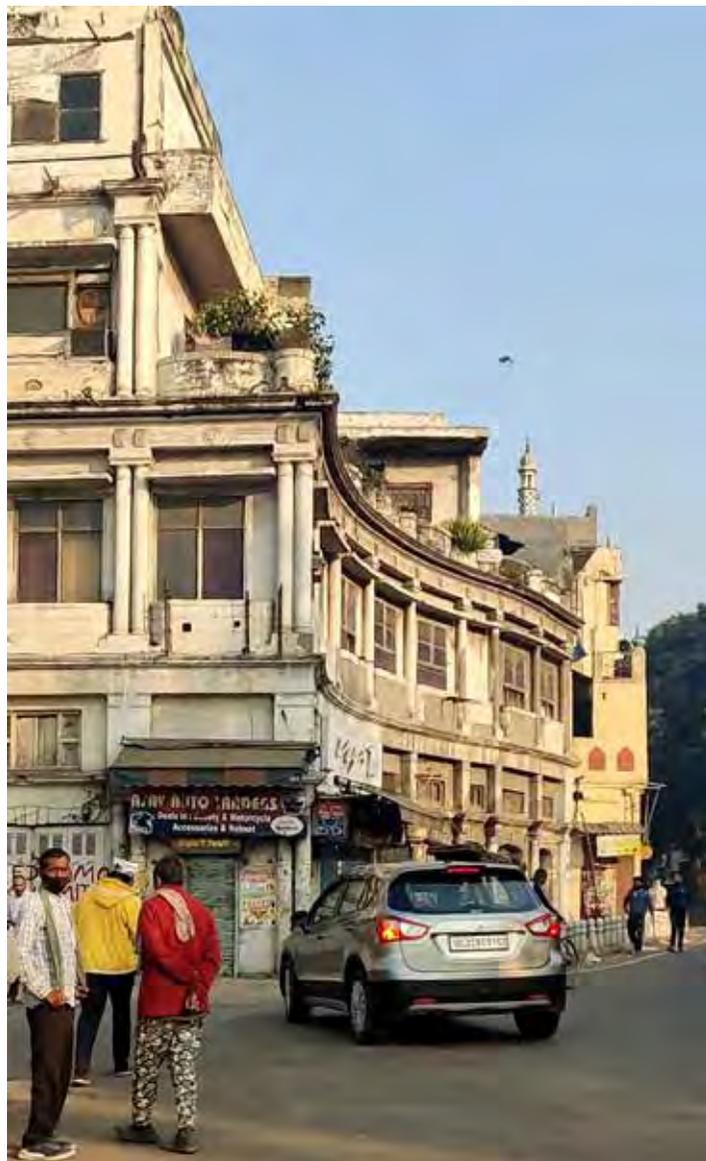
The Seven Cities within

To explore the mystical and glorious past of Delhi, which has seven cities within, was by no means going to be an easy task. It wasn't just architecturally exciting for visual pleasure, but the process itself was intensively embedded in historical knowledge and mapping abilities. To run 21 km across the town and touch upon 21 monuments, as simple it may sound, it had its due challenges.

Getting down to it, we decided to start the run from Central Delhi, for the convenience of accessibility for people to converge. We chose the site of the monuments of the Lodhi era, popularly known as Lodhi Garden, which itself has multiple layers of history buried within. The original site of the monuments was converted into lawns by the British Government and named after Lady Willingdon, wife of then-Viceroy of India, Lord Willingdon. That being our Monument Site One, we moved towards another gem in the neighbourhood, Safdarjung Tomb. One of the most beautiful tombs of its era, it stands amidst the city's cacophony as an oasis. We moved down straight towards the beautiful standalone gem, the newly restored Sabz

Burz, an early Mughal era tomb. It is located along the complex of Humayun's Tomb, a world heritage site that has many other historical structures within. Our next point of direction was the Old Fort, also known as Purana Qila, and the glorious Sher Shah Suri Gate right opposite. The two have their entwined history between its rulers Sher Shah Suri and Humayun. As we moved ahead, it was time to live through the modern history of New Delhi. The architectural masterpieces such as National Gallery of Modern Art (formerly used as Jaipur House), Bikaner House, Jam Nagar House, the recently-built War Memorial and the majestic India Gate. Further on the hexagon, we went past other monumental structures built as palaces for rulers of erstwhile Indian States, the Hyderabad House, Patiala House, Baroda House, and we reached another hidden gem, Agrasen Ki Baoli. Nestled inconspicuously between the by-lanes, this would be missed nine out of ten times. Our next transit was to the ancient observatory, Jantar Mantar, built by Maharaja Jai Singh in 1724. Moving past we couldn't help but notice the NDMC HQ designed by Late Ar. Kuldeep Singh, and on the other end of the road, the famous LIC HQ by Ar. Charles Correa, both landmarks of Indian modern architecture. This

brought us to Connaught Place, the magnificent colonnaded marketplace which has stood the test of time. Connaught Place is also the threshold of modern Delhi, as just across the road one ventures into a talismanic time of history. We ran a few miles observing and relishing the changing face of the city, and reached the remnants of the city built by Feroz Shah Tughlaq, also known as the 'haunted city'. From here, we moved further to what was perhaps the largest of all settlements, Shahjahanabad, entering through the Delhi Gate. Just as we crossed this point, a huge sense of nostalgia poured over. Each building on our sides was history as we ran ahead in Darya Ganj. The decades-old eateries, shops, cinemas, each one of them spoke about the times gone by. We moved ahead and came to the magnificent Jama Masjid, a symbol of Mughal sovereignty. However congested these areas have become, they have not lost their grandeur. All this while, on our right, was the Red Fort, which, ever since Independence, has been the venue for unfurling the Indian national flag on Independence Day.

Old Delhi as this place got to be known ever since the British government established Lutyens Delhi, has a history overdose, stories spilling out of every building we see, every street (kucha) we pass. How the social settlement, the business establishment and even the religious demarcation were marked but they coexisted in harmony. We were now moving ahead on the main avenue, Chandani Chowk. We went past various old structures as we also saw the famous Town Hall, till recent times used as HQ for the Delhi municipality. In our sight was now our final destination, at the end of running 21 KM, the Fatehpuri Masjid.

This brought us to the end to our city tour on feet, travelling through four of the seven cities- Shergarh, Ferozabad, Shahajanahbad and New Delhi. But not before we relished the lip-smacking Old Delhi savouries: jalebis from Mahalakshmi Bhandar, kulfi falooda from Giani, kachori from Chaina Ram and jumbo paranthas of Kake di Hatti.

The run, as supposed to be, was a travel back in time, reliving the history of our city and enjoying the famous cuisines of Old Delhi. In those 21 km, we not only touched upon 21 monuments, we lived each moment of the times gone by, discovering and revisiting our history. This travel back in time, was more than just 21 km of run on foot.

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DESIRABLE WAY OF STUDY OF HISTORY OF ARCHITECTURE

Ar. Anil Darshetkar

Currently, the study of the history of architecture is being taught and not learnt. This is usually with the aim of completing the syllabus of an academic requirement than emphasizing its usefulness in developing an understanding of the evolution of architecture in terms of contemporary principles of design, construction and technology prevalent then. There is a need to make students aware of what has happened in the past, why and how. It is therefore appropriate that they develop an awareness based on their findings.

Over the years, all the aspects related to human settlements undergo changes: technology, the governance pattern, culture, social systems and occupations. It is very difficult to perceive the situation as may have been then, except through inferences drawn by the older generation, unchallenged by the actual stakeholders. With this basis, a different way is suggested and presented as a start. This is aimed at making the subject meaningful and useful for enhancing the understanding of architecture and not only for marks and examination compliance.

SUGGESTED METHOD
1. Chronology, names of rulers, dynasties and period of construction, etc. is not to be considered as part of the study. Anybody with a personal interest can refer to history books for such information.
2. A building complex is to be identified for study and its location plan, site plan, building plans, elevations, sections, construction and certain important features and details are to be prepared, if not available, and then studied.
3. Existing material from the internet and photographs to be used for such preparation where measured drawings are not available, if possible to be made. (In fact, Indian students, over the years, have collected lots of data through NASA's competitions).
4. Discussions on functions and utilities of the building parts to be held within the class.
5. Relationship between built and open spaces to be studied and discussed.
6. Construction methods to be studied and discussed.
7. Ornamentation and external wall treatment to be studied and discussed.
8. Land use percentage, FSI consumption, ground coverage with footprint percentage, landscape with water-bodies percentage, etc. to be assessed, studied and discussed-not for purposes of DCR, but as developing analytical skills based on material and technology.
9. The entire building is to be studied from the case study angle of architectural design.
10. Any other unique feature observed for that building/complex can be studied and discussed.

EVALUATION AND MARKING
Grading can be based on performance, discussion participation, individual effort in analysis, presentation and any innovative idea for the study. Some percentage of marks for group work some for individual and one or two submissions of reports.

In order to develop such a system one case study is presented here:

Case Study of Palace Complex at Fatehpur Sikri: *Presented in Exercises 1 to 10*

It is expected that an exercise is to be attempted before any detailed study. As part of the exercise, the questions are to be answered as a surprise test and then a second submission can be made after referring to textbooks/ reference books/ internet/ etc.

Generally, tourists enter from the south and the first building seen is the Diwan-e-Aam. It is therefore necessary that the palace complex needs to be studied from that side. So the entire plan of the complex needs to be studied first. A study of the famous structure of Buland Darvaza can be introduced first, being well known, before being a student of architecture. It is desirable that the study is initiated with help of google imaging technology.

The technology of videography, also being available, and hence the study need not be restricted only to only photos and plans. Videos can be used to develop the understanding of scale and dimensions of the built and unbuilt spaces and of course the visual impacts that help the development of design ideas. In the system, there has to be some audio-visual presentation for this purpose.

Contemporary Comparisons: Exercises 11 & 12

Another aspect that needs to be considered is the comparison of similar palaces, which is not yet thought of in any book on the history of architecture. This could be compared with some modern buildings of wealthy persons with such palaces. For example, comparison with Fatehpur Sikri with Antillia, if undertaken on aspects of location, requirement or private and public spaces, parking of cars in place of horses and elephants, services, dimensions of spaces, visitors and their arrangements, use of FSI (as land has more value now), cost, technology and impact on entertainment aspects, ornamentation styles, staff and their requirements and arrangements in different governance systems and other such other aspects. This would help towards a primary understanding of architectural design requirements as suitable for different periods of time.

Whether such comparisons are useful for study

It may be possible to compare various administrative-cum-residential structures like Rashtrapati Bhavan as well, which was built during an aristocratic governance system, while Antillia has been built after fifty years after the adoption of democratic governance and is approved under the Town Planning Act and DCR. It can be recalled that a USA president had found the White House less luxurious than his own house and the issue had come up for discussions worldwide and he had to move into the White House to meet statutory protocol.

In the aristocratic governance system, there are two primary employment categories: the armed forces and the is construction industry. This may be why each ruler undertook the construction of new palaces at different locations for a sort of contemporary employment guarantee scheme. In democratic governance too, the public works department is considered as an important department where all buildings were made for public use without cost restrictions on the basis of affordability. Even if the original estimate was exceeded, there was a system of supplementary demands and which were generally approved, as no work could be left incomplete or halfway. In aristocratic governance, such a situation would not arise as the word of the ruler was sanction.

As the construction or structures were permanently for state use, there was no relationship with market rates as observed today, so the structures could be completed as per the dream or ideas of designers without any budget constraints for the architects. In the present situation, about 80 per cent of construction activity is primarily for housing or residential users and most of it is for sale after construction. Hence the architects appear to have limited freedom as the product has to be sold in the market at prevalent rates.

As part of the study of history, the comparison with today needs to be being made as the emphasis needs to be on materials, technology and concepts which has made old buildings last centuries while today redevelopment projects appear unacceptable only after some thirty years. Also, there is the system of depreciation and the economic life of buildings. The cost of management and maintenance of buildings constructed with older techniques is higher than contemporary construction as those materials have become expensive and such skills are rarely found at normal rates. The time required for matching with the entire structure during repairs also consumes time and effort and is hence costly. It is, therefore, necessary to study all the socio-economic and governance aspects along with technology and costing. In case a student wants to express his ideas about such aspects, he or she needs to be encouraged and the assignments need to be designed accordingly for evaluation as part of the curriculum.

CONCLUSION

It is necessary to consider whether all the aspects stated above can be taken into consideration while studying history of architecture. At present, the study of history does not have specific contents related to construction materials, technology, water supply system, light and ventilation systems or the use of spaces and concepts behind the architectural design of such buildings.

Instead, the emphasis is on 'who built', 'when was it built, and so on. Heritage is important, but not merely as a monument, but also to understand concepts of design prevalent then and how limitations of technology were handled. Even though in democratic governance today such buildings or complexes may never get built, the study for architectural students needs to be different than that of a historian. Though this lack of emphasis would have been unintentional, as technology is now available and various options of data are also available the system of study can be different and needs to be changed.

If history is studied in such a manner, it may make the subject interesting and may help in developing different perspectives for the study of the history of architecture as study tours are arranged actually for this purpose than as a tourist with an itinerary.

Exercise 1 : Observe the photo and write answers to queries in the table

Details of the building:
Name of building
Location
Probable year of construction
Purpose of the building
Materials of construction
Approx. height of building
Approx. height of plinth
Estimated height of arch
Whether it is entrance to complex
Any other observations
(Answers to be checked and corrected with cited sources)

Fig. 1: Symbol for Fatehpur Sikri

Points for discussions in class
1. As this is the entrance gate to a mosque and is taller than the mosque, its similarity to a gopuram in south Indian temples can be discussed.
2. This gate is a memorial for a war victory – its appropriateness can be discussed with respect to land-grabbing and mass killings.
3. Whether the entire structure of the gateway can be considered as ornamentation for the main structure before the introduction of a porch after the invention of the automobile?
4. Whether steps and a high plinth form part of architectural design or that is a requirement of contours of the site or a technical requirement?
5. The entrance gate faces east and away from the palace complex. What could be the reasons for the same? If it was not for use of the emperor, for whom was it?
6. Whether the high level of the plinth enhance the beauty of the structure? Whether the provision of steps helped the visual impact?
7. If the DCR prescribes no more than 12 steps between two landings in residential buildings today, how can such a large number of steps without any landing be appreciated in its context?
8. Whether this structure has any similarity with the central structure of the Taj Mahal? Whether the height, width, etc. are also similar?
9. Why is the mosque located on the east side of the palace complex?
10. Any other aspect found by students/faculty

Exercise 2 : Observe the photos below and write your observations

Fig. 2 : Red Fort Delhi- any similarity?

Fig. 3 : Adapted by Author from google maps

Fig. 4 : Palace Complex within the city

Points for discussions in class:
1. Whether the features at the top floor are taken from the Red Fort where the top floor was designed for the security staff requirement as part of defense?
2. Whether the similarity is unintentional or otherwise? Compare with the Red Fort entrance at Delhi, while Agra fort does not have such features.

Exercise 3 : Initiate a study of the complex from the building termed as Diwan-e-Aam, which means a structure for common citizens, who have some administrative work with the governing system.

Fig. 5 : Diwan-e-Aam, the darbar for commoners

Points for discussions in class:
The entry to the complex is from the original entrance to the first part known as Diwan-e-Aam, which was accessible from Meena Bazar from the city side. This bazar structures are now in ruins as its importance was not considered as a monument. The bazar probably stopped functioning after the fall of kingdom and habitation of the palace and was ruined as part of tourist attraction and was not revived. It can be observed that such a bazar still functions in Delhi Red Fort even today. Such bazar activities were necessary as many visitors to the palace complex were probably coming from outside the city and taking the opportunity for shopping either before or after finishing their administrative work.

If the complex visits are designed with such a background, its functioning can be appreciated better than merely reading on maps or as part of descriptions or as mere atmosphere-creation in films. If some shops are redeveloped as part of a conservation programme, then such users can generate revenue and help further aspects of management of such monuments than just a show piece. Architecture students can consider such aspects as part of their study.

The entry to this part is not huge or decorative and there are hardly any security arrangements, which were probably ruined and demolished over the years. A king or ruler was chief of administration and also the judge and hence there must have been considerable administrative work and accordingly there is large enclosure with covered spaces for darbar work. There is small and non-conspicuous exit to the remaining part of complex, where only VIPs were permitted then. Some systems continue to be part of functioning of the administration irrespective of time and pattern. The palace complex was mix of residence-cum-office. The same system continues even in a democratic set-up where the residence of the Chief Minister of Maharashtra state like Varsha on Malabar Hill functions in similar manner.

In view of such a situation it is appropriate that study of this building, materials used, style of construction and ornamentation can be compared with structures that function similarly today. The requirement of areaws for various functions were based on the population of the kingdom, quantum of works, number of employees, etc.- all which must have been considered while undertaking construction of this building. That aspect needs to be studied.
Any other view point by students/ faculty to be considered & discussed.

Exercise 4 : *Draw the plan of the entire palace complex and draw the movement pattern for different visitors today and also the movement patterns of various persons residing / working within the palace complex then.*

The dimensions of the complex are to be estimated and travel-movement to be assessed from building to building.

Exercise 5 : *This is an analytical exercise to understand the various aspects of the Panch Mahal which is the second most important building in the complex.*

Fig. 6 : Panch Mahal - important for observation of entire complex

The second enclosure within the complex was expected to have restricted entry and the common public was not allowed to enter. But the space appears to be huge and has activities other than governance and administration. This enclosure has a number of buildings. It is in center of the entire complex and is also the tallest building here. It has only one covered space on the top floor and various large spaces on the lower floors. It can be accessed from different enclosures.

Points for discussions in class
- What could have been the purpose of this building in the complex?
- Who could be the users of this building- one or more- w.r.t. the relaxation hours of the emperor and vigilance during all other times?
- Whether it was for panoramic views during mornings/ evenings at different seasons of the year?
- Whether such structures were present in all other palace complexes?

- Whether this fulfils the human need for satisfaction of achievement of the dream house- as observed during modern times?
- Whether the feeling 'top of the world' was a conscious part of the design?
- Whether such a function is part of privacy for the owner with his near and dear ones?
- Whether this idea could have been given by the architect then, considering his client's status and position?
- In Renaissance, large open spaces and gardens were proposed. This is the same even in democratic governance by Le Corbusier in Chandigarh.
- It is necessary to study the construction method of this building: it is a fully-framed structure, similar to the RCC frame. It has survived many centuries and the stone pieces have sustained earthquakes. It is not heavy as the pyramids or Stonehenge and its appearance is quite light.
- The location of staircases is also important and its aspect for internal vigilance and security aspects during the night time could also be important. This is like the central tower at airports for control, in absence of modern CCTV systems, etc..

Exercise 6 : *Discussions on other buildings and spaces within the complex*

Even with such radical thoughts about the socio-political situation, it is necessary for architects to develop an understanding of design aspects followed. Imagine the arrangement of the central seat for a singer in a pond with water on all sides which could have given the right atmosphere for music. The inmates of the palace complex could have been lucky to enjoy that for unlimited periods during various seasons. The ponds could have been helpful for the celebration of the festival of Holi as well and it could also have been a pond in the summer season as a substitute for a swimming pool - thus having multi-purpose functions. The idea of reflecting adjacent buildings, as seen in Taj Mahal and also at Chandigarh, does not appear to be in the minds of this designer as the nature of the complex is private and not public as these other buildings. All such intricacies need to be understood by designers, then the style of construction or ornamentation alone.

Points for discussions in class:
- Whether the pond was necessary only for musical performances?
- Whether it was for micro-climate?
- Whether it was for Holi celebration?
- Whether it was used as a swimming pool?
- Why were no swimming pools observed after the Indus Valley towns were washed away?
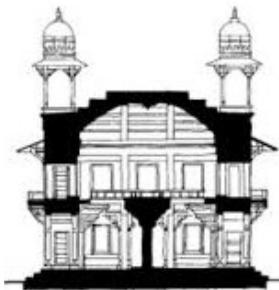
Top-Bottom:
Fig. 7 : *Use of water in pond*
Fig. 8 : *Diwan-e-Khas as focus*

Exercise 7 : *Developing design aspects of the structure and open spaces around in the past, today such treatment is like statue or fountain or monumental than functional requirement*

Fig. 9 : *Diwan-e-Khas as against the sky background. Its profile formed an important component of the complex design*

**Fig. 10 :** *Interior view of the Diwan-e-Khas*

Fig. 11 : *Interior view of the Diwan-e-Khas*

Exercise 7 : Developing design aspects of the structure and open spaces around in the past, today such treatment is like statue or fountain or monumental than functional requirement

The Diwan-e Khas, which means space for VIPs or close circuit persons, is a free-standing, sculptural structure with a view from all sides. It offers a good silhouette in the evening from its eastern side. This building needs to be studied in detail w.r.t. its plan, elevation, ornamentation and function. The planning needs to be analysed for functioning as the Diwan-e-Khas, as its upper floor overlooks the lower floor with passages for circulation. The administrative work with the public in this building took place in the morning and with VIPs in the evenings. The afternoon breeze from the lake ensured that the spaces could be utilized for entertainment events in the evening. The planning appears to be suitable for discussions or observation of parties on lower floors by women folk from the upper level.

Exercise 8 : Analysis of buildings with different functions within a complex - Jodhabai's Palace, Mariam's Mahal and Birbal's House.
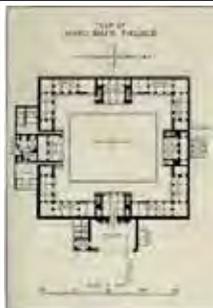
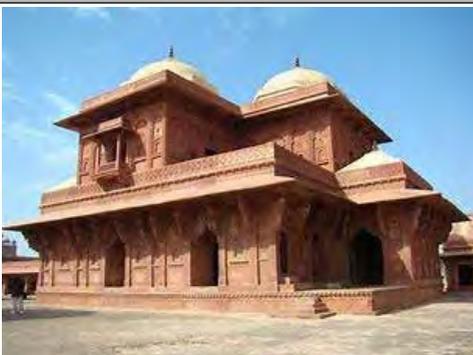**Fig. 12 :** Plan of Jodhabai's Palace with internal courtyard

Fig. 13 : Internal view of Jodhabai's Palace

As Jodhabai was a Rajput and an important queen, she probably had larger premises and also a tulsi vrindavan, with a private passage leading to the lake. The entire light and ventilation of this building are from the internal courtyard as if it were an independent building in a city. The enclosure within this building appears quite large for a single building and appear to be necessary for various activities of large paraphernalia of a queen with a Rajput background. Palaces of other queens appear much smaller. Another important provision that appears missing is the kitchen and it may have been separate for each building and not centralized and as per the requirement of the main queen.

The Mahal of Mariam, the queen from Iran, is smaller and has a garden nearby and no internal chowk.

The other palaces of queens do not have central courtyards. The plans may be obtained and a detailed study may be undertaken.

Exercise 9 – Contradiction about the user of the building termed as Birbal's house.


The small building known as Birbal's House needs verification. Only one of the persons, from the ministers, could not be part of the palace complex in such a religion-oriented governance. It could have been the office of the emperor and Birbal, being an important minister, could have been spending more time there. It could be the palace of the emperor where he could invite the queen of his choice and hence needed a separate building.

The building may have been termed 'Bibi's House' which got modified to 'Birbal's House' over the years. It's secluded from the other buildings and close to the stables which also raises questions. These could also have served as dormitories for male servants, as well as for animals or horses. It appears difficult to believe that such a large number of horses could be so near to the palace where air pollution due to the animals would be part of the design.

Fig. 14: View showing the passage leading from Panch Mahal to Birbal's House

Exercise 10 – Concept of different enclosures & different or mixed users & separation of privacy & public spaces.
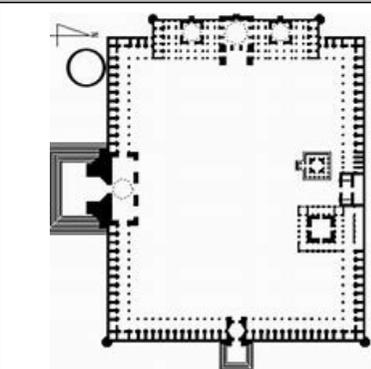
Fig. 15: Plan of the mosque complex

Fig. 16: Rear view of Buland Darvaza expressing height of the opening as compared to remaining structure

Fig. 17: Interior view of the mosque complex

The last and independent enclosure of the palace complex is the Jama Masjid enclosure on the eastern side of the palace complex. It has the famous Buland Darvaza on its east for visitors to the mosque from the city. This enclosure may have been separate due to religious purposes and for easy access or for security-free entries. Another aspect may be that it was a large enclosure for staff and service population as it has a well nearby and it could have been converted into a mosque like many other historical buildings. It can be seen that the entire structure, except the dargah, is built in different materials, while the dargah itself is in contrasting white marble. Hence the possibility of change of use appears to be possible.

Exercise 11 : Comparative Study of Fatehpur Sikri with Antillia			
Aspect of comparison	Fatehpur Sikri	Antillia	Remarks
Owner			
Plot Area			
Built up area			
Office user area			
Recreation area			
Residential area			
Parking area	Horses/ elephants/ etc.	Cars/ helipad terrace	
Open Space Areas			
Likely number of users /occupants			
construction Technology			
Services			
Utilities			
Lighting			
Additions by students/faculties			

Exercise 12 – Impact of such aspects in architectural design. Study the following photos.

Fig. 18: *View of surrounding premises*

Fig. 19: *Modern palace profile*

Fig. 20: *Night views can also become important now*

Points for discussions in class:

In Mumbai, the real estate developers attract clients for a panoramic view of different locations within the city as can be observed advertisements. This is considered a design feature in such buildings. It may be interesting to find out whether such thoughts were prevalent while designing Antillia in South Mumbai in midst of existing development by the owner or the architect?

Sources of Images

Fig. 1 : http://www.bandbaretha.com/fatehpur-sikri/
Fig. 2 : https://th.bing.com/th/id/OIP.rDKAZOiDpe7CWSZx5VQvx-gHaE7?w=304&h=202&c=7&r=0&o=5&dpr=1.25&pid=1.7
Fig. 3 : Google maps
Fig. 4 : https://www.slideshare.net/ctlachu/planning-of-fatehpur-sikhri
Fig. 5 : https://i.pinimg.com/originals/a0/a6/82/a0a682c0d4e381cb-6658763e48c109df.jpg
Fig. 6 : https://th.bing.com/th/id/OIP.mJ7SnvK15vQKNA3gx7x_OA-HaE6?w=273&h=180&c=7&r=0&o=5&dpr=1.25&pid=1.7
Fig. 7 : https://www.tripsavvy.com/thmb/6jqxavCQqDf1I4RQ-F30Y-0li-mo=/2121x1414/filters:no_upscale():max_bytes(150000):strip_icc()/GettyIm-ages-692142248-4175bae74835410d8ad630be9cd22e23.jpg
Fig. 8 : https://th.bing.com/th/id/OIP.fd50UaX3DxjIj9_qwWo-2EQHaE8?w=231&h=180&c=7&r=0&o=5&dpr=1.25&pid=1.7
Fig. 9 : https://th.bing.com/th/id/OIP.RaY4ISLHw2xkJWcgbBjUX-QHaE6?w=291&h=193&c=7&r=0&o=5&dpr=1.25&pid=1.7
Fig. 10 : https://th.bing.com/th/id/R.28a4a49ea8efd6a502a33d1a1efb-4b4c?rik=QOKjnuUBAEptxA&riu=http%3a%2f%2f1.bp.blogspot.com%2f-qDPigiItrMI%2fUd5V8YNqhVI%2fAAAAAAAAEF0%2fXTOD-nCKpyEM%2fs1600%2fFatehpur_Sikri-Salle_des_audiences_privees.jpg&ehk=3QO0E2QDsYT2Tj5qVrdZIWo%2bs3rysv09TWPCuo7xY-rU%3d&risl=&pid=ImgRaw&r=0
Fig. 11 : https://th.bing.com/th/id/OIP.BuE9igatsW_8tXXGU1gKiA-HaE8?w=270&h=180&c=7&r=0&o=5&dpr=1.25&pid=1.7
Fig. 12 : https://image.slidesharecdn.com/rishabh-150428001806-conver-sion-gate02/95/jodha-bais-palace-fateh-pur-sikri-4-638.jpg?cb=1430182193

Fig. 13 : https://th.bing.com/th/id/OIP.56SfPXLcazcsESCQ39ImI-wHaEy?w=310&h=200&c=7&r=0&o=5&dpr=1.25&pid=1.7
Fig. 14 : https://th.bing.com/th/id/OIP.YVICjNUAW8naq4GFeEc5VwHaFj?w=244&h=183&c=7&r=0&o=5&dpr=1.25&pid=1.7
Fig. 15 : https://th.bing.com/th/id/OIP.nbO2DL9oKtAIWe8ZGUXOW-gHaH2?w=160&h=180&c=7&r=0&o=5&dpr=1.25&pid=1.7
Fig. 16 : https://th.bing.com/th/id/OIP.yxzTPXjcBVt8i3pPcyiNL-gHaE8?w=237&h=180&c=7&r=0&o=5&dpr=1.25&pid=1.7
Fig. 17 : https://th.bing.com/th/id/OIP.Kr2faB-CSPu8z-uSMFey-BQHaE8?w=240&h=180&c=7&r=0&o=5&dpr=1.25&pid=1.7
Fig. 18 : https://th.bing.com/th/id/OIP.Ek0uH_0qVOHLr0KBFVmQRA-HaD4?w=303&h=181&c=7&r=0&o=5&dpr=1.25&pid=1.7
Fig. 19 : https://th.bing.com/th/id/OIP.Xt6Kh9uFWn3z82btbw2fW-gHaK1?w=182&h=267&c=7&r=0&o=5&dpr=1.25&pid=1.7
Fig. 20 : https://th.bing.com/th/id/OIP.rToDuGwpwd-b8kfcOXi-FtQHaEt?w=261&h=181&c=7&r=0&o=5&dpr=1.25&pid=1.7

Dr. Anil Darshetkar is an architect, urban designer and has a long professional work span in semi-government and private sectors. He has been in academics for over thirty years and holds several degrees and diplomas in different specializations. He is a life member of IIA, COA and IIPA and associated with two NGOs.
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MAHARASHTRA CHAPTER
IIA KOLHAPUR CENTRE

10TH
MAHA
IIAPL
6, 7, 8 & 9TH JANUARY 2022
KOLHAPUR

10TH MAHA IIAPL 2022

The Indian Institute of Architects Premier League (IIAPL) is a national flagship annual event of IIA with inter-chapter cricket tournaments, along with table tennis and badminton matches. This year the tournament was held from 6-9 January at Kolhapur, Maharashtra, socially developed under the reign of great visionary Rajarshee Chatrapati Shahu Maharaj and with rich architectural, cultural and art heritage. During the past 10 years previous IIAPLs have been held at Hyderabad, Hubli, Cochin, Indore, Guwahati, Ahmedabad, Bhopal and Bangalore. The mascot was the Indian giant squirrel which is the state animal of Maharashtra, who was named Shekaru. This logo was inaugurated by Hon. District Collector, Mr. Rahul Rekhavar on 23 December, 2021.

Conduction of the IIAMHPL-2021 (21-22 November 2021) was the rehearsal so that we could hold the 10th MAHA-IIAPL-2022 successfully. Planning and management had commenced along with the National Sports and Cultural Committee Chairman and Jr. Vice President, Ar. Jitendra Mehta, Maharashtra Chapter Chairman, Ar. Sandeep Bawadekar, Convener, Ar. Satishraj Jagdale, Maharashtra Sports Committee Chairman, Ar. Sanjay Pathe and IIA Kolhapur Centre Chairman, Ar. Vijay Korane. Various committees were also formed to distribute the work. Four turf wicket cricket stadiums were booked for three days for 26 matches with league matches till quarter finals, knock out from quarter finals. Two indoor badminton stadiums were booked for conducting individual and team events for more than 100 matches. To make this event a success, many sponsors played an important role : Majesty Enterprises, Bandson Windows, Cosmo Electro India Ltd., Asian Granito India Ltd., etc.

On 6 January, all the sports participants were welcomed at five hotels, Hotel Pearl, Hotel Citrus, Hotel Krishna Inn, Hotel Maratha Regency and Residency Club. IIA Chapter Teams from thirteen states of India participated: Maharashtra - 3 teams, Haryana, UP, West Bengal, Rajasthan, Karnataka, Telangana, Tamilnadu, Kerala, Madhya Pradesh, President XI

Inauguration of Mascot Shekaru- 'The Giant Squirrel' at the hands of Hon District Collector Mr. Rahul Rekhavar sir on Thursday, 23rd December, 2021

Inauguration of 10th MAHA-IIAPL-2022 at the hands of Hon. Chatrapati Sambhajiraje, Ar. Jitendra Mehta, Ar. Sandeep Bawadekar, Ar. Satishraj Jagdale Ar. Sanjay Pathe and Vijay Korane.at Shahu Stadium, Kolhapur with the cultural program typical Kolhapuri lathi-kathi.

Inauguration of 10th MAHA-IIAPL-2022

Day and night matches in flood lights at Sanjay Ghodavat Cricket Stadium, atigre, Kolhapur.

Badminton matches were organized at Sasane Ground and Ambai defence, Badminton Hall.

Prize distribution to Maharashtra blue winner of the tournament

Table tennis matches organized at Shahu stadium, Kolhapur

All National/Maharashtra sports committee and Kolhapur organizing committee members

National council president Ar. C.R. Raju, Jt. Hon, Secretary, Ar. Leena Kumar and others enjoying cricket match

All National/Maharashtra sports committee and Kolhapur organizing committee members

Publication of Kimayagar and kimaya news bulletin

teams, with a contingent of around 22 players (cricket 15+ Badminton 4+ TT 4) from each team, making a total of nearly 300 players.

The event was inaugurated on 7 January by Hon. Chatrapati Sambhajiraje, National Sports and Cultural Committee Chairman and Jr. Vice President, Ar. Jitendra Mehta, Maharashtra Chapter Chairman, Ar. Sandeep Bawadekar, Convener Ar. Satishraj Jagdale and Maharashtra Sports Committee Chairman, Ar. Sanjay Pathe and IIA Kolhapur Centre Chairman, Ar. Vijay Korane. The inaugural programme showcases the culture of Kolhapur which is an amalgamation of several cultures influenced by several centuries of history. The cricket tournaments started at 3 grounds, D.Y Patil Cricket Ground, Shahu Stadium and Rajaram Stadium, Ichalkarnji.

On 8 and 9 January the cricket semi-final and final matches were played at Sanjay Ghodavat Cricket Stadium. For the 1st time in the history of IIAPL, this year the cricket matches were conducted in flood lights during night.

Simultaneously, badminton matches were organized at Sasane Ground and Ambai defence, Badminton Hall and table tennis matches were organized at Shahu Stadium, Kolhapur. 60 players played around 150 matches in various catagories, singles, doubles and mixed doubles. The IIAPL series concluded on the evening of 9 January, followed by a grand awards ceremony with prize distribution. The Kimayagar and Kimaya news bulletin were also published.

BADMINTON	
Tournament Team Event Winner	**Maharashtra Blue** 1. Ar. Varsha Guggari 2. Ar. Neelam Sanghavi 3. Ar. Nitin Kelkar 4. Ar. Sachin Salunke 5. Ar. Omkar Kelkar 6. Neeraj Mahajan
Tournament Team Event Runner up	**Maharashtra Red** 1. Ar. Shivani Sonavane-Shah 2. Ar. Laxmikant Surve 3. Ar. Pralhad Magdum 4. Ar. Saket Shah 5. Ar. Satyajit Deodhar
Women's doubles Winners	**Tamil Nadu** Lishali K. & Kreethika Anand
Runner up	Madhya Pradesh Snehal Sontakke & Shruri Agarwal
Women's Singles Winner	**Maharashtra** Shivani Sonawane-Shah
Runner up	**Tamil Nadu** Kritika
TABLE TENNIS	
Men's Singles Winner	**Maharashtra** Vipul Saleankar
Runner up	**Madhya Pradesh** Neeraj Agrawal
Women's doubles Winner	**Maharashtra** Priyanka Kulkarni & Snehal Shedage
Runner up	**Madhya Pradesh** Snehal Sontakke & Ishu Shukla
Men's doubles 45+ Winner	**Maharashtra** Sandeep Ghorpade & Upendra Pandit
Runner up	**Madhya Pradesh** Neeraj Agrawal & Vinay Shrivastav
Men's doubles Winner	**Maharashtra** Vipul Salwankar & Upendra Pandit
Runner up	**Haryana** Akhil Gupta & Gaurav Thukral
Team Event Winner	**Maharashtra** 1. Ar. Sneha Shedage 2. Ar. Priyanka Kulkarni 3. Ar. Sandeep Ghorpade 4. Ar. Vipul Salwankar 5. Ar. Upendra Pandit
Runner up	**Madhya Pradesh** 1. Ar. Ishu Shukla 2. Ar. Snehal Sontakke 3. Ar. Neeraj Agrawal 4. Ar. Arpit Kabra 5. Ar. Ankit Lambhate
Championship in all three games- cricket, badminton, table-tennis	**IIA Maharashtra Chapter**

NEWSLETTER JANUARY

OBITUARY

Prof. Dr. N. Altaf Ahmed
(b. 1942 – d. 2022)

Ar. Prof. Dr. N. Altaf Ahmed graduated in 1965 from School of Architecture and Planning, Madras University. He gained practical experience with M/s. Prynne, Abbot and Davis, a leading architectural firm of the time, before joining his alma mater as faculty. He went abroad in 1980, designed numerous buildings such as villas, shopping malls, hospitals and multi-storied apartments in places such as Jeddah, Mecca, Dammam and Riyadh. After his return to India in 1985, he started M/s. Altaf Associates which has created several prestigious projects. He was associated in the establishment of various architecture colleges such as MGR University, Chennai, AMS Academy of Architecture, MNM Jain Engg. College. Notably, MEASI Academy of Architecture, established in 1999, under the directorship of Prof. Altaf Ahmed has become one of the best institutes of architecture within a span of fifteen years. One of the leadership qualities of Prof. Altaf Ahmed, was that besides being a teacher, was to have an eye for identifying the best teaching talent. He had a strong view that students should not only be well exposed and talented, but also have maturity and ethical values.

Prof. Dr. N. Altaf Ahmed's vision for teaching, which is not confined to the classroom alone, is evident from the fact that he has made valuable contribution as:

- Chairman, Board of Examinations
- Member, Syllabus Committee
- Member, Board of Studies–Anna University
- Member, Board of Architectural Education, The Indian Institute of Architects
- Convenor, Inspection Committee for Council of Architecture

Prof. Dr. N. Altaf Ahmed was been a dedicated academician, extremely sincere in his profession and a man of principles and conviction. He has received the following awards:

- Best Teacher Award by The Indian Institute of Architects, Tamil Nadu Chapter, 2011
- Fountainhead Lifetime Achievement Award by Council of Architecture, New Delhi, 2012
- Dr. RadhaKrishnan Teaching Excellence Award, 2013
- Madhav Achwal Gold Medal, The Indian Institute of Architects, December 2016

The Indian Institute of Architects, Tamil Nadu Chapter pays its tribute to this legendary architect of the times, on his departure for his heavenly abode, for being a great inspiration to all professionals, teachers and students.

A BRIEF NOTE ON THE IIA MEDAL FOR BEST OUTGOING STUDENTS

The Indian Institute of Architects (IIA), to facilitate the involvement of students of architecture in its activities affiliates Institutions of Architecture all over the country and also encourages student membership. The number of affiliated Institutions today stands at 88.

Towards this overall objective the Indian Institute of Architects announced in November 2021 the Institution of an Annual Award- **IIA MEDAL**- to recognize the **Best Outgoing Student of the Year** from each Architectural Institution affiliated to IIA. This award was instituted not only to recognize student achievers but also to give more visibility to the architectural profession among students through IIA. This is one of the many initiatives undertaken by the IIA through the Institutional Affiliation and Students Affairs (IASA) Committee.

The IIA Medal is to be awarded based on a selection process done by the respective Head of Institution based on criteria set by IIA which will enable the identification of an Outstanding Student in the graduating class every year. Hence, the selection process is to be based not only on the grades obtained by the student throughout the five years of study and his/her performance in Architectural Design Thesis but also on the other accomplishments such as participation in co-curricular and extracurricular activities including competitions and other awards, leadership roles, etc. A total number of 27 institutions have sent in their nominations for the year 2021 and the IIA Medal will be presented at the Graduation / Annual Day Function of the Institutions in the presence of IIA Representatives.

Ar. Sanjay Goel, Punjab Chapter Chairman writes to the Chief Minister

IIA Punjab Chapter wrote to the Chief Minister of Punjab on 2 January 2022 regarding improvements in all cities, especially upcoming smart cities. This was also covered by the Times of India, the Hindustan Times and on cityairnews.com.

Ar. Sanjay Goel, the Chairman of IIA Punjab and director of Ludhiana Smart City Ltd. Praised the efforts of the Punjab government in solving problems of the people. He also brought attention to the efforts required in addressing the issue of traffic congestion in the upcoming smart cities of Ludhiana, Amritsar and Jullundhur. He also advocated coordination between various development agencies to prevent building against byelaws, which do not even provide the minimum stipulated parking within the premises. He said that multilevel parking complexes can be built using the funds available from the Centre as well as the State in several cities. Other issues which also need to be tackled are garbage disposal, rainwater sewers and harvesting, sewerage systems, water supply, landscaping, proper electrification, LED street lights, maintenance of traffic lights and CCTVs.

On behalf of IIA Punjab, Ar. Sanjay Goel offered to meet with the state architects, planners and SPVs of smart cities to take up such projects on priority to make cities more liveable.

ARCASIA OB-CC 2022-2023

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Architecture, Design & More (ADM) Summit

Curator : Ar. Apurva Bose Dutta

ADM Summit 2021 saw the crème de la crème of the architecture world converging on a single platform. Garnering over 1000+ viewers who logged in from various platforms, many insightful takeaways and ideas were exchanged, making the new journey an eventful one. The first edition focused on discussions around the theme Designing the New World Order. It was an attempt to explore, evaluate and envision values, beliefs, avenues, technologies, strategies, intent, and new levels of purpose in the architectural design field.

The summit successfully set the ball rolling with cross-pollination of ideas, philosophies and narratives through the formats of inspiring keynote sessions, engaging dialogues, and stimulating panel discussions. The themes revolved around issues that necessitate more attention in the new age, namely – Society, Diversity & Inclusivity, Technology, and Education & Careers. The Summit also witnessed a special section with students, Planning the New World with Young Minds. Industry stalwart Romi Khosla, who is an independent consultant at Romi Khosla Design Studios, New Delhi delivered an engrossing opening keynote where he shared, "As a designer, you are always dealing with the future since you are designing things that don't already exist in the present." Khosla emphasised on the need to find multi-disciplinary solutions to the challenges of our time in order to continue to live and thrive on this planet.

There was another keynote address by Nathalie De Vries, founding partner of MVRDV (Rotterdam). She shone a spotlight on challenges that come along with architectural construction. Focussing upon the five trends that will shape the construction and capital project, she shared that future-proof designing and construction, intelligent asset management and decision-making, digital collaboration and mobility, designing platforms for the future, and rapid mapping and estimating are crucial trends to keep in mind.

With the keynotes setting the tone of the summit, the sessions under Design in / with Technology theme shed light on how the intersection of design and technology enabled enormous advancements in the design sector. The theme focused on gauging how technology will influence architecture, design and their allied fields in the new world order and finding out if there can be consensus on using technology as a tool to advance architecture and design.

All the experts of the Technology Panel and dialogue highlighted the need of customization and understanding the basic needs of every customer as the use of technology will also be area-specific. The maxim 'adversities bring opportunities' was expressed during the course of the summit in various sessions. The sessions under the theme of Diversity & Inclusivity mainly reflected on how architecture and design become social movements to diminish fragmented societies by giving up on preconceived design ideologies and prejudices to address the diversity in society.

A design solution for the majority is not always a design solution for all. When the concept of inclusivity is skewed or overlooked, whether in gender, age, religion, caste, physical and mental abilities, living conditions, or decision-making powers, it leads to social movements. So this theme delved deeper into the needs of different kinds of individuals and explored design solutions based on them. As a key takeaway, the speakers resonated with the idea that society cannot be just for young people, it has to be for everyone. People in architecture need to re-educate, sensitise and listen to the people they are designing for. One has to be aware and interact more to address diverse needs of the people.

To delve deeper into the concept of a sustainable smart city, the summit organised pertinent sessions dedicated to the theme of Designing in / for / with Society. With the pandemic shifting the industry's glamour from trends-oriented solutions to design's social and cultural value for people and society, the attention to people-centric design through healthy, liveable, adaptable and evolving spaces, where people become the core of every architectural and design thought and are empowered with basic knowledge of spaces, has become critical. The speakers highlighted that rather than creating a smart city, it is important to enable a city with smart features enabled. Professionals should also focus on how to reuse water, transform old furniture into new one, use of solar and wind energy and so on for a picturesque future city.

The ADM Summit also focused on the theme of Education & Careers. The sessions were mainly about how the pandemic denied the mandatory environment design education demanded or sought, it also exposed the inadequacy of many institutions worldwide that never acknowledged the relevance of this environment. Also, they tried to figure out if these teaching models could be reinvented and reconfigured to adapt themselves to changing times. In a very enlightening panel discussion, the industry doyens and educators pondered on amazing facts about their institutions, how they try to fill in the existing gaps in the field of architecture and in a broad way highlighted how everyone should understand the term 'Education'. The major highlight of the session surrounded the fact that education in creative professions such as architecture and design, is more about learning experientially and less about learning from knowledge. As the young generation steer away from the prejudices that envelope mature minds and can be more open and inclusive in their design approach and design thinking, ADM Summit 2021 had a dedicated segment called Planning the New World with Young Minds. The students shed light on what will be the future of architecture and how it is evolving over time. Not just that, the students also showcased their ideas as to how they would design the new world order. Citing an example of the Frank Lloyd Guggenheim museum in Bilbao which is a famous curved building, one of the students pointed out that in order to create such a design, technological support is inevitable. While computers were mostly used in the final stage of design in the early days, computers and algorithms are now used right from the initial stage of designing.

The sessions were ideated with the guidance of several design stalwarts on the advisory board, namely, Council of Architecture (COA) President Habeeb Khan, Indian Institute of Interior Designers President-elect Tanuja Kanvinde, Indian Institute of Architects National Council Jt. Hon. secretary Leena Kumar, Ethos founder Gita Balakrishnan, IE School of Architecture and Design dean Martha Thorne, Venkataramanan Associates principal architect and managing partner Naresh V Narasimhan, author-educator Sumita Singha (OBE RIBA), James Law Cybertecture Architects founder, chairman & CEO James Law, Sandeep Shikre & Associates (SSA Architects) president and CEO Sandeep Shikre, Anil Wanvari and Apurva Bose Dutta.

Architecture, Design & More (ADM) Summit was organised by AnimationXpress.com. ADM is the first of its kind initiative incepted by IndianTelevision.com founded by its Chief Editor, Mr.Anil Wanvari. The program was curated by award winning architectural journalist andaAuthor Ar. Apurva Bose Dutta.

IIA-Haryana Chapter

Meeting with architects at Rohtak

IIA Haryana Chapter organised a meeting with architects at Hotel Rivoli, Rohtak on 27 December, 2021. Architects from Rohtak and nearby towns attended the meeting. The objective of the meeting was to discuss various issues being faced by young architects in professional practice, and also to make them aware about the activities of The Indian Institute of Architects. Many architects shared their experiences about difficulties being faced at various levels, including building permits, practices by non-architects, fee structure, lack of a common platform for interaction, etc.

Chairing the meeting, Ar. Punit Sethi, Chairman, Haryana Chapter, urged the architects to adopt best practices in consultancy, design and construction of projects so that people can experience improvement in the overall built environment, as well as the professionalism with which architects deliver services. He said that we must strive for improving the quality of buildings built in our country. He emphasized the importance of providing services in accordance with Code of Conduct and Scale of Charges, as stipulated by Council of Architecture. Ar. Vivek Logani, Hon. Treasurer, explained the role of IIA in building togetherness among the fraternity. He invited all architects to join IIA and strengthen the association. Ar. Surender Singh, Jt. Hon. Secretary, elucidated various activities of the Chapter towards addressing common issues faced by the professionals. He also informed the gathering about activities and initiatives being planned for the near future. Ar. Nirmal Makhija, Chairman, IIA Faridabad Centre, talked about the efforts made at the Chapter and Centre levels in taking up matters with authorities regarding building permits. He urged architects to remain united in efforts towards betterment of the profession. The meeting was sponsored by JK Super Cement.

IIA-Tamil Nadu Chapter

World Braille Day

On behalf of IIA Tamil Nadu Chapter, the Chairman Ar. T. Loganathan and Treasurer Dr. Elango visited the School for Blind at Adyar and handed over a contribution on occasion of World Braille Day. Thanks to Ar. Mohd. Hayas, EC Member for suggesting this gesture. It was great to see the cheer in the faces of the students. The teachers also expressed their cooperation.

World Braille Day

Reforms in Approval Process

IIA Tamil Nadu Chapter, represented by its Chairman Ar. T. Loganathan, Ar. K. Cheralathan and Ar. Jamaal met the Member Secretary of CMDA, Mr. Ansul Mishra, IAS on 12 January to discuss the reforms required for the approval processes. It is reported to be a breakthrough in the current system, revolutionising timelines and providing ease of doing business.

Reforms in Approval Process

IIA-Kerala Chapter

Cricketers from IIA Kerala Chapter represented Kerala at IIAPL Season 10 organized by IIA Sports and Cultural Committee at Kolhapur, Maharashtra. Sportsmen from the chapter also participated in Table Tennis and Badminton for IIA National Sports Event. Due to the recent restrictions and the prediction of third wave of Covid, the IIA Kerala Awards to be held at Kannur is expected to be postponed until further notice. The submission date of entries for the award has been postponed to 30th of January due to popular demand and circumstances. The IIA Kerala chapter cultural fest MAMANGAM to have been held in January, organized by IIA Palakkad Sub Centre has also been postponed to a later date

IIA-Karnataka Chapter

IIAPL, KOLHAPUR - 2021

Karnataka chapter gave an outstanding performance at the IIAPL Kolhapur giving a tough competition to the defending champions in all the events. Karnataka chapter's efforts of selecting a team didn't go in vain while the players brought home lovely trophies. The tournament IIAPL held at Kolhapur consisted of three sports namely Cricket, Badminton and Table Tennis and conducted various categories like Singles, Doubles and Team events.

THE RESULTS
CRICKET
- KARNATAKA KINGS reached the semi-finals settling at the 4th position in the tournament.
- Ar Suhas Kabbur : BEST BOWLER OF THE TOURNAMENT
- Ar Suhas Kabbur : MAN OF THE MATCH against Haryana with 4 wickets for 9 runs in 3 overs
- Ar Suhas Kabbur: MAN OF THE MATCH against MP TIGERS with 3 wickets for 13 runs in 3 overs.
- Ar Vivek SN : MAN OF THE MATCH :40 runs in 24 balls against RAJASTHAN RYDERS.

BADMINTON
- Ar Shamika Shetty/Ar Sandeep H : MIXED DOUBLES 2nd place
- Ar Sriraj Basavaraju / Ar Sandeep Harappanhalli: MENS DOUBLES 2nd place

TABLE TENNIS
- Ar Maitreyee Bailoor: WOMENS SINGLES 1st place.

The cricket team performed well to its potential with retaining their 4th position overall. The matches played were a great treat, for the first time in IIAPL history, day and night match under lights were arranged and Karnataka won the first quarter finals under lights.

With tremendous matches played through the year and rigorous practise for one month prior to IIAPL ensured the team's success and just missed reaching the finals by a whisker having played great cricket till then.

The Badminton and the TT team too performed beyond everyone's expectation defeating the reigning champions in men's badminton doubles in the first round and then annexing the TT women's singles crown and being just short as winners in badminton.

With great support from the chapter n the team members, TEAM KARNATAKA played one the best IIAPL so far with quite a few awards.

Ar Maitreyee Bailoor: TT WOMENS SINGLES 1st place.

IIA-Andhra Pradesh Chapter

As part of the 'Arugu' interactive session on November 12, Ar. Pingali Naga Praveen, Associate Professor, Aurora's Design Institute, Hyderabad, gave a presentation on "Concepts of Clock Towers and Public stairs Architecture". He has conducted and coordinated several workshops including interdisciplinary studio workshop for Architecture & Fine Arts Students. He also curated the exhibition "Tracing Narratives Hyderabad Stop a Travelling Landscape Exhibition" (an initiative by LEAF Landscape Environment Advanced Foundation, India) that toured across 14 cities in India.

On December 17, Ar. Murali Murugan, Practising Architect from Chennai was invited to talk as part of Arugu sessions. He gave a presentation on the topic "Towards a Humanistic Future…Carrying the Past!!". Ar. Murali started his firm, Murali Architects in the year 1990. The firm specializes in educational, medical, cultural institutions and residential buildings. His firm recently won the "IIA awards 2016 for Excellence in Architecture" in the commercial category for their Highway project and National Design Competition for Selvi J. Jeyalalithaa Memorial and successfully completed the memorial complex.

The IIA Andhra Pradesh Chapter and Visakhapatnam Center conducted the Architecture EXPO during December 25-26, 2021 in Sagarika Hall, AU Convention Center, Beach road, Visakhapatnam. The Two day event included Magazine launch, Seminars, Material exhibition, Competitions, Architect's and students' works display, Quiz, Felicitation of Veteran Architects and Cultural events. Architects, Students and Professionals across the state attended the event. The main aim of the event was to create awareness about architecture profession and the value of an architect in the public domain. The event was graced by Prof. P.V.G.D. Prasad Reddy, Vice Chancellor of Andhra University, Shri M.V.V. Satyanarayana, Member of Parliament Visakhapatnam, Dr. G. Lakshmisha, I.A.S., Greater Visakhapatnam Municipal Corporation and Ar. C.R.Raju, IIA President as the Guests of Honour as well as Shri K.S.K.R. Raju, CREDAI, Shri Bhavani Shankar, SE, VMRDA and Dr. D. Rajasekhar Reddy, Convener, INTACH Visakhapatnam Chapter as Special Invitees. After the lighting of the lamp, the Chapter released the event Magazine with the theme – "Stories in Storeys", elaborating experience from Science to relationships in buildings, through the Convener of the event Ar. P.R.B.Rao. The inaugural followed the presentations by eminent Architects and speakers namely Ar. Rajesh Shukla, Quintessence-New Delhi, Ar. Sridhar Gopisetty, Team One-Hyderabad, Ar. Y.Narasimha Rao, Visakhapatnam, Mr. Balamurugan P, Prism-Bengaluru, Ar. Srinivas K, Aakaar-Visakhapatnam and Ar. Harsh Goel, INI Design Studio, Ahmedabad over a span of two days. Students from various colleges across the state participated actively in the competitions and cultural events.

Inaugural

Magazine cover

IIA-Punjab Chapter

Building bonds amongst the community - Ambuja with IIA Jalandhar

The IIA JALANDHAR TEAM under the leadership of Dr. Ar. Atul Singla, Chief Architect, Lovely Professional University (LPU) and Founder IDEARCH Architects organized an educational session for more than 100 architects on 24th November, 2021 at Sarovar Portico Hotel, Jalandhar. Sh. Navender Tomar (RSO head Punjab),Ambuja Cement presented the technical session followed by interactive sessions by Sh. Sharad Shukla (branch in charge of Jalandhar Ambuja Cement). Ar. Sanjay Goel, Chairman, IIA Punjab Chapter and Ar. Dinesh Bhagat, Hon. Jt. Secretary of IIA Punjab Chapter also addressed the huge gathering. The IIA Jalandhar Centre team members were introduced by the chairman, Dr. Ar. Atul Singla hereunder the Vice Chairman, Ar. Shruti H. Kapur, Hon Treasurer, Ar. Rahul Ratra, Jt. Hon Secretary, Ar. Lalit Verma, Executive Members, Ar. Tara Singla, Co-Founder IDEARCH Architects, Ar. Arpan Aggarwal, Ar. Ashish Batra and Ar. Gurkirpal Singh. Ar. Chandan Aggarwal, Jalandhar Centre Executive Committee. Special Invitees-Ar. D P Singh, Ar. Julie Khanna, Ar. Thakur Udayvir Singh, Ar. Sanjay Sharma and Ar. Meenal Verma were also present on the occasion.

Duraton's Session with IIA Jalandhar - Simplifying sustainability

Disseminating knowledge on the humble beginnings of the versatile cement Mr Vishal Dua, RSM, Jalandhar Duraton Cement, was the main presenter for the Duraton event held at Jalandhar in collaboration with Jalandhar IIA on 27th December, 2021. Mr. Bhupindervir Singh, Technical Incharge, Jalandhar Duraton Cement and Mr. Dinesh Kumar, Technical Incharge, Jalandhar Duraton Cement were also present in the session. Representatives from, IIA Punjab Chapter, Ar. Dinesh Bhagat, Hon. Joint Secretary and Founder chairman IIA Jalandhar graced the occasion and addressed the session. The IIA Jalandhar Centre Chairman Dr. Ar. Atul Kumar Singla, Chief Architect Lovely Professional University and The Dean Lovely School of Architecture and Design emphasized the importance of such sessions. Adding to the same he even highlighted the need to hold certain regular activities in association with GRIHA/IGBC/ITPI/COA-TRC. Career fairs, educational sessions and conferences are crucial to the all-around development of the students and should be planned more often. Laying stress on the international presence of IIA, he purported more collaborations with educational institutions around the globe. Heritage awareness, sustainable design and the strategies to propagate the same in the state of Punjab remained the core of his discussion. The vibrant session culminated with greetings from Ar. Dinesh Bhagat, who has been the main support of IIA Punjab in organising such wonderful events.