

# Innovative Research in Architectural Design Process through Abstraction Method

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**Abstract**—Design is a continuous process of learning where we can generate ideas and brainstorm solutions. The design process is a creative problem solving endeavor that transforms ideas and visions into the three dimensional realities. The process involves identification of the functional purpose of the object, analysis of its aesthetic and utilitarian aspects, and visualising alternative solutions. The Design can be achieved through Observation, Perception, and Visualization and Abstraction of Natural Objects or Elements. Visual Design Elements are line, colour, texture, Form 3D and Shape 2D. The design principles can be studied from nature like Flower, leaf, fruit, vegetable and so on.

The abstraction is the process to break away from Traditional representation of physical objects. It is the visual language of shape, form, colour and line to create composition. The same composition can be treated as form and shape for First Year Design Studio. Abstraction: "The act or process of separating in thought, of considering a thing independently of its associations; or a substance independently of its attributes; or an attribute or quality independently of the substance to which it belongs." The First Year Design process through abstraction can be like a selection of any natural element then abstract it into geometrical form 2D then prepare a model to create a shape. The model can be altered with Additive or subtractive method. The play with levels, addition of built form characteristics like openings, color, texture & material. The 3D Model can treated as Built mass or structure for the given Assignment. Abstraction addresses the process of removal in order to reach the essential datum of things. In a design world increasingly dominated by organic and redundant forms, abstraction is likely to be one of the most unpopular concepts in the field of architectural theory. While it is a mistake to think abstraction opposes the complexities and contradictions of our world, we deny that it is the very outcome of larger historical and cultural forces.

This paper is focused on the use of creative technique of abstraction method for form generation. Objectives: Development of space visualization Application of materials to simple architectural forms. Application of the knowledge gained in other subjects and basic design to design of buildings of single/ simple activity. Anthropometry, Form & Space, Elements of built form, spatial organization, Concept generation.

**Keywords:** Abstraction, Natural Elements, form & Space.

## Introduction

Architectural Design is closely related to Arts & Design. Design is a process which includes combination of creative

vision, technical expertise and strategic thinking although architectural design processes ends up with a single built design.

"Design is an Expression of Feeling.....Any Creative Act is Design".(Emerson-1953).

Design process is a thinking process and the process adopted must generate creative thinking. Creative thinking involves visualization which is the skill and ability to convert vision into visuals. The element of creativity can be nurtured if creative stimulus is introduced and the technique of problem solving is explained. (MASA- 2010)

The design studio is the nucleus of the architectural programme. Design is a core subject in architectural education in India and other countries overseas. The main objective of Design Studio is to develop student's imagination in design, initiate creativity and thereby appreciation of art in many forms. Design Studio provides architectural students with the skill to work under both intuitive and practical contexts. In Design Studio, students express their architectural ideas and creativities through various communication techniques such as in the forms of conceptual sketches, drawings, study models, photography, video clips and others to produce innovative, creative and competent design solutions.

Introduction to the creative method through elements and principles of design and taking the creative thinking of the student from the "known to the unknown" is a continuous process. A creative stimulus is possible if the art of innovative and creative exercise is first introduced and is followed by further design exercises. The first year is a transition period for students from a traditional vertical thinking fostered by the education, hence it needs to be dismantled and a lateral thought process should be triggered.

## Why abstraction

Art is an abstraction.

Architecture is an art.

Architecture is an abstraction.

Architecture is an abstraction of nature. (Milton Stricker-2010)

Originating from Latin, when used as a verb, the word “abstract” historically means, “to draw away from”. Thus “Abstraction” is the “process through which new ideas or conceptions are formed by considering several objects or notions and omitting the features that distinguish them.” In other words, the act or process of separating in thought, of considering a thing independently of its associations; or a substance independently of its attributes; or an attribute or quality independently of the substance to which it belongs.”

Architecture, similar to other creative disciplines, is traditionally taught through design practice. Such form of education puts emphasis on learning by doing, seeking actions and experiences for deeper understanding of the subject. One element, which strongly influences this process of interpreting and learning, and yet is rarely explicitly investigated on its own terms in architectural education, is the process of abstraction.

In the process of abstraction the student is expected to observe his / her environment from the viewpoint of a designer and interpret these observations in terms of the basic design principles. Indeed abstraction aims to extract the final design through intuition since it is a method for understanding the whole in terms of its underlying idea of composition and its components.

**Types of Abstraction**

**-Formal abstraction-**

Formal abstraction is a type of abstraction that is generated by expressing the concrete forms with simplified and symbolic forms of Natural Elements. Geometrical expression can be achieved through forms like geometrical shapes such as circles, squares, triangles, rectangles.

**-Aims & Objectives** The overall design process is divided into five different steps. The design process is start with collection of specimen (natural object) if it not available in the market like custard apple was not available in the Summer season, in this case they brought plastic made. And few of them created by their own material. The quote finding task related to specimen was quite interesting, and to represent the quote in graphical manner was again challenging task for students. The quote poster was made in black and white colour. The sketching of given specimen the activity was treating as natural object sketching. The abstraction of given specimen into geometrical form, they need to develop it into five different stages.

**-Step 1** List of Specimen – teachers identified total 120 different natural elements like fruits, vegetables, marine animals, natural elements, animals, animals and their shelters. Then teachers search out the pictures of specimen. Total 120 chits containing the picture of specimen were prepared and

through lucky draw process students allotted with specimen. The lucky draw process is useful for allocation.

Fruits - Papaya, Banana, Pineapple, Pomegranate, Kiwi, Guava, Grapes, Fig, Custard apple

Vegetables- Pumpkin, Broccoli, Onion, Bitter Gourd, Lady Finger, Cabbage, Capsicum, Peas, Jackfruit

Marine Animals – Turtle, Larva, Sea Conch, Octopus, Stag horn Corals, Star fish, Snail shell, Sea shell

Natural Elements – Waves, Draught, Ripples in water, Water drops, dew drops, Air bubble

Animals - Butterfly, Honey bee, Spider, Caterpillar, Skull, and Pug mark.

Animals and their home – Nest, Honey comb, Ant hill



Figure 1: List of different natural element specimen



Figure 2: List of different natural element specimen

The selected Specimen and Find out the Quote related to specimen. Preparation of A3 size Black & White Poster to gives graphical explanation to Supporting quote and Specimen. Evaluation Criteria – Translation of quote into graphical presentation – 50% and Presentation -50%

For Example

1. Specimen –Beetroot and quote – Vegetable come from the ground so does my love will eat raw.
2. Specimen – Water ripples and quote – I alone cannot change the World, but I can Cast stone across water create many ripples.
3. Specimen –Water droplets and quote – Time itself comes in water drops.



Figure 3: Poster explaining the quote related to specimen



Figure 4: Poster explaining the quote related to specimen

**Step 2 Specimen Study**

Every student supposed carry the individual allotted specimen. The sketching exercise includes top view, all side elevation and sections. Evaluation criteria Level of detailing -30%, Understanding of specimen -40% and Presentation-30%.

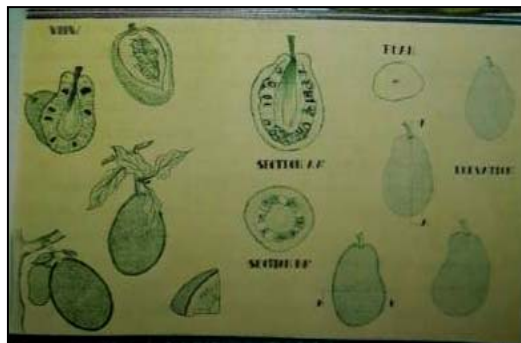


Figure 5: Jackfruit Specimen Study – Sketching Exercise (Plan, Section, Elevation and View)

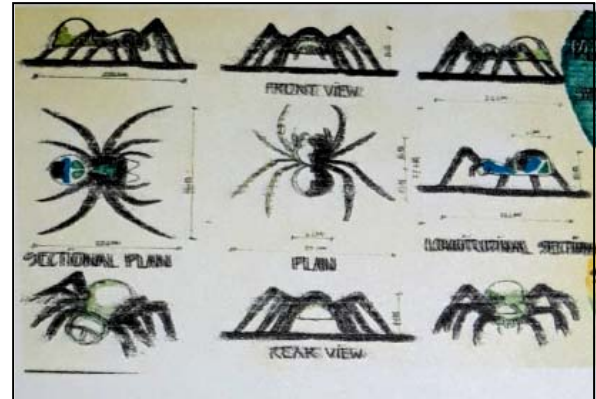


Figure 6: Spider specimen study – sketching exercise (plan, section, elevation and view)

**-Step 3 Specimen Abstraction**

Abstract art uses a visual language of shape, form, color and line to create a composition. The formal abstraction of given specimen into geometrical shapes. Evaluation criteria - Five different stages -30%, Final abstraction of specimen – 40% and Presentation – 30%

**Stages of Abstraction**

Stage 1 – original sketch/ view of given specimen

Stage 2 – outer profile of sketch

Stage 3 - addition of different geometrical shapes like circle, square, rectangle and triangle.

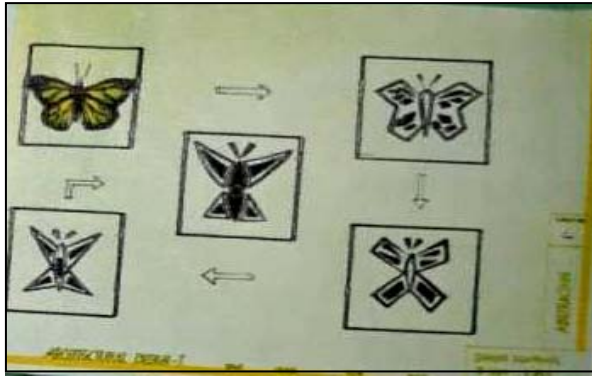
Stage 4 –modification in shapes, addition and alternation in form.

Stage 5 – Schematic plan form



Figure 7: Specimen butterfly- sketches explaining five different stages of abstraction



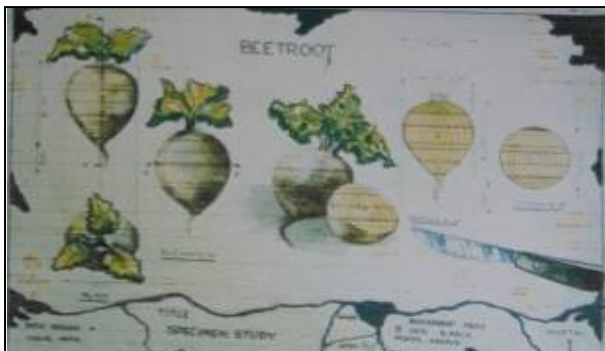


**Figure 8: Specimen butterfly- sketches explaining five different stages of abstraction**

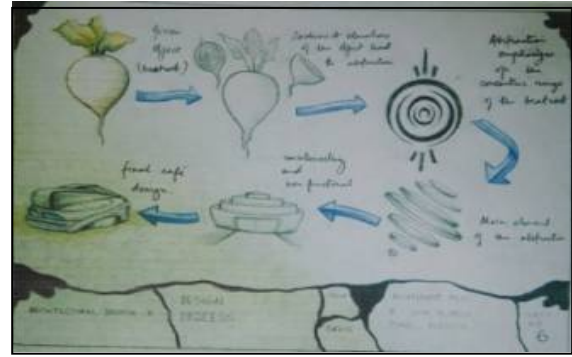
-**Step 4** Every student has given the Design Assignment i.e. Cafe with hypothetical site. They did two live case studies and frame the design requirement and area program. They suppose to select site location anywhere on earth like on ground, underground, on trees, on beach side, mountains etc.

-**Step 5** The final abstraction of given specimen in two dimensional form is used as plan form for given design assignment. According to requirement of Cafe students start working on basic zoning, connectivity between different activities. Few students face the problem with final plan form like curve walls and negative space, how to locate windows, to overcome this problem student slightly altered plan form. Three dimensional models are prepared with oasis material, so that students can easily carve out spaces. That carve out portion is further used in elevation with level difference.

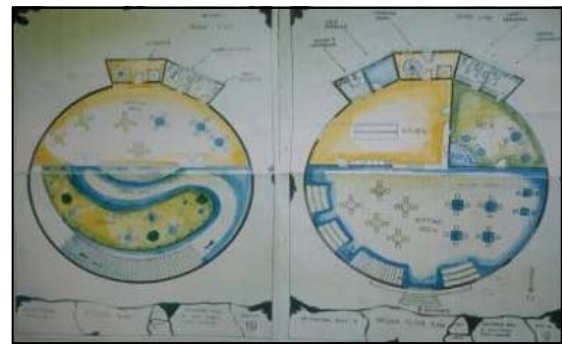
Three dimensional models are prepared to analyze the negative and positive spaces of form. During the design development process which is two dimensional at the beginning it generally reaches a three dimensional virtual appearance. Transferring a three dimensional abstraction into two dimensions is achieved using technical drawing methods. The perspective sketches that are prepared by various methods during the design process, the colored or black / white lines, models, photographs of models, animations and thoughts are useful from the point of view of fixing and transfer.



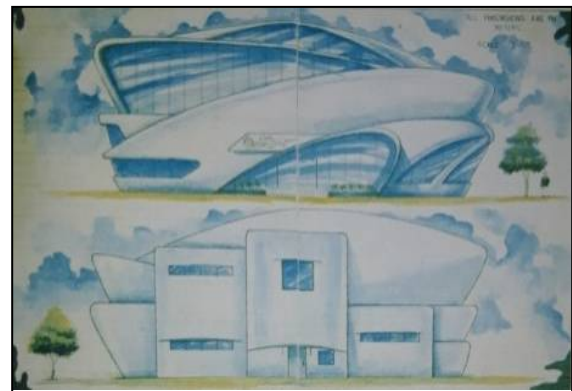
**Figure 9: Specimen beetroot- sketches**



**Figure 10: sketches explaining abstraction**



**Figure 11: Plan of Cafe**



**Figure 9: Elevations of cafe**

**Conclusion**

Purpose to introduce abstraction in first year design process was intended to promote and support visual design thinking, design creativity/creative thinking. Students analyze the variety of natural elements and there co-relation with all design principles. As all art form are rotate around basic design principles. Students enjoyed overall Design process which is starting from selection of Specimen to final design solution for Café. Various factors were explored and considered in the overall design process. Overall Exercise 1 and Exercise 2 were successful to achieve its aim and

objectives. The beauty of abstracting nature for the purpose of art, architecture, and life is a timeless idea and process for same can be vary, the paper tried to demonstrate an opening step in abstraction for architecture.

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