

Product Design Project III

HANDBAG IN BAMBOO AND LEATHER

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Handbag in Bamboo and Leather

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Project Guide

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CONTENTS

| | | |
|------|---------------------------------|----|
| 1..0 | ABSTRACT | 01 |
| 2.0 | HANDBAG | 04 |
| | 2.1 WHY HANDBAG ? | 05 |
| | 2.2 HANDBAG FOR WHOM ? | 11 |
| | 2.3 BRIEF HISTORY | 15 |
| | 2.4 IMAGE BOARD | 18 |
| 3.0 | MATERIAL STUDY | 22 |
| | 3.1 BAMBOO | 23 |
| | 3.2 LEATHER | 25 |
| 4.0 | USER STUDY | 33 |
| 5.0 | MARKET STUDY | 42 |
| 6.0 | TREND STUDY | 44 |
| 7.0 | PRODUCT BRIEF | 48 |
| 8.0 | IDEATION AND CONCEPT GENERATION | 50 |
| 9.0 | CONCEPT DEVELOPMENT | 56 |
| 10.0 | FINAL DESIGN | |
| 11.0 | Appendix | 73 |
| 12.0 | Bibliography | 76 |

1.0 ABSTRACT



Lifestyle accessories are not new for Indian culture. With rich heritage of textiles and craft, people have been using customized accessories for various occasions. But repositioning this craft in today's modern and post-modern world is a challenge. Also, it is important to give new meaning and value to the craft in order to keep our rich tradition alive. One such tradition prevalent in India is Bamboo Craft. It is highly evolved in Northeast states like Assam, Manipur, Mizoram etc.

This project aims at designing a handbag in bamboo for ladies, to be used in parties, weddings and other social functions. My previous project was related to Bamboo furniture design, wherein I could explore the possibilities of using full bamboo. The current project gave me an opportunity to explore many other facets of bamboo.

Even though, the present market is full of wide variety of bags, many customer expectations are left unaddressed. This project tries to address this gap to ensure success of the product. The project went through various stages starting with 'identifying which product to select' till 'the final design'. These are briefly explained below-

A. Classification of products and checking the appropriateness of using bamboo as a material for the same. Also, reviewing the current market trend in accessories was an important aspect.

B. Analysis of different types of bags with respect to various parameters such as - their use, the form, occasion of use, cost, user interviews etc. was carried out. This helped in deciding the finer and specific aspects of the product such as the user age-group and type of bag.

C. Study of both the materials : bamboo and leather was carried out. Case study of Amar kutir, Shantiniketan and leather workshop at Dharavi, Mumbai was done in order to understand leather craft.

D. Next stage consisted of defining the Product Brief followed by idea generation and concept development. This led to the final handbag design in bamboo and leather.

Participation in the bamboo workshop held at IDC by IGNOU proved to be very beneficial for the project. It provided exposure to the work by various NGO's in the area of craft and also gave an opportunity to interact with the craftsman and designers across the country.

2.0 HANDBAG



2.1 Why Handbag ?

The decision of designing a handbag was an outcome of the following analysis:

1. Classification of various types of products, keeping in mind the material (bamboo) and its appropriateness with respect to those products.
2. The current market trend and positioning of proposed product.
3. User interviews to know their requirements and opinion about bamboo products.

1. Product classification:

The products in general can be classified as -

Personal Products

Professional Products

Family Products

Public Products

Religious Products

Personal Products

This product category includes various products that people possess for their specific needs and requirements. Various types of accessories that are used as personal products include -

Foot ware

Jewellery

Electronic gadgets : mobiles, laptops, PDA, walk mans, I-pods,

MP3 players etc

Goggles, spectacles

Pens, watches, cigarette lighters

Jewellery box

Stationary

Handbags, Purses

Products with possibility of using bamboo were short listed which includes -

Jewellery

Pens, Stationary Handbags

Professional Products

Professional products include range of products for work related usage. Various accessories include

- Pen holder/stand
- visiting card holder
- File rack
- Table clock
- paper weight
- Mobile phone holder
- Organizer
- Paper cutter
- Note books /diaries /sketch books

Following are the products with possibility of using bamboo as a material:

- Pen holder/stand**
- visiting card holder**
- File rack**
- Table clock, paper weight**
- Mobile phone holder**

Family Products

These include range of kitchen related products and products used for home decor.

Kitchen accessories could be easily divided into three broad areas which consists of

- a. Cookware
- b. Serving ware
- c. Eating ware + Drinking

The overall products could be listed as follows

- Salt and pepper shaker
- Bowels, cutlery,

Napkin holder, table runner
Mugs, cups and saucers, tea kettles
Laundry baskets
Paper towel holders
Bathroom accessories – soap dispenser
Soap dish, toothbrush holder
Tissue paper box holder

Opportunity of using bamboo included following areas

Bathroom accessories – soap dispenser
Soap dish, toothbrush holder
Tissue paper box holder

Home Decor

Products used for home decor include following range

Flower vase
Lamps
Decorative items – sculptures
Paintings
Candle holder
Dry flowers/ decorative sticks
Containers

Bamboo usage could be explored in following products

Flower vase
Lamps
Candle holder
Dry flowers/ decorative sticks
Containers

Religious products

These are the accessories used for religious purpose which include

Lamps/ diyas
Candle holder
'Agarbatti' holder

Water container

Except water containers and diyas, bamboo can be easily incorporated in these types of accessories/products. This product classification helped in giving overall view of Products in general and possibility of using bamboo for the accessories.

2. The current market trend and positioning of proposed product. In the second part the product range by brands like **Bungalow Eight**, **The Culture Shop**, **Contemporary arts and crafts**, **The Bombay Store**, **Hidesign**, **Lifestyle**- retail outlet chain etc. was reviewed. This was important to understand the current market in lifestyle accessories.

The Bungalow Eight store in Mumbai exhibits the products by various brands and designers. Products ranged from kitchen accessories, home decor, luminaries, textiles to leather handbags and jewellery. The products are priced at a very high range starting from anything around two to three thousand rupees.

The Culture Shop and The Bombay Store in Mumbai displays products with craft focus. Handmade office accessories such as diaries, pens etc. are available. Luminaries, tea coasters, handbags, jewellery, sculptures, wall hanging etc are sold extensively. Bamboo containers and table mats are available at The Culture Shop. In Bombay Store, there are handbags in Bamboo and cloth, imported from Thailand and sold at Rs 800 for a small sized bag. The store manager mentioned that the Bamboo handbags had huge demand since they were unique and not available in any other store in Mumbai. Contemporary Arts and Craft shop in mumbai also displays similar products (Fig. 2.1(b)). Their store manager mentioned that there is a good demand for products made of natural materials like cane, jute, paper, silk etc. He also felt that bamboo products like handbags would be in good demand since very few such products exist.



Fig.2.1(a)
Steel accessories designed and manufactured at Magpie India.



Fig.2.1(b)
Lifestyle accessories available at Contemporary arts and crafts, Mumbai.



Fig.2.1(c)
Bamboo bag available at Fabindia.



Fig.2.1(d)
Leather and fabric sac at Fabindia.



Fig.2.1(e)
Handbag by Hidesign

Fabindia, another popular brand amongst all age groups, is well known for collection of ethnic clothes and unique prints. They have ventured into natural food products and showed interest in starting a handbag range. They do have a bamboo handbag for sale at Rs. 400 which is nothing but a traditional bamboo basket (Fig.2.1(c)). They also have a limited range of bags in jute-leather and fabric with leather.

Recent years have seen the emergence of the '**Hidesign**' brand. The product range consists of high quality leather handbags for formal use and 'salsa' range for younger crowd. The leather is vegetable tanned by traditional methods. Products are priced anywhere between Rs 1500 to 6000 for a regular range and salsa ranger is priced little lower from Rs 900 to 3000 (Fig. 2.1(e)).

Apart from these, there are brands like **Magppie India** (Fig.2.1(a)) and **Art-di-Nox** who are mainly into kitchen accessories in steel, such as salt and pepper shaker, bowls, plates etc. The design and feel of their product is very contemporary and modern. Playing with textures of brushed and smooth steel along with innovative forms, gave new definition to these products.

3. User interviews to know their requirements and opinion about bamboo products.

This part of the analysis consisted of conducting few random user interviews. Users were mainly people who had come to above mentioned shops. It could be summarized as -

- a. Users are looking for something unique and craft based products, being different from other common product, satisfy the criteria.
- b. The office products such as handmade paper notebooks, pen stands, book holder etc are popular as gift items.
- c. Users like handbags in jute or cane since they look elegant and can be worn on Ethnic as well as western attires. They can also be used as party bags for weddings and social gathering, if they have a

very good finish.

d. Users also expressed that ‘not many products are available in bamboo but users would love to buy baskets if they were available.’

After considering all the aspects, I reached a conclusion that the bamboo handbag would be the most appropriate product for the current market.

a. They do have great potential since there is a demand and currently they are not available in the market.

b. Also the shelf life of the handbags is less compared to other products which demands constant design input.

c. Combining it with classic material like leather would definitely enhance the product value. The richness of bamboo, together with leather would be an interesting combination.

d. The beauty of weaves in bamboo along with natural dyes developed at IDC would definitely be unique, where the handbag market is saturated with denim, leather and synthetic materials.

e. Research at IDC in chemical treatments for bamboo to prevent fungus attack is at our rescue for positioning the bamboo with leather handbag at a high price catering to a niche market.

The next stage was to understand market segmentation with respect to handbags. Also find out the targeted users and occasions of use.

Types of bags

Way/ pattern of use : how it is used

Handheld



Held in palm



Held at elbow



Held in hand



Shoulder hung



Small



Medium



Large



Sling



2.2 Handbag for whom ?

In order to delineate the user group and context of use, data collection was done in three broad areas which include

A. Types of bags and their relation with the user and his environment. The type of bag to be used is governed by many factors which include (a) the purpose or occasion of use, (b) the attire with which it is to be used since handbag is a fashion accessory and (c) personal choices, liking and fashion trends followed by the user.

B. Current market trend and Fashion trend
What is selling in the market and what type of bags people like and prefer, what are the deciding factors for decision making was an interesting study.

C. Designer brands in handbags : in India and in Europe: their latest collection. Since it is a fashion accessory, collection exhibited by various designers in the latest Lakme India Fashion Week was studied to understand the trend forecast. This is important since the product should be in sync to the happenings in the fashion world. It was also interesting to study the extent of adoption of those fashion accessories by the real users.

Classification of bag can be done based on three factors. Though these are dealt separately here, they have lot of overlaps into each other. For the ease of classification, they are classified considering only one factor at a time.

(a) way or pattern of use : this consists of how the bag is held and used. Hence it could be either hand held or shoulder hung, depending on the size of bag. Chart shown in Fig. Explains this further.

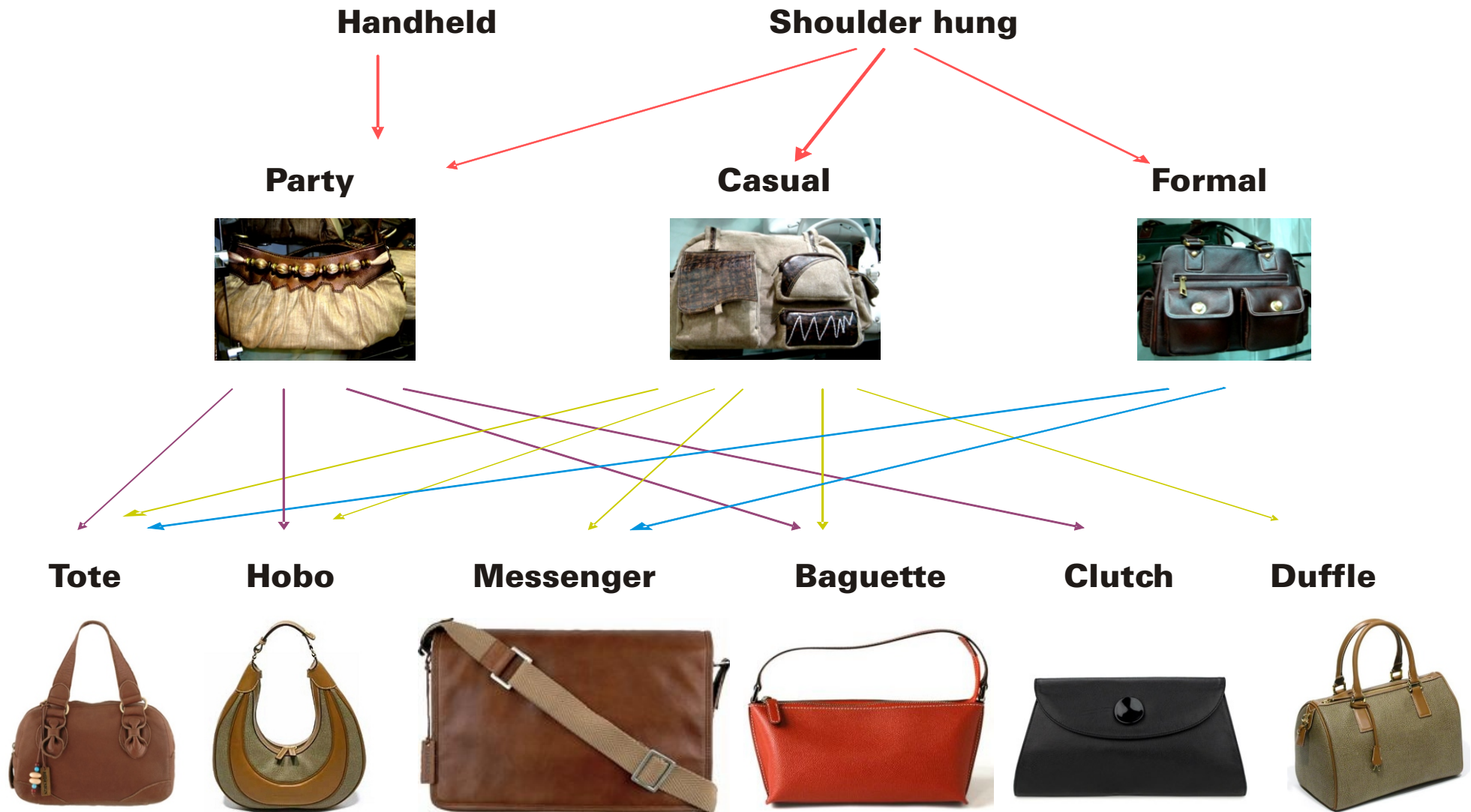
In handheld, there are three sub divisions - held in palm (if it is of smaller size and is usually used for party purpose), held at elbow

Level (the handle is small and bag is of medium size and light weight), held in hand/palm (if the bag is heavy with short handles) The shoulder hung bags could be further divided into four sub divisions - Small (bags with smaller handles and bag sits close to the shoulder), Medium (these are with little longer belts and commonly used as formal bags), Larger (these are wider and bigger bags which are of casual nature), fourth and last category is of Sling bags (have long handle, usually college bags with sporty look).

(b) Occasion of use : type of bag differ according to the context of its use. They can be divided as 'Party bags' (used for social functions, parties, weddings etc) 'Casual bags' (used for casual outing, shopping, visiting friends etc) and 'Formal bags' (these are mainly office bags used for taking to work)

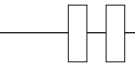
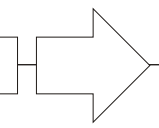



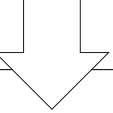
(c) Form and Aesthetic : bags could be named as per their formal structuring and attributes. The form and shape of bag along with appearance of various formal elements decide the type of bag. These include 'Totes' (An open-top bag with straps or handles.), 'Hobo' (A crescent-shaped shoulder bag.), 'Messenger' (A large, soft shoulder bag with long straps - often worn across the body), 'Baguette' (Long, small, narrow bag with a shoulder strap, carried under the arm), 'Clutch' (A small, handheld bag - frequently used for evening wear) and 'Duffle' (Tall shoulder bag, often with a wider opening on top).

Types of bags



The data obtained from this classification was tabulated, considering various factors such as - sub types, environment of use, contents kept, material used, characteristics, user study etc. This helped in analyzing the data for finding potential area of designing bamboo bags as well as gaps in the market could be tapped by this new product to come.

The data was compiled in the following format, attached in annexure, for reference.

| Types of bags | Sub type | Environment of use | Contents | Material used | Characteristics | User feedback/observation | Sizes | Price range |
|---------------|---|---|----------|---------------|-----------------|---------------------------|-------|-------------|
| |  |  | | | | | | |
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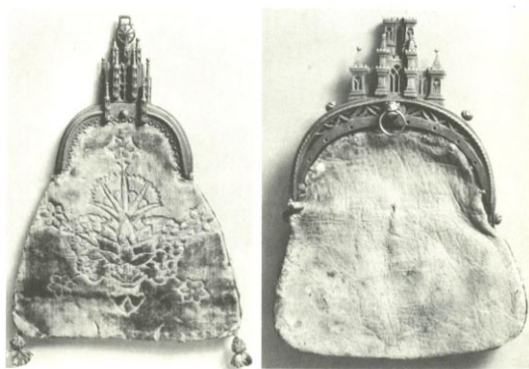
This helped in understanding areas of Possibilities where advantages offered by bamboo and leather could be fully utilized. This was followed by user interviews and product brief.



A mid-14th century French purse on display at the Cloisters in New York. This purse was constructed out of linen and embroidered in polychrome silks and metallic threads.



Late-14th century pouch in London. This pouch is made of half-silk velvet with a tablet woven edge.



This is 15th century French purse made up of leather with decorative iron clasp

2.3 A Brief history of bags

Bag has been ladies' loved possession and passion. It would be interesting to know how the need for the bag arose and how the development in terms of use, need and material has happened till now.

Need to carry a range of items while moving around the houses and while traveling away from house was the reason for development of a personalized container or carrier for women and men too.

An early form of bag or wallet was the drawstring leather pouch to carry coins, and which was looped through men's belts for safety. The design was quite simple - a circular cloth pulled together near the periphery, stitched for making provision of drawstring. This was prevalent from 12th to 16th century.

From 16th century onward, there were 'sweet bags' for ladies which were made up of variety of available herbs like lavender to scent their handkerchief. Men usually carried metal cases for their important documents. Tobacco pouches came into existence in 17th century. People preferred carrying personal bags on a long journey since more precious and intimate items were carried in personal bag. Another interesting development was appearance of pockets on the dresses for carrying personal belongings. These pockets were usually called as '**bagges**'. By 18th century, the ladies' side pockets had proved very useful and had increased in sizeso they were often separated and attached to a band tied to waist. These were nothing but bags below the skirt and not a visible accessory.

In late 18th century and early 19th century, the dressing of ladies' was changing and appearance of pockets in the skirt was hampering the dress fashion. So they use to carry small , drawstring pouch called '**reticules**'. These could carry a



Byzantine relic pouch from the 16th or 18th century. It is made from a single linen-lined piece of cloth, and has seams on two sides. These are concealed by a narrow gold tablet woven border



This collection of 14th century German reliquaries gives one an idea of how varied the simple drawstring, rectangular purse with tassels could be.

handkerchief, fan and dance card, a scent bottle, some face powder. They were traditionally of some lightweight fabric such as pale coloured silk satin, prettily embroidered, or knitted silk.

In the 18th century, an extraordinary variety of bag appeared (as seen in the image). They were in fabrics which matched or co-ordinated with different outfits, and which suited different fashionable styles of dress. They were embellished with different types of needlework and knitting skills. Small knitted, netted or crocheted silk or cotton coin purses are also characteristic of this period and were known as stocking purses, or 'miser' purses. There were specialized bags for different occasions like opera bag which is to be taken while going for an opera.

The term '**handbag**' first came into use in the early 1900's and generally referred to hand-held luggage bags usually carried by men. These were an inspiration for new bags that became popularized for women, including handbags with complicated fasteners, internal compartments, and locks. Metal frames, zips, leather, and mirrors were in short supply so manufacturers used plastic and wood.

The 50's saw the rise of important designer houses including **Chanel, Louis Vuitton, and Hermes** and the 60's saw the breakdown of old notions of the classical and the rise of youth culture. Shoulder bags were introduced during the Second World War. For most women, from the 1950s to the 1990s the shoulder bag rested on one side of the shoulder only and not across the shoulder. But in 21st century, there were attempts to introduce diagonal strap. This was mainly because the contents of the bag were increasing slowly. A mobile phone, heavy loose change, other things like glass cases, pens, makeup bags, mirrors, etc.

The contents of a handbag or purse at any given time depends upon the preoccupations and interests of its owner, and of the age

in which they lived. In terms of function, the bag or purse need only ever be of sufficient size and strength to bear its contents. But inevitably the bag have become much more valuable and necessary than that . They are one of the highly decorated and precious accessory for woman.

2.4 Image Board

The image board here shows some of the handbags by renowned designers brands like **Louis Vuitton**, **Hermes**, **Gucci**, **Dior**, **Judith Leiber**.



HERMÈS' KELLY



JUDITH LEIBER



FENDI



LOUIS VUITTON



GUCCI



DIOR

2.4 Image Board

The image board here shows some of the handbags in bamboo, available internationally. Thailand based company **Lalida** manufactures some of the finest quality bamboo handbags.



LALIDA



LALIDA



LALIDA



LALIDA



LALIDA



2.4 Image Board

The image board here shows some of the handbags in bamboo which are designed in different parts of India, including IDC- Mumbai and craftsman in Assam, Nagaland etc.



Traditional 2x2 weave basket converted to be used as bag. The rim detail is interesting



The container has two layers at the base used in inverted fashion to raise the height of the inner space



Bamboo beads are used along with plastic beads.



Straight woven flat mat is used. Developed at IDC



Two baskets are joined to be used as a handbag. A rim is added which incorporates the handle at the top



2.4 Image Board

The image board here shows some of the handbags in other natural materials like 'Shital Patti' and 'Grass'. The handbag in Shital patti and leather is designed and manufactures at Guwahati and sold at Rs. 600/-



**Shital patti mat and
Leather combination**



**Shital patti
mat and cloth
combination**



**Woven
using
grass**

3.0 MATERIAL STUDY





Fig. 3.1(a)
Baskets from Japan



Fig.3.1(b)
Baskets from Assam, India

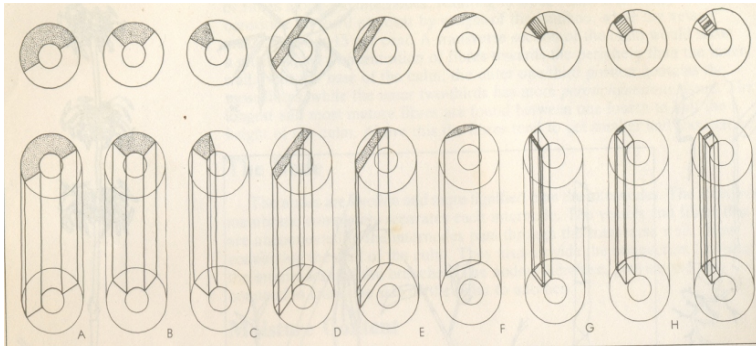
3.1 BAMBOO

Bamboo has always fascinated designers as well as artists throughout the world. It is the fastest growing biomass and an eco friendly material, which is why it is drawing attention of many ecologists and designers today.

This tropical and sub-tropical perennial grass is increasingly being recognized in the modern world as a substitute for plastics, steel and cement in new applications for housing, furniture construction. People are trying to find newer and newer applications of bamboo. Bamboo has reached in the world of design, fashion and fabrication and is being rated very high as a viable material. In Northeast part of India, it has been used with utmost innovation by replacement for wood as a structural material. Tribal and hill communities not only for interiors and accessories, but for basic architectural construction such as houses, bridges, stilts, doors, windows, partitions and irrigation equipment too. Apart from this, everyday utility items such as baskets, furniture, fishing rods, hats, walking sticks and storage bins are crafted using this wonder material. In other parts of India, bamboo is mainly used for scaffolding and paper industry. Figure 3.1(b) shows Bamboo basket from Assam. It has always been a part of life and culture in various Asian countries like Japan, China and Northeast part of India. In Japan, successful efforts have been made to industrialize this craft based tradition of bamboo products. Figure 3.1(a) shows a Basket from Japan

In countries like China, Japan, Malaysia, Thailand, Bamboo craft is one of the cherished traditions and well respected craft. Baskets, containers, furniture have been extensively made and used for various day to day activities as well as rituals

Bamboo has a natural habitat in most of the regions in India. There are over hundred identified species of bamboo in India and has meeting variety of user needs.



Sketch showing various cross sections of bamboo culm which different applications for different products.

Bamboo properties

Bamboo can be used in whole or in split form. The properties of lengthwise split of bamboo depends upon the portion of culm from which they have been cut. Unfortunately, there has not been any elaborate research done to record the properties of bamboo in India.

The anatomy of bamboo is mainly responsible for its characteristics. The strength of bamboo varies with the species, age of culm, the moisture content and the portion of the culm used and it generally increases till it reaches maturity.

It has high tensile strength measured parallel to the grain. Bamboo fails in shear before tension and hence modulus of rupture is used to calculate strength. The basal portion of culm has a high modulus of rupture due to its greater wall thickness.

Due to the weak transverse bonds between the bamboo fibers, it can be split easily along the length. The splits may be radial or tangential. The outer tangential splits are stronger than the inner ones due to densely packed fibers in the periphery.

Bamboo treatments

Bamboo has advantages as well as disadvantages, while using it for products. Though it is strong, highly tensile, fast growing and easy to work with, it offers certain disadvantages also. Due to high moisture and sugar content, it is susceptible to insects and fungal attack. Hence, it is important to treat bamboo well before use to prevent decay. Drying is one of the natural processes for preservation. It could be air dried or kiln dried. In IDC, IIT Bombay, extensive research has been done in this area by Dr. Krishna Lala and Prof. A. G. Rao. A chemical treatment manual has been compiled and is very effective. The treatment can be done using either of the two chemicals - Alum or Borax/Boric Acid as per specification in the manuals.



Fig. 3.2 (a)
Leather shop selling hides to customer at Dharavi, mumbai



Fig. 3.2 (b)
Storage of hides



Fig. 3.2 (c)
Storage of hides

3.2 LEATHER

Leather is an animal skin that has been converted by chemical or other processes - known as tanning- into a useful condition. Tanning preserves the skin and protects it against extremes of temperature and humidity. Many kinds of leather will remain undamaged even by boiling water. It is an excellent and classic design material since it resists tears and punctures. It is somewhat elastic or stiff, depending on the type of tanning. It keeps one cool in summer and warm in winter because of its ability to 'breathe'.

About 30,000 years ago, cro-Magnon man discovered that hide of dead animal was splendid for keeping himself warm. Natural oil from man's body rubbed off the skin, producing the first crude tanning. It was a commonly used material by Egyptians for their garments, home furnishings, tents, weapon carriers as well as body covering. Thousand years ago, Egyptian women valued and prized leather for fashion as much as woman today!! In India, this age old tradition of leather craft goes back to Indus valley civilization. Ancient sages and ascetics used deerskins for making clothes as well as for meditation.

Leather could be obtained from any animal skin which includes **Cowhide, Goatskin, Sheep, Rabbit, Elephant, Snake, Kangaroo, Crocodile, Ostrich, etc.** Since it is a live material like bamboo, no two skins be exactly alike - the colour, grain and texture vary according to the way that animal have lived his life. The beauty of material lies in the fact that every piece is unique in itself. Leather is used for various application including clothes, jackets, handbags, wallets, belts, decoration etc.

India is the third largest leather producer in the world after China and Italy. In India, the leather industry occupies a prominent place in the economy with respect to its potential for employment,

growth and export. Major production centres of Leather and Leather Products in India as per information obtained from Council for Leather Exports, India are as follows:(important centres could be seen in bold letters)

Southern Region

Tamilnadu - **Chennai**, Pondicherry, Ranipet, Trichy and Dindigul

Andra Pradesh - Hyderabad

Karnataka - Bangalore

Norther Region

Punjab - **Jalandhar**

Delhi - **Delhi**

Eastern Region

West Bengal - **Kolkata** (Shantiniketan)

Central Region

Uttar Pradesh - **Kanpur** and Agra

Western Resion

Maharashtra - **Mumbai** (Dharavi)

Tanning

Tanning leather is an important process which makes the skin soft and resilient,flexible but strong and able to withstand considerable decay and spoilage. Tanning process consists of several stages which could be explained as follows:

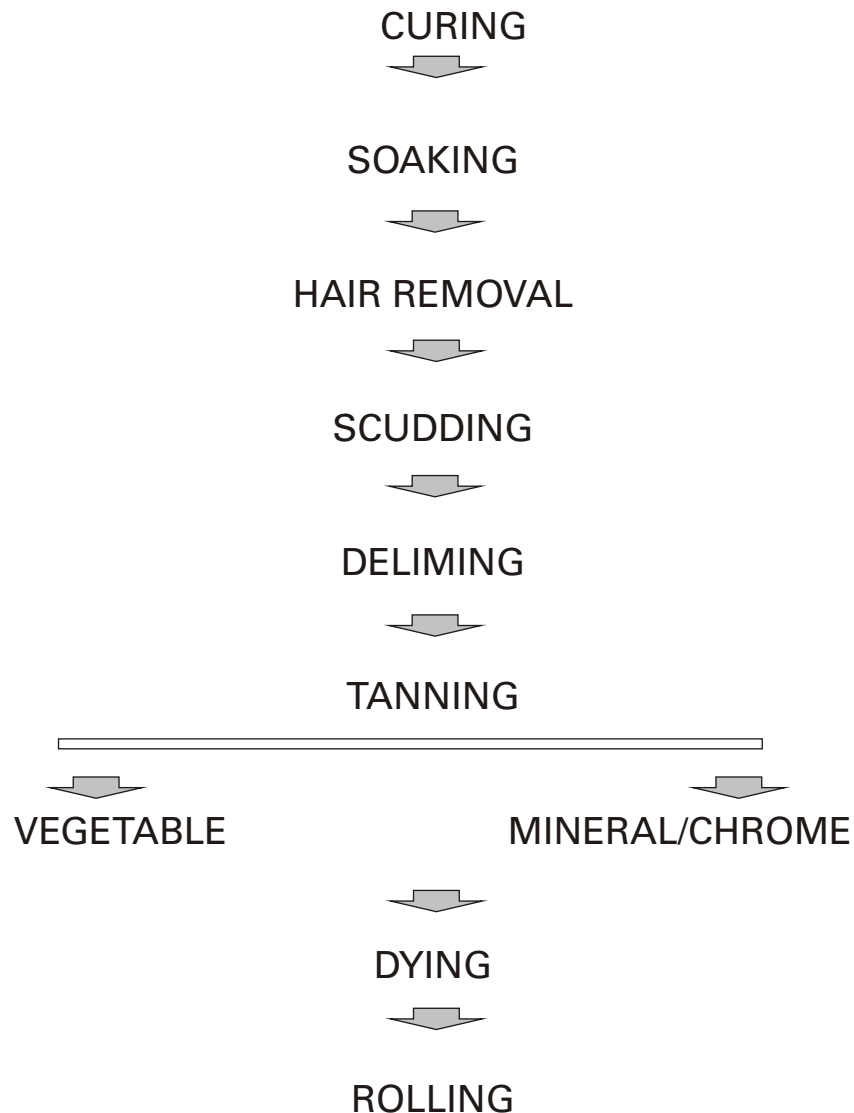
Stages of tanning

Raw animal skins go through several steps during the tanning process. Depending on the type of hide used and the desired end-product, the steps taken during tanning can vary greatly.

Curing

Animal skins or hides are first "cured," or it will begin to decompose. This process involves salting and/or drying the hide once it's been stripped from the animal. Because this step needs to

TANNING PROCESS



be performed almost immediately upon removal from the animal, it often takes place inside the meat-packing industry or at a nearby factory. Hides can be cured in one of two ways:

Wet-Salting is done by salting the hide and then piling many skins together until they form a moist bunch. They are then left to cure for one month, so that the salt can completely be absorbed into the skin.

Brine-curing is more common than wet-salting, as it's considered a faster, easier method. During brine curing, hides are positioned carefully in vats and smothered with a mixture of salt and disinfectant. After 10-16 hours, the skins are completely cured and ready to move on to the next stage.

Soaking

Once the hides have been cured, they are then soaked in water for several hours to several days. The water helps to rid the skin of salt, dirt, debris, blood and excess animal fats.

Flesh removal (also known as fleshing)

After soaking, animal hides are moved through a machine which strips the flesh from the surface of the hide.

Hair removal

The hides are then transported to a large vat, where they are immersed in a mixture of lime and water, which loosens the hair from the skin. After a 1-10 day soak, the hair is mechanically removed from the hide.

Scudding

Stray hairs and fat which were missed by machine, are removed from the hide with a plastic tool or dull knife in a process known as "scudding." Scudding is done by hand.

Deliming

After the hair and debris has been cleaned from the skin, hides are delimed in a vat of acid. After the lime has been pulled from the skin, hides are treated with enzymes, which smooth the grain of the leather and help to make the resulting product soft and flexible.

Tanning

Hides and skins are often treated several times during the process of tanning. Which type of tanning procedure is used, depends largely on the hide itself and the resulting product intended.

Vegetable tanning : Hides which have been tanned with a vegetable tanning agent solution produce flexible, but stiff leathers, such as those used in luggage, furniture, leashes, belts, hats, and harnesses. Vegetable tanning consists of stringing hides on large frames, located inside large vats, and exposing them to tannin, a natural product found in the bark, wood, leaves and fruits of chestnut, oak and hemlock trees. Hides are transferred to many different bins during this step, each containing a stronger solution of tannin. Vegetable tanning prevents the skin from decay and shrinkage.

Mineral tanning or chrome tanning : This is the most widely used method for tanning today. Mineral or chrome tanning is performed on skins which will be used for softer, stretchier leathers, such as those found in purses, bags, briefcases, shoes, gloves, boots, jackets, pants, and sandals.

Hides which are tanned with minerals are pickled first in an acid and salt mixture. From there, hides are soaked into a chromium-sulfate solution. This process is much faster than vegetable tanning, and is usually a 1-day project.

Dyeing process

Depending on the desired product, the hides then go through a dyeing process, which also involves adding moisture back into the skin. Hides which have been vegetable tanned are bleached and then soaked with oils, soaps, greases and waxes to make them



Fig.3.2(d)
Manufacturing unit of
Mr Mansoor Bhai at
Dharavi, Mumbai



Fig.3.2(e)
Manufacturing of one part
of the bag



Fig.3.2(f)
Manufacturing of each
component of the bag.

more pliable.

Rolling

Rolling leather running the skins through a machine, which works to firm the leather to make it stronger.

After the rolling process has finished, leathers are stretched, where they dry out in a heat controlled room.

Finishing compound

The final step in the tanning process involves finishing the skin.

This is done by covering the grain surface with a chemical compound and then brushing it. Light leathers are buffed and sandpapered to cover imperfections. Leathers which are buffed for long periods of time become suede.

Waxes, pigments, dyes, glazes, oils, waxes and other solutions are also added to make the leather more appealing to the buyer.

Most leather varies in thickness. A leather splitting machine splits the leather in different layers, each is used for different purpose. A suede split is nothing but underside layer of a cowhide.

Leather industry in Dharavi, Mumbai.

Dharavi constitute major leather industrial area in Mumbai. Located on Sion-Bandra Link road, Dharavi offers various retail outlets for finished leather goods as well as hides and raw material. Wide range of products are available, starting from wallets, belts, handbags to travel bags and coats. Handbags range from Rs 500 upto Rs 3000. A manufacturing unit was visited to understand the manufacturing setup and system of manufacturing. Mr Mansoor bhai, owner of the unit explained their method of working. He owns four small units, each consists of 7-8 workers. Each unit is dedicated to manufacturing one product. The unit which I visited was manufacturing office bags. As seen in images, there were eight workers with linear production.

There were two skilled tailors and six people working on cutting and pasting. The template of the bag was made in cardboard.



Fig.3.2(g)

This template in stiff material like cardboard saved the time of measuring and cutting as well as does not get spoiled like paper template. The template is known as ‘**cutting**’. The bag is divided into components which can be made separately, independent of each other. As we can see in the images, there are six people working on making of these six parts of the bag. This includes 1. Front side panel, 2. Back side panel, 3. The inner pockets lining, 4 the provision of belt, 5. The width panel and 6 the belt cutting. There are two people dedicated to stitching or assembly of these components.



Fig.3.2(h)
Assembly of all the parts:
by stitching th bag inside
out, to hide the seam line.



Fig. 3.2 (i)
Office products
designed in leather and
imitation bamboo
weave in plastic, at
Dharavi Shop.



Fig.3.2(j,k,l)
Handbags
manufactured at other
units of Mr Mansoor
bhai



Fig. 3.2 (m)



Fig.3.2(p)



Fig. 3.2 (n)



Fig.3.2(q)



Fig. 3.2 (o)



Fig.3.2(r)

Visit to Amar Kutir at Shantiniketan, kolkata.

Amar Kutir is well known cottage industry operating in the area of leather craft. Mr Surul Mukhopadhyay, established this industry with focus on rejuvenation of rural cottage and handicrafts. It was interesting to observe how the traditional leather craft is manufactured in a factory setup. Wide range of leather products are made there, such as small purses, wallets, handbags, piggy-banks, file and folders. The strategy for manufacturing was same as observed at Dharavi unit. The product is divided into components and there are people dedicated to making each component. If the components is complex, it is again subdivided into smaller parts. The assembly is done in the end or in between the process, depending upon the complexity and requirement of the product.

A. Cutting the leather (goat hide), procured from Kolkata with the help of a cardboard template cut according to the design of the product. (Fig.3.2 (m, n))

B. Embossing the parts with the desired design punch. (Fig. 3.2 (o)and (p))

C. Colouring the embossed design using alcohol based leather dyes. These dyes come in many colours and are procured from 'Fazalhussain Brothers,44 Armenia Street, Kolkata (Fig. 3.2 (q, r))

D. After colouring, it is sent to different sections according to the product (whether it is a bag, or jewellery box, etc)

If it is a bag, one person - to cut the inner lining material, second person - paste the leather to the lining, third - make the zipper component, fourth person - fix the handle part and fifth person - assembly of the purse....mainly stitching and reversing.



Fig.3.2(s)



Fig.3.2(w)

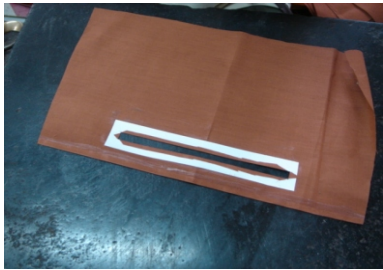


Fig.3.2(t)



Fig.3.2(x)



Fig.3.2(u)



Fig.3.2(y)



Fig.3.2(v)



Fig.3.2(z)

Fig. 3.2 (s) to 3.2 (v) shows various stages in making of a handbag. The cloth is cut according to the template made for the particular design. It is nothing but the development of the three dimensional bag into a two dimensional cloth and it is divided according to the process of assembly. Fig. 3.2(t) shows sticking a paper at the opening where the zipper is positioned. This stiffens the edge which helps in easy opening of the zip. Fig. 3.2(v) shows a stage in assembly process where the opening part of the bag is being stuck to the rest of the bag body. Complete bag is assembled by stitching by inverting the bag, so that when it is again inverted, the seam lines are hidden inside and outside remains clean and finished. Sticking method is used extensively and the adhesive used is Industrial Rubber Solution.

Fig. 3.2(y) and 3.2(x) shows finishing the dyed leather with the help of polishing stone. After using alcohol based leather dyes, the surface becomes matt and loses its shine. Hence polishing is done to impart shiny surface to leather. As seen in the images, a river pebble is used to rub vigorously over the leather, leaving a glossy leather surface. Though it does not look attractive for all the products, every product is polished in this fashion. The matt texture also has a richness and it can be combined with the similar finish in Bamboo. Since the glossy surface is not the inherent quality of leather, it loses its natural look and looks artificial on few occasions.

4.0 USER STUDY



Three types of users were studied between age group of 25 to 40 including working professionals in various fields such as IT industry, Banking, Design field etc.

It was evident that a single user has more than one handbag of different types which she uses for different occasions or with different attires. There is also overlap such that the same bag is used for more than one occasion or attire. This pattern was documented with three users of different professions along with the identification of their personas expressing their choices and likings as well as environment in which they operate.

User I : Ms Anuradha Ramkrishna : Age 30: software professional
Wardrobe consists of : Ethnic/traditional, Contemporary/ Indo-western and Western.

Shops for handbag every 3-4 months and spends rupees 800-1500 for a handbag.

Decisions are liking driven and not very keen follower of fashion or trend.

Well traveled across the world and required to attend business meetings and conferences.

Does not like handbags with more than three compartments since it is difficult to find things..

Elegant looking, self standing handbag in brown, beige or black since these colours show richness of leather.

She could not find elegant handbag for social functions like weddings etc since all the bags available are very loud in terms of their look.

Shopping

**Socializing : visiting
relatives/ friends**



**Ms Anuradha Ramkrishna
Age : 35 years**

Business meetings

Work

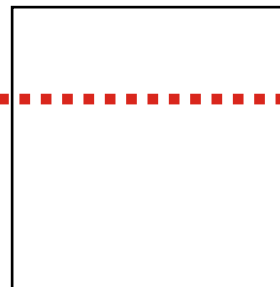


Evening parties

**Going out for dinner with
family/ friends**



Social functions/weddings



User II : Ms Anushka Bhatnagar : Age 28 : Graphic Designer :

Wardrobe consists of : Ethnic/traditional, Contemporary/ Indo-western and Western.

Shops for handbag every 2-3 months and spends rupees 500 - 1500 for a handbag.

Mobile should be easily removable since it keeps ringing and could not be located easily.

Want to carry A4 papers, pencil and stationary for formal meetings
Cosmetic pouch consists of - comb and lipstick, tissue papers + money wallet.

Does not like soft base since things cannot be easily found in such bags.

Likes vertical / tall and large tote handbags.

It should be decent looking, different and should 'look like designer's bag.'

It should be rain and sweat proof.

Has bought a handbag in 'bamboo looking' (as told by her) natural material on the Singapore airport for Rs 800/- which she uses extensively to meet friends, socializing etc.(this could be seen in the image on the next page).

Shopping



Work / formal meetings



**Ms Anushka
Bhatnagar
Age : 29 years**



Parties



Social functions/ weddings



Socializing : visiting relatives/ friends



User III : Ms Madhavi Sane : Age 36 : Banker

Wardrobe consists of : Ethnic/traditional.

Shops for handbag every 4-5 months and spends rupees 500 - 1000 for a handbag.

Likes handbags in natural material such as leather, cotton or jute.

Feels sorry that these are no party handbags available in decent colours and she does not like 'jazzy' party bags available in market.

Wants a compartment for mobile outside since it takes long time to remove it from inside.

Carries a Tiffin, 200ml water bottle, wallet, mobile, comb and small towel in office handbag.

Likes handbags that are stiff and does not loose their shape.

Earth shades are favorite since they look good on all colours and 'suits my age'.

Shopping/going out



Work / formal meetings



Mrs Madhavi Sane
Age : 40 years

**Socializing : visiting
relatives/ friends**



**Social functions/
weddings**



Informal talking to various ladies about their handbags also helped in supplementing the user study, following conclusions could be drawn from talking to users and it could be summarized as follows:

- a. Non- availability of bags for social gathering, wedding or parties for working professionals in older age group : 35 -45
This age group demands party bags which are elegant , non-glittery but still looks rich along with the ethnic attire
(gap in the market : available products consists of glass or acrylic crystals and shining, glittering embellishments : price starts at 500 till 3000/-)
- b. Young age group (25-35) working in design profession demands handbags that are bold and different in terms of colours or use of materials.
Such professionals wants their accessories to express about their creative profession. 'It creates an impact while meeting with the client'...says one of the user.
- c. This profession does not have rigid rules of formal/informal ...hence good scope for experimentation and creative design.
- d. Such professionals like to use of bags in natural materials like jute, cane available in stores.
(vast difference in terms of products availability : roadside markets of Linkning road/ Colaba (250 -500/-) or in lifestyle stores such as Bombay Store or Culture shop (800/- onwardsbut variety is very less)
- e. Ladies, who are exposed to global influences, but possess a strong sense of tradition, culture and family always want handbag to express their preferences. They prefer using handbags in natural materials like jute, cane, bamboo etc which are kind of blend of ethnic and western style.

- f. Fashion professionals: combining ethnic with western. Normal dressing is also a blend of Indian sensitivity with western cuts and it demands that accessories to speak the similar language. **(bamboo, leather along with rich traditional textiles and laces there is possibility of interesting designs since such products are not available here, except for bags imported by Bombay Stores from Thailand and priced at 800/-)**

Hence there is possibility of designing handbag for two types of users and functions:

1. For ladies who does not want to use the glittering and shimmering party bags available in the market and demand for more subtler and elegant party handbags.
2. For ladies working in design profession who are ready to experiment with new materials and want their handbag to speak about their creative profession.

The first type of user segment is huge compared to the second type of users. The market study was done for the party bags to understand what type of design strategies are used to design a party bag. **ESBEDA** is a well known brand in Mumbai that sells mainly party bags. Also **BAGGIT** by Nena Lekhi is one of the fastest growing design brand in India, which mainly focuses young users and casual bags.

5.0 MARKET STUDY : PARTY BAGS





Case Study of Brand : **ESBEDA** : In touch : cost 1000-3000/-

The design characteristics of Party Bags could be analysed as follows

a. Absence of single, plain surfaceit is broken in fragments with the help of various elements.

b. Fine and intricate elements like crystals, pearls, sequin etc are used which attract attention because of its fine workmanship (which is achievable in bamboo weaves)

c. Use of bright colours like magenta, yellow, blue which catches attention. In party, people want to flaunt their bags and they are to be noticed by others, which is achieved by using pure colours. Also, the ethnic attire like sarees etc are usually in bright coloured silk.

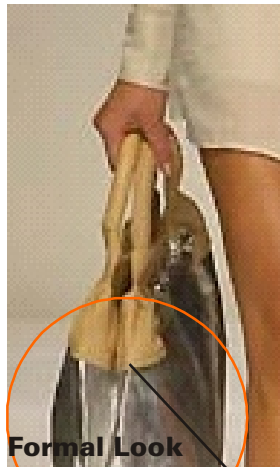
d. Interview with Mr Kapil, owner of ESBEDA, revealed their marketing method. He explained that they produce only 200 bags of any new design initially and if that design is sold and people like it, they manufacture more numbers, depending on the demand. "Speculating what will sell and what will not in handbag business is impossible to tell , even though I am in this business since past 40 years"....explains Mr. Kapil.

e. The interview also brought to my notice that people who do not prefer these type of highly decorative bags, use good leather bags for attending weddings and social parties.

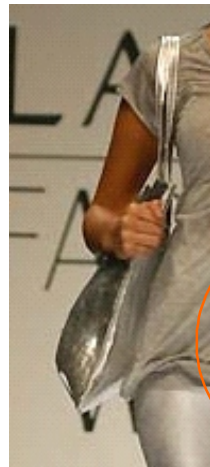
6.0 TREND STUDY



The Lakme India Fashion Week 2006, which was held in Mumbai was reviewed to understand the trend forecast for Spring-Summer 2007. This was supported by the market study, to understand how much is actually been absorbed by people. The similarities between what is displayed by the fashion designer and what is been used by people and what is been absorbed in the market.



Formal Look



Quilted surface

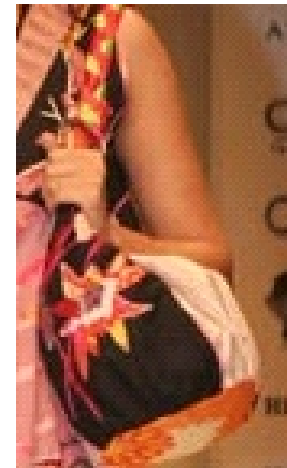
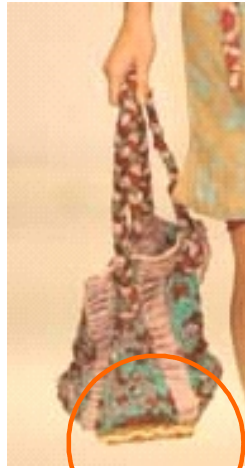
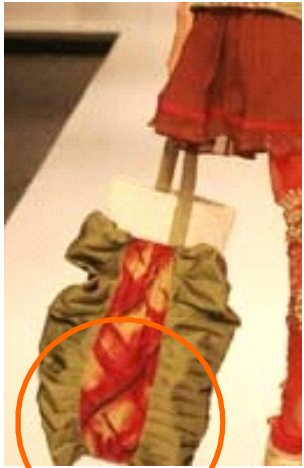


Lakme
India
Fashion
Week
Collection

Large totes in metallic colours such as dull silver and gold



Available in
stores in
Mumbai



Lakme
India
Fashion
Week
Collection



Woven base combined with fabric : gives very informal look



Available in
stores in
Mumbai



Lakme
India
Fashion
Week
Collection



Available in
stores in
Mumbai

7.0 PRODUCT BRIEF



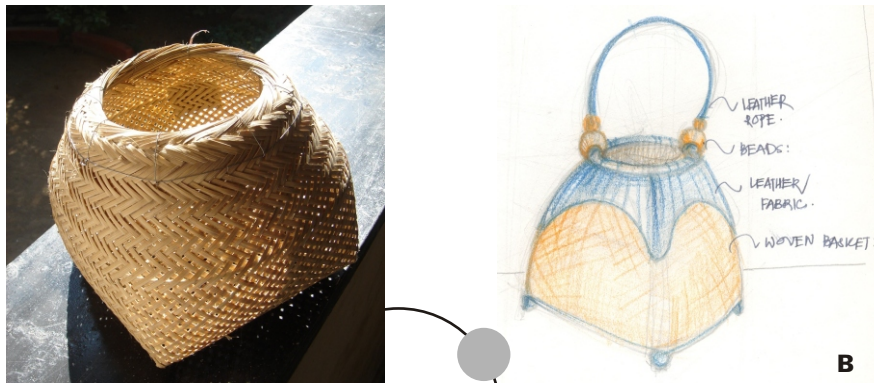
The main objective of the project is to develop a lifestyle accessory
- a handbag

The product will have following features-

- a.** The material used would be mainly Bamboo and natural Leather.
- b.** The bamboo would be used in the woven form.
- c.** The leather would be Cow or Goat hide, prepared using vegetable tanning.
- d.** Use of Cane or metal for fixtures and joinery, if required.
- e.** The target audience would be ladies with age group of 25 to 40
- f.** The bag is focused as a party bag, which would be used for various social functions, get together or weddings etc considering the ethnic attire of the user.
- g.** The price range of the handbag would be in the bracket of 1500 to 2000/-

8.0 IDEATION AND CONCEPT GENERATION





Bamboo can be used in various forms which include strips, cross sections, full bamboo or partly cut bamboo. Leather being very versatile material, it can be used as soft and undefined form or stiff and defined form. Various ideas were generated without focusing on the proposed use of it as a party bag so as to churn out ideas without constraints in the initial phase. Three approaches were adopted for this idea generation.

- a. Using bamboo in a completely woven form like baskets and leather as a soft component for joinery.

As seen in the Fig. 8.1- A, B and C, the basket form shown in the picture was taken as a generic model. Variations in form and use of leather was explored.

Fig. 8.2 shows use of basket form along with the stiff and supple leather which is wrapped around it, pinching it at a point and inserting bamboo cross-section in the pinched area.

Fig. 8.3 and 8.4 are variations where there could be possibility of using wooden components for handle joint. Inserting beads or pearls in the weave of the basket, seen on the outside of the bag, was another idea.

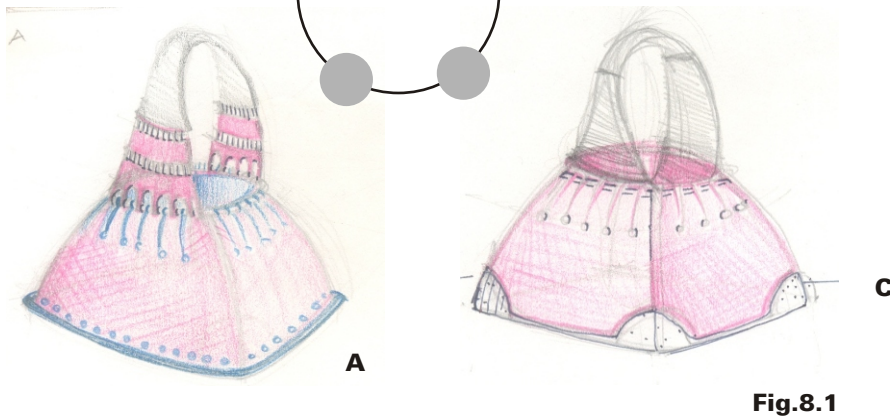


Fig.8.1

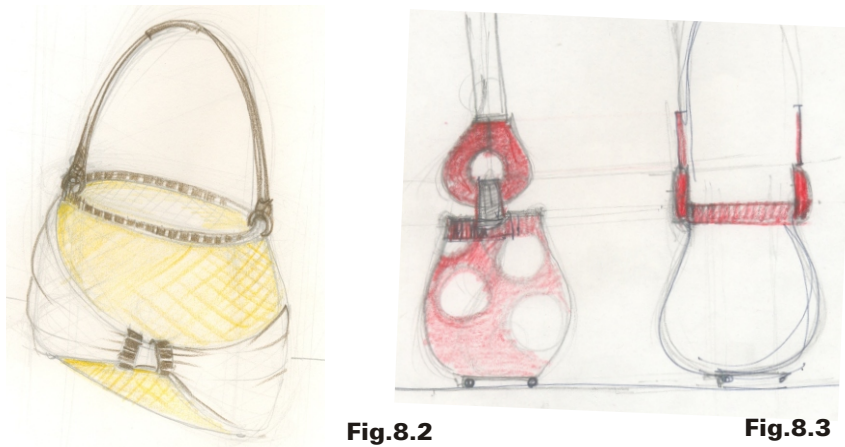


Fig.8.2

Fig.8.3

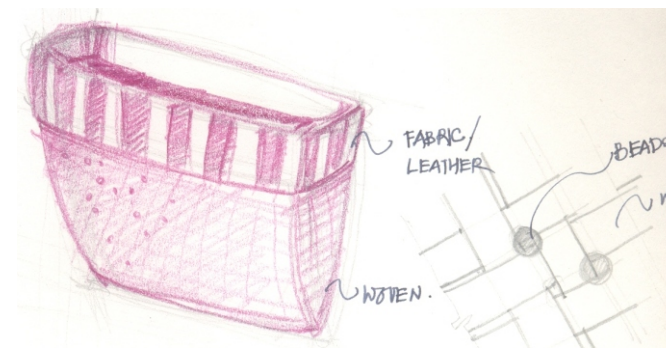


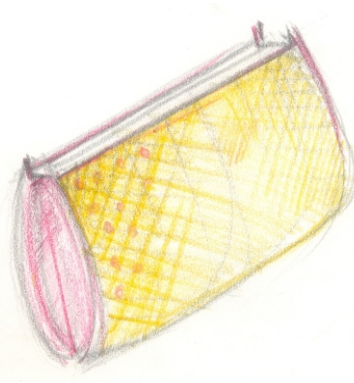
Fig.8.4

b. Using bamboo in a flat woven form like mats and leather as encompassing component.

Fig. 8.5 shows use of the form obtained by traditional 'soop' form (used for cleaning the grains). This soop was procured from a village near Shantiniketan, Kolkata.

In the various ideas, fig. 8.9 shows use of flat mats. Open edges are enclosed with leather, treating them as panels of weaves. Leather rope is used as handle with cane binding at the edges.

Fig. 8.6 and 8.7 shows use of flat mat which consists of combination of flat and round bamboo cross section as shown in image. The traditional 'batuva' or drawstring' purse could be designed using leather and this mat. The mat forms the solid base with leather used for opening and closing purpose



B

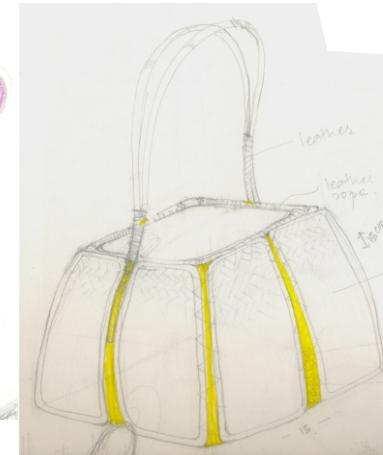


Fig. 8.9

C

Fig.8.5 (A,B,C)

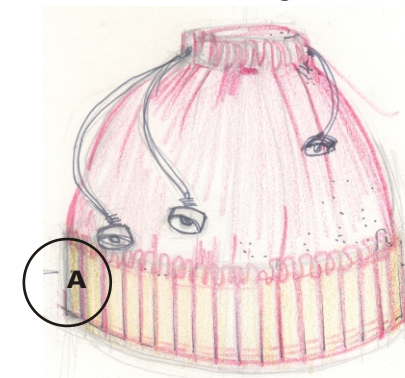


Fig. 8.7



Fig. 8.8

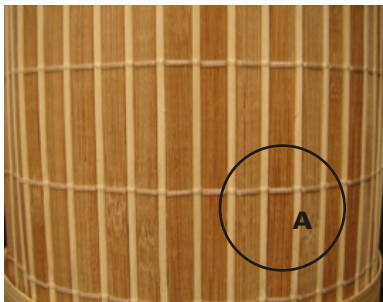


Fig. 8.6

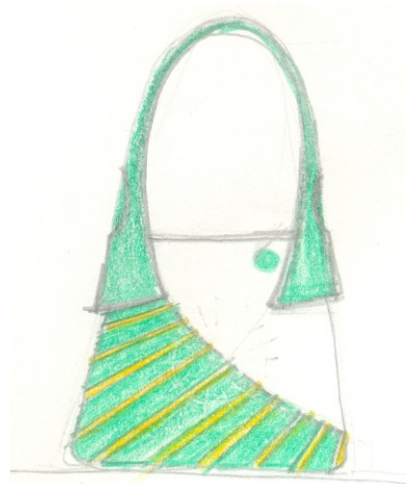


Fig. 8.10



Fig. 8.12

c. Using bamboo as a component to add on to the main leather bag.

Fig. 8.10 shows use of broad bamboo strips alternating with round bamboo sticks to be used along with the leather body with a broad belt.

Fig. 8.12 shows incorporating bamboo cross-section with the leather bag. The circular bamboo section as seen in the front can be tied to stiff leather body with the help of cane.

Fig. 8.11 shows use of two bamboo cross sections integrated to leather bag with the help of leather rope. Also use of flat mat at the edges/rim.

Fig. 8.13 shows use of bamboo rims along with leather body.

Fig. 8.14 and 8.15 shows other explorations where bamboo is used as top and bottom rim. And leather is stitched in between. The bamboo rim is made by using Coil Technique that has been developed at IDC by Prof. A. G. Rao. The pre laminated bamboo rim could be used.



Fig. 8.11



Fig. 8.13



Fig. 8.14

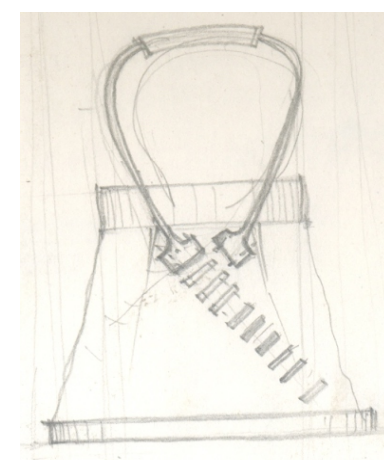


Fig. 8.15



Fig. 8.16

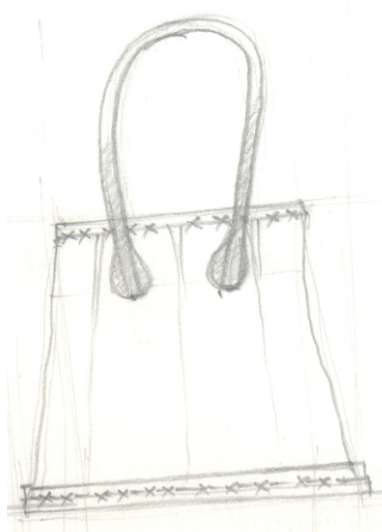


Fig. 8.18

These are some more explorations of the same idea. Fig. 8.16 and 8.17 shows incorporating the edge detail using two bamboo rims. Leather is sandwiched in-between the two rims and tied using traditional cane binding instead of rope or thread. Fig. 8.17, 8.18, 8.19 to 8.21 shows few more variations in terms of form and handle design.

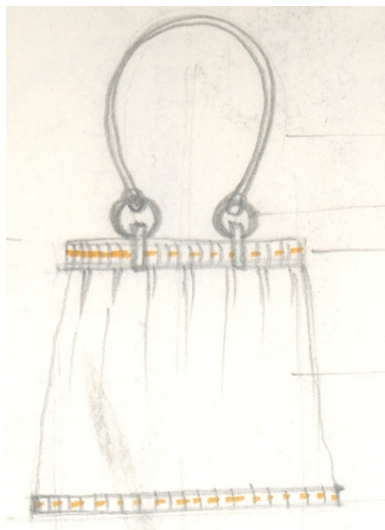


Fig. 8.17



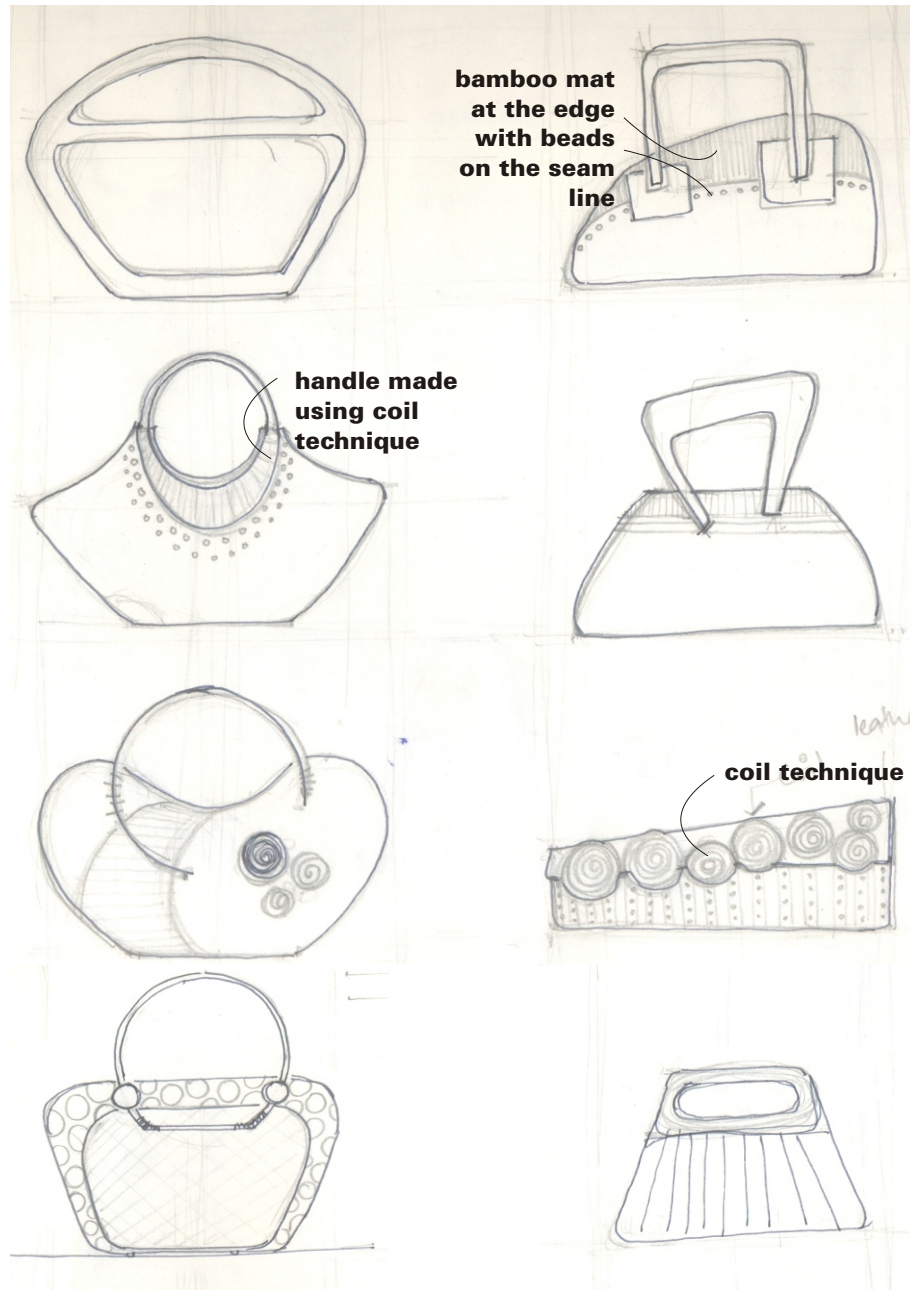
Fig. 8.19



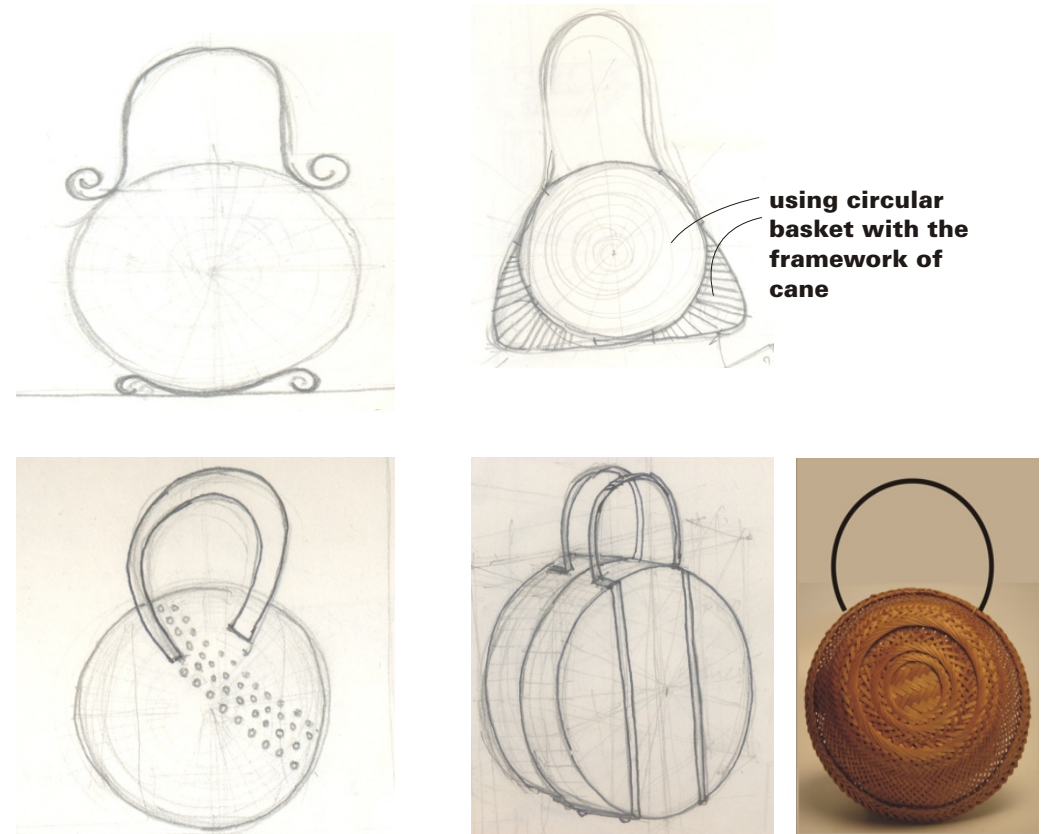
Fig. 8.20



Fig. 8.21



The formal variations in the bag were tried. Various ideas were generated based on the form of the handbag as seen in the adjacent images



9.0 CONCEPT DEVELOPMENT



After reviewing all the ideas and the potential of the ideas, the second approach of ideas was selected for further development. This approach consists of using bamboo in a flat woven form like mats and leather as encompassing and enclosing component. Following are advantages offered by the selected approach :

1. Using bamboo in woven form offered great potential in terms of design possibilities. Since flat mat is a versatile and evolved form of craft, it opened up lot of production possibilities.
2. Flat mats are very easy to make and could be procured easily from an outside agencies like Chaitanya group in Mumbai etc and assembled at the production unit.

In this approach also, two design concepts were developed which consists of :

Concept I : Using woven mat as basket : to contain volume.

Concept II : Using woven mat as completely flat component and combining it with leather to contain volume.

The metaphor of a shell, which was one of the ideas in initial ideation (Ref Fig. 8.5A) was selected for further development. The observations from user study were summarized and the content organization was worked out. This was based on the priorities of use of various things kept in the bag as expressed by the users.

Contents that users carry in a bag while going for wedding, party or social function includes:

Mobile, Pen / Pencil, Small notepad, Home/Car Keys, Money / credit/debit card, Tissues / handkerchief, Lipstick, Lip gloss, Compact powder, Eyeliner, Safety pins / hair clip, Comb, Mirror
This was important and governing factor in deciding the size and form of the bag.

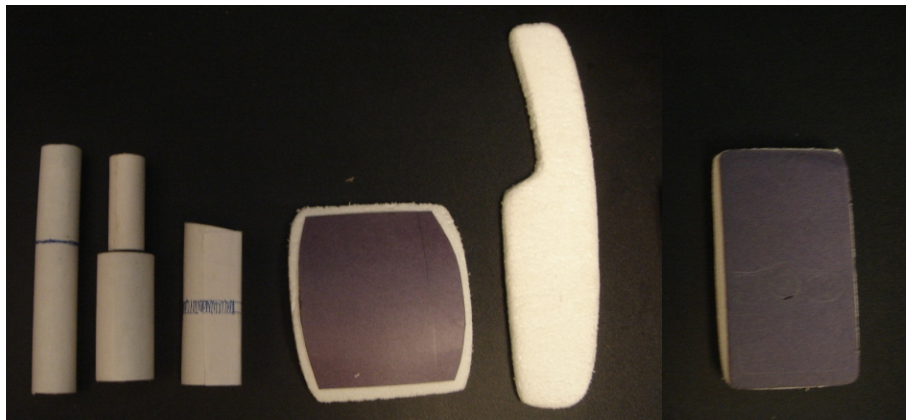


Fig. 9.1

The contents as well as priorities can be listed as follows

Things that people carry in the bag

Priorities according to the use of the contents

Cluster A

- A. Mobile
- b. Pen / Pencil
- c. Small notepad

Should be easily removable and visible

Cluster B

- d. Home/Car Keys
- e. Money / credit/debit cards

Should be most secured and do not want others to see when bag is opened

Cluster C

- F. Tissues / handkerchief
- g. Lipstick
- h. Lip gloss
- I. Compact powder
- j. Eyeliner
- k. Safety pins / hair clip
- l. Comb
- j. Mirror

Do not mind if seen by the people when the bag is opened

Thermocol model simulations (fig.9.1) were made to see the organization of components inside the bag. Content clustering was worked out with the help of the models according to the hierarchy of use and importance.

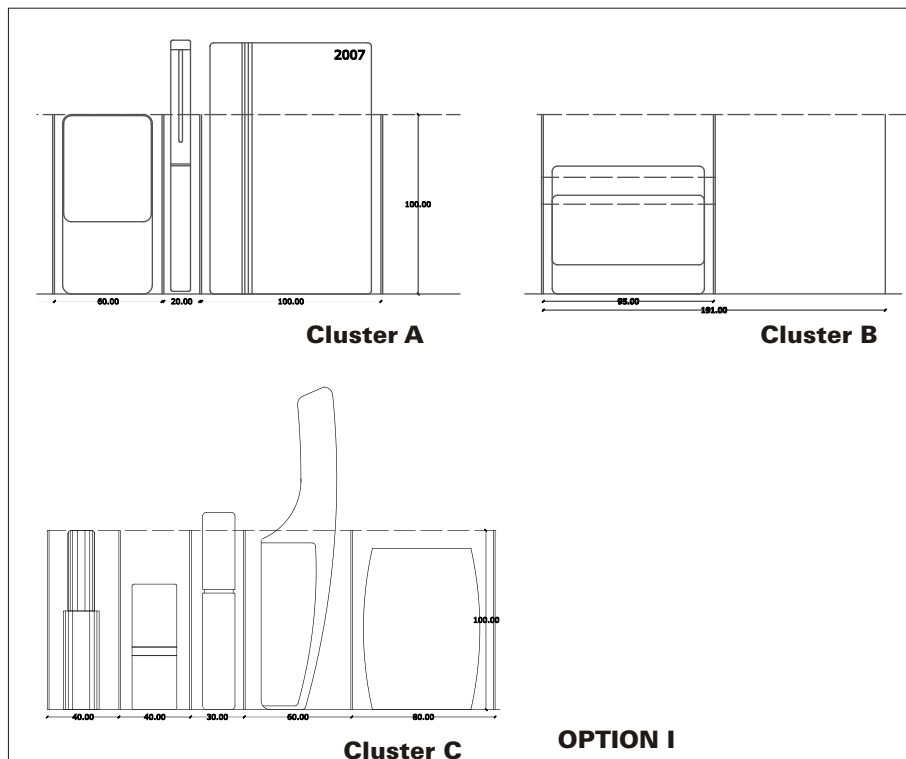


Fig. 9.2

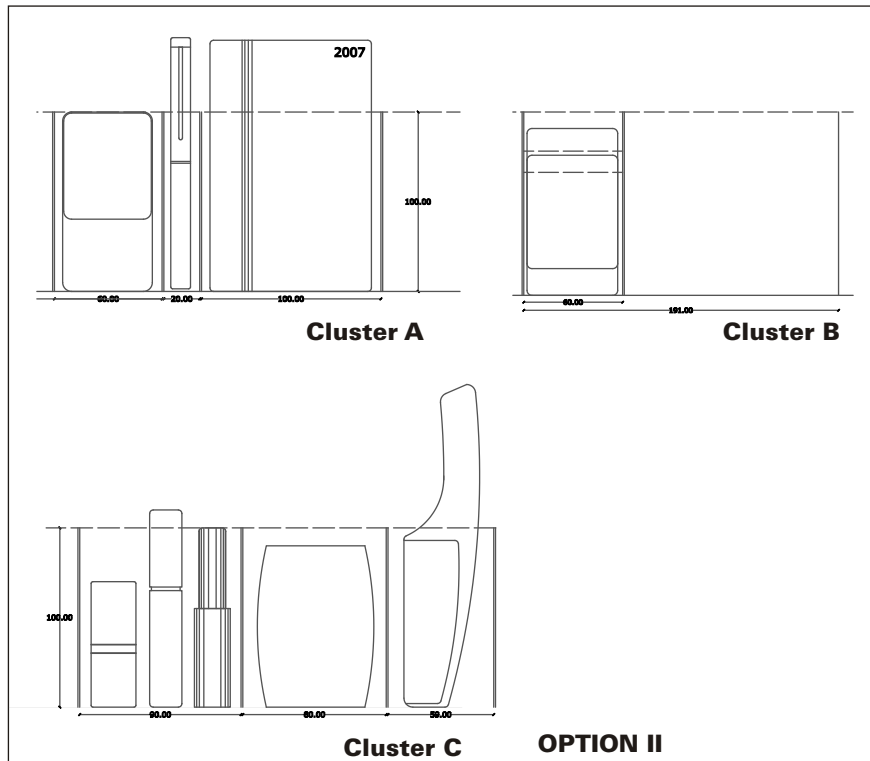


Fig. 9.3

The contents were segregated according to the clusters. The space requirements for all the contents in each cluster was worked out with the help of mock up models. Two options were designed as shown in Fig. 9.2 and 9.3.

Option I

Cluster A : since all the objects in this cluster should be easily removable, a simple three partition system was worked out. Separate compartment for mobile, diary and a pen was provided. The orientation was straight and maximum horizontal distance covered was 18cm.

Cluster B : it was observed that people do not want to carry their regular wallet for going to parties and prefer carrying cash instead. In this option, a horizontal compartment with zipper was provided along with the provision of keeping two credit/debit cards. The orientation of the cards was horizontal and located on the inner side of the zipped compartment.

Cluster C : in this cluster, separate partition was provided for all the cosmetics which include eyeliner, lipstick, lip-gloss, compact and comb. This would help user in organizing their cosmetics so that they could be easily found.

Option II

Cluster A : this was the same design as explained in first option.

Cluster B : in this options, the orientation of Credit card compartment was changed to vertical. Vertical orientation facilitates easy removal and insertion of the credit cards as compared to horizontal.

Cluster C : in this cluster, instead of providing individual partitions and compartments for each cosmetics, the cosmetics were rearranged in clusters. Three major compartments were provided :first for eyeliner, lipstick and lip-gloss, second for compact set and third for comb.



Fig. 9.4

The weaving of mat can be seen here. It starts at the top edge and gets locked due to the weave type.

Concept I

After working on the internal organization of content, the form and design was explored further.

1. Using woven mat as basket : to contain volume.

The 'soop' form is a very interesting which is made from a flat mat (Fig 9.4) and a bamboo rim (Fig. 9.5). The mat is sandwiched in the rim and pushed to form a bulge. It no longer remains flat, but becomes a space containing form. The rim is twisted and bent in two planes giving it a very interesting form (Fig. 9.5)

This soop was procured by visiting Shantiniketan A craftsman - **Kartik Mahuli** makes these 'soop' which are used as a framework to hold the idol of Goddess Durga. These were helpful for doing explorations in terms of various details etc.



Fig. 9.5

Son of Craftsman Mr **Kartik Mahuli** working on binding the rim. Rim binding is the most difficult and skillful job



Fig. 9.6



Fig. 9.7



Fig. 9.8



Fig. 9.9

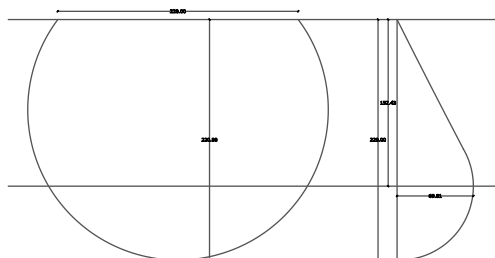


Fig. 9.10

The different content layouts as explained earlier were used as hard points to explore various other form options taking inspiration from the soop form. These can be seen in image 9.9. Variation in the depth and curvature were tried out before finalizing the form. The final form can be seen in image 9.10. With more elongated forms, the depth of the bag was not well utilized since user cannot look inside the bag. With the wider openings and lesser depths, the form loses its beauty and force. Hence the final selected form (Fig. 9.10) was such that it could achieve balance between both - the form and the use.

Space organization

After coming up with lot of variations in terms of form of the bag, they were analyzed and most suitable form was finalized. The internal content organization was reworked for the selected form as seen in Fig. 9.11, 9.12, 9.13. The organization consists of three layers. These were according to the clustering explained in earlier section (ref. Fig. 9.2 and 9.3).

Layer I : Fig. 9.11

This includes contents of cluster A : mobile, pen and a diary. Two alternatives are shown here. Instead of straight orientation, they are tilted at 75 degree for easy removal.

Layer II : Fig. 9.12

This includes contents of cluster B : credit cards, money and keys. Horizontal as well as vertical orientation for the credit cards can be seen here. The vertical arrangement is more user friendly compared to horizontal arrangement.

Layer III : Fig. 9.13

This includes contents of cluster C : cosmetics and comb. Three compartments take care of all the contents. Comb and compact are kept in a separate compartment along with a small mirror. Rest of the cosmetics are kept in a common compartment.

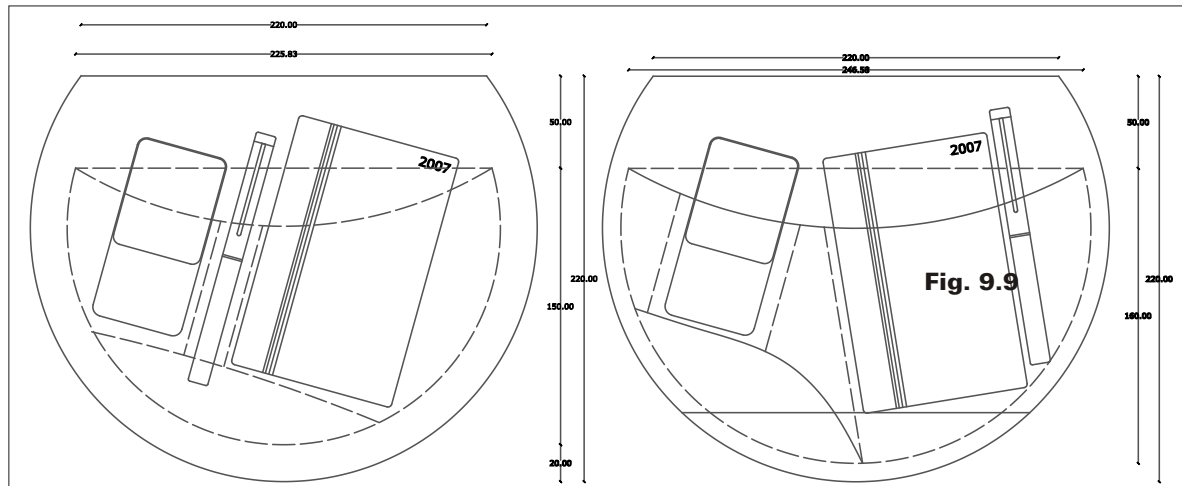


Fig. 9.11

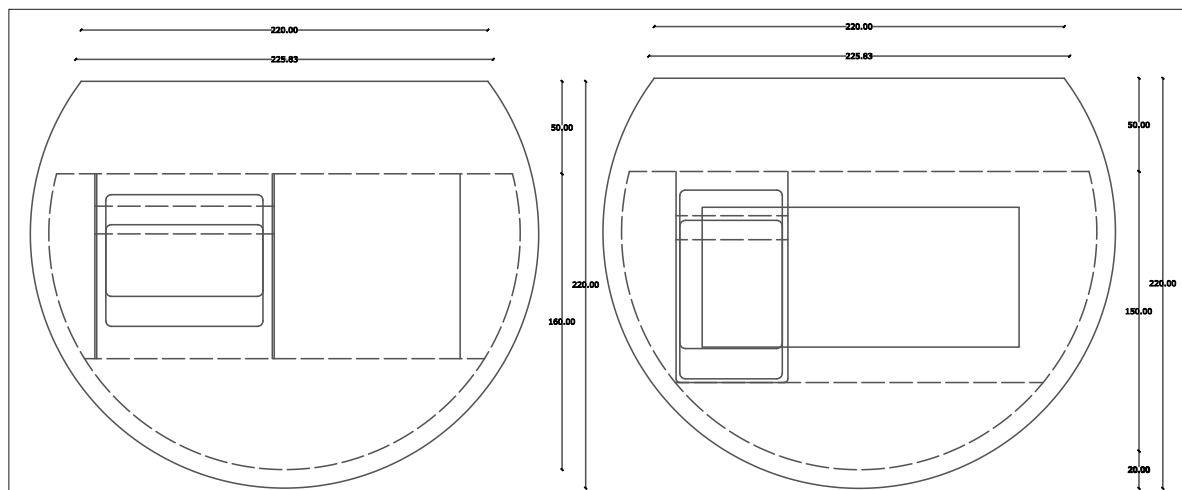


Fig. 9.12

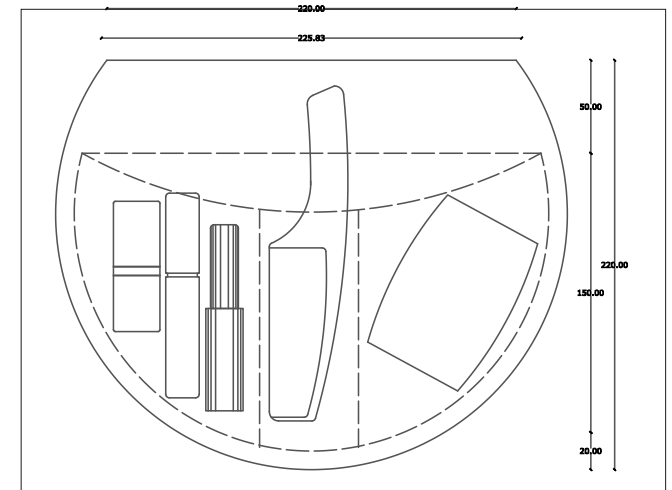


Fig. 9.13



Fig. 9.14



Fig. 9.17



Fig. 9.15



Fig. 9.18

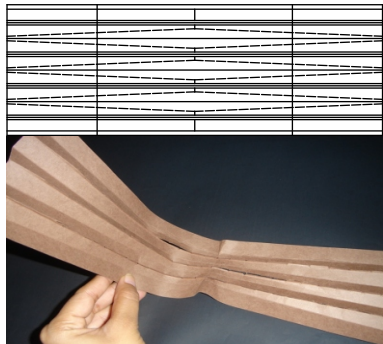


Fig. 9.16



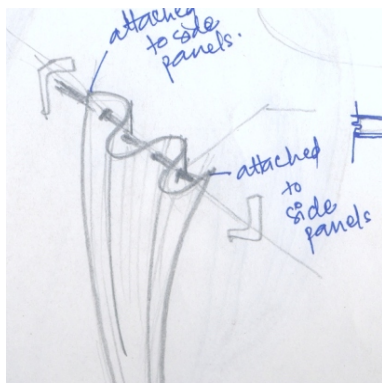
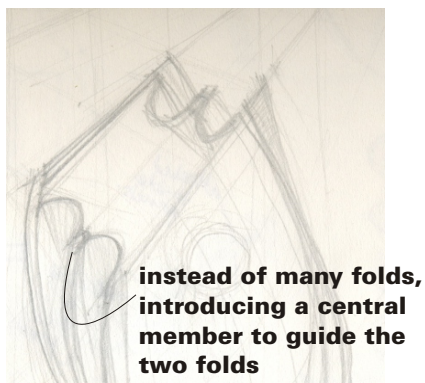
Fig. 9.19

Joinery of two shells

While working on the form of the bag, various other details such as the joinery of the two bamboo shells, handle details, weave details were worked out. The samples which were procured from Mr Kartik Mahuli were used to try various details and exploratory models.

To join two hard shells, a soft leather joinery was required. Bellows was the first exploratory idea for graceful opening and closing of the two halves. Since the form was complex, working on the bellows geometry was difficult. Paper was used to understand the working of bellows (Fig.9.14). The shell has to be joined at the base with the tapering bellows. This was again a challenge since it has to be tapering and will be continuous throughout the rim of the shell. Drawing was made and it was tried out with the paper as seen in Fig. 9.16. The dotted lines show portion to be cut or stitched to facilitate the taper in the bellows. Since stitching leather by hand was difficult, denim cloth was used to test the working of the design. Denim has quality common to leather, hence it was used for exploratory models.

Options, other than bellows were also sketched and tried with the help of denim cloth.



The other options consists of introducing one more central member between the two shells. This would facilitate easy closing and opening of the bag. Larger opening was also possible with this detail.

In the other option, complete zip was provided for closing the bag. Bellows were replaced by a box plate detail to take care of the opening and closing. This was supplemented by circular zip for the bag opening as seen in the Fig.9.20.

Combinations of bellows and box plate was also worked out.(Fig. 9.22)

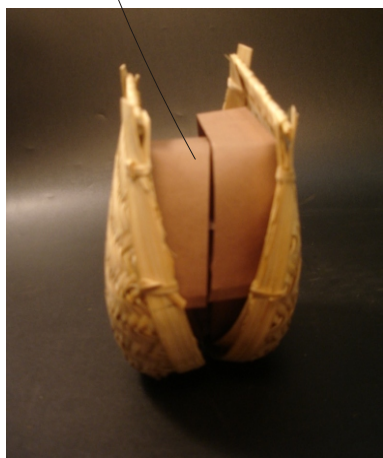
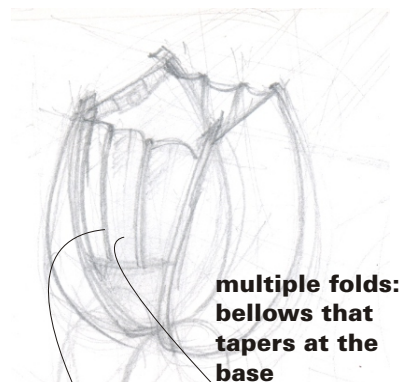
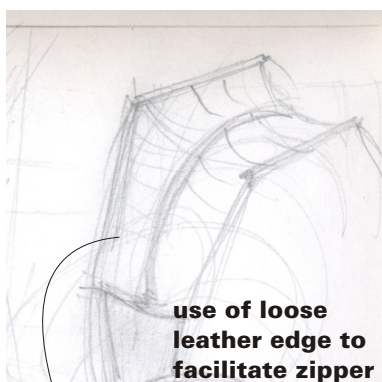
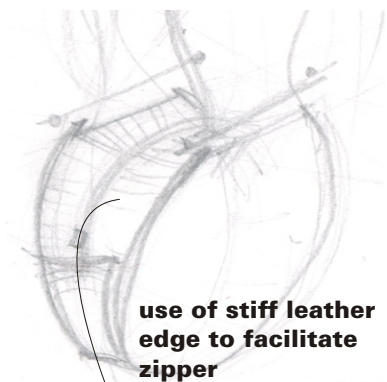


Fig. 9.20



Fig. 9.21



Fig. 9.22



Fig. 9.23



Fig. 9.24



Fig. 9.28



Fig. 9.25



Fig. 9.29



Fig. 9.26



Fig. 9.30



Fig. 9.27

Surface Finish

Further details were worked out regarding the finish of the shell. At the periphery of the mat, the flat part is folded to enclose spherical volume. These folded strips hamper the finish of the product. To overcome this problem, different options were tried out, which include -

a. Finishing the outer surface of the mat with the technique developed at IDC, which consists of applying mixture of adhesive(fevicol SH), water, wood stainer or natural dye or clay. After drying, the surface is finished with fine sand paper exposing the wave but covering all the uneven gaps and joints as seen in the Fig. 9.24

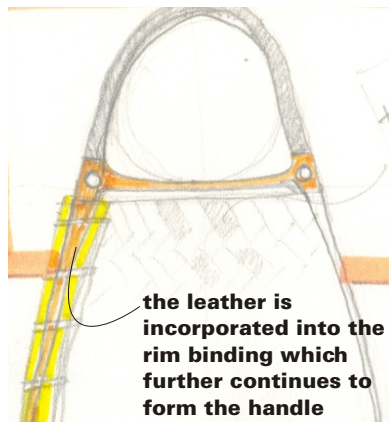
b. The part of the mat which takes the curve and bends was split into two parts and woven as a finer mat as seen in the Fig 9.25. This not only reduces the unevenness of the surface but also creates an interesting composition of wider and finer strips.(Fig.9.25 and 9.27)

c. After splitting the strips into two parts as explained in (b), instead of weaving them as two strips, one part was tucked behind the other and was woven as a single strip but with half the width. This also reduced the unevenness but increased the gaps between the weave.(Fig.9.26)

d. Instead of complete circular form, the mat was folded with two corners to eliminate the unevenness.(Fig. 9.28)

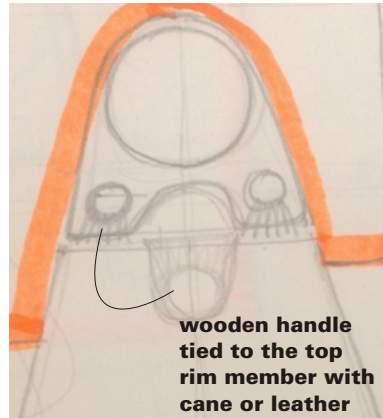
Different edge treatments were also tried where a fine leather rope was to fill the gap between mat and the rim. The edge was tied using Haldi coloured (natural dye) cane strip.(as shown in Fig. 9.29)

Flocking was also experimented for the lining of the handbag as seen in the adjacent image.(Fig. 9.30). Flocking could be used very effectively here. The negative curvature of the shell can be finished well using flocking.



the leather is incorporated into the rim binding which further continues to form the handle

Fig. 9.31



wooden handle tied to the top rim member with cane or leather

Fig. 9.34



Fig. 9.32

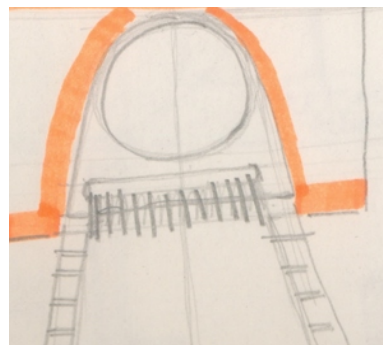


Fig. 9.35

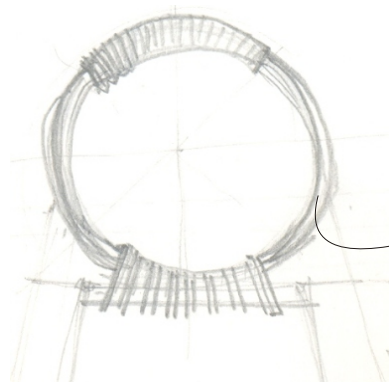


Fig. 9.33



Fig. 9.36



Fig. 9.37



Fig. 9.37



Fig. 9.39

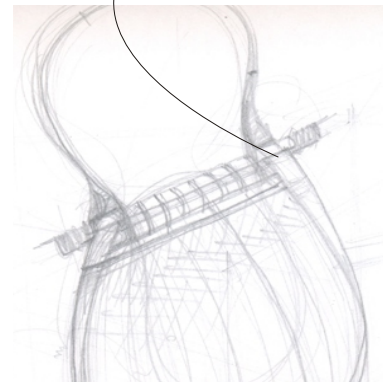


Fig. 9.38



Fig. 9.40

Handle Details

Various options were thought of which include incorporating cane for handle, using leather rope (Fig. 9.31 and Fig 9.32), using wooden handle(Fig.9.34, 9.35). Other options consists of using the half woven mat and changing the form from tapering to semicircular.(Fig.9.39) The top member could be converted into a handle.

Inserting a full bamboo into the leather loops which runs continuous through the outer rims was another option(Fig. 9.37, 9.38). Leather rope would be tied to the full bamboo to form the handle.

Use of wooden beads in woven form for the handle was also thought of in few options.(Fig. 9.40)

Hinge Details

For joining two components various hinge details were thought of. This can be seen in Fig. 9.40(a). It includes using wood, small sized bamboo with a metal or wooden rod. Some ideas also include use of brass sheet with laser cut holes, along with brass pipe used for hinge. The sheet would be attached to the rim with the help of cane binding, using the holes in the plate.

Some other details as shown in Fig. 9.40 (B) include the rim details at the corner where the rim is joined to the horizontal member (on which the soop is woven).

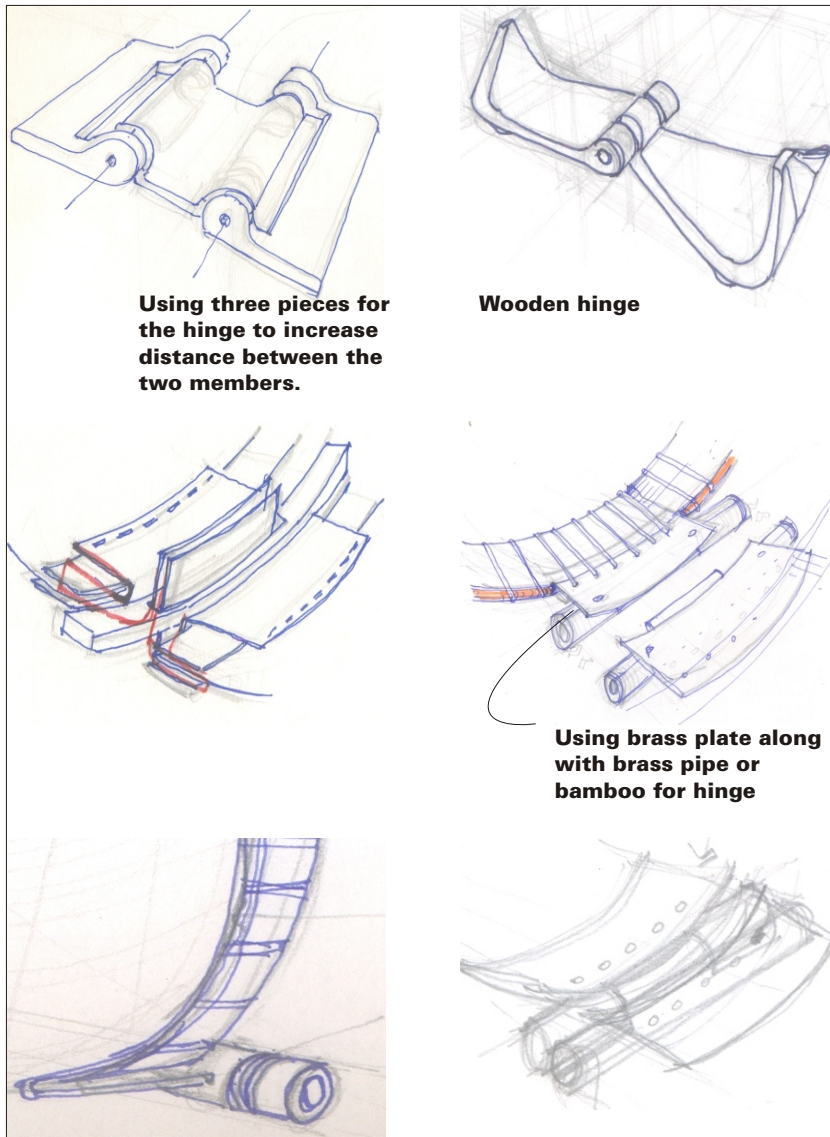


Fig. 9.40(A)

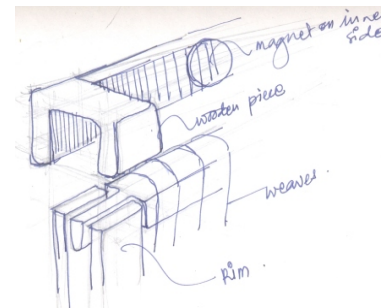


Fig. 9.40(B)



Fig. 7.41



Fig. 9.44

Further work

Work is being done on the detailing of the bag. Exploratory models in denim and bamboo are made to understand the working of internal compartmental organization as seen in adjacent images.

Also, the sequence of manufacturing is being worked on to facilitate faster and easier assembly.



Fig. 7.42



Fig. 9.45



Fig. 9.43

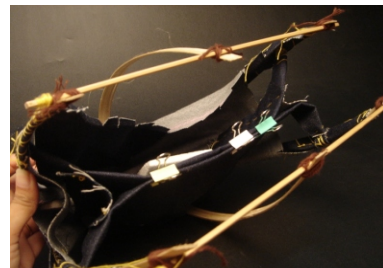


Fig. 9.46

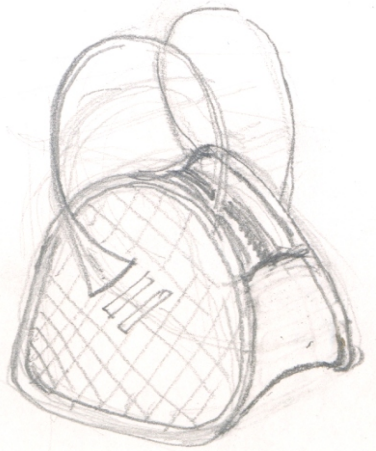


Fig. 7.47



Fig. 7.48

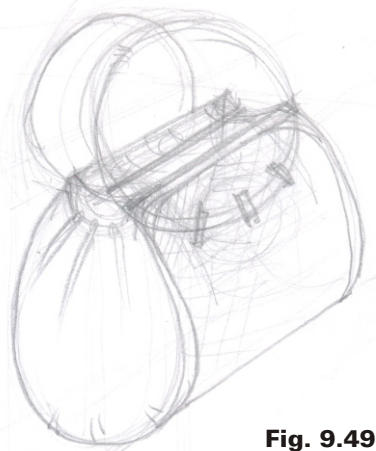


Fig. 9.49

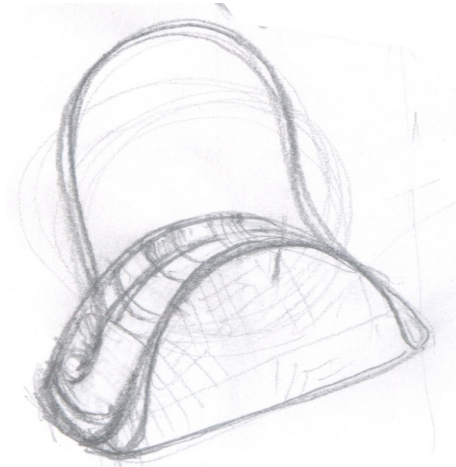


Fig. 7.50

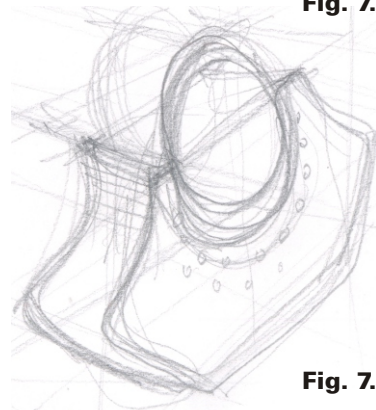


Fig. 7.51

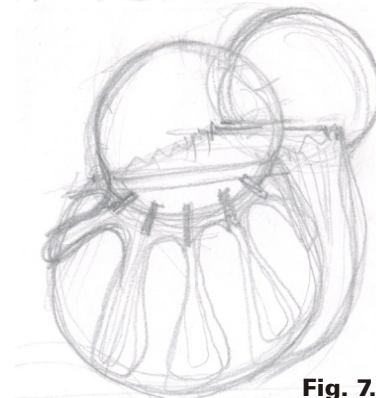


Fig. 7.52

Concept II

2. Using woven mat as completely flat component and combining it with leather to contain volume.

In this second type of design exploration, I tried to address the issues of manufacturing and production planning. The current craft industry is more skill based. If product manufacturing is looked at closely, the design inputs should be such that the product is simple and incremental design inputs should create variations easily.

With the same focus, second design concept was explored. This consists of using flat mats along with leather. The initial idea generations could be seen in 8.9, Fig. 8.7. These were developed further and more variations was done which can be seen in adjacent images.

The same metaphor of the shell was experimented further in next set of ideas as seen in sketches on next page.

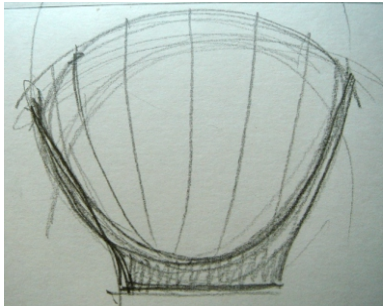


Fig. 7.52

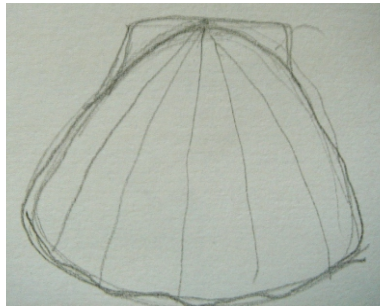
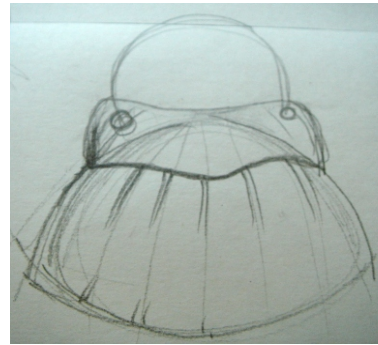


Fig. 7.54



Soft leather at the top with bottom part as a soft mat

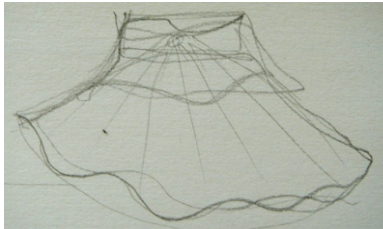
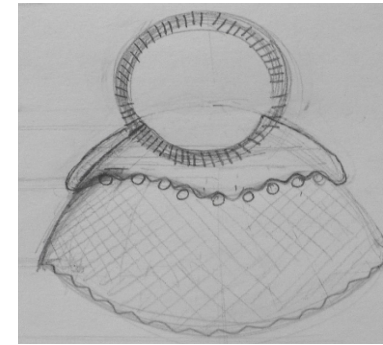
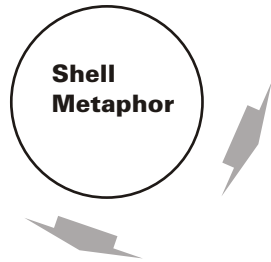
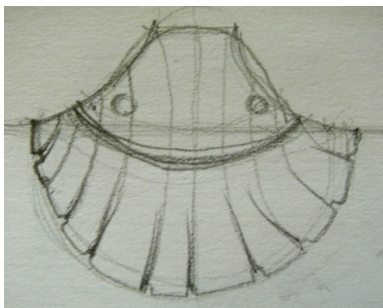


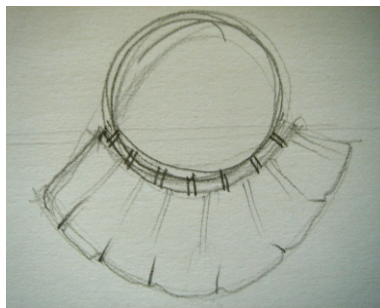
Fig. 7.53



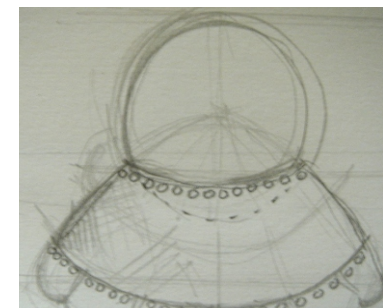
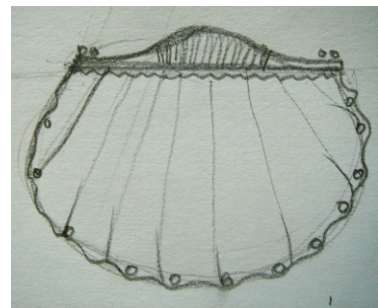
Soft leather at the base along with top part as a flat mat



Bottom part as soft leather with top part as a flat mat



Soft leather with top part as a flat mat with circular cane handle



Soft leather as a base along with top part as a flat mat



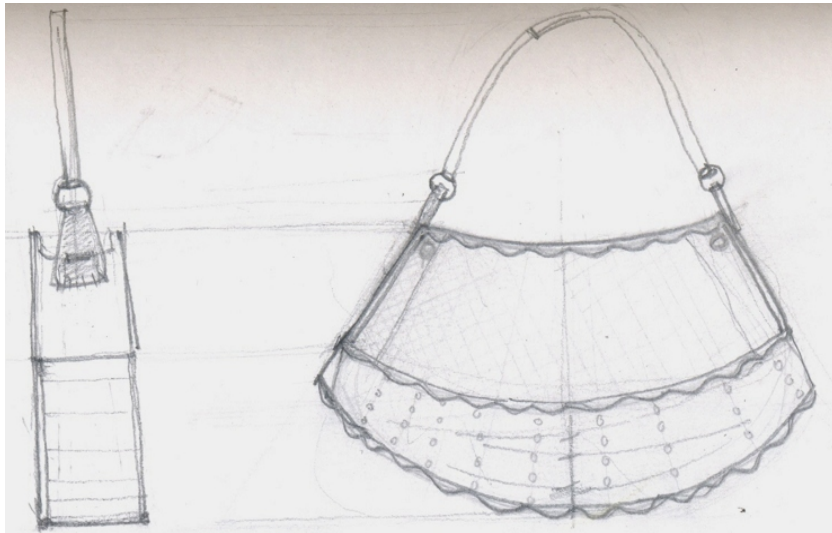


Fig. 7.55

The idea of using flat mat at the top with soft leather base was further developed to come up with two designs. In Fig. 7.55, the top part is weave enclosed with leather border having zig-zag edge, reflecting the shell edge. The small holes punched in the leather accentuates the lines possessed by the shell. The bag has a stiff, well defined base which is crescent shaped.

In Fig. 7.56, the base takes the form given by the pleats in the leather at the point of joining with the flat mat. The number of pleats as well as their orientation and length of fold was important in giving form to the structure.

The second idea was selected and developed further with the help of exploratory models. This was selected because the form given by the leather to the base was very interesting. (Fig. 7.57) It accentuating the amorphous nature of leather which could be exploited. This is like a skin which is a part of shell but has very contrasting characteristics and behavior as compared to hard , tough shell.

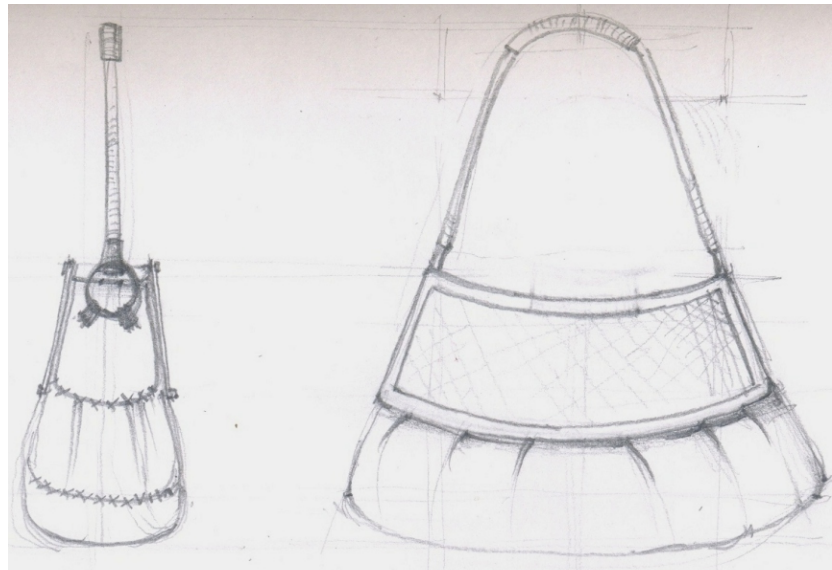


Fig. 7.56

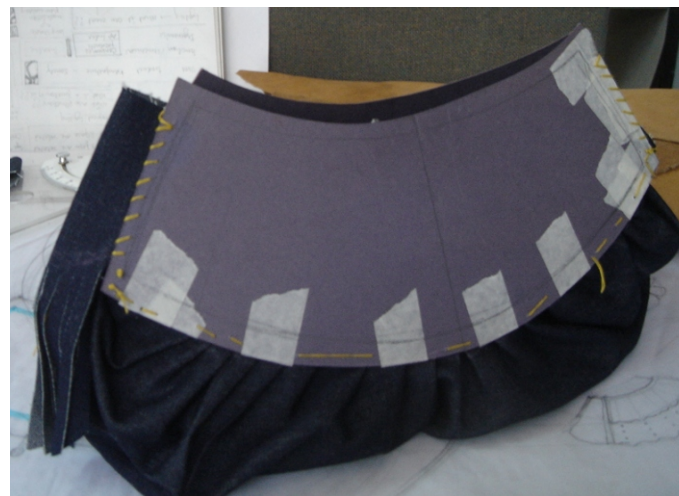


Fig. 7.57

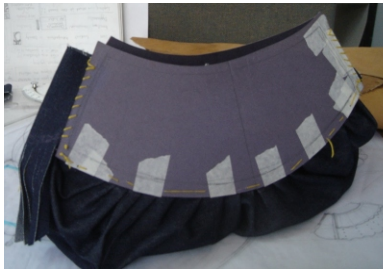


Fig. 7.58



Fig. 7.59



Fig. 7.62



Fig. 7.60



Fig. 7.63



Fig. 7.61



Fig. 7.64



Fig. 7.65

As seen in Fig. 7.58 and 7.59, the direction of pleats control the form of the cloth/leather. It was mirrored in the second half of the base to give it a circular outwardly bulging form. Number of pleats were reduced to change in the form as seen in Fig.7.65. Two treatments to the side edge were tried which could be seen in Fig. 7.62 and 7.63.and 7.64. Fig. 7.61 shows circular bamboo handle embellished with copper coloured pearls.

Further work :

Further work is going on in terms of refining the design and detailing of both the concepts.

11.0 Appendix



12.0 Bibliography



Books Referred -

1. Grainger, Sylvia - *Leatherwork*
2. Faulkner, Jan - *Leatherwork by hand*
3. Rao, A. G. and Koli, Madhavi - *Bamboo Craft Design*
4. Ranjan, M. P., Iyer, Nilam and Pandya, Ghanshyam - *Bamboo and Crafts of Northen India.*
5. K.,Muralidhar - *Leather products with crafts focus* (Industrial Design Project II,2002, IDC, IIT Bombay)

Information and images from :

www.craft-asia_com-images-Bamboo-handbag---category-i_jpg.mht
www.hants.gov.uk
www.essortment.com
www.psdaimaandsons.com
www.nymag.com
Www.lalida.com



Fig. 7.41



Fig. 9.44

Further work

Work was done on the detailing of the bag. Exploratory models in denim and bamboo are made to understand the working of internal compartmental organization as seen in adjacent images.

Also, the sequence of manufacturing was worked on, to facilitate faster and easier assembly. This helped in understanding the working of various agencies involved in the design such as leather, bamboo, assembly of both components and then packaging.

The final design consists of woven mat tied to two twisted bamboo rims with leather skin on the inside.



Fig. 7.42



Fig. 9.45



Fig. 9.43

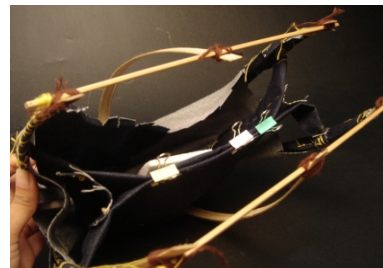


Fig. 9.46

The Final Design







Fig. 9.47



Fig. 9.48



Fig. 9.49

Assembly sequence

Fig. 9.47

This includes weaving of flat mat first as explained earlier.

Fig. 9.48

The next step is tying the bamboo rim and converting the flat mat into space containing basket. A wooden mold was made to control the size and form of the twisted bamboo rim. This also helped in segregating the leather and bamboo work making them independent of each other. These rims were tied using the mold and were given to the leather stitching agency. The high density thermacol mold was used to give depth to the basket or 'sup'.

Fig. 9.49

The rim was tied to each other and flat mat is sandwiched and pushed to contain volume as seen in the image.

Fig. 9.50

The two twisted rims were given to the leather stitching industry and this woven shell is fixed over the leather skin. Brass wire is used for binding both the rims to each other. Brass is not only easy to work with but enhances the beauty of leather as well as bamboo weaving. The loop for the handle was made in cane and integrated with the brass tying.

Fig. 9.51

This image shows the inner three layer organization stitched in suede leather.

The handle is made up of round cane which is wound with coloured cane and brass wire.



Fig. 9.50



Fig. 9.51

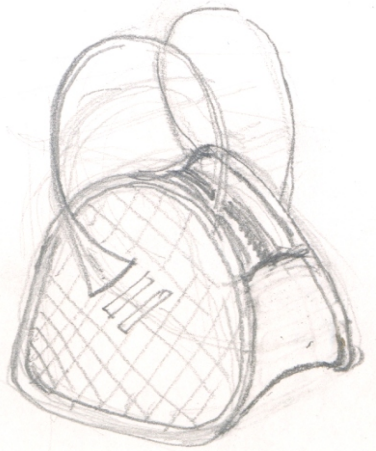


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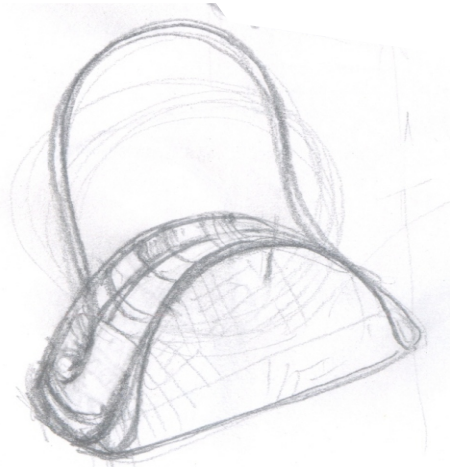


Fig. 9.55



Fig.9.53

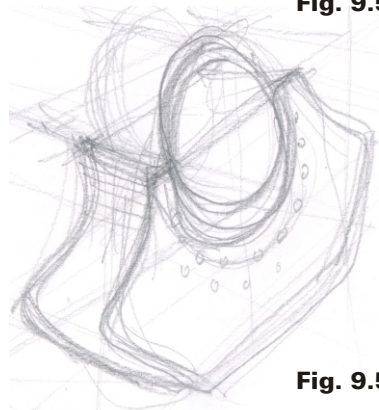


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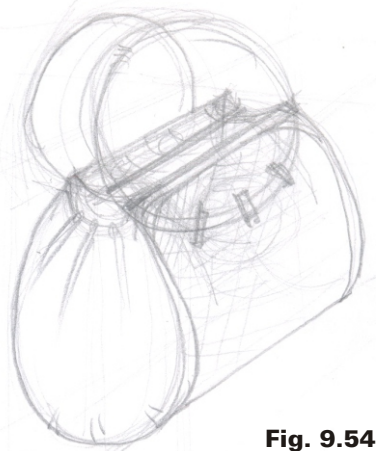


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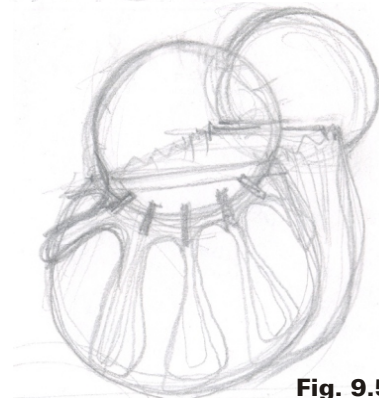


Fig. 9.57

Concept II

2. Using woven mat as completely flat component and combining it with leather to contain volume.

In this second type of design exploration, I tried to address the issues of manufacturing and production planning. The current craft industry is more skill based. If product manufacturing is looked at closely, the design inputs should be such that the product is simple and incremental design inputs should create variations easily.

With the same focus, second design concept was explored. This consists of using flat mats along with leather. The initial idea generations could be seen in Fig.8.7 and Fig. 8.9. These were developed further and more variations was done which can be seen in adjacent images.

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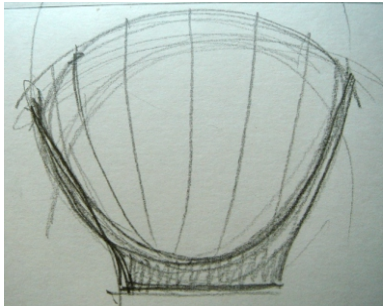


Fig. 9.58

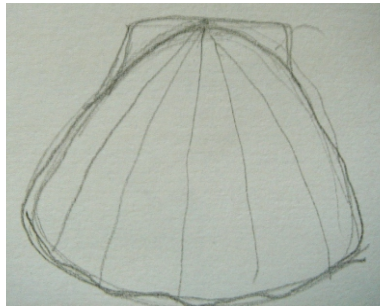


Fig. 9.60

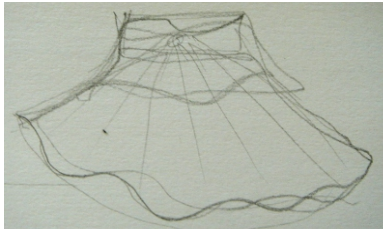
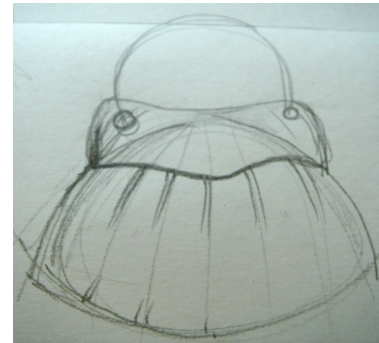
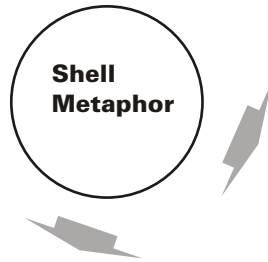
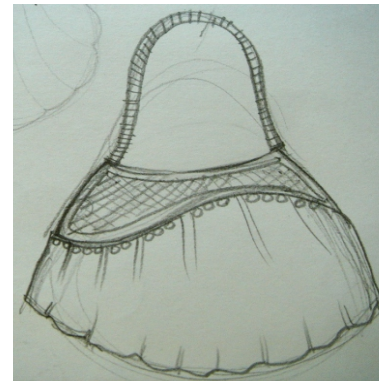
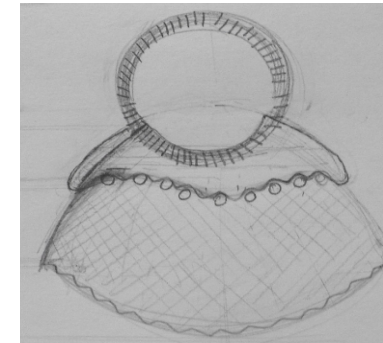


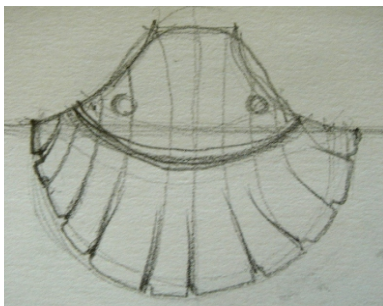
Fig. 9.59



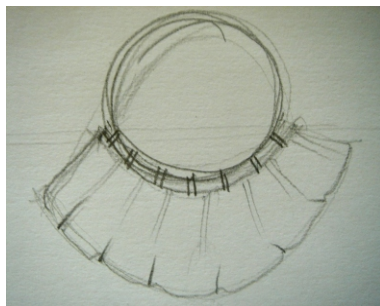
Soft leather at the top with bottom part as a soft mat



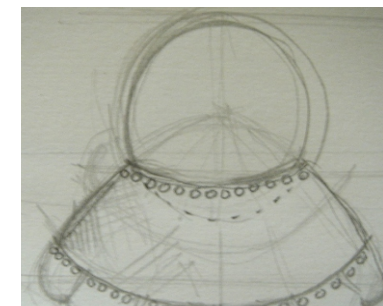
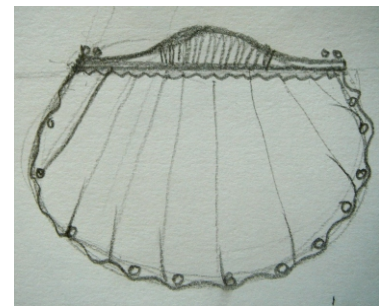
Soft leather at the base along with top part as a flat mat



Bottom part as soft leather with top part as a flat mat



Soft leather with top part as a flat mat with circular cane handle



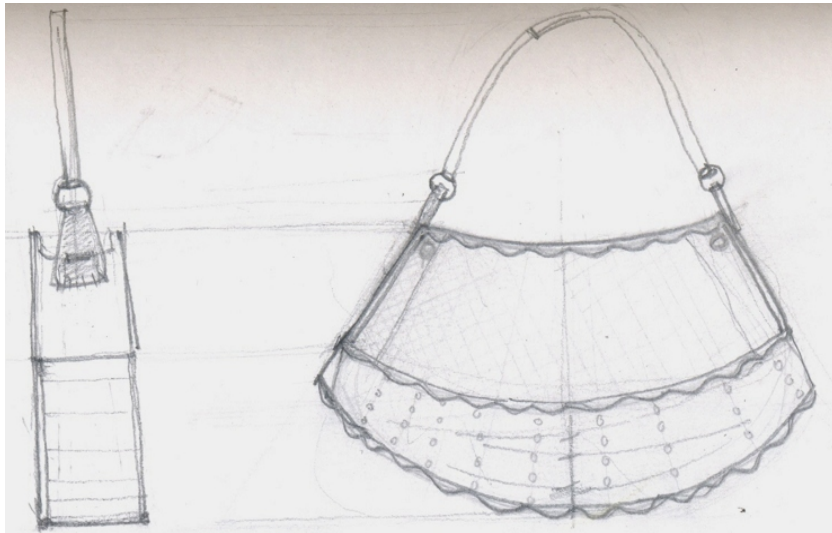


Fig. 9.61

The idea of using flat mat at the top with soft leather base was further developed to come up with two designs. In Fig. 9.61, the top part is weave enclosed with leather border having zig-zag edge, reflecting the shell edge. The small holes punched in the leather accentuates the lines possessed by the shell. The bag has a stiff, well defined base which is crescent shaped.

In Fig. 9.62, the base takes the form given by the pleats in the leather at the point of joining with the flat mat. The number of pleats as well as their orientation and length of fold was important in giving form to the structure.

The second idea was selected and developed further with the help of exploratory models. This was selected because the form given by the leather to the base was very interesting. (Fig. 9.63) It accentuating the amorphous nature of leather which could be exploited. This is like a skin which is a part of shell but has very contrasting characteristics and behavior as compared to hard , tough shell.

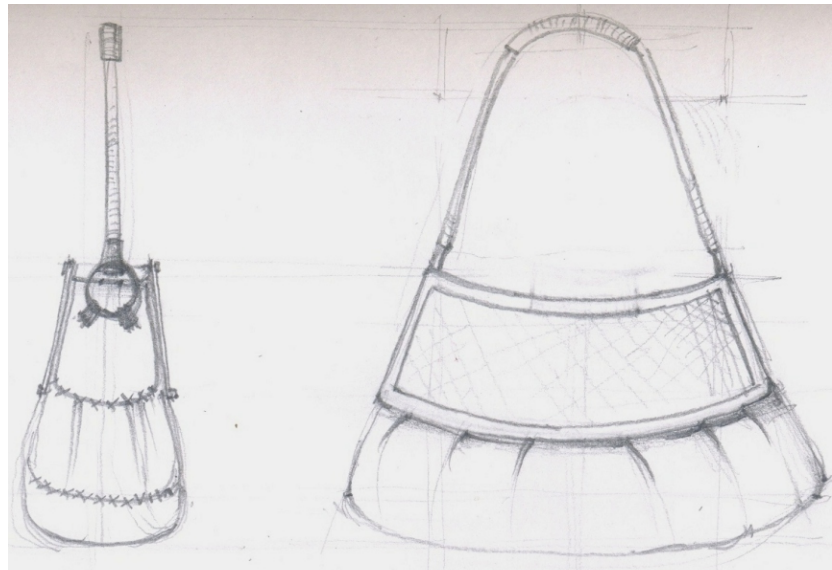


Fig. 9.62

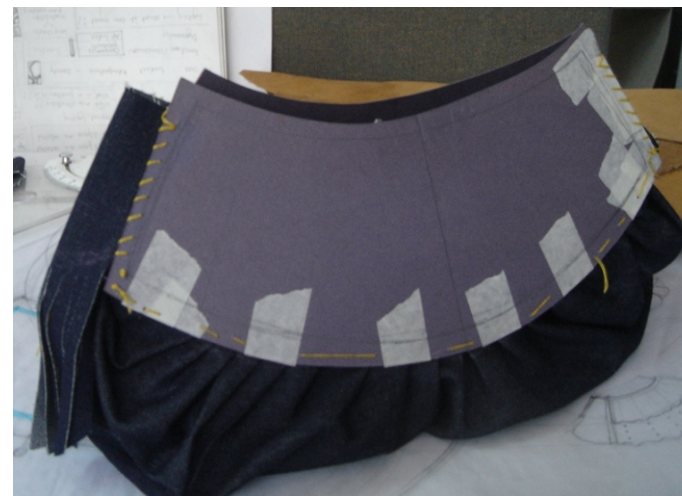


Fig. 9.63

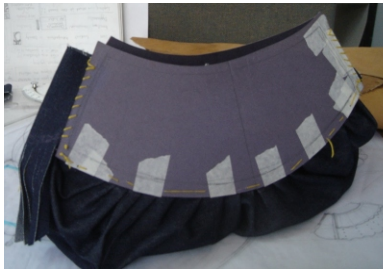


Fig. 9.64



Fig. 9.65



Fig. 9.66



Fig. 9.67



Fig. 9.68



Fig. 9.69



Fig. 9.70



Fig. 9.71

As seen in Fig. 9.64 and 9.65, the direction of pleats control the form of the cloth/leather. It was mirrored in the second half of the base to give it a circular outwardly bulging form. Number of pleats were reduced to change in the form as seen in Fig.9.71. Two treatments to the side edge were tried which could be seen in Fig. 9.68 and 9.69. and 9.70.

Fig. 9.67 shows circular bamboo handle embellished with copper coloured pearls. The weave design for the flat mat was worked out using varying width strips : 6mm, 5mm and 3mm.

While working on the first concept, i realized that the weave design for first concept can be used for second concept as well. This was beneficial from weaving point of view also.

The concept of splitting the bamboo strips as the weave progresses (as explained earlier) was used. This will be explained further.

Various colour options in natural dyeing were worked out for three different users under consideration : a. IT professional, a banker and a design professional.

10.0 FINAL DESIGN



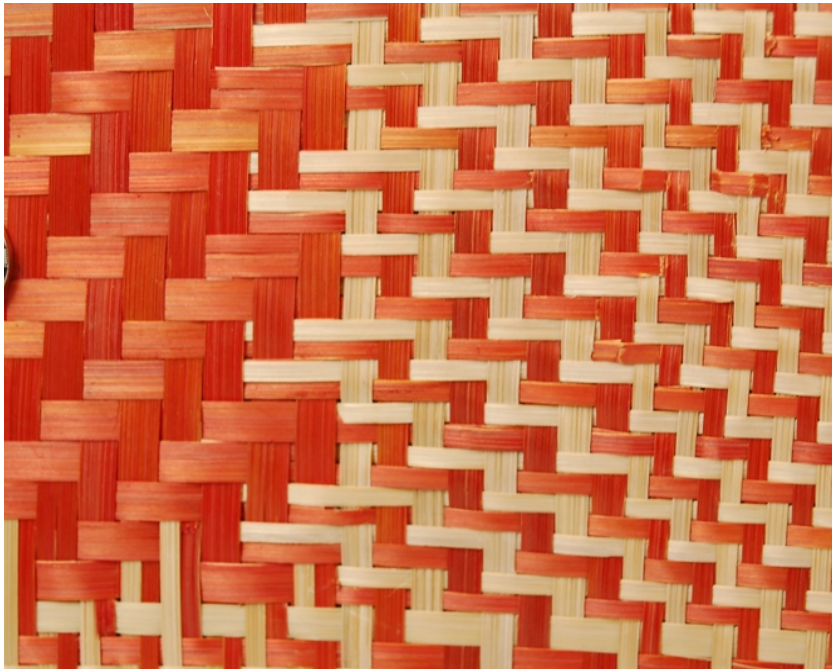


Fig. 10.1

Weave design

The basic weave is of 2x2 (2up, 2down) pattern. Interesting part is that the width of the strip gets divided into half and woven as individual strip as the weave progresses. This makes the weave more finer towards the end, giving intrigue pattern.

Three varying widths of strips are used in weave design :
6mm , 5mm and 3mm.

The weave is started with 6.5mm wide strips as seen in image10.1. 24 strips are used for initial folding over the horizontal bamboo member. After that, 5 strips on each side are added. 8 no strips of 5mm width are added after adding those 5 no .of 6mm strips. The perpendicular strips are split into half making them 3mm wide. One part of the split strip is removed and another colour of 3 mm strip is introduced

Three colour options were made according to the three personas of users considered during user study.

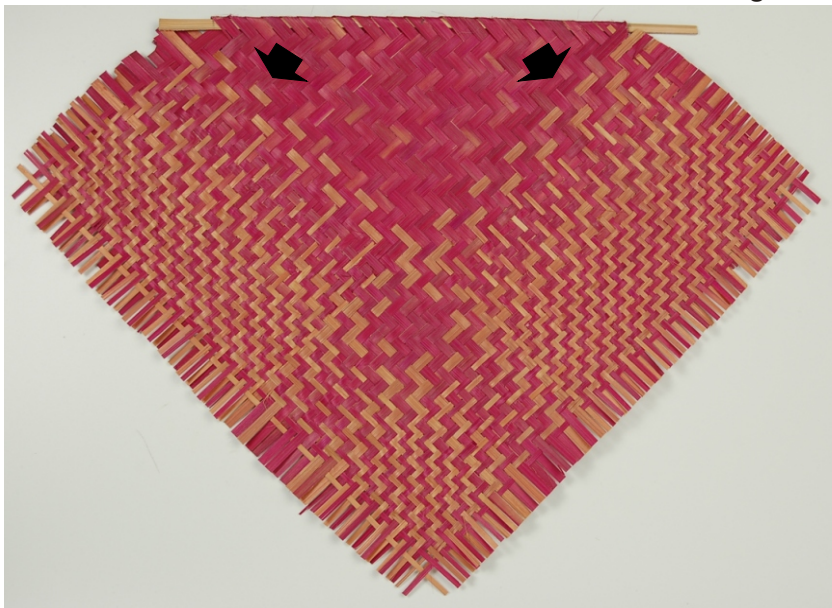


Fig. 10.2

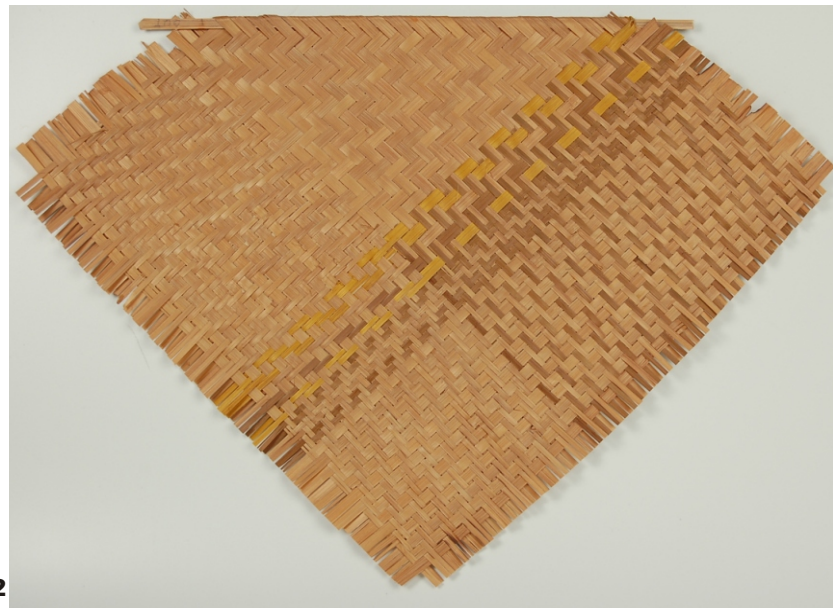


Fig. 10.3



Fig. 10.4(a)

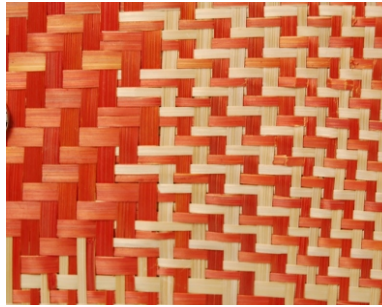


Fig. 10.4(b)



Fig. 10.5(a)



Fig. 10.5(b)



Fig. 10.6(a)

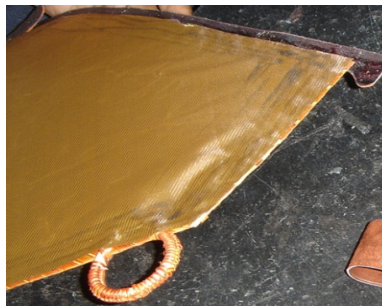


Fig. 10.6(b)

Assembly sequence

In the final product, there are three agencies involved

- (a) Bamboo
- (b) Leather
- (c) Cane

Following is the sequence of assembly as well as making along with the images of the making process.

Fig 10.4(a) and (b) : (bamboo)

The flat mat is woven using dyed bamboo strips. The edges are left open with some extra strips. The size is checked with the help of acrylic template which has the weave pattern etched over it.

Fig 10.5(a) and (b) : (cane)

The two hooks are ties to the flat mat. The marking for the hooks is done with the help of transparent template. The hooks are made up of half split cane.

Fig. 10.6 : (leather)

Two flat mats along with the hook are given to the leather vendor. Along with this, a mockup paper model of handbag, acrylic template, 1:1 scale printouts of the side zigzag border was given for ease of making. The magnet components was fixed to the mat and an inner lining of synthetic cloth was stuck to the mat using rubber solution as seen in the image.



Fig. 10.7(a)

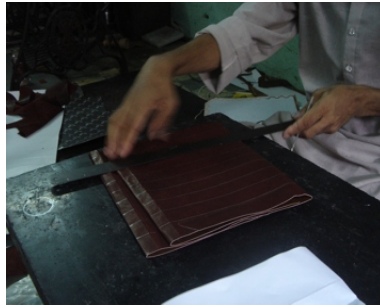


Fig. 10.7(b)



Fig. 10.8(a)



Fig. 10.8(b)



Fig. 10.9(a)



Fig. 10.10

Fig. 10.7(a) and (b)

With the help of paper development the single leather piece was cut. The development on paper was used as template to mark the folds. The leather is stuck over inner synthetic cloth lining material to give stiffness.

Fig. 10.8(a) and (b)

The flat leather was stitched over the edges marked according to the template. The three corners where the bellows change direction were not stitched leaving room for folding. The extra nylon thread was burned using waxed burning thread (10.8-b). The burning of thread helps to lock the open end of nylon thread.

Fig. 10.9

The 'chain patti' was prepared using leather stuck with cardboard backing. The chain is stitched using sewing machine.

Fig. 10.10

The zigzag leather border was cut using paper template and stuck over the mat only on the outer surface. The



Fig. 10.11



Fig. 10.12

Fig. 10.11

The edge of the stitches bellows was stuck to the inner edge of the mat for checking the matching. It was glued using rubber solution.

Fig. 10.12

The other edge of zigzag border was folded over it and glued, hiding the edge of the bellows.

Fig. 10.13

After sticking, the edge was hammered to make sure that it holds the surface properly.



Fig. 10.13



Fig. 10.14

Fig. 10.14

The central knob over the magnet was made by bamboo craftsman using coil technique. Other part of the magnet was fixed to the central wooden piece used for coiling the bamboo. Natural as well as orange dyed strips were used for coiling and the wooden piece was lacquered using dark brown stainer.

Fig. 10.15

The inner side of the knob was covered with leather. Two leather pieces were glued to each other with a cotton rope sandwiched between both the layers. They were stitched on both the sides of the rope. This was how, the leather rope was made for the knob as well as for the handle.



Fig. 10.15



Fig. 10.16

Fig. 10.16

The next step was cutting and stitching of the internal compartment. It was stitched separately and attached with the 'chain patti' that was made earlier.



Fig. 10.17



Fig. 10.18

Fig. 10.17

The inner compartment, which consists of three layers for organizing the contents was inserted in the outer housing of the handbag made up of mat and bellows. It was stitched on the top edge where the chain patti is fixed.

Fig. 10.18

The open edge of the mat and bellows was stitched using circular stitching machine



Fig. 10.19



Fig. 10.20

Fig. 10.19

It was again hammered over the edge to make sure that it is glued properly.

Fig. 10.21

Image shows the leather craftsman who worked for the handbag along with Mr Babubhai in the center.

Fig. 10.21

The leather rope made by leather vendor was tied around the loop with the help of cane be craftsman working in cane. This was how the handle was made in the end.



Fig. 10.21



Fig. 10.22

Fig. 10.22

This was the final stage of the assembly/manufacturing process. The back side of the knob housing the magnet was stitched to the bamboo mat from the outside. The edge of leather rope was detailed using another coiled bamboo circle. A small niche was cut in the circle which received the thickness of the two stitched leather ropes



Final product



Back view



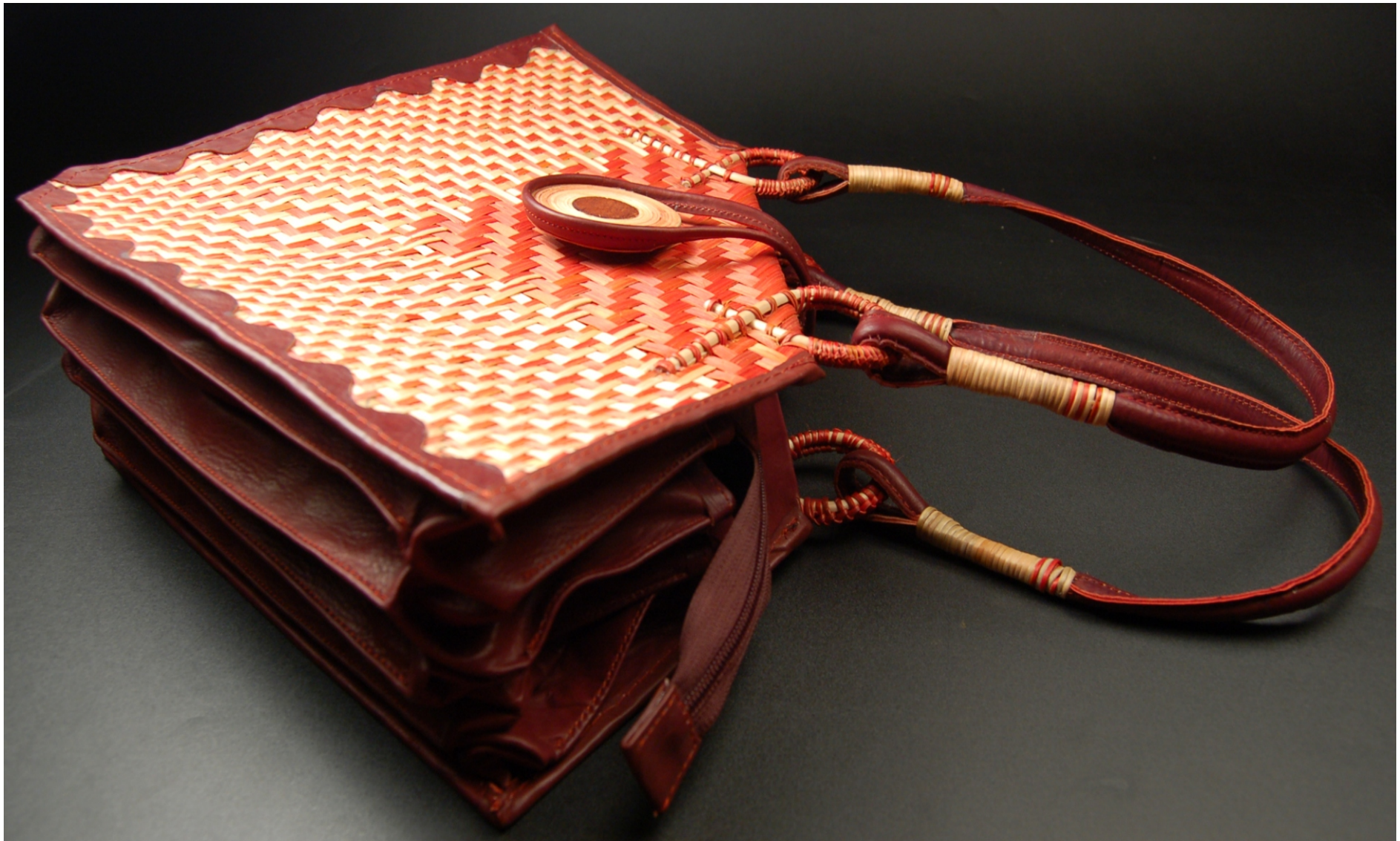
Front view



Side view



Internal organization



Project III Poorva Lavate 05613002 IDC IIT Bombay

Handbag in Bamboo and Leather