

IMAGERY FROM NATURE ON CERAMICS

DESIGN RESEARCH SEMINAR

PDSPL - 143

BY

GAURAV VAIDYA

146130002

GUIDE: PROF. RAJA MOHANTY



INDUSTRIAL DESIGN CENTRE

INDIAN INSTITUTE OF TECHNOLOGY BOMBAY

2016



Imagery
from Nature on
Ceramics

Design Research Seminar Report
Dec 2015 - Feb 2016

•••

Guided by : Prof. Raja Mohanty
Gaurav Vaidya | 146130002 | Product Design

Approval

The Design Research Seminar Project entitled
“Imagery from Nature on Ceramics”
by Gaurav Vaidya, is approved as a partial fulfilment of
requirements of a post graduate degree in Industrial Design
at IDC, IIT-Bombay.

External Examiner

Internal Examiner

Project Guide

Chairperson

Declaration

I declare that this written submission represents my idea in my own words and where other ideas or words have been included, I have adequately selected and referred the original source.

I also declare that I have adhered to all principles of academic honesty and integrity and have not misinterpreted or fabricated or falsified any ideas / data / facts / sources in my submission.

I understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources that have not been properly cited, or from whom proper permission has not been sought.

Signature :

Name : Gaurav Vaidya

Roll No : 146130002

Date :



Acknowledgements

I'd like to thank Prof. Raja Mohanty for guiding me and constantly supporting me at every stage of the project.

Thanks to the institute for providing us a well equipped ceramic studio. I also thank my colleague Vishal for helping and encouraging me while working on the project.

Lastly, thanks to my batch mates at IDC and my parents who have been the greatest resource at the best and worst of times.



Abstract

The motivation behind choosing ceramics for this project was to understand the medium and play with it to explore various techniques while working. The journey of this project helped me learn different stages involved in ceramic tile making.

The theme of the design research seminar is Imagery from nature on ceramics. This involved observing the beauty in nature around us, looking at the minute details which makes it alluring and depicting the essence of it on ceramic tiles in the form of visual images.

Working in ceramic studio and making tiles with hands was a major part of this project. A disciplined routine in working allowed me

to understand the nature of clay and its behavior in different stages.



Introduction	1
Tiles	3
Nature Around IITB Campus	5
Sketching on Paper	8
Tile Making.....	13

Contents







Introduction

A Brief History of Pottery

Pottery is clay that is modeled, dried, and fired, usually with a glaze or finish, into a vessel or decorative object. There is abundant clay available in nature. Clay has quality of taking any shape desired to be given to it and it retains the shape after drying and baking.

In the beginning, pottery was made with hand and then sun dried. Some accidental fire produced the knowledge of hardening of clay on firing.

There are several findings which show that Egyptians used wheel for pottery. However wheel was an independent discovery of many early civilizations.

The Egyptians seem to be first who used a glaze on pottery. These early pots had more silica and less of clay and the colors came out very bright. From Egypt the process of making glaze came to middle east.

Evidence for pottery is found in the neolithic age of mostly early civilizations such as Mesopotamia, the Indus Valley, China and Egypt. Clay toys of mother goddess, feeding bottles, whistles, storage jars, sculptures all prove that pottery was not only used for household goods, but for industry and sanitation.



Greek Vase

The Greeks were the first to use plasticity of clay for the creation of shapes which are classical. They also developed the use of various color slips and decorations. These are done with a delicate but sure hand, depicting scenes of mythology and of national sports.

The Roman contribution to the ceramic arts was great. The Romans, wherever they went and whichever country they conquered, introduced the art of pottery. We find Roman pottery made all over France, England, Spain and Asia. Mostly they made utility wares, large solid items for the house.

In **the Chinese** early period, the containers made were robust, made with hand. These were made out of plastic mud and fired in open kilns. At next stage, the wares were thrown on a wheel which was turned with stick. The discovery of bronze casting made its impact on shapes of pottery as well.

Pottery in India

There is evidence of pottery making, both handmade and wheel thrown from all over India in the neolithic age. At Harappa and Mohenjo Daro, the earliest known cities of India of more than 5000 years ago, pottery has been excavated to show that the potter's place was quite an important one in society.

The craft was well advanced, so much so that rectangular kilns were used for firing the product. In a warm country, with the economy built on agriculture, pots for storage of water and grain were in demand, quite apart from cooking-pots and pots for milk, toys, gods. The Indus valley pottery is mostly decorative, but the design, conception and execution all combined to make it beautiful.

Indian sculpture made heavy use of terracotta from a very early period and in more sophisticated areas

had largely abandoned modeling for using molds by the 1st century BC. This allows relatively large figures, nearly up to life-size, to be made, especially in the Gupta period and the centuries immediately following it. Several vigorous local popular traditions of terracotta folk sculpture remain active today, such as the Bankura horses. Often women prepare clay figures to propitiate their gods and goddesses, during festivals.



Roman Vase



Persian Tile

Tiles

History of Tile Making

The first architectural ceramics were almost certainly produced in the Near East in the fifth millennium BC. Decorative walls, modelled and glazed have been found and dated as having been made around 1400 BC.

Egyptians used tiles for decoration of palaces. In China by the third century BC tomb figures and tiles were in common use.

Brick and tile making spread throughout Europe under the Greek and Roman Empires. Persia in fifteenth century produced lustre tiles which were used for decorations in mosques and palaces.

By the eighteenth century floors, walls and ceiling of certain rooms in Dutch houses can be found clad entirely in tiles. With industrialization and the growth of towns the tile making became an increasingly important industry.

Such was the boom in the building industry that only factory manufacture could meet the enormous demand and in the tile industry methods of tile making and decorating techniques were subject of much research and mechanization.



Slip-cast Tiles



Die Pressing

Techniques of Tile Making

Cast Tiles

Slip-cast tiles are commercially produced by casting large tiles in banks of moulds where the pouring holes are interconnected, as are the risers which allow the air to escape.

The tiles should be produced as a clay or plaster model and from that model a mould should be made. The mould is made of plaster of Paris, usually in two pieces containing pouring hole.

Pressed Tiles

There are several types of press for production of tiles. The simplest is the hand-operated fly press, which consists of a heavy cast frame which supports the bottom die.

The top and bottom dies are secured in place so that as the top die is lowered it will slide easily into the bottom die without touching the slides and damaging either part of die.

Extruded Tiles

In recent years, the technique of extruding clay, originally developed for brick production, has been modified for the production of extruded tiles. The clay is fed into a hopper and extruded through a de-airing pugmill.

The extrusion feeds on to a conveyor monitored and controlled by special jigs which measure the appropriate length of a tile and wire-cut the extrusion before passing them on to be stacked and set for drying.



Nature Around IITB Campus

The campus of IIT Bombay nestles among hills and it has Powai lake on one side of it. The campus is a green island in the concrete jungle of Mumbai. As the green cover is maintained here, it is rich in flora and fauna.

Although I am living in the campus for past one and half year, I never observed the variety of trees, animals, birds, insects in detail until this point.

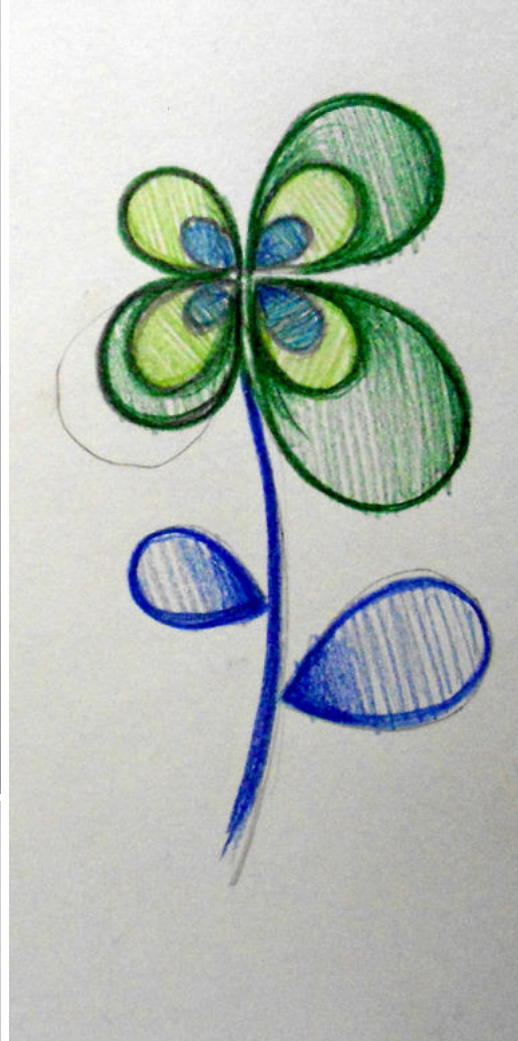
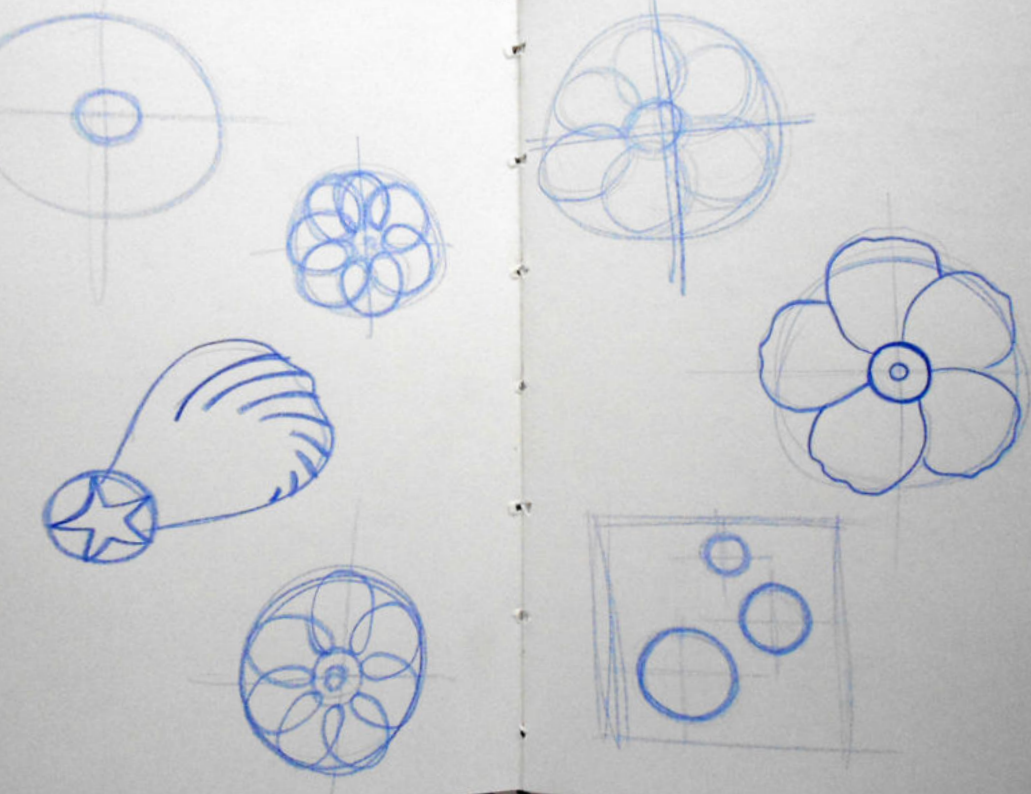
The project involved roaming around the campus to observe the beauty of nature and its documentation in the form of photography and sketching. Live sketching helped me to observe and understand intricate details of each element.





To be unable to SEE beauty properly is to lack the basic foundation for any aesthetic understanding. – The Unknown Craftsman

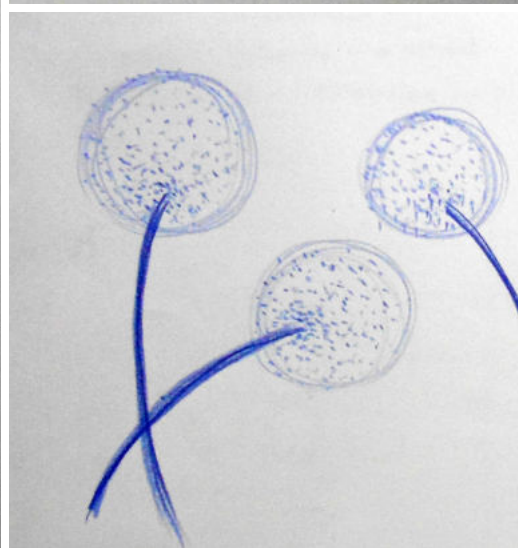
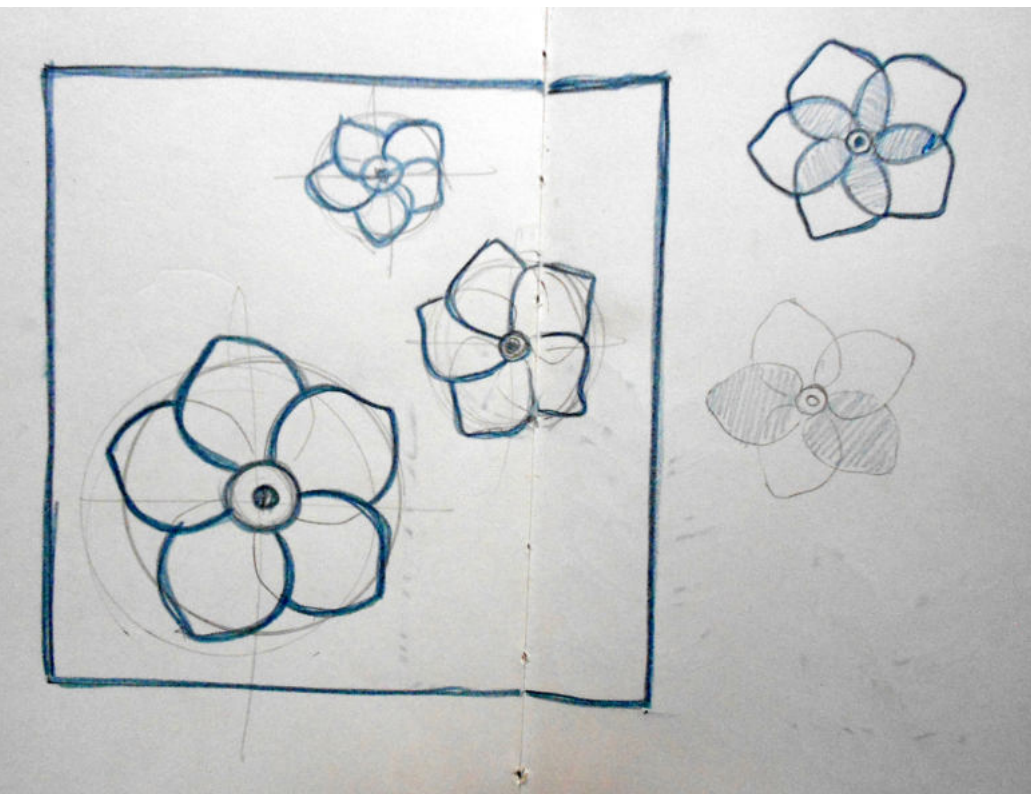


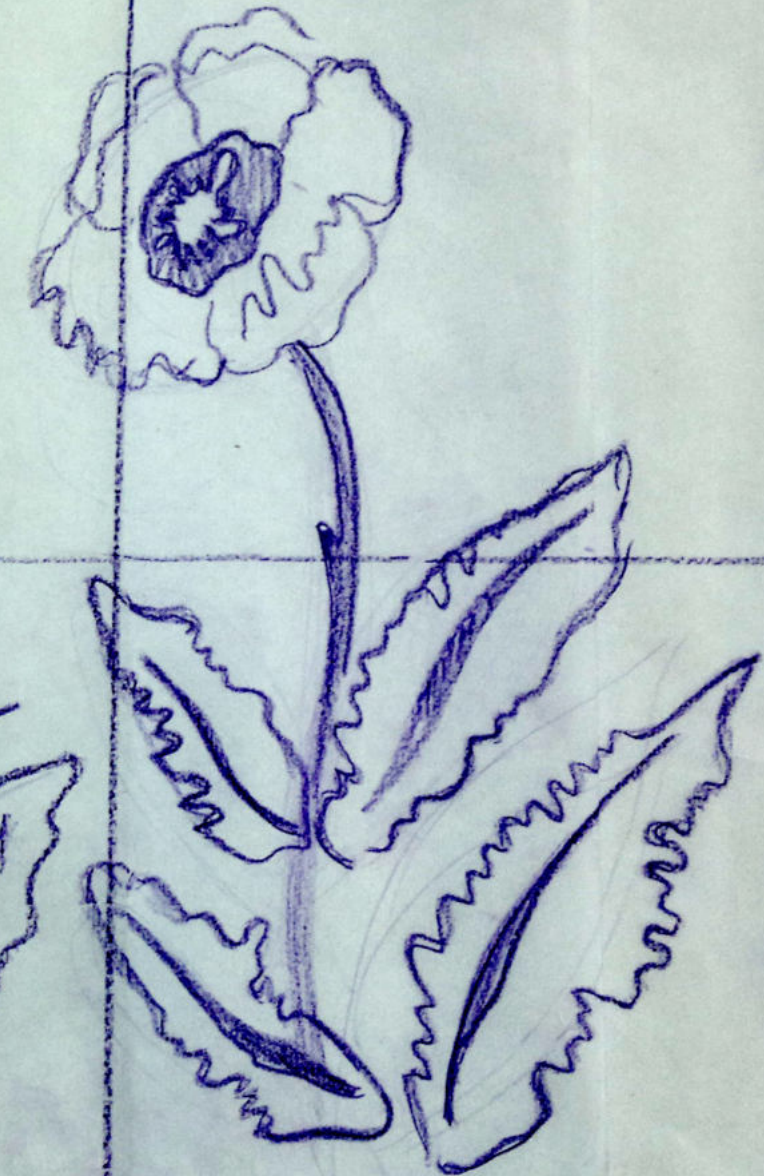


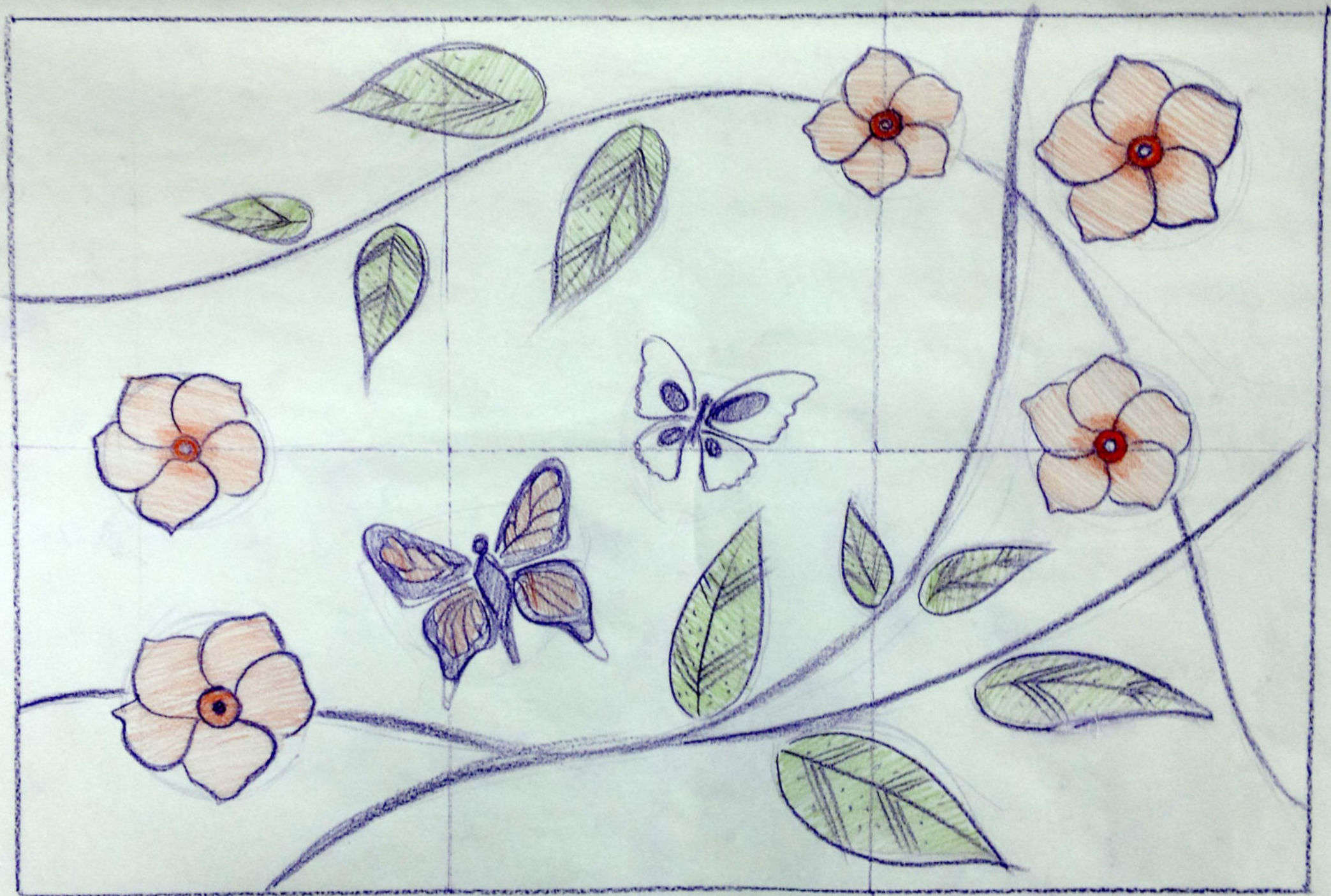
Sketching on Paper

Sketching gives more freedom to illustrate what's in ones mind on paper. By means of drawing rough lines and shapes, one begins to use that spark of creativity to come up with interesting concepts that can be the initial foundation of next work.

Sketching helped me to simplify the forms that I wanted to execute on clay medium. It is also a good way to document things.

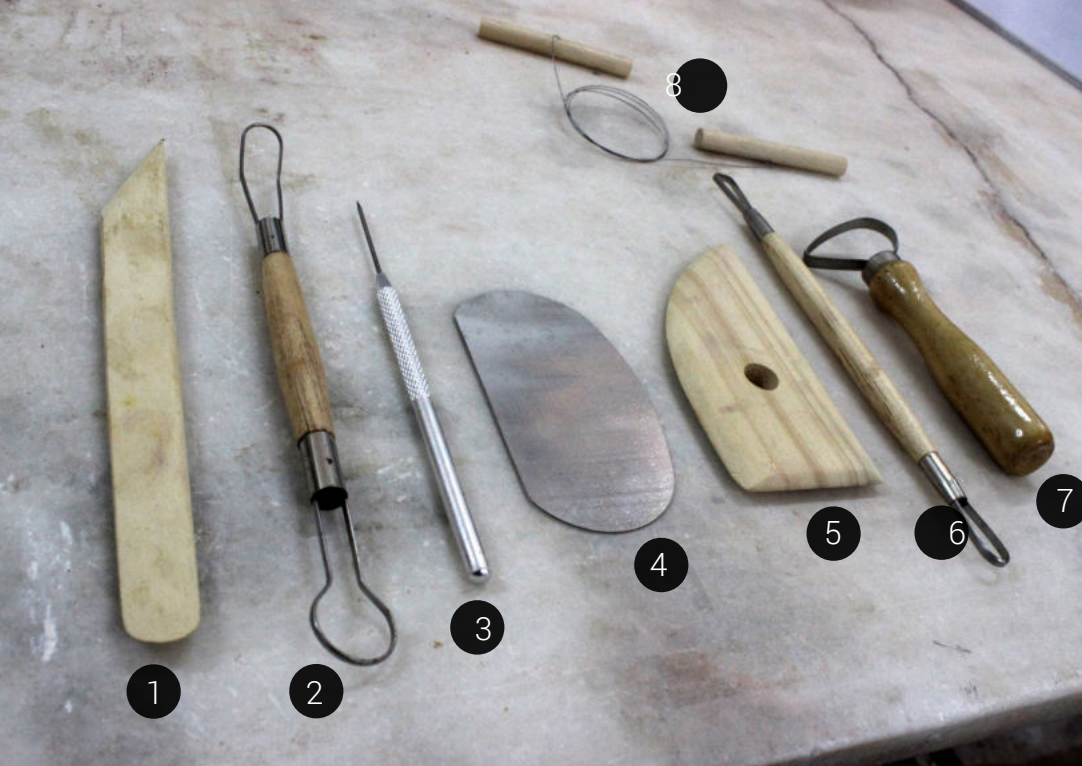












Tile Making

Tools

1. Wood Modeling Tool
2. Ribbon Tool
3. Needle
4. Steel Scraper
5. Wood Rib Tool
6. Small Loop Tool
7. Large Loop Tool
8. Wire Clay Cutter



Square Wooden Frames 6" x 6"



Clay Kneading

Clay Kneading

Kneading is a step in preparing clay for shaping. It involves manipulating the clay in a fashion somewhat like kneading dough for bread. Kneading is done on a solid surface. Proper kneading will make it easier to work with and will eliminate air bubbles. Also it ensures the even distribution of moisture in the clay. Proper kneading will avoid clay objects from breaking while being fired.

Upper body weight is applied on clay through palms while kneading. Clay is sliced with wire tool to check if any bubbles have still remained in the lump. Clay is kneaded again and wrapped in plastic bag so that it retains moisture.



Clay cutter to slice the lump



Check for air bubbles



Pressing clay into frame



Removing excess clay

Making Ceramic Tiles

Tile frames made from wood are used for making ceramic tiles. Frame is located on working table top. Newspaper is kept below the frame in order to ensure that clay will not stick to the table top.

Kneaded clay is pressed into the frame and a roller can be run across the clay. The pressure will squeeze the clay against the edges of frame. The excess layer of clay is removed

and sponge is used to smoothen the surface of the tile. Frame is removed when the clay is almost leather hard.

The corners of the tiles get curved while drying. This can be avoided by keeping some weight on the corners or reversing the tiles at regular intervals.



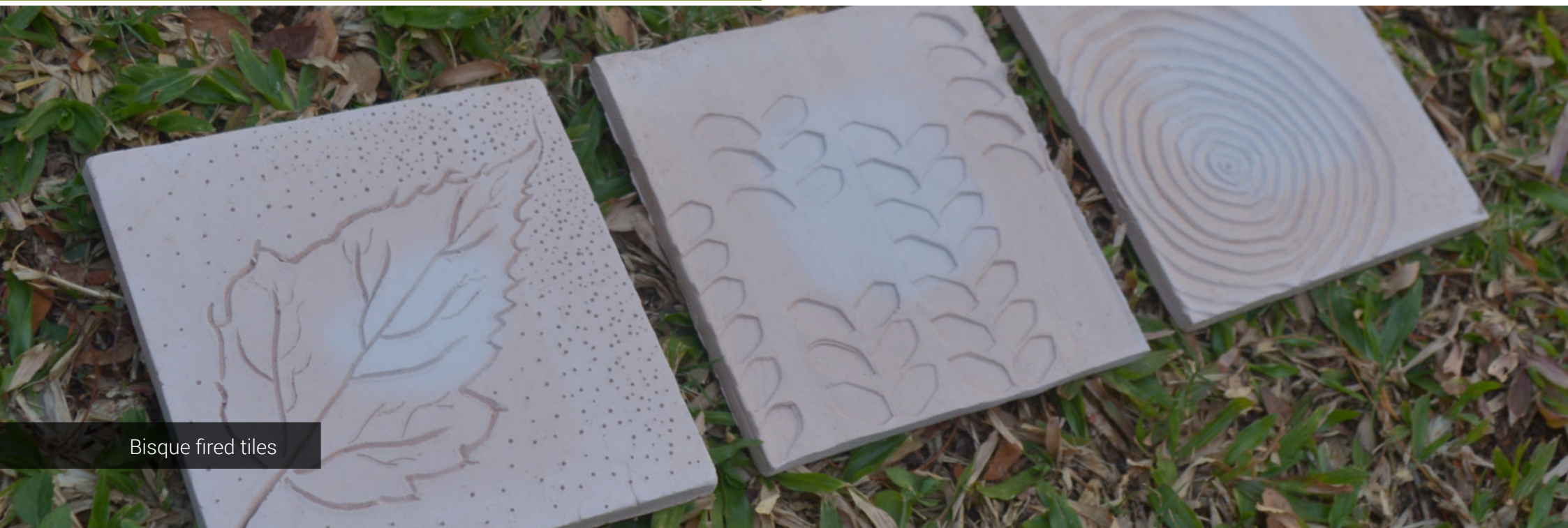
Bisque Firing

The purpose of bisquing is to change the clay into ceramic material, without fully fusing it. Most pottery goes through a bisque firing before it is glazed and then fired again to melt the glaze and fuse it to the clay body.

Because the bisque firing is brought to temperature much more slowly, bisquing also reduces the chances of pots cracking or exploding in the glaze firing.

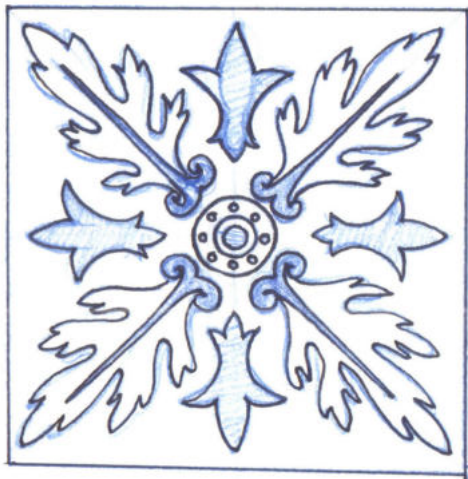
During the start of the bisque firing, temperature is raised slowly up to approximately 90-100°C in 1st hour. The rate of temperature rise is then constantly maintained at 100°C/hr in successive hours till it reaches to 850°C.

Tiles loose water contents after bisque firing and turn into pink shade from initial gray color



Bisque fired tiles





Sketches



Before Firing



After Firing

References

Architectural Ceramics by David Hamilton
The complete Book of Pottery Making by John B. Kenney
Pottery in India by Gurcharan Singh