

DESIGN OF CONTEMPORARY FURNITURE RANGE INSPIRED FROM TRADITIONAL SANKHEDA CRAFT

**PRODUCT DESIGN - PROJECT II
MPR - 427**

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**INDUSTRIAL DESIGN CENTER
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2016**

**PRODUCT DESIGN
PROJECT II**

Design of
Contemporary furniture range
inspired from Traditional
SANKHEDA
Craft



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Guide
Prof. Sandesh

Approval

Product Design II

The project titled “ Design of Contemporary range of furniture inspired from Traditional Sankheda Craft” by Dattaram Chari, is approved for the partial fulfillment of the requirement for the degree of “Master of Design” in Industrial Design

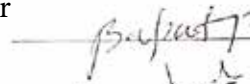
Project Guide




Chair Person



Internal Examiner



External Examiner



Date: 25/07/16

Declaration

The content produced in the project report is an original piece of work and takes due acknowledgement of referred content, wherever applicable. The thoughts expressed herein remain the responsibility of the undersigned author and have no bearing on or does not represent those of Industrial Design Centre, IIT – Bombay.



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My parents and friends, for being an unconditional pillar of strength and support.



Abstract



India has been a powerhouse for vast cultural and ethnic diversity and craft. This has enabled a variety of motifs, techniques and crafts to flourish in various parts of this land. Wood craft has been one of the integral part of the rich tradition of handicrafts in India. The hallmark of Indian wooden furniture has always been durability, ethnic flavor, elegance and design, attractive colors, unmatched workmanship and subtle elegance.

Even today the traditional Indian craftsmen use the simplest of the tools and adhere to their style of their forefathers which has helped to keep the traditions alive. Today craftsmen are engaged in making furniture, products for everyday use, toys and decorative items that are in demand in the market.

One such work is Sankheda wood craft in Gujarat wherein the artist put forth their ideas about mythology, emotions in their work which is losing its potential market.

As an Industrial design student the area of work i have dealt in this project is to understand the particular wood craft furniture, understand the artisan issues, and explore various possibilities & ideas to reposition the craft in a higher segment of market.

Excerpts from reading

“Function meets decorative,
commercial meets artistic,
infinite meets finite”

- Jonas Bolin

“Vision is not only a founding
of an idea but necessarily the
resolution to ensure its Realization”

- Jonathan Ivy

“The details are not the details,
they make the product, just as
details make the architecture
the gauge of the wire, the selection
of the wood, the finish of the
castings – connections,
the connections, the connections.”

- Charles Eames

“Design must balance ethics and
aesthetics for good of society”

- Kazuo Kawasaki



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1

Literature Study

1.1 Craft and Creativity in India - A Retrospective

In this modern age, the philosophies of blending old world India and contemporary ideas can bring international fame and stature to Indian crafts. One can integrate superlative qualities of craft to modern trends of industriousness of products.

On the functional side, the ergonomics, culture, individual lifestyle can also define the product with a clear identity. It can actually make the product more efficient & purposeful. The distinctive, edgy, contemporary twist can be camouflaged with the traditional crafts. Clean lines, fluidic forms can redefine the value aesthetics of the design .

If one has to be vocal about the Indian culture, he should have in depth basic knowledge of processes & materials with respect to traditional craft techniques & traditions. The culturally led design, innovativeness can help in sustainability

After the arrival of Europeans there was a drastic change in the social etiquette in India. There were demands for aesthetics in floors, chowkis, Drawer chests, hookapie, which surrounded the lifestyle of people. Things like lamps, mirrors, stools, tables were produced with finest detailing from local artisans. Every object was perfectly tailored to the environment and had its local cultural aesthetics, relevance & identity.

Eventually, the situation has drastically changed with lesser value to all the above mentioned factors wherein a family carpenter will come to your house and dispose of the details in the furniture & objects at his mercy and will. There has been lesser demand for highly skilled artisanal skill set.

The respect for manufacturing, craft base, quality, standards has been lost with due course of time.

The so called next generation sees less galleries with handcrafted items, retail stores for craft segment..

Hence, there has been identification of strong need for the repositioning of age old traditional handicraft & develop its new identity in terms of the future context. Even this can help the master skilled craftsmen to be aspirational to new ventures and be part of contemporary culture rather than be a part of the past.

If the new generation of designers can help in approach of infusing technology with tradition, against a backdrop of poverty, it can become a culturally responsible vision. If the methodology and changes in material is re visited, there is a big scope to defend the cultural heritage that has been lost to the rest of the world.

1.2 Understanding the Indian Tradition history & design



Fig. 1.1
Sayyed Pir Shah's nine-domed mausoleum ,
Pic: Author



Fig. 1.2

Poetic Analogy of Form :

Early Indian artists had been masters of creating plentiful secular images, i.e. strong symbolic structures rooted in the world of experience, without representing the main subject of contemplation. They pushed forms beyond their evident meaning. Different forms of plant, animal and human life have been joined in a harmonious imagery without replicating the reality of the material world. The figurative guise of reliefs is accompanied by a strong abstractness rooted in the articulation of symbols, which becomes signs addressed to the legibility of images. The humanistic approach to life and socio cultural history of India then is the solid ground on which artists built their imagery.

Philips Rawson, The Methods of Indian Sculpture, 1958

1.3 Understanding the Indian Tradition history & design

All the motifs and embellishments in the Indian Art are straightforward expressions of an uncomplicated human Spirit & its relation with the Cosmos, directly reflecting the experience of life in the early times. There was depiction of celebration in harmony with nature shown through motifs of various flora and fauna.

There are vast diversities of language, social habits and religious practices which are much beyond the scope to be taken up for study.

So, it was decided to narrow down the scope & select a particular traditional regional wood craft furniture for further exploration and work.

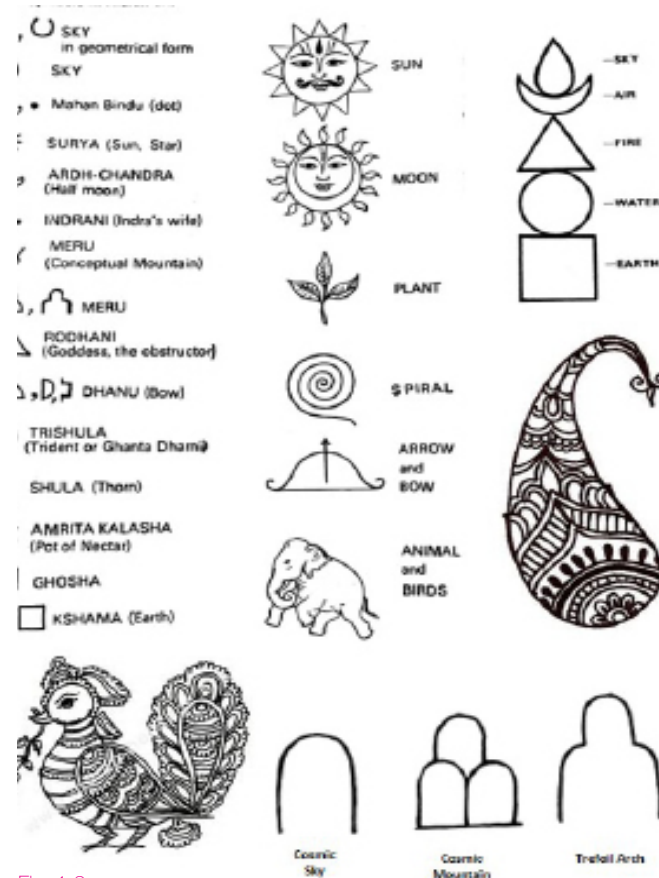


Fig. 1.3

Ref : K C Aryan, "Basis of decorative element in Indian Art"

1.4 Post Modernism - Scope of Study

The word Post modernism describes a range of conceptual framework & ideologies where the approaches are critical of the possibility of objective knowledge of the real world, and consider the ways in which social dynamics affects the human conceptualizations of the world.

It emphasizes the role of language, power relations & motivations in the formation of ideas and beliefs.

Postmodernism has helped in maintaining a distinctive line between reality & virtual world. In a post modern society, every product is articulated with sensitivity and understanding.

The post modern philosophy tends to propagate the theory of creativity going well with the selling of product in the market.

Post modernism in Architecture

Postmodern movement continues to influence present day architecture. Eg. Michael graves Portland building in Portland, Oregon & Philip Johnson's Sony Building (Originally A T & T Building) in New York city, which borrows elements from the past and reintroduces color and symbolism.

Post modernism trend has been applied to a whole lot of Art, music & literature that reacted against "modernism" and is marked by revival of historic elements and techniques.



Fig. 1.4
https://en.wikipedia.org/wiki/Portland_Building

1.4 Post Modernism - Scope of Study

Post modernism in Furniture Design

The golden age of Postmodern furniture started in the 1960s until innovation began to wane and slip into eccentricity. Only a small minority really understood and appreciated the design, the quality and the timelessness of the era's best furniture.

In the fifties, urban collectors and dealers at big furniture companies started revival of the furniture. The modern 50's revivalism was characterized by playfulness and humor and risk-taking approach to design.

There were challenges to the international style propagated by post modern architecture. Color and ornaments often with historic reference were added with local content, metaphor, ambiguity and interest.

There have been many experiments in post modernism in the 80's such as the Memphis group; their focus was mainly on the development of structure using new material and technological processes.

There have been many examples in history which used heritage vocabulary to develop post modern furniture. This research is looking into the contemporary furniture design with traditional elements therefore emphasizing the local identity of the region.

The word heritage includes the physical inherited elements that define a lifestyle and the physical means of production along with non-physical inherited elements such as morals, habits and traditions.



Fig. 1.5

Ref : <http://www.dwell.com/product/article/how-build-classic-design-collection-herman-miller>

1.4 Post Modernism - Scope of Study

Post modernism in Folklore Art

Study of ethnic folklore is defined as the collection of habits, traditions, morals, arts, crafts, skills that have been produced by the society over a long line of experience that it has been dealt with and learned among society.

Thus, folklore contributes to the articulation of the identity of a society and its cultural characters.

Folklore Fields:

Folklore can be classified into four categories as follows:-

Literature.

Traditions and habits.

Beliefs and popular knowledge.

Material culture and folk arts.

Culture is defined as the sum of the inherited elements physical or non physical, which shapes everyday life and behavior. Accordingly , the material culture is the physical part of the culture as a whole.

This is usually manifested by the conversion of raw materials to a specific object that serves a particular purpose. Material culture is an important aspect of the indian folklore, since it constitutes the creative component of it,

Post modernism approach can be beneficial for the use of historical reference in decorative elements, forms, and has been marked in furniture design by the revival of classical styles in the Ethnic Art with new reading of details and use of color and ornamentations. This could very well lead to a promising advance towards a plan to visit the place , understand the traditions, living habits ,

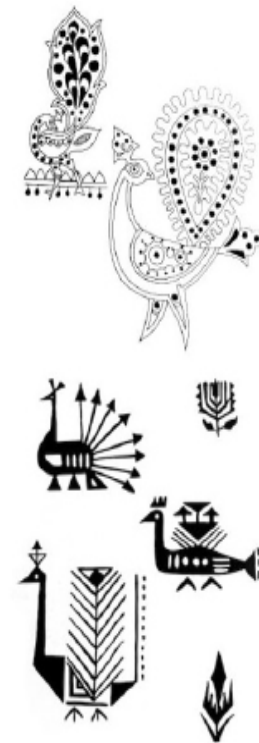


Fig. 1.6
Ref : K C Aryan, " Basis of decorative element in Indian Art"

1.5 Post Modernism - Conservation of Heritage Vocabulary

Importance of preserving the Heritage Vocabulary

Cultural heritage and folklore is an important source to understand the different eras of the society and an indication of its development. It acts as a link between the past and present. One of the best ways to preserve a regional identity is to utilize it in tourism and economics.

One way is to use it in the touristic field, but a more effective way is to use it as an economic drive. There is always a need for authentic concepts to generate design ideas for the different fields of architecture & interior design.

Heritage elements should get integrated into the modern life not as an antique but as a source of inspiration. The furniture design must reflect the regional heritage in a contemporary way through use of

modern materials and techniques. This can actually integrate the current culture on a level that is different from just collecting antiquities.

This will strengthen the connections between the past and the present while preserving the modern qualities of the present. The purpose is to use the material culture and folk arts to produce Contemporary furniture.

Many reasons for the declination of the related crafts furniture were:-

1. A sudden invasion of readily available imported furniture that is cheap with acceptable quality.
2. The change in economy to other jobs and migration of talented

craftsmen to more secure income opportunities.

3. The change of the income increased the purchasing power which led to the aspiration of getting imported furniture even though it is more expensive which did not reflect the local culture.
4. The lack of documentation of the traditional craft of furniture making which made it difficult for local designers to be inspired by it.

1.6 Aspect of Socio Cultural Analysis

Importance of socio cultural analysis

It can become a designers forte to identify the issues and make use of the transformational thinking. It is indicative that there should be an in depth analysis and study of culture, traditions which can help to develop a connectivity between design and culture.

One has to understand the system and try to figure out the possible solution by mapping the problem area. This approach can itself help in connecting people through design.

Product Design — Process Design — People Design

This may include the following steps

Search for cultural resources for documentation

Understand the cultural habits, skills through power of communication and innovative capabilities.

Understand the changing human behavior in communities and analyze the scenarios.

New Product Entry — Design for Concern — Change in Socio Cultural pattern

Develop a space for new opportunities, new economic structure and marketing policy.

Diversification of the product

Developing a strategy for value proposition of the product



Fig. 1.7
Image Source : <https://in.pinterest.com>

1.7 Overview

The word Post modern always made me think of newness & uniqueness as a way of approach for designing things. So, an approach of using Postmodernist philosophy and the analysis of culture and society was considered during the initial phase of the project. How can we justify the Indian wood craft in a holistic way by developing something new & original.

Postmodern theory holds importance in the works of literature, architecture, and design, as well as being visible in marketing/business and the interpretation of history, law and culture, starting in the late 20th century.

These developments—re-evaluation of the entire Western value system that took place since the 1950s and 1960s, with a peak are described with the term Postmodernity.

Who will buy the product and for what they will buy? There is a clear distinction between perception and reality. The modern world objects have a unique art value which is uncommon which communicates the value of object symbolically.

There is strong importance to amalgamation of functional value, status value, style value, poetic value which becomes a reason for the selling of objects.

There can be a debate of the phrase “Affordability is not everything” and “Affordability for poor customers”. But, as per the consumer and economy standards Affordability itself becomes the only thing.

But, there are varied examples like Lido Sofa, Kim Sofa by Michelle de Luchi, Alessandro Mendini's watches create a distinct value propagation to the product.

Products from modern furniture designers like Campana Brothers & Gijs Bakker do have a strong identity & value in the market.

1.8 Product Analysis

When i think of product analysis, I think of structural design. Analyzing the faults within the product in order to make adjustments in the existing product to improve upon the original ideas.

To create something new which can fit into a contemporary sense of living standards, I read about famous new generation designers.

By analyzing existing products in the contemporary living rooms & retail stores, I was able to see what materials were used & their minimalistic style & could think of creating a design to compliment these values in the craft that was about to be chosen for development.

I had chosen certain aspects of design & one can make a bigger statement of intent by directly analyzing individual products & identifying clearly which points can be improved upon & which can be related to individual designs.

In reflection, I did not use critical enough analysis of the available furniture products & their disassembly. The next level of thinking was, why I have been designing it ? Who have been asked to design it for? One almost need to gain inspiration before designing a new product, this can come from looking at existing ideas already available furniture to purchase.

Asking questions like what does the market need? Actually creating questionnaire or surveys directly asking people their opinions on what they would like and using the information to make an informed choice on what is needed.

One can possibly look for a niche within the market that can be explored and exploited to give the new furniture the edge over its rivals.

Basically a good round observation of the market place as a whole is necessary so that I can come to an evaluation about where my product will fit into the market.

Furniture:

What kind of People?

Which class of people?

What is already available in the market and try to come up with something original in my initial set of ideas.

Explore various traditional crafts & locations.

So, with the previous framework of literature review, a design methodology was developed for developing the product.

2

Design Methodology Development

2.1 Design Methodology Development

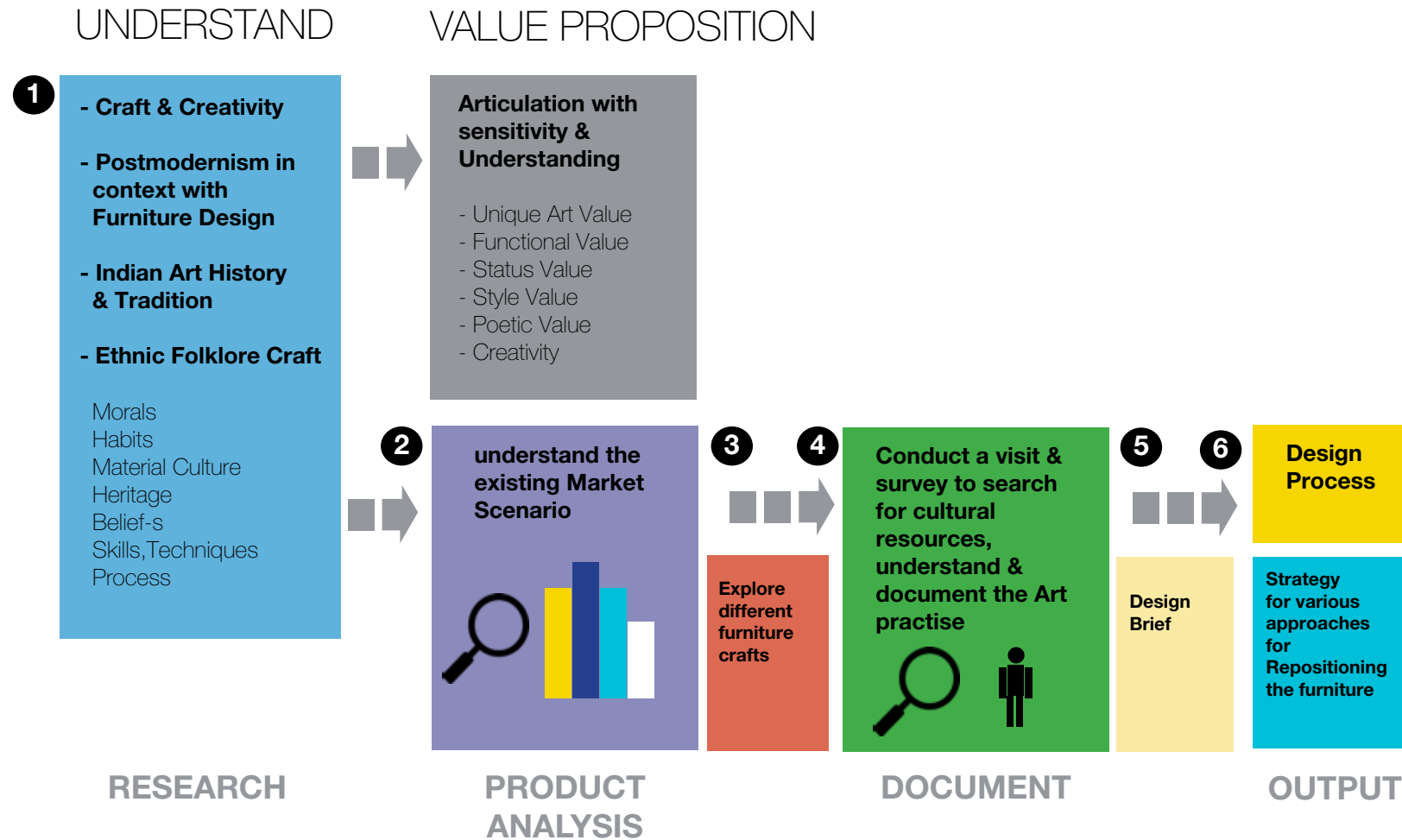


Fig. 2.1
Image Source : Author

3

Market Study

3.1 Exploration of different furniture crafts in India



Woven Chaarpai in North India

Charpai is an age old north Indian style of furniture wherein the woven jute threads form seating base.



Goan Chairs of Portuguese era

The goan furniture which is derived from Portuguese architecture is rich in details and famous for the wickers weaving.



Mooda Furniture

The mooda is a traditional low stool from the Sarkanda plant. The frame is created with the stalks of the plant which are aligned in a criss-cross construction and tied along the spine



Nilambur Furniture from Kerala

This style of furniture was developed by Britishers during their regime in India



Sankheda Furniture

Sankheda furniture is originated from eastern region of Gujrat. The word sankheda is derived from Sangedu which means lathe in Gujarati.



Rajput Furniture

The rajasthani furniture consists of metal foil installed on the carved decorative motifs & colorful paintings depicting culture & tradition of Rajasthan

Fig. 3.1

Image Source : <https://in.pinterest.com>

3.2 Market Study

Understanding Current Furniture Scenario in India

A study on the current Indian furniture trends was done and it was found out that there was more demand for home & office furniture. The new contemporary trend involved the preference of plush upholstered furniture in urban rich class of buyers, meanwhile the middle class of buyers mostly preferred the mass manufactured furniture in plastics & metal.

The Range of Indigenous furniture available in India

The most popular furniture includes

- Home
- Office furniture
- Garden Furniture
- Kitchen Furniture
- Bedroom Furniture
- Seatings
- Furniture in Plastic, Cane & Bamboo

Marketing Mediums

- Magazines
- TV Ads
- Billboards
- Social Media
- Digital Marketing

Market Size

Approximately Rs 65,000 Crores

Facts

- The furniture industry employs around 5,00,000 workers in India.
- There are around 5,000 companies of which 65% produce wooden furniture , 25% metal furniture & 10% plastic furniture.

Ref. (AC Nielson Report),july 2015

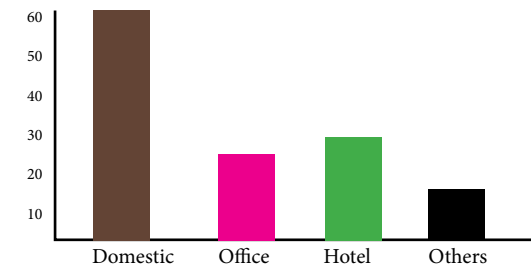


Fig. 3.2

Image Source : KPMG Analysis
[www.worldwidejournals.com/indian-journal-of-applied-research-\(IJAR\)/file.php?val=September_2013_1378216929_3a30e_35.pdf](http://www.worldwidejournals.com/indian-journal-of-applied-research-(IJAR)/file.php?val=September_2013_1378216929_3a30e_35.pdf)

3.2 Market Study

Major Players in the market



The new entrants in the market



4

Selection of Craft segment, Visit & Documentation

4.1 Selection of wooden craft furniture & Visit

Sankheda Wooden Furniture

Finally the traditional Sankheda Wooden Furniture Craft was selected for further exploration, study & further design intervention.

The richness of the craft lies in the lacquered finished round elements & the traditional look. The distinct feature lies in the production process of the furniture, which involves skilled handwork & artwork that ensures formidable strength & high durability.

Visit to Sankheda was done after initial study of the subject & the available data from various resources.

Basically the visit was conducted to understand the art at a deeper level and have an understanding of the root cause of the problems

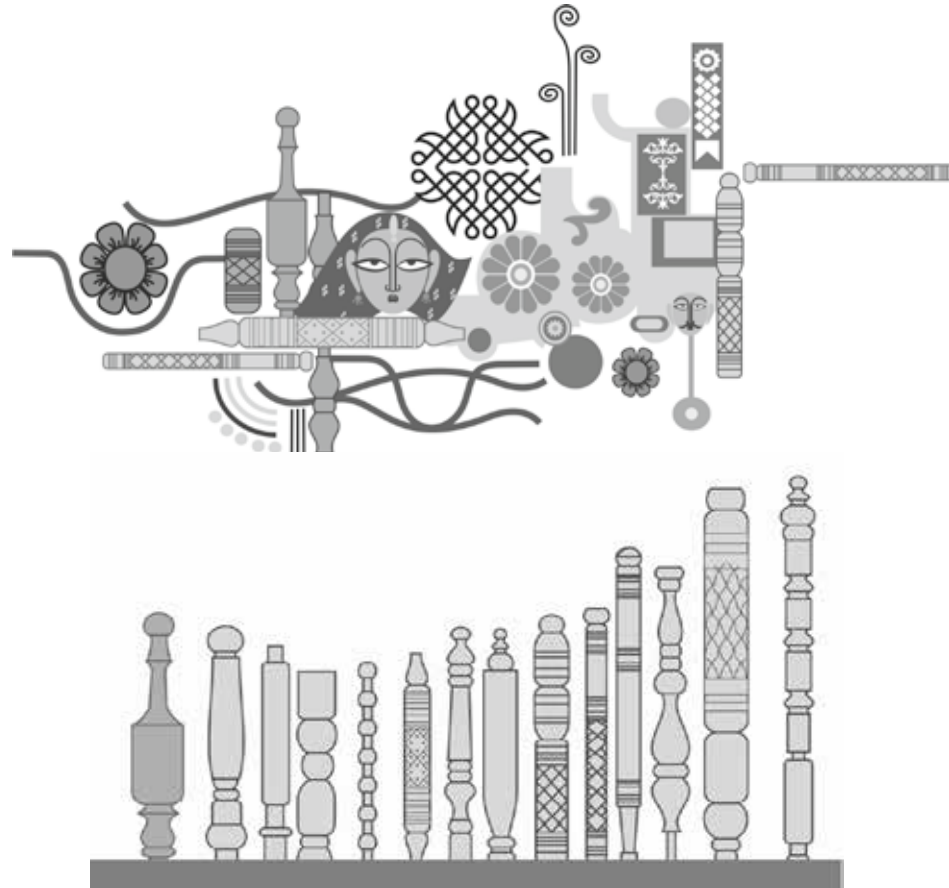


Fig. 4.1
Image Source : Author

4.2 Location and Details

The place is renowned for its wooden lacquer furniture with great historic values. The community residing in this village who perform this centuries old traditional art are called “Kharadi Suthars” giving them strong sense of community. How to improve upon their existing skills by adding new dimension to their craft.

The unique art of Sankheda uses paint & lacquer on Teak wood to fashion exquisite pieces of furniture as well as other decorative objects. The furniture is exported all over the world.

Sankheda furniture has a very typical beauty of its own with distinctive colors of golden, orange, cherry and brown with ornate designs in silver. Of late, the new artisans have experimented with ivory, green and purple. Sankheda derived its name from the word “Sanghedu” which means lathe in Gujarati language.

The village, is on the banks of river “Mahi” and closer to the forest of Chota Udaipur.



Image Source : Author

Sankheda is a village in the Southern part of Gujrat in Vadodara District on the banks of river ‘Mahi’ & closer to Chota Udaipur.

Sankheda is located 55 km away from Vadodara. The neighboring towns are Dabohi (21 km), Bodeli (21 km) and Waghodia (27 km).



Travel by Bus: - Vadodara to Dabohi
(2 routes)

Dabohi - Maatar Chota Udaipur (Bus Boarding) to
Ghaamdi Chowkdi (Bus Boarding)
to Sankheda Village

Dabohi Viga Chowkdi (Auto Rickshaw Boarding) to Sankheda Village

4.3 Products manufactured

Lacquered furniture used previously were only some basic forms of furniture, toys, Dandiya, Swings, “Ghodiyun” Child’s cradle is believed to be one of the first furniture.

Sankheda furniture is considered auspicious and is used in many religious and festive occasions.

Other items produced using this Form of expression are:

Pedestal for sacred use in temples
God’s sacred pedestal
Chairs for bride & groom in wedding
Garden swings, Zhoolas.
Sofa set & Deewan
Dining Table & Corner Table
Wedding Mandaps , Doli

Other miscellaneous products include:
Mirror Box, Bangle stand, Photo frames
Dressing tables, Agarbatti stands
Tik-tik, Walker, Tops (bhamardo)
Chakardi, Toy animal, dolls



Image Source : Author



4.4 People & Culture

Language

The language spoken varies from local, charotari, Surti, Kathiyawadi and Kutchi in the Sankheda region.

Costumes

The People wear mostly dhotis, kurtas, bandis. They wear traditional outfits during cultural festivals.

Food

Majority of the community people are pure vegetarians. Mainly, the diet consists of dal, roti, rice, vegetables followed by Chaas Butter Milk.



Image Source : Author





4.5 Living Standards & Education

The craftsmen ensure that their Children go to school to get formal education and due to the location of workshop inside the house and the children's active involvement facilitates the learning of the craft at an early age and gradual transition of skills.

It was observed that the community is bound to train only their further generation the skills and is reluctant of training the people from the other communities.



Image Source : Author



4.6 Homes

The people in Sankheda still value their old dwellings and wooden houses. These houses still stand tall with the rich heritage feel and ethnic living. Wood carved houses with the “chabutras” for bird feeding are the beauty of many traditional homes in Sankheda.

The houses consists of people using the lower floors as workplace area whereas the upper floor is used for household living.

The most usual house set up consists of machinery set up on the ground floor with the stacking of Raw material & finished parts for assembling.



Image Source : Author



4.7 Cultural Belief

Gujrat is influenced with culture, tradition & lifestyle transfer from generations to generations.

The “Kharadi- Suthar “ community is influenced by the waves from the past that inherit values of arts, culture and traditions.

Every year, on the “Mahasudh Teras” day in February, the entire “Kharadi Suthar” community, along with the “Sonis” (jewellers), “Luhars” (metal works) and “Kumbhars” (potters) comes together to worship lord “Vishwakarma”, the presiding Hindu deity of all craftsmen and architects, and celebrate and pray for the well being of the community and the progress of their craft.



The temple of main deity Lord Vishwakarma
Pic.: Author



4.8 The Process

Raw Material used for the furniture

First the Teak wood pieces are cut into blocks of basic size. The wood is first shaved & smoothened to the required shape. These wooden blocks are further stacked according to their respective sizes. There is a practise followed here wherein one person will be an expert in just preparation of this basic raw material. These pieces are taken accordingly by the artisans as per their requirement to their workplace.

Then these cut to size teakwood are then taken for turning where they are further rounded to develop the basic shape.



Image Source : Author



4.9 The Process

Turning the precut wooden pieces

Then these cut to size teakwood pieces are hand shaped on a lathe. After the rough finishing, the pieces are sanded and left to dry after a coat of primer.

Craftsman who turns the wood & gives it a contour is called as “Kharadi” whereas, the person who paints the turned components with patterns is called Suthar”.

The individual members are made by turning the wood on a lathe which is powered manually, with help of a hand held bow.

The craftsman uses chisels & gauges to shape the wood & achieves the contours without using any measuring devices. Everything is skill dependent.



Image Source : Author



4.10 The Process

Finishing of the turned components before painting

The turned pieces are then finished for the rough wooden burrs, gaps and holes. These gaps are filled with wooden dust obtained after the left over waste from turning process.

Some amount of putty is also filled in to cover up the gaps. This helps in obtaining a smooth finish on the surface. These finished unpainted turned pieces are stacked for drying for at least 3 to 4 days.



Image Source : Author



4.11 The Process

Application of paint on the finished parts

The finished & polished wooden components are then painted with application of paint by placing the component on a mandrel stock & rotating it & holding a brush dipped in paint.

Various line patterns are created by holding the brush tip against the rotating turned pieces. The painting vary from geographical shapes to traditional motifs.

The natural colors and dyes are replaced by synthetic materials recently .The combination of brown & orange is most common.

Ornamental Sankheda designs are crafted on the pieces with specially made squirrel tail brushes



Image Source : Author



4.12 The Process

Application of melamine on the finished parts

After the basic painting, The melamine varnish is applied with brush or using spray gun.

Wherever motifs are required on flat panels, they are hand painted by the skilled craftsmen.



Image Source : Author



4.12 The Process

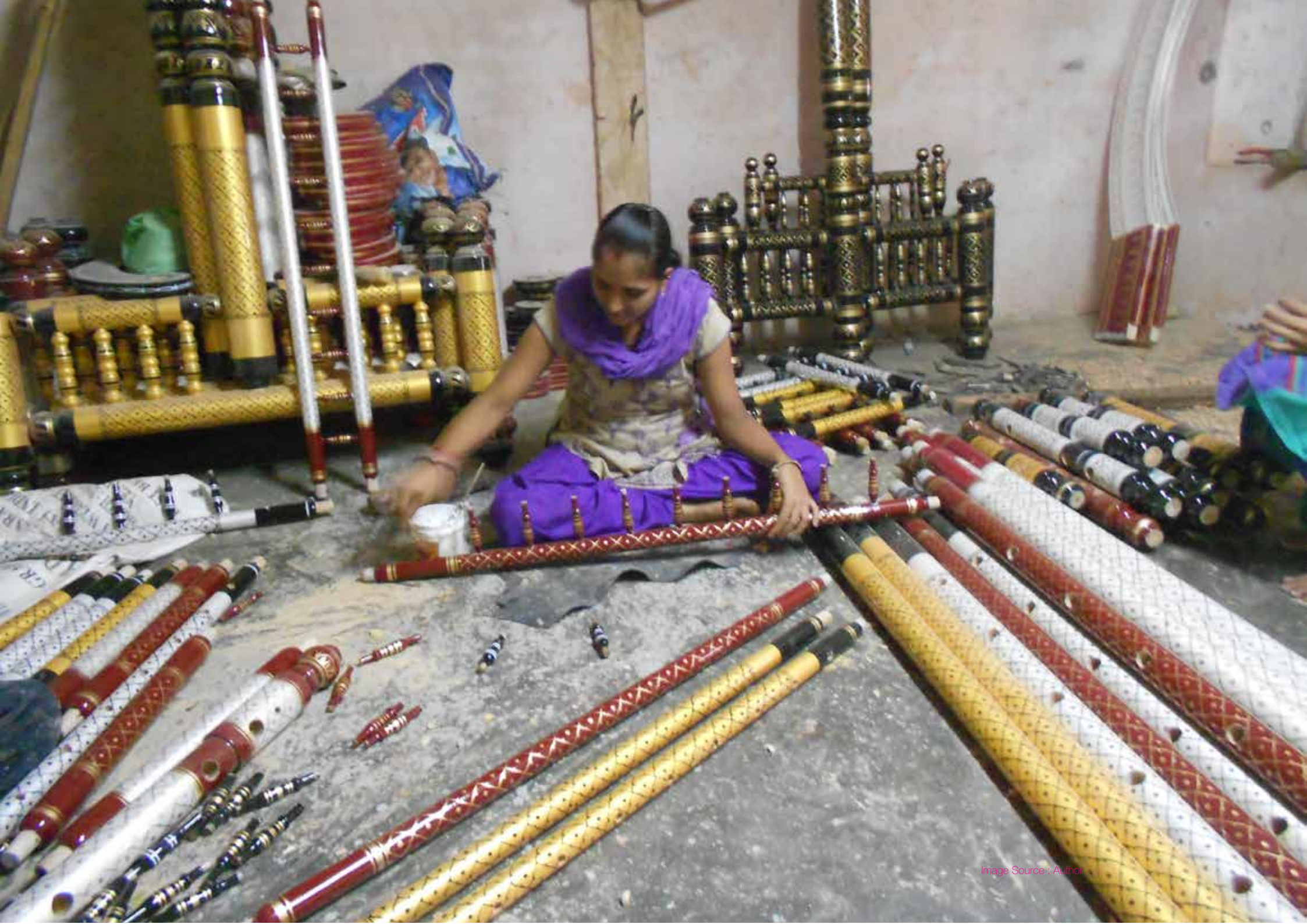
Sub Assembly of the painted parts

The painted components are taken for further assembly where, subassemblies are done. This includes the drilling & insertion of joining elements.

The pieces are assembled using the tongue & groove joint before the final assembly.



Image Source : Author



4.12 The Process

The final Assembly

The sub assemblies are stacked in a particular fashion considering the space requirement.

This facilitates the easier movement of components during the final assembly.

The final structure is assembled using hardware, nuts, bolts & drilling process.



Image Source : Author

4.13 Materials



Wood

Mostly the furniture is done using the Teak wood for strength & durability. The main material is Babool wood as it is strong, cheaper, stable & provides good finishes on the machines. The growth rate of this tree is faster & is abundantly available near Sankheda.

Even it gives better finish & strength than other kinds of wood. For bigger items like Sofa set, Sofa chairs, zulas, either Burma or Teak wood is used.



Fabric

Hand printed cotton fabrics made by highly skilled craftsmen is used for the covers of Canvas and Cushions. The cotton cloth is block printed with small & big traditional motifs & designs



Polyurethane Foam

Polyurethane foam sheets are used for cushioning of the seats & backs of sofa & arm chairs.



Epoxy Adhesive

The adhesive is known for its qualities to provide strong, Permanent & water proof bonding.



Hardware

Hardware like screws, nails, bolts & other fittings are used To provide fastenings to the Furniture. Brass nails are used as decorative elements.

Image Source : www.google.com

4.14 Tools



Wood Turning lathe

The square section of wood can be turned into circular section. Recently motorized Lathes have been used for faster production.

Cutting Chisels



Cutting chisels of high carbon alloys of various types while turning to obtain vivid profiles are used. Different shapes and size of chisels of high carbon steel with longer lasting edges are used for cutting of profiles



Bench Drill

Bench drill is used for making flat bottom holes. It is used to drill the holes of various diameters for the joinery purpose at various angles.



Emery Papers

Emery papers are used for Sanding and finishing providing smooth & glossy finish of high quality. Emery paper from grade 360- 1200 to achieve mirror like finish on the wooden sections before applying any other coat of lacquer or oil paint.

Image Source : www.google.com

4.15 Scope and purpose of the study

It has been observed that the new generation of the trained craftsmen are migrating to the cities, hence this craft center needs to be offered with proper technology of wood joinery and the revival of craft by teaching them the importance of using the environment friendly materials and the conservation of the traditional art, materials and skill.

The raw material mainly Teak wood has become scarce post independence due to deforestation act, these craftsmen are facing difficulties to produce good product out of cheaper varieties of locally available wood.

It has been observed that there is use of motorized lathe. The natural dyes and colors have been replaced by synthetic materials.

Though the colorful Sankheda furniture appears attractive, it lacks the sitting comfort and also lacks the proportions in most of the cases. The market demands more practical furniture with strong joineries, easy for the production ergonomically perfect, maintaining all the original characteristics & legacy of the famous Sankheda Furniture.

The study can help to figure out certain areas of design intervention, innovation & reinvent forms through Indian experience.



Fig. 4.2
Image Source : Author

4.16 Observations

Inaccessibility

The village is quite remote & it is a task to ascertain the exact location of the artisans without guidance.

Irregularity in work process

There were many artisans who were either not working for the time being or only worked when there is requirement of financial gains.

Family based business

Most of artisans worked for their families. Hence, there was no wage structure or working hours. The work starts at 10 o'clock in the morning to 1 o'clock in the afternoon. There is lunch break & the work resumes from 3 o'clock till midnight depending upon the work content.

Lack of Awareness

Most of the artisans have no access to the outer world or to marketing tactics that would render them capable of running their business successfully.

Most of the senior artisans are content with the existing conditions and don't want have changes being made in their business style.

But, there are some aspirational people who have given good education to their children & are making use of internet & technology for their business deals.



Image Source : Author

4.17 Identification of the key problem in the region



Information Source:

Interview with Master Craftsmen ,Mr. Vrajeshbhai Kharadi,Mr. Jayantilal J. Kharadi Mr. Mitesh Suthar, Mr. Mukesh Suthar .

New Design

It has been 20 years since the same range of furniture has been delivered by the master craftsmen in the village. There is a big demand in the market for new designs. The modern consumers are not satisfied with the same kind & range of furniture. The developed product should be:
- New, Unique, Original

Design Innovation

There is a need for new design intervention with new designs which can help to promote this handicraft at a highre segment in the market by repositioning & the craftsmen can generate lot of income.

Literacy & Knowledge

The people in the village are less educated & have less knowledge about latest processes & they are unable to afford a designer.

Government Policy Intervention

There should be a policy from Government to develop & promote the product.

Literacy & Knowledge

The people in the village are less educated & have less knowledge about latest processes & they are unable to afford a designer.

4.18 Scope and New Direction

The project aims at process of providing design intervention to make the products for contemporary life style without altering the traditional values of the craftsmanship and develop fresh identity for the skilled artisans.

Another purpose will be to develop a distinctive & edgy contemporary flavour in the traditional furniture.

To develop strategy for promotion & marketing by integrating the traditional craft into a Mall culture which is gaining more acceptance.

Educate craftsmen & give them exposure to online advanced technology supply chain. To introduce to them primary knowledge of the advanced technology.

To develop business for community & generate some economy. Make the next generation aware & aspirational with opportunities.

To obtain a furniture range which is highly sophisticated, with certain degree of elegance which can give the old age art special attention & appeal.

The initiative can be used to help people connect to their rich heritage by embracing designs derived from their culture and folk art.

5

Design Brief

5.1 Design Brief

Design of Contemporary furniture range inspired from the Traditional Sankheda Craft.

The unique quality of the product

- It can be
- Easy to make
- Improved manufacturability

How is it envisaged to address the problem

- New range of furniture derived from Ethnic Craft
- More human effort & craftsmanship involved
- Standardization of work

Scope for new materials & technology

- New technology infusion with traditional process
- Partly industrialized & partly hand crafted

How well does it address the user segment it is intended for

- Use of modern material , processes thereby injecting sense of modernity



6

Initial Ideations & explorations

6.1 Brain Storming

COMFORT
Reposition
Decorative
Material
Post Modern
CULTURE
Ergonomic
Skill Based
New Philosophy
New Thought Form
Motiffs
Motifs

Fig. 6.1

Image Source : Author

6.2 Early ideas

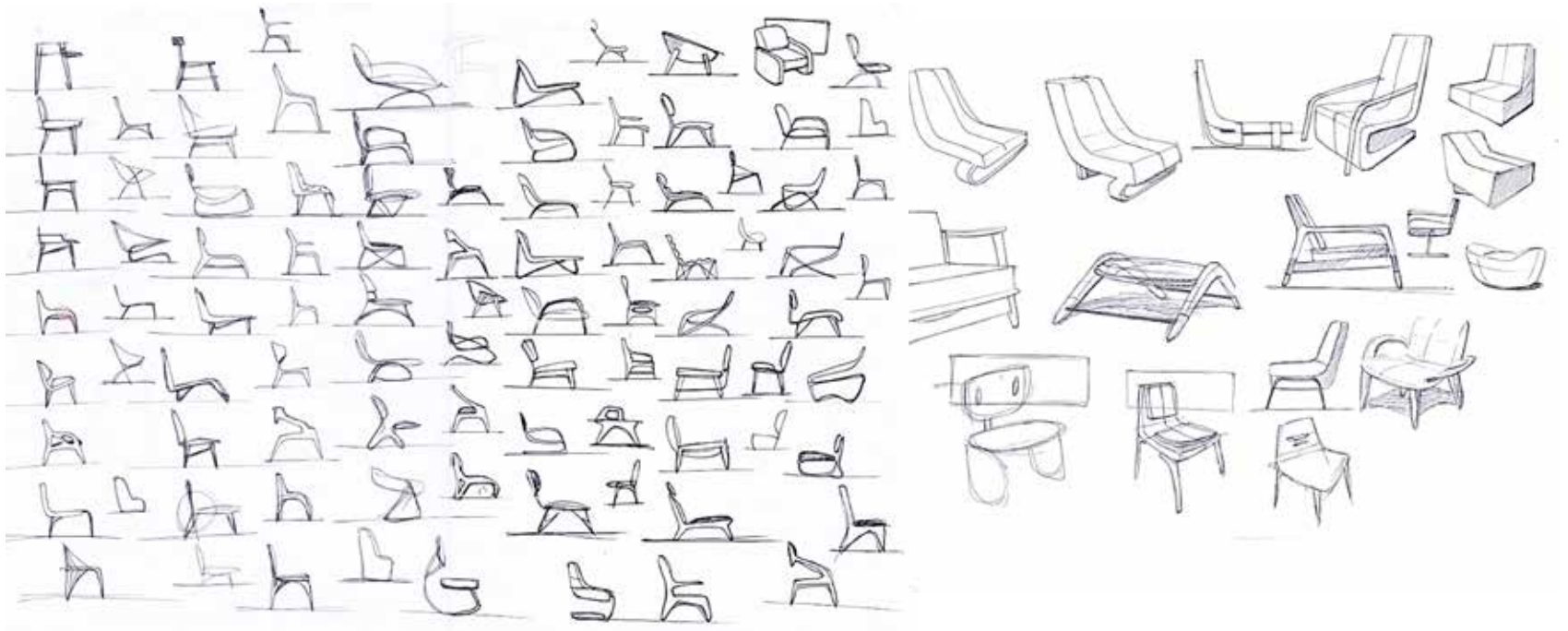


Fig. 6.2
Image Source : Author

6.2 Early ideas

Use of hybrid materials

- wood, plastic & metal
- Turned Sankheda sleeves with bent sections of tubes.



Fig. 6.3

Image Source : Author

6.3 Initial Explorations

Use of hybrid materials

- wood, leather, fibre & metal
- Turned Sankheda sleeves with bent sections of tubes.



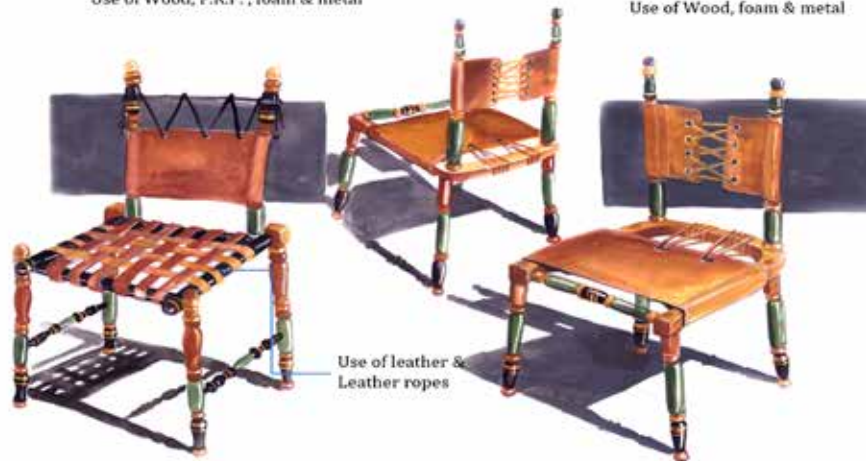
Use of Wood, F.R.P., foam & metal



Use of Wood, foam & metal



Use of Wood, metal joints, knock down assembly



Use of leather & Leather ropes



Exposure of natural wood along with painted elements

Fig. 6.5

Image Source : Author

6.3 Initial Explorations

Use of hybrid materials

- wood, plastic & metal
- Turned Sankheda sleeves with bent sections of tubes.



Fig. 6.6

Image Source : Author

6.3 Initial Explorations

Use of hybrid materials

- wood, plastic & metal
- Turned Sankheda sleeves with bent sections of tubes.

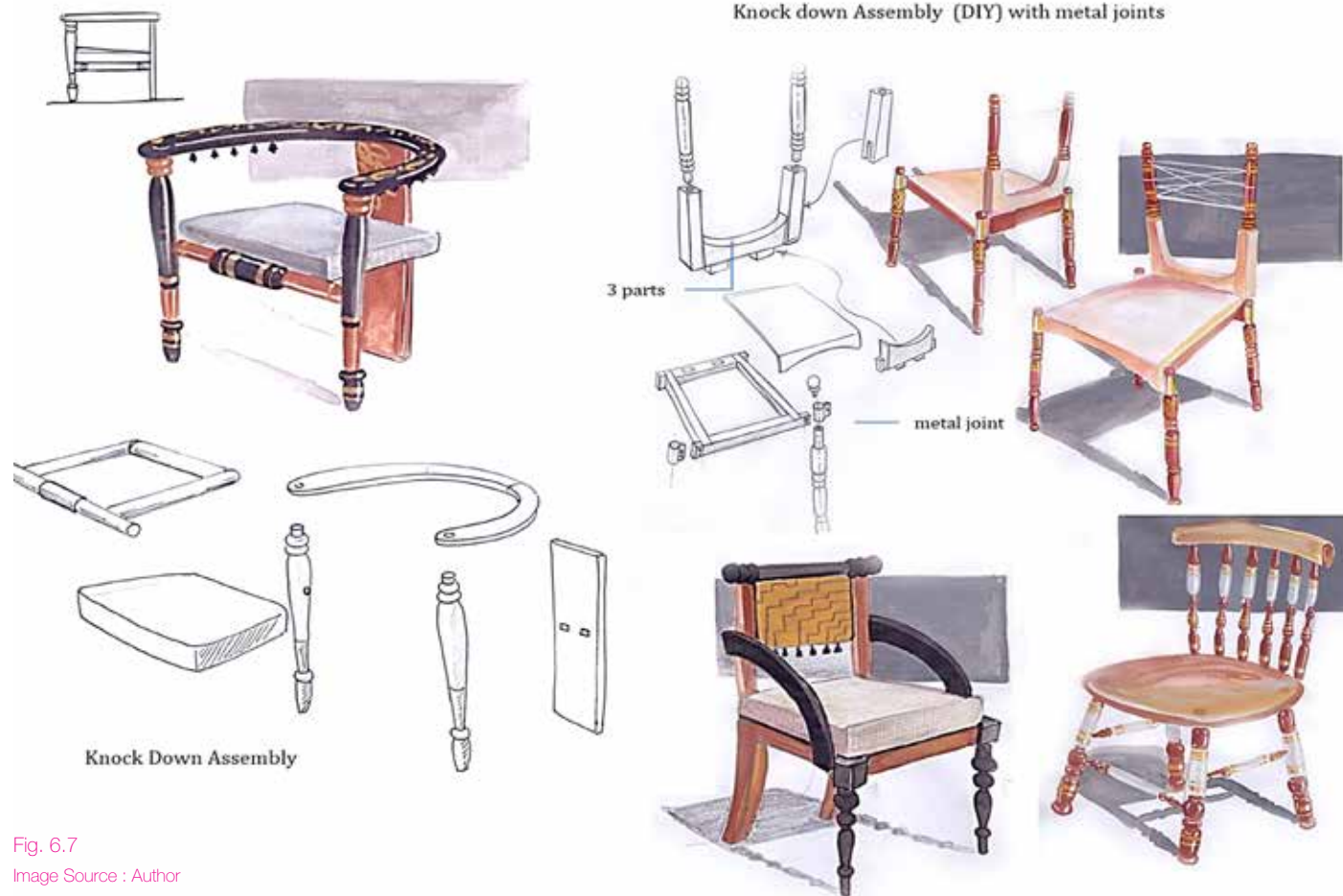


Fig. 6.7

Image Source : Author

6.4 Selected ideas

Use of hybrid materials

- wood, plastic & metal
- Turned Sankheda sleeves with bent sections of tubes.



Fig. 6.8

Image Source : Author

6.4 Selected ideas

Initial 3D CAD renders for further filtering , use of new color variations

The ideations were modified to rough & crude renders with the various combinations of colors, graphics & textures.

The purpose was mainly To achieve newness & Uniqueness with color Variations & textures.



Fig. 6.9
Image Source : Author

6.5 Selected directions

Direction 1 & Direction 2



Fig. 6.10

Image Source : Author

6.6 Direction 1

Direction 1 taken ahead for further exploration



Fig. 6.11

Image Source : Author

6.7 Direction 1

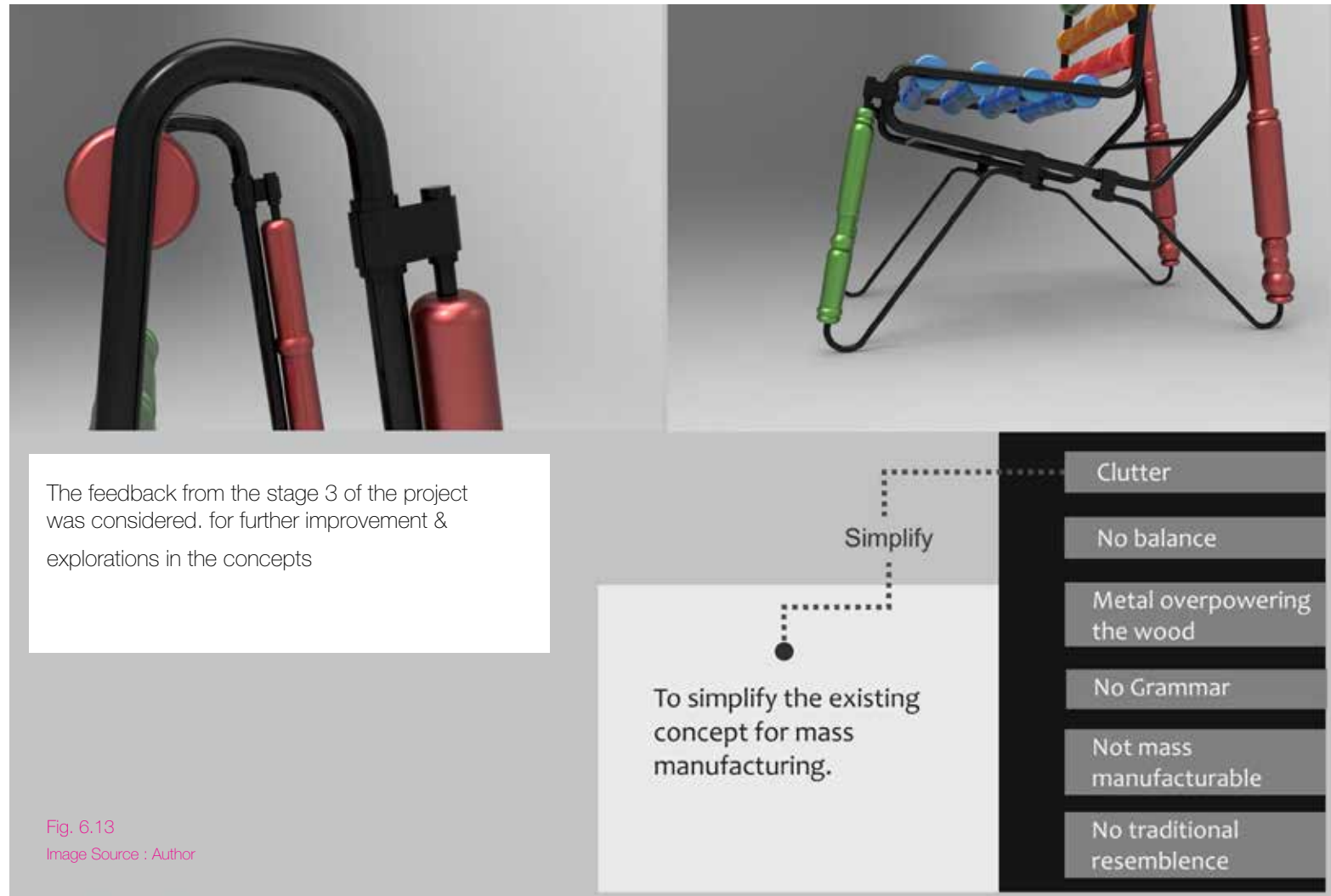
The Range



Fig. 6.12

Image Source : Author

6.8 Stage 3 Inferences and Feedback



7

Documentation of development of Motifs & Graphics Vocabulary

7.1 Exploration

Exploration of Turned Sankheda components for proportion & length

During my visit to Sankheda, I had documented the various contour patterns generated to manufacture the Sankheda pillars.

The various turned pillars and components were studied and a vocabulary was developed for the components to find out where they can fit in the further explorations of the product.

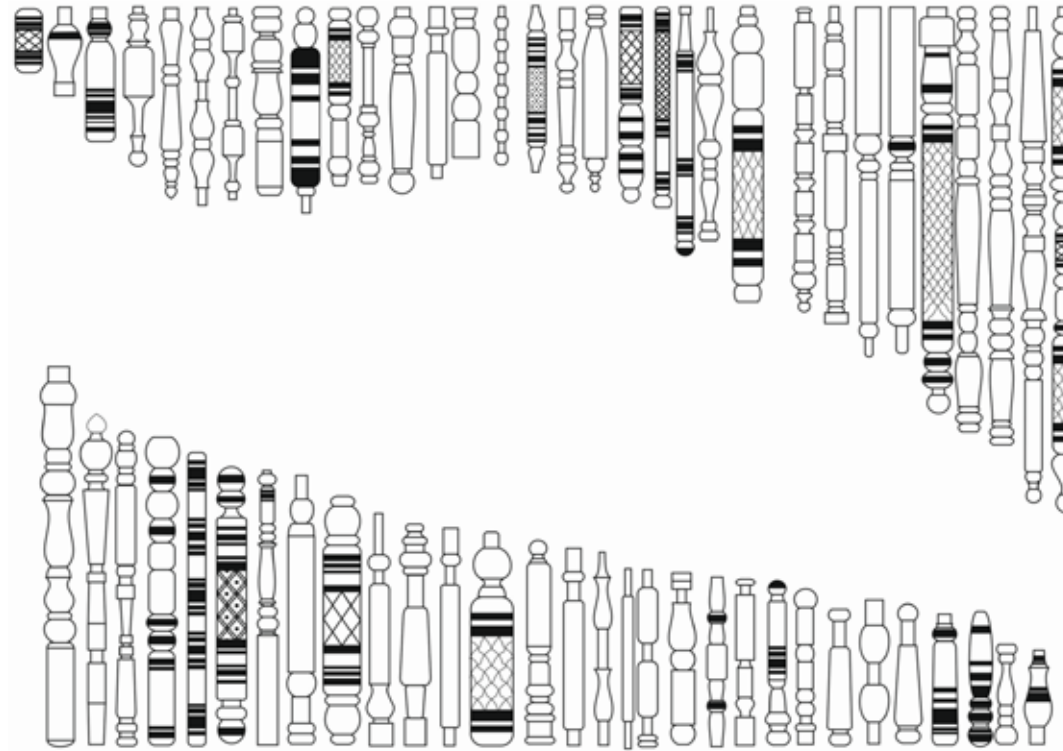


Fig. 7.1

Image Source : Author

7.1 Exploration

Exploration of Motifs & Décor elements for further refinement

The various turned pillars and components were studied and a vocabulary was developed for the components to find out where they can fit in the further explorations of the product.

- Early Ideas
- The form
- Visualization
 - Elements
 - Layers
- Motif Design
- Application in Prototype

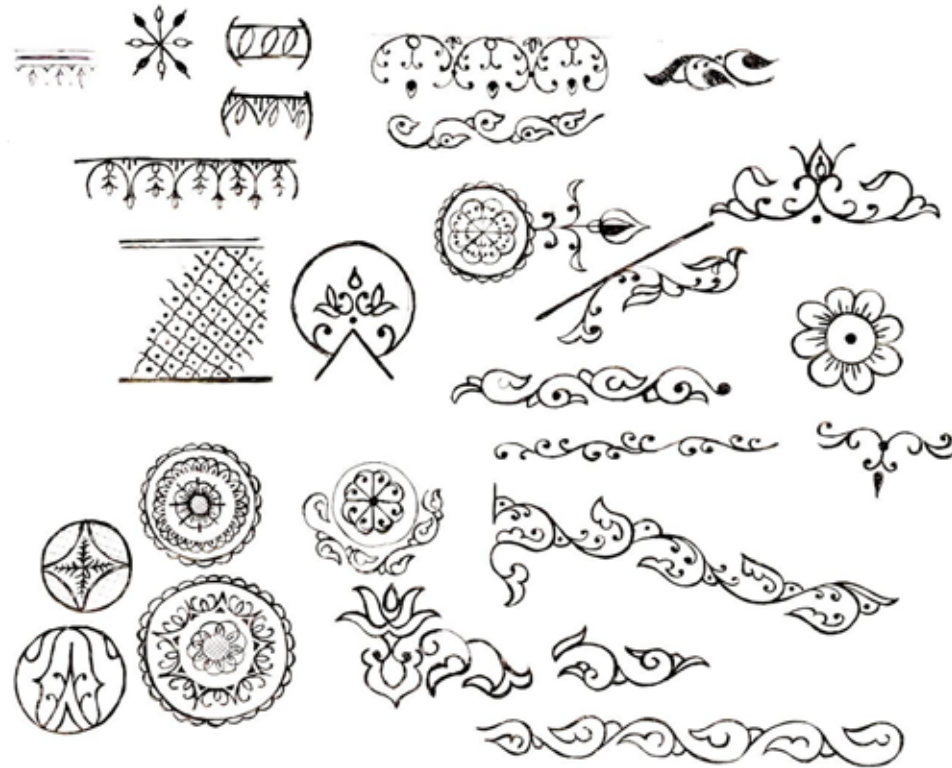


Fig. 7.2

Image Source : Author

7.2 Abstraction

Motifs & Graphics

The motifs can be developed in a modern way to develop & weave a merger between cultures, people, lifestyles & architecture in harmonious & co existent manner. The study of the hieroglyphic symbols earlier was very helpful for developing new motifs & designs.

The motif at one glance should give glimpse of tradition & culture, whereas the combination of colors will give the modernity to the scheme & capture the true Indian essence.

The existing motifs from temple houses, pooja ghars, zhulas, child cradles were collected & a series was made.

It can be possible to reinvent these elements and come up with the contemporary language along with the ethnicity in it.

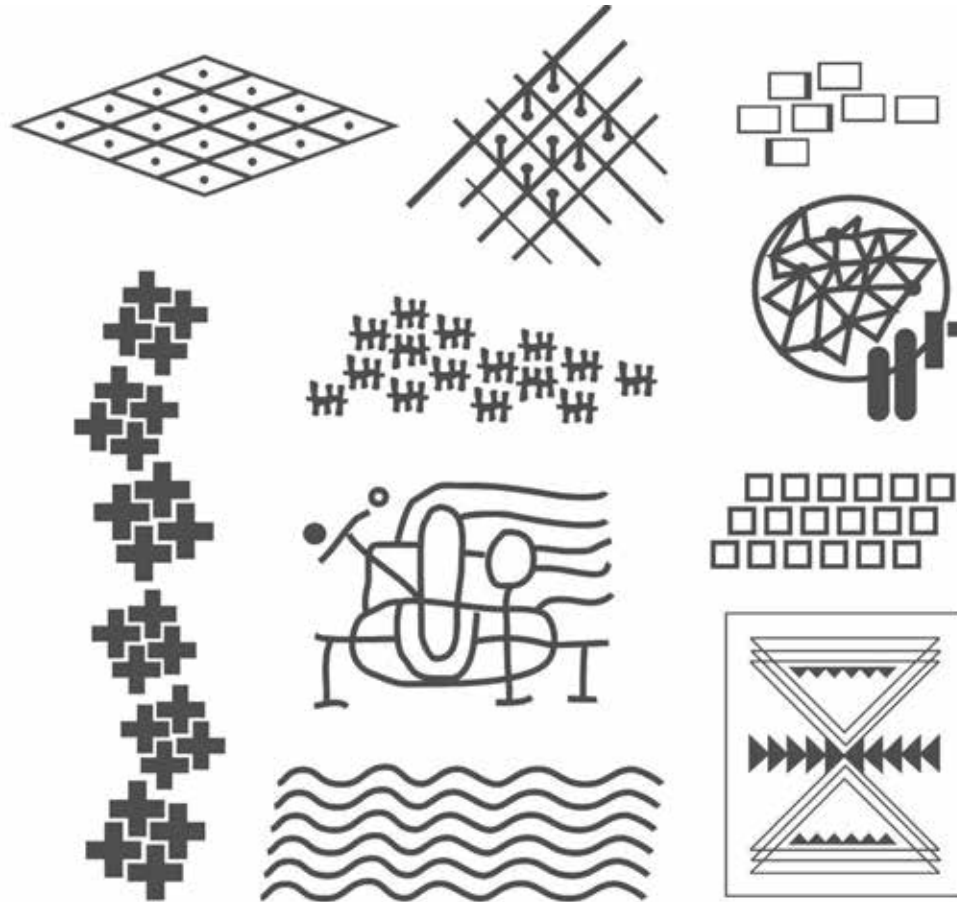


Fig. 7.3
Image Source : Author

7.2 Abstraction

Motifs & Graphics

One aspect would be to pay respect to the architecture of the traditional Gujarati customs & try to connect it with the motifs.

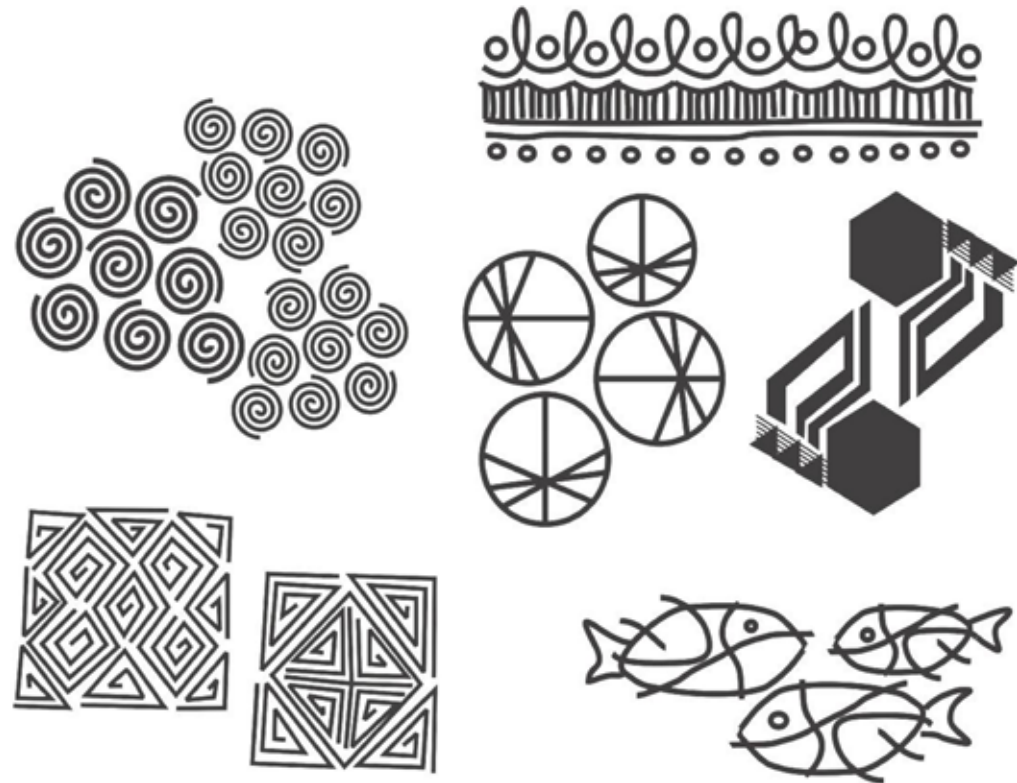
Florals

Florals can be used to bath up the gaps & borders if they are to be presented primarily on the cushion pads & seat pads. We can scale up the floral motifs & make them as large as to up the over the top factor.

Fauna

The birds & animals like peacocks & elephants in the graphics can be abstracted in a contemporary way. Techniques like dabbing by using blocks or using the paint spraying on a stencil can be used to improve the quality of the graphics. The more flow in the contours of motifs can be simplified by use of straight lines and dots to the generation of repetitive patterns of squares & rectangles.

Bandhani - Peacocks, flowers, dances, "Rasamandala", mix of combinations.



Play with scale & repetition

Color Separation

Metaphors

Fig. 7.4
Image Source : Author

8

Way Ahead

8.1 Way Ahead

Consideration of various approaches

It was decided to develop a strategy for the exploration of concepts.

There were 3 approaches taken into consideration for developing concepts.

The approaches will be considered to strategize the re positioning of the Sankheda craft into the new realms of the major platform in the Furniture Scenario in India,

1

Sankheda as an ancilliary unit to mass manufacturing furniture giants like Godrej interio and Neel kamal

2

Sankheda as a urban furniture companies like Pepperfry, Urban Ladder, Fab India for the urban middle class customers

3

Sankheda as it is maintaining its tradition & process & as an independent market segment player

9

Approach 1

9.1 Approach 1

Sankheda as a craft cluster acting as an ancillary unit to mass manufacturing furniture giants like Godrej interio and Neel kamal

Proposal

The proposed idea includes the furniture company sending the base panels to the Sankheda cluster with proper details.

The artisans send back the assembled panels & other accessories to the company for final assembly.

Here there can be an opportunity to merge & open up broader prospects of business expansion & exposure to merging of industriousness & craft .

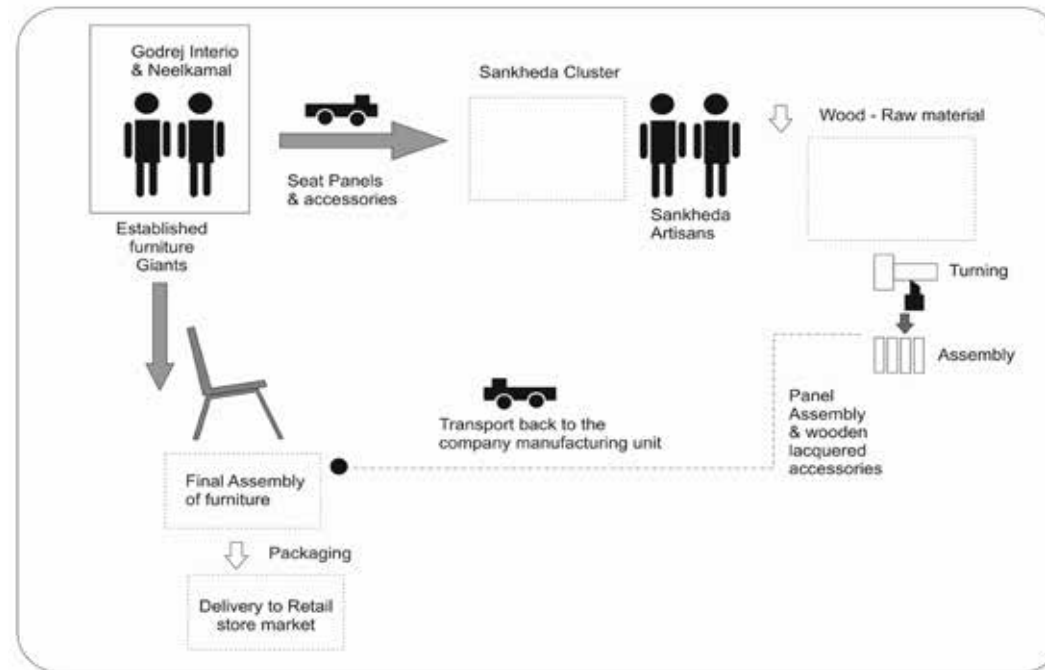


Fig. 9.1
Image Source : Author

9.2 Approach 1

Initial Mind Mapping

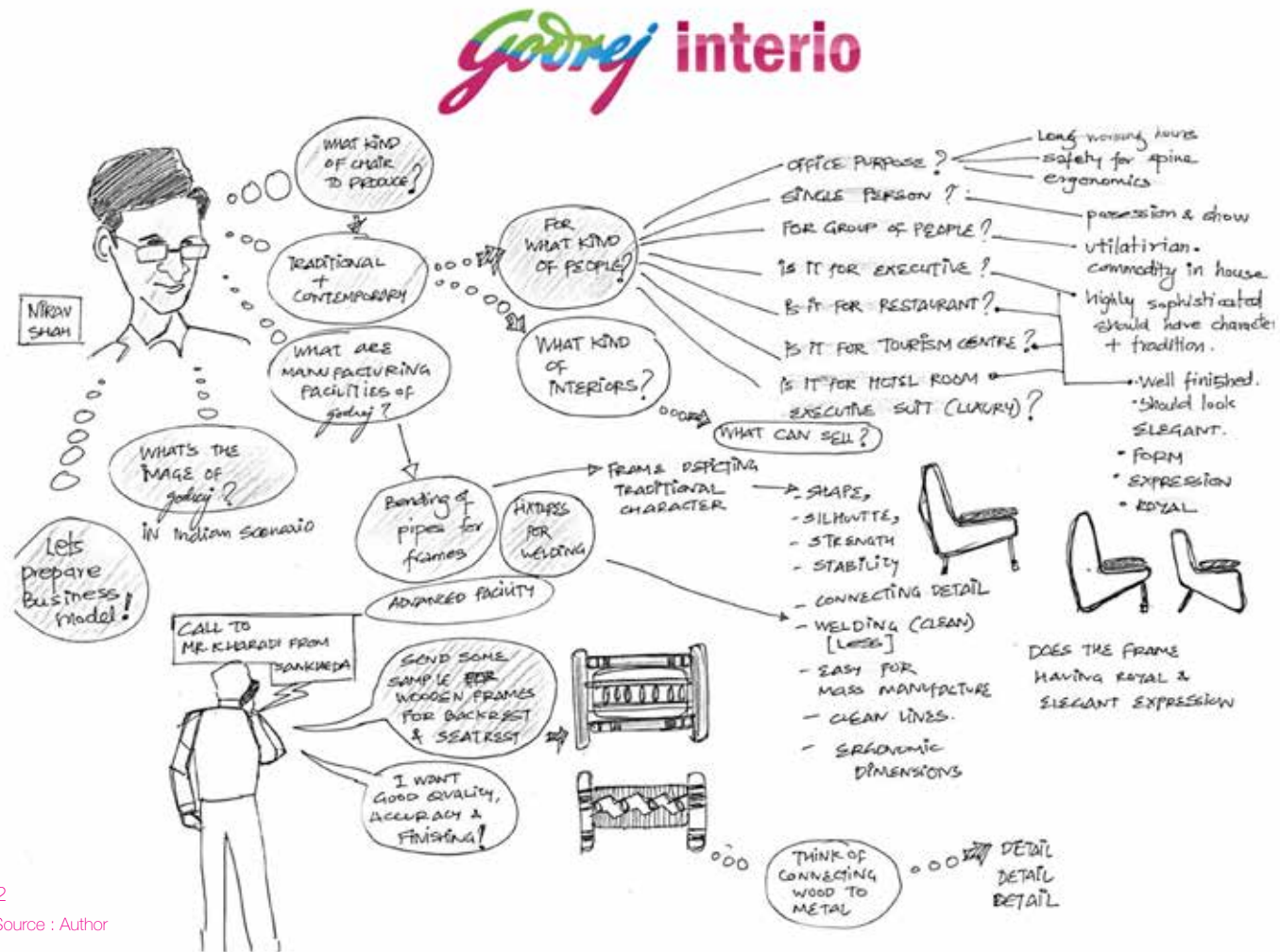


Fig. 9.2
Image Source : Author

9.3 Approach 1

Product Analysis



Fig. 9.3
Image Source : Author

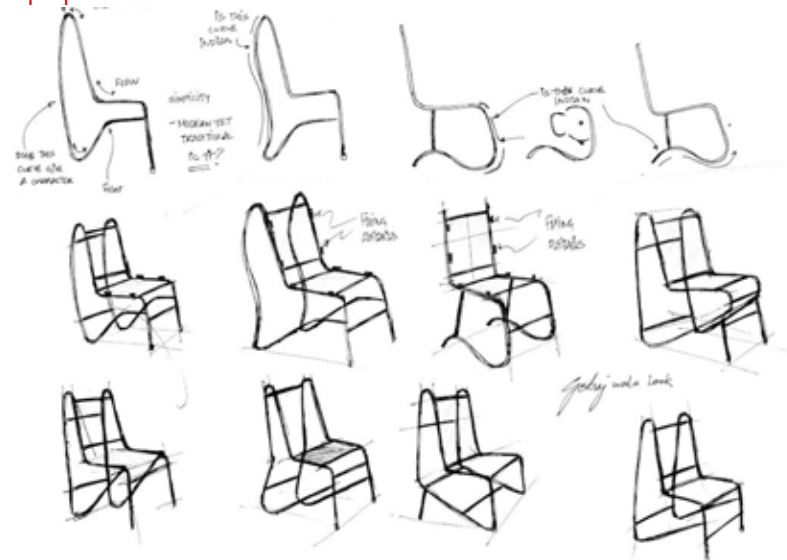
9.3 Approach 1

Product Analysis



Fig. 9.4
Image Source : Author

9.4 Approach 1



Different variations in the metal frames were avoided

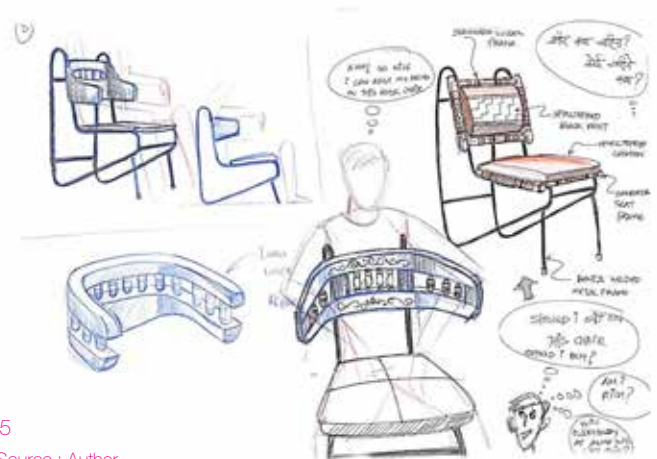
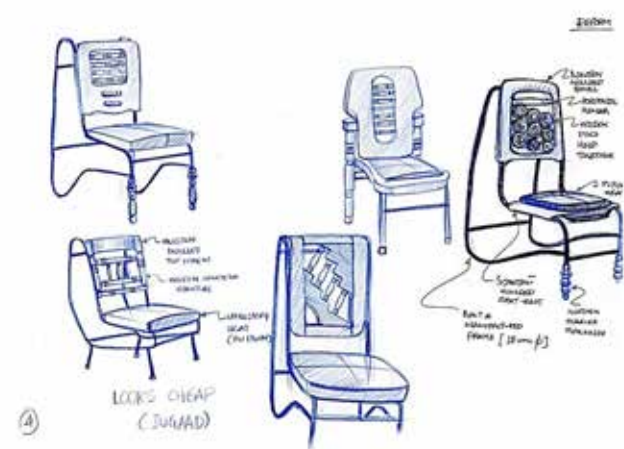
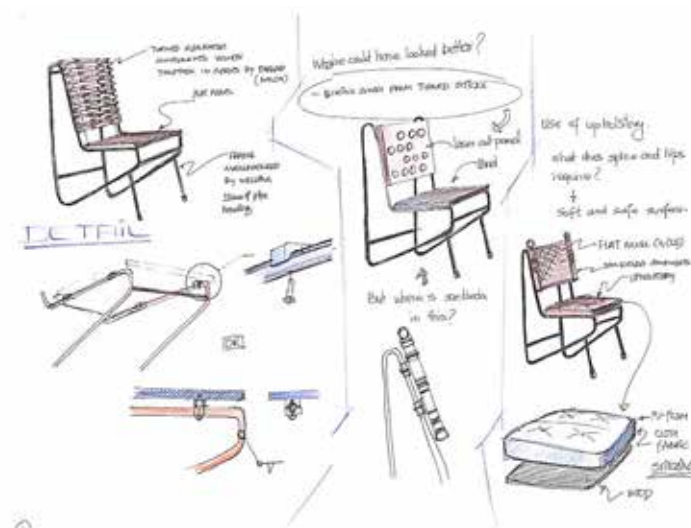


Fig. 9.5

Image Source : Author



9.4 Approach 1

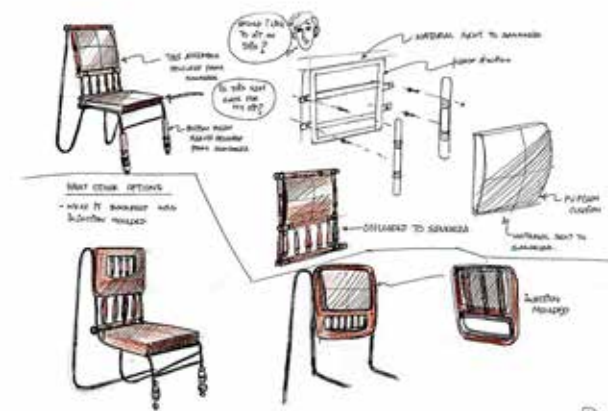
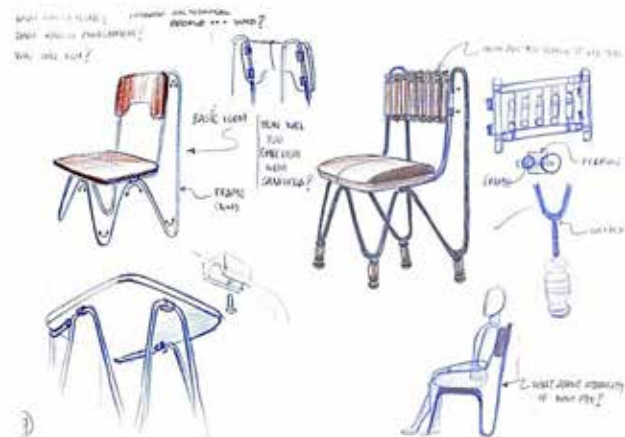
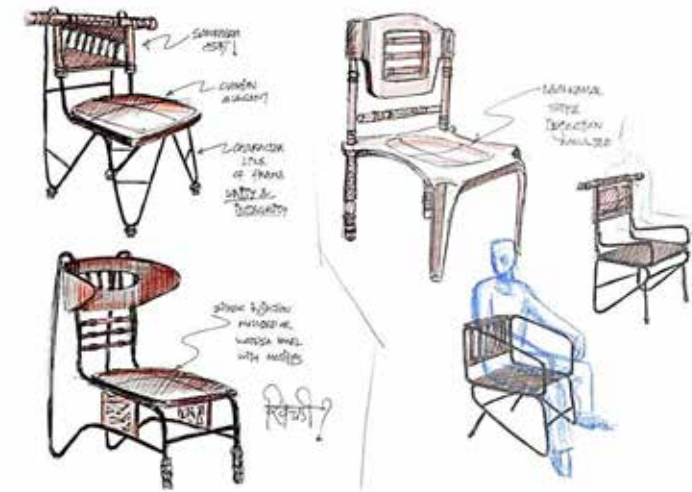
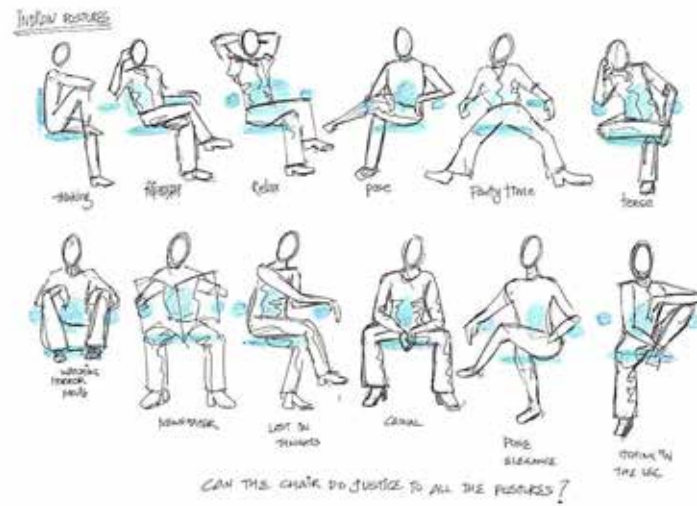


Fig. 9.6
Image Source : Author

9.4 Approach 1

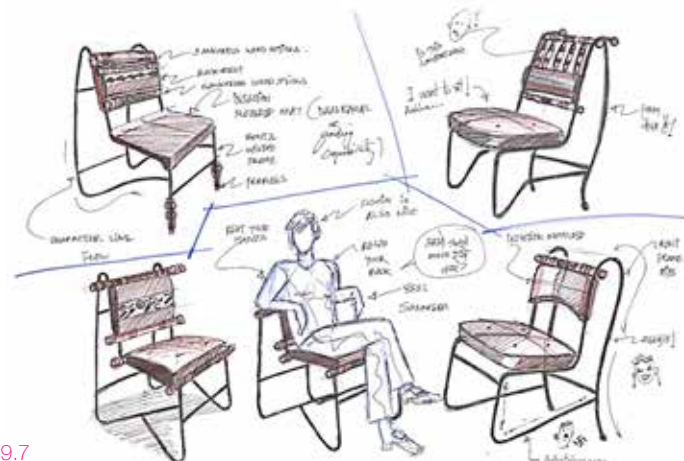
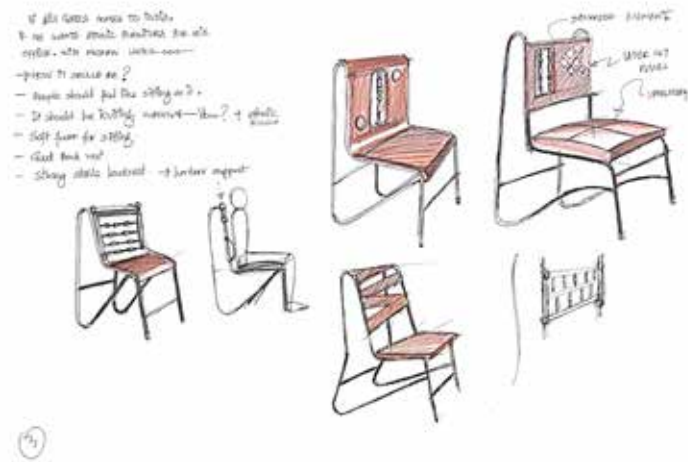
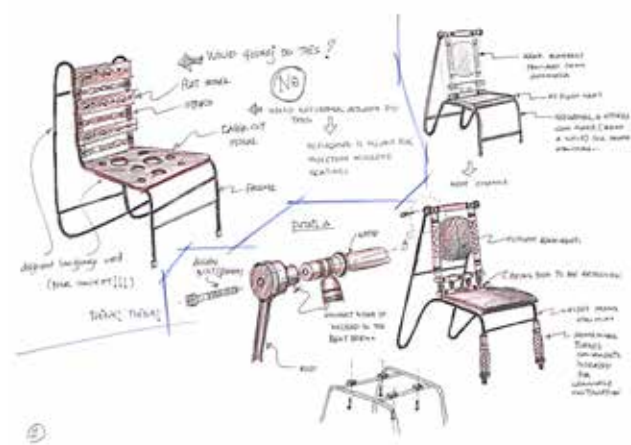
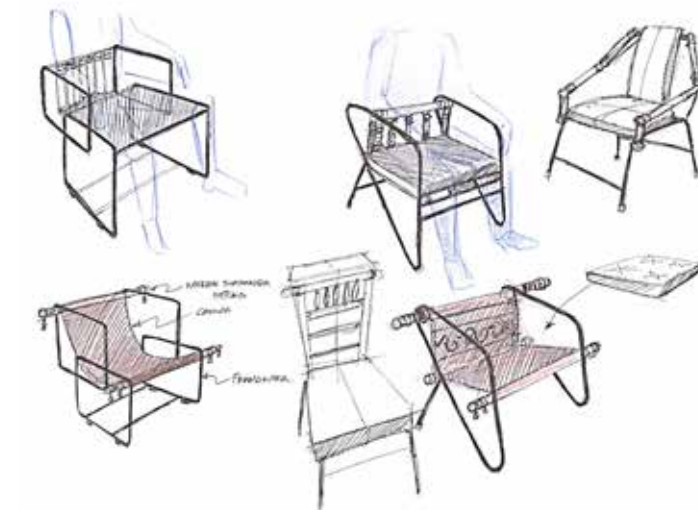


Fig. 9.7

Image Source : Author



9.5 Approach

Making of Mock ups



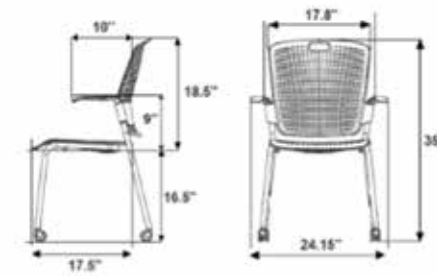
Various miniature wireframe & bamboo mock up models were done referring the ideations.

The scale of 1:5 was preferred during the making of mock up. The recline angle of 5 degrees was considered for the mock up before proceeding for the final detailing of the concepts.

The basic ergonomic considerations in terms of seat length, seat width, recline angle & the seat pad angle were considered in the scaled down model.



Pic. : Author



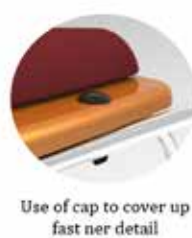
Ref: www.smartfurniture.com . Cinto stacking chair

9.6 Approach

Ideation 1

Involves the use of different materials wherein the hand crafted Sankheda turnings will be Assembled on panel assembly to form the backrest & legs of the chair.

Made up of different materials
Use of standardized hardware
Use of Allen bolts for clean detailing
Use of fabric



Injection moulded plastic panel
Panel with wooden Sankheda elements mounted on backrest



Check the feasibility of using Sankheda sticks on backrest.
Change the curvature of backrest Support.
Change the structural aesthetics.

Conference Chair (Upright)

Fig. 9.8
Image Source : Author

9.7 Approach

Ideation 2

In this ideation, the rear legs are characterized by sudden band in structure to generate a different kind of aesthetic appeal to the form & geometry.

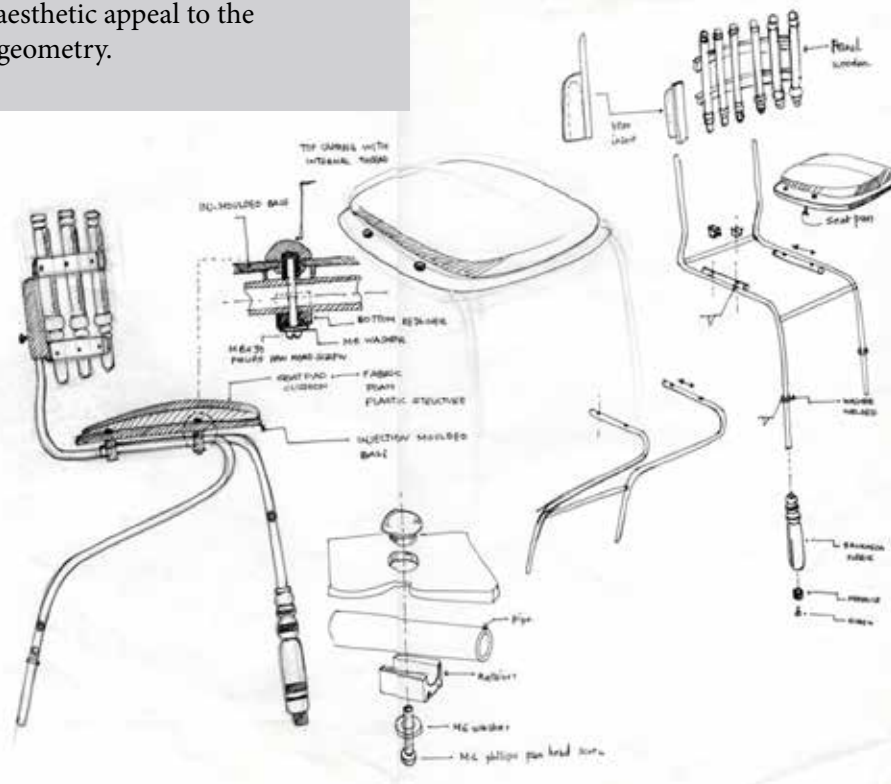


Fig. 9.9
Image Source : Author

Conference Chair (Upright)



Injection moulded support



Bent leg profile

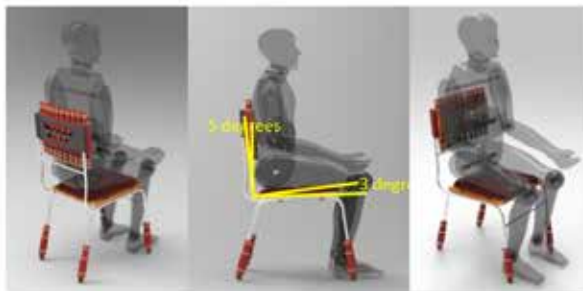
9.8 Approach

Ideation 1 Refinement

Conference Chair (Upright)

Concept 1 & 2 refinement by

- Making it stackable by changing the orientation of the legs.
- Refining the visual aesthetics of the backrest



Ergonomic Evaluation

Fig. 9.10

Image Source : Author

9.9 Approach

Ideation 3

Using the Sankheda wooden panels Integrated with the plastic support Structure to integrate hand crafted Element to the mass manufactured Metal framework.

The seat pad can be injection moulded to support upholstered cushion.

- Made up of hybrid materials
- Use of standardized hardware
- Use of Fabric

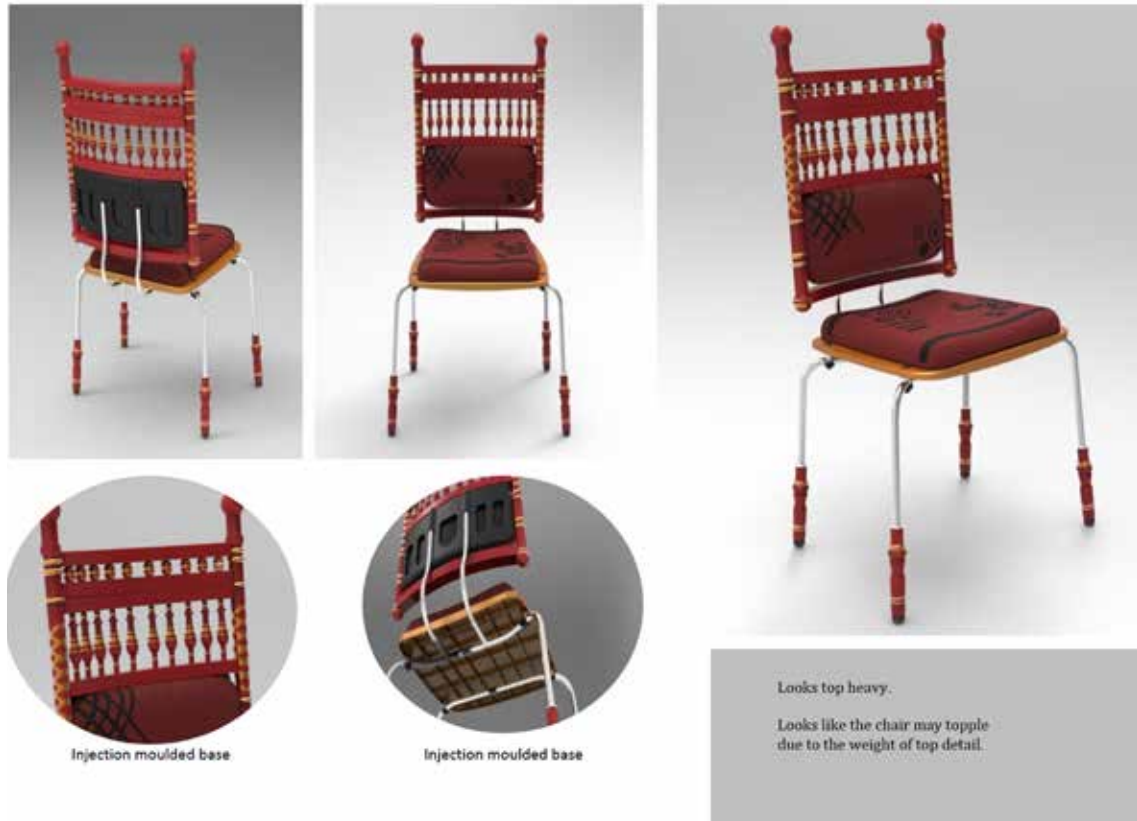


Fig. 9.11
Image Source : Author

Conference Chair (Upright)

9.10 Approach 1

Refined Renders

Conference Chair (Upright)

Variation in leg profile more wide spread Butterfly legs .

This is to generate some form of characteristics of insect standing tall & holding the structure.



Fig. 9.12
Image Source : Author

9.11 Approach 1

Refined Renders

Conference Chair (Upright)

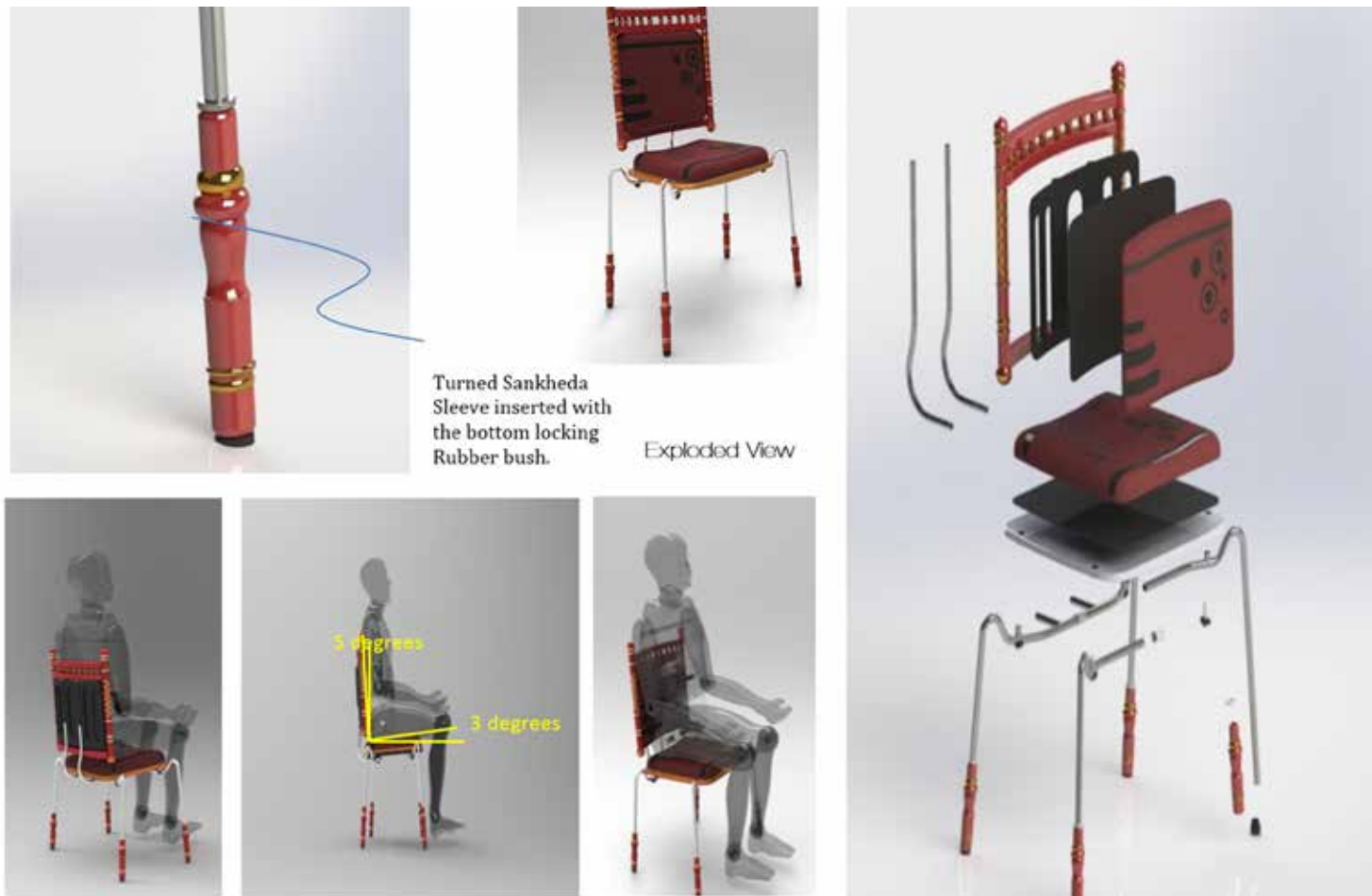


Fig. 9.13
Image Source : Author

9.12 Approach 1

Refined Renders

Conference Chair (Upright)



Fig. 9.14

Image Source : Author

9.13 Approach 1

Ideation 7

Conference Chair (Upright)



Fig. 9.15

Image Source : Author

9.14 Approach 1

Ideation 5

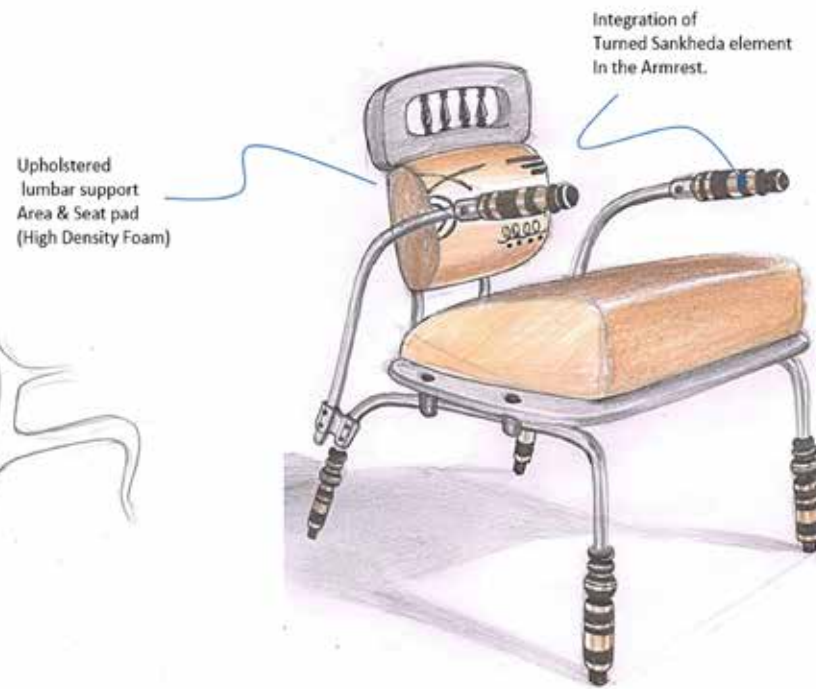
Low Seated Lounge Chair

The purpose in this ideation is to develop a low seated lounge chair with upholstered Seat pad & integrated with Wooden elements of Sankheda



Fig. 9.16

Image Source : Author



9.14 Approach 1

Ideation 5

Low Seated Lounge Chair

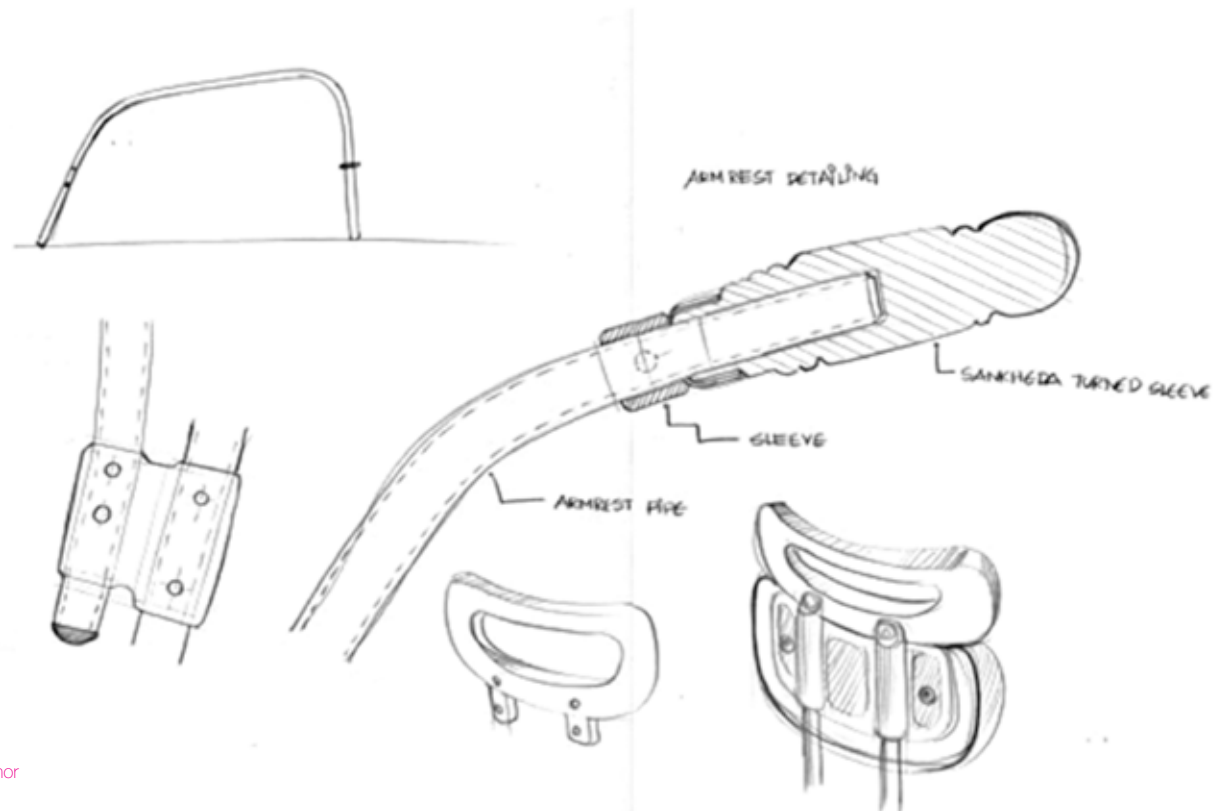


Fig. 9.17

Image Source : Author

9.15 Approach 1

Ideation 6

Detail involves use of metallic armrest moving all the back rest to the front of the seat pad.

Low Seated Lounge Chair

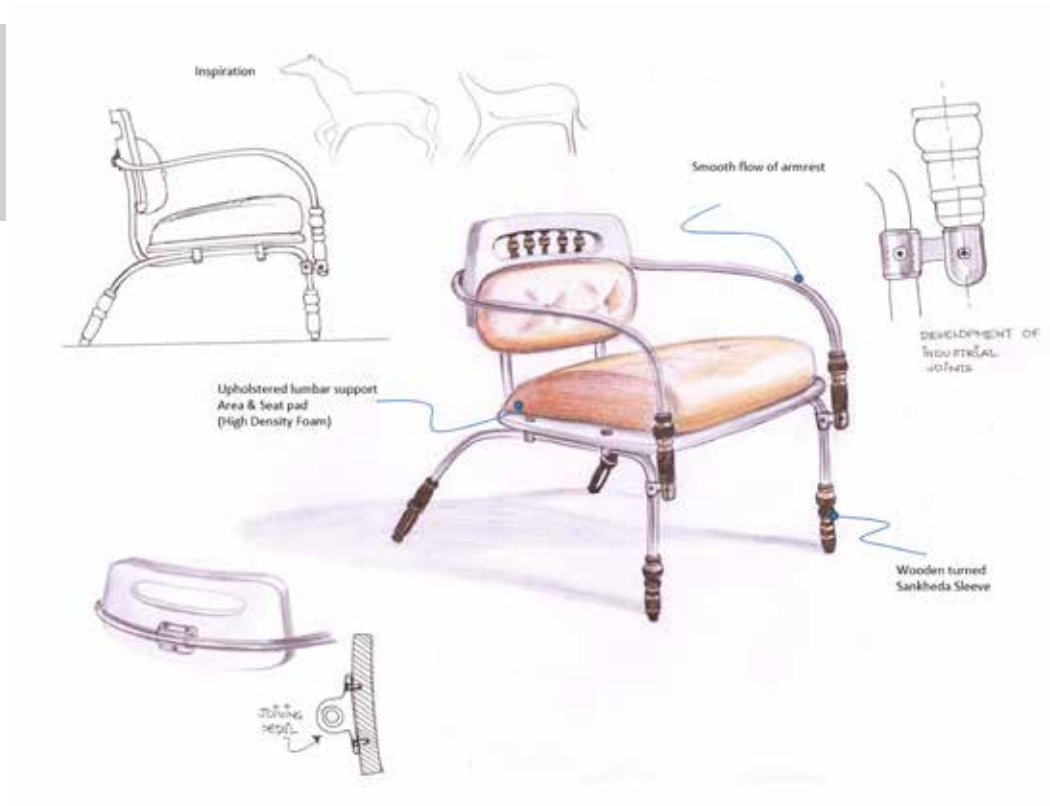


Fig. 9.18

Image Source : Author

9.15 Approach 1

Ideation 6

Low Seated Lounge Chair

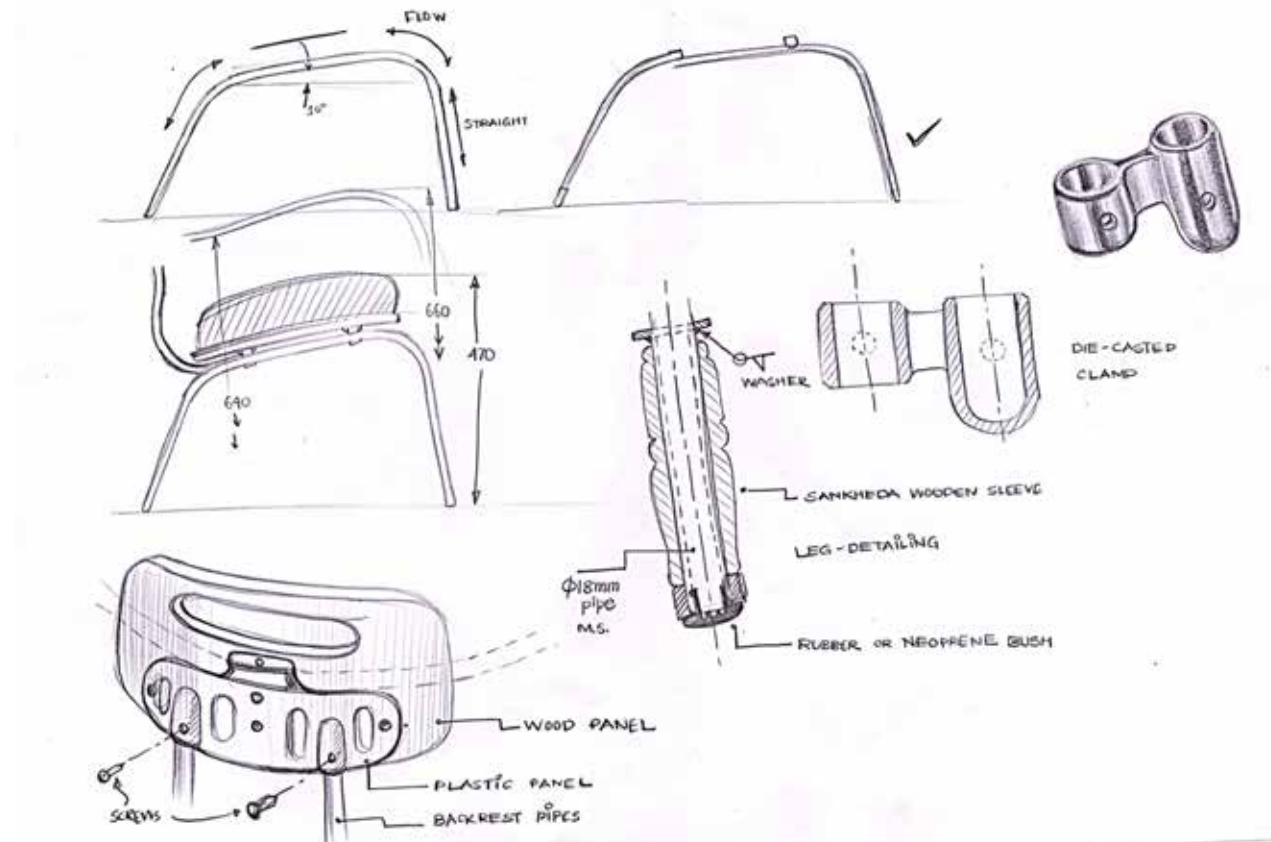


Fig. 9.19
Image Source : Author

9.15 Approach 1

Ideation 6

Low Seated Lounge Chair

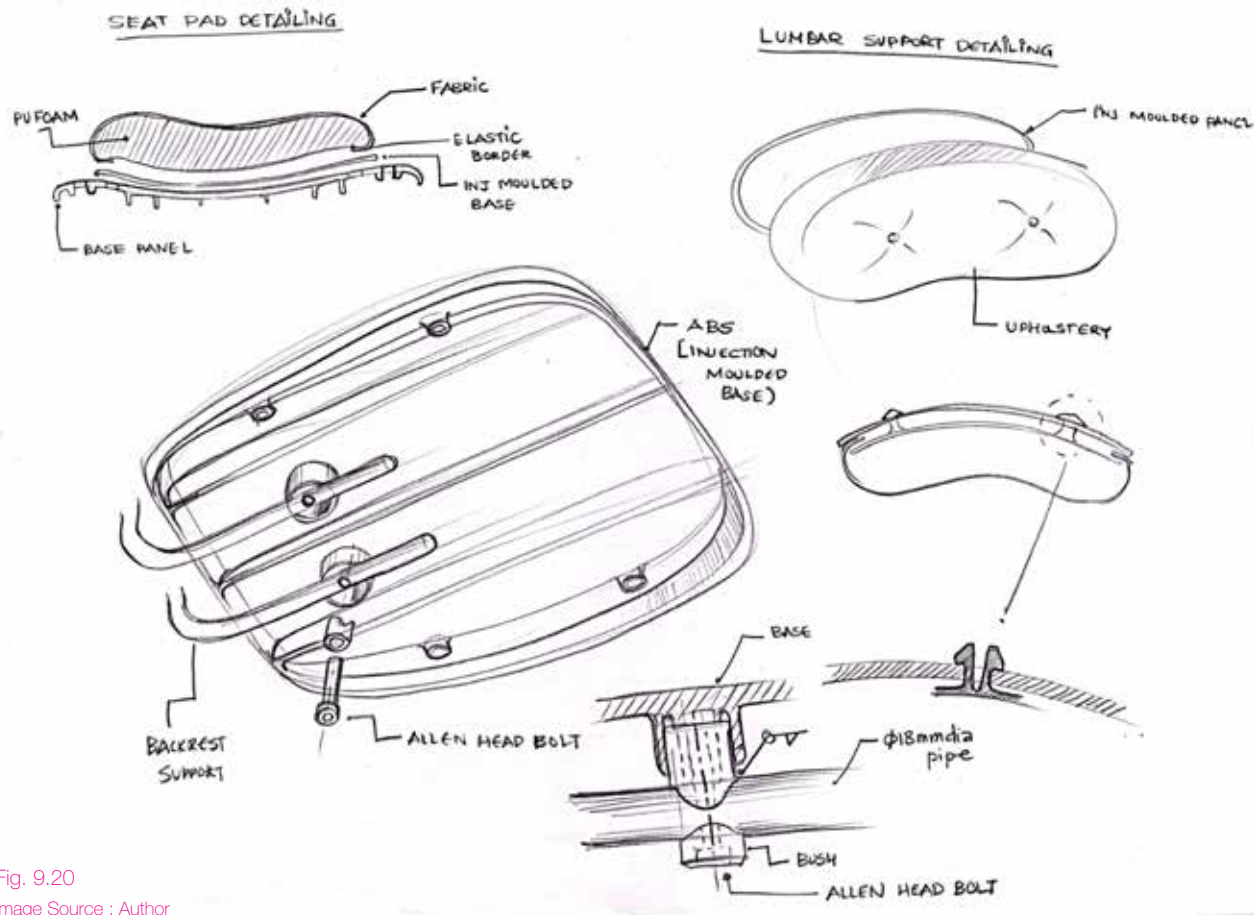


Fig. 9.20
Image Source : Author

9.15 Approach 1

Render

Low Seated Lounge Chair

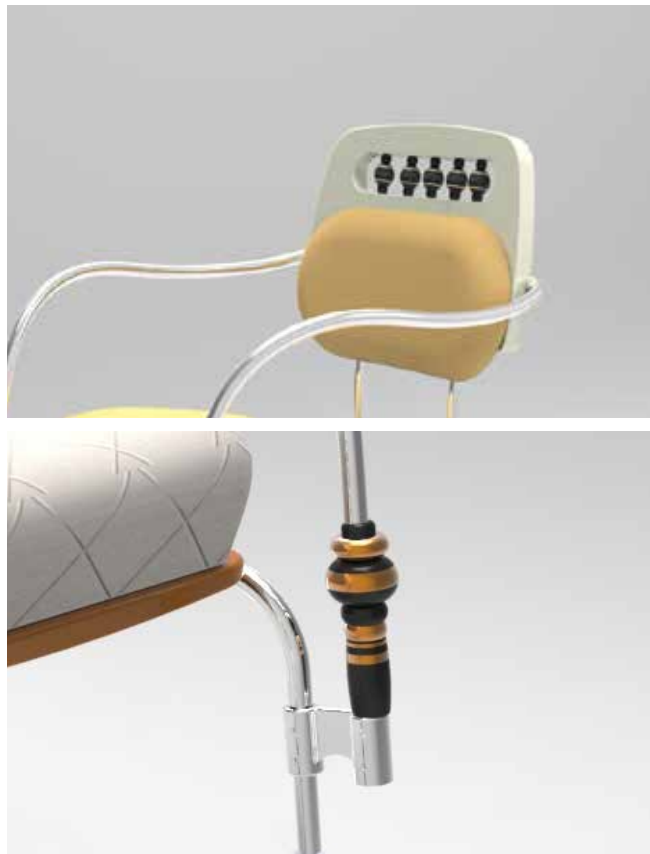


Fig. 9.21
Image Source : Author

9.16 Approach 1

Ideation 7

Use of fantasy analogy, wherein a jumping deer is taken as an inspiration to generate the basic structure of the chair with the integration of wooden Sankheda elements.

Low Seated Lounge Chair

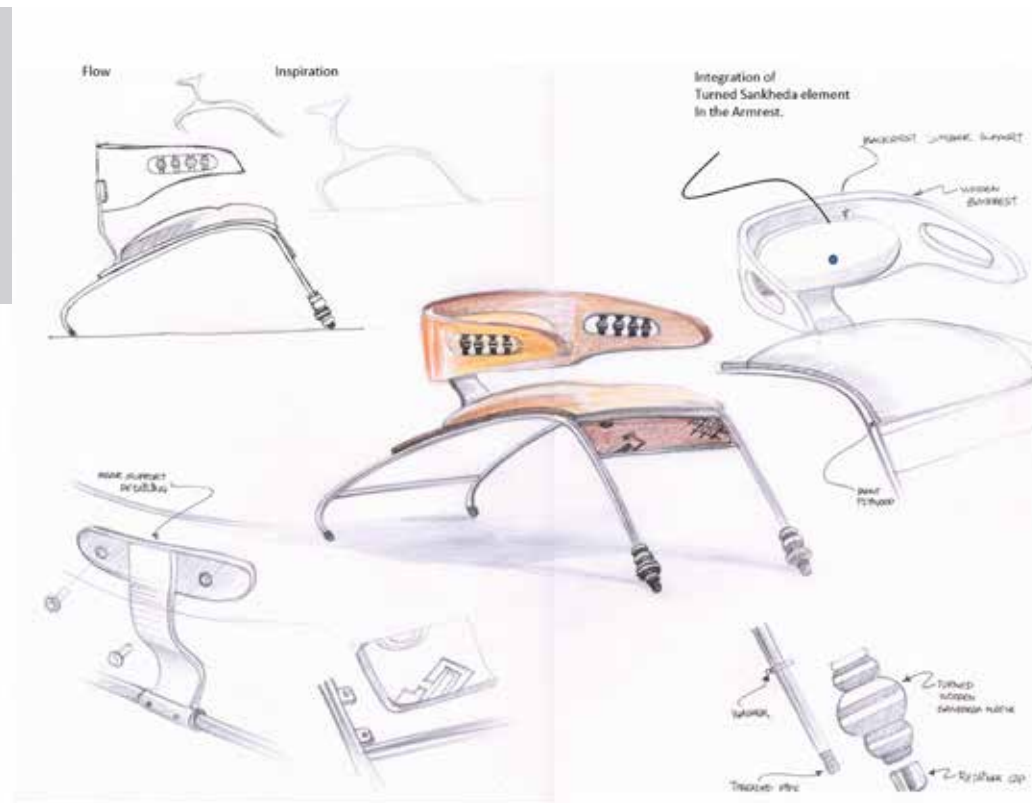


Fig. 9.22
Image Source : Author

9.16 Approach 1

Ideation 7

The backrest consists of beautifully crafted wooden panel which acts as backrest as well as armrest with the Turned Sankheda elements embedded in it.

Low Seated Lounge Chair

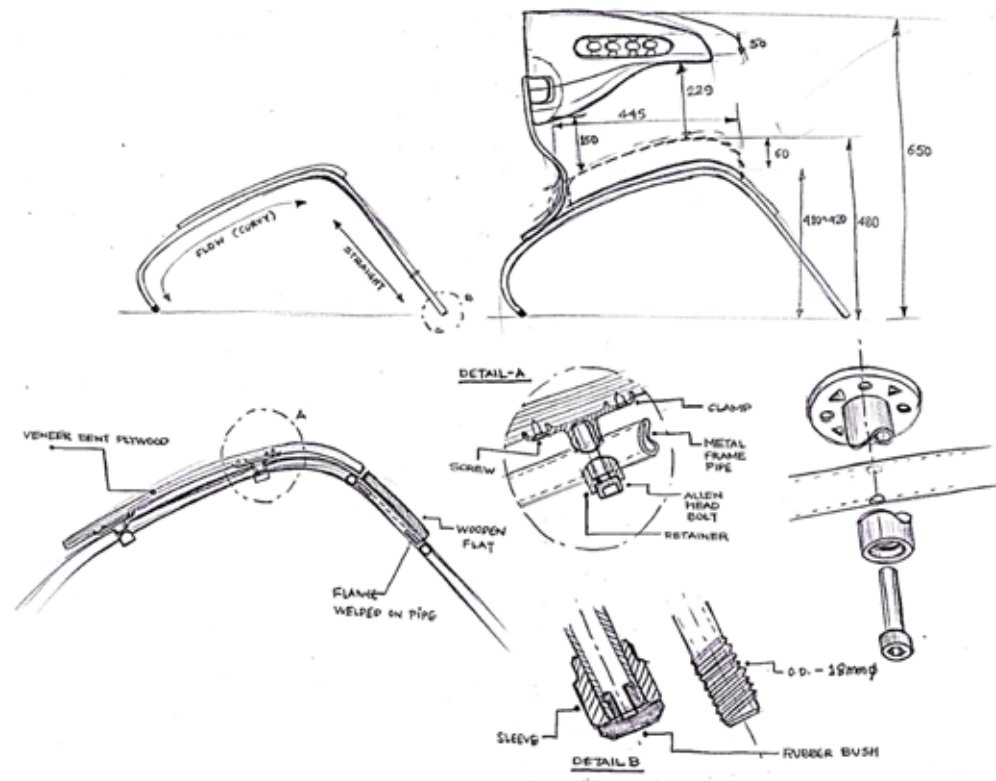


Fig. 9.23

Image Source : Author

9.16 Approach 1

Ideation 7

Low Seated Lounge Chair

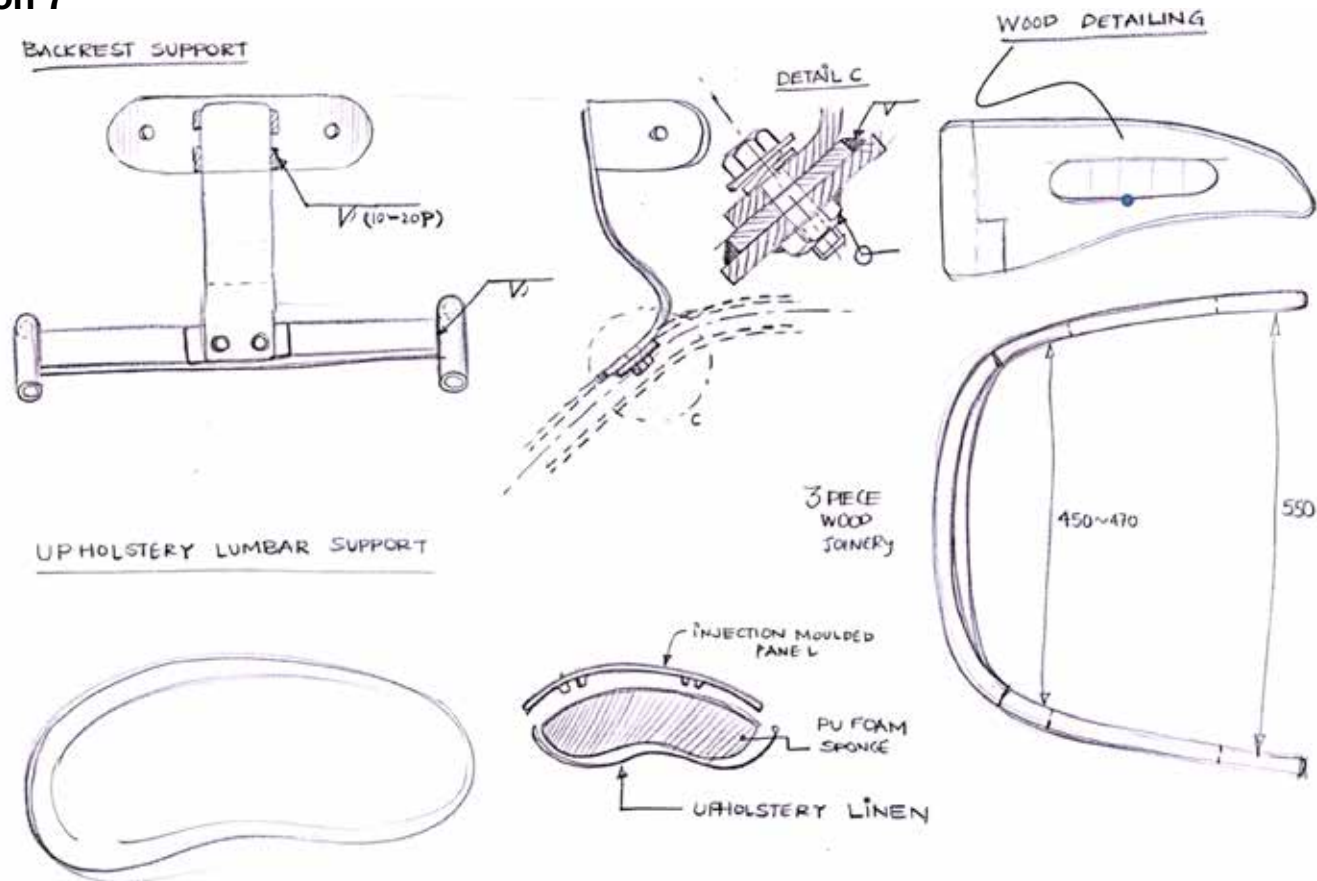


Fig. 9.24

Image Source : Author

9.16 Approach 1

Render

Low Seated Lounge Chair



Fig. 9.25
Image Source : Author



10

Approach 2

10.1 Approach 2

Sankheda as a urban furniture companies like Pepperfry, Urban Ladder, Fab India for the urban middle class customers

Proposal

This may involve the variations in designs with the feel of urban class conglomerated with the traditional elements. The contemporariness may be reflected in the design philosophy of form following function prevalent in modernism. These designs should represent the ideals of cutting excess & absence of decoration.

The forms can be visually light (polished metal & engineered wood). The furniture can fit best in open floors with clean lines with the absence of clutter.

Major Competitors

The new entrants in the market



Fig. 10.1

Image Source : www.google.com, Author

10.2 Approach 2

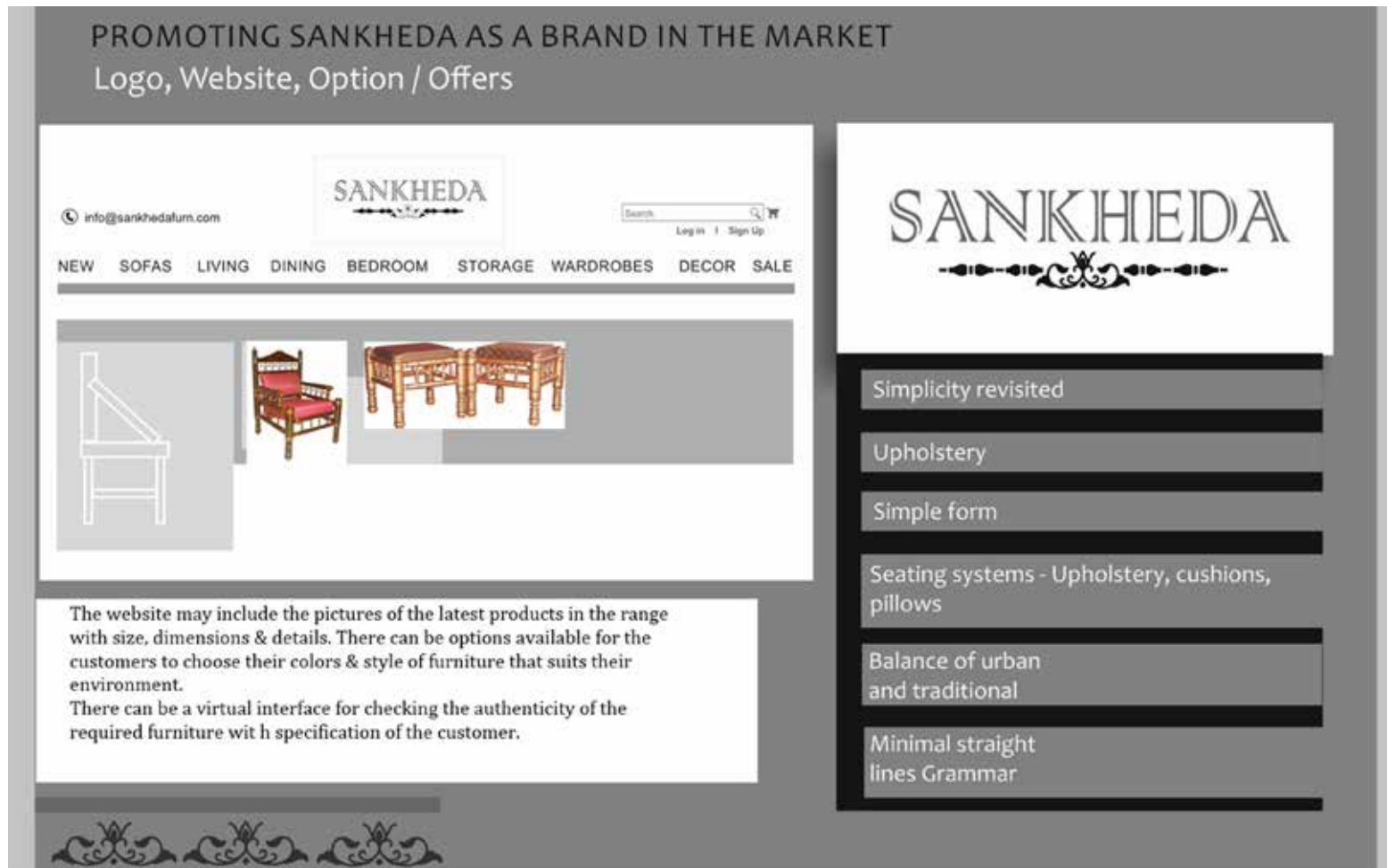


Fig. 10.2

Image Source : Author

10.3 Approach 2

Product Analysis



Fig. 10.3
Image Source : Author

10.3 Approach 2

Product Analysis



Fig. 10.4
Image Source : Author

10.4 Approach 2

Initial Exploration



Fig. 10.6

Image Source : Author

10.5 Approach 2

Ideation 1

Development of a dining chair with the knock down approach integrating with the ethnic flavour of the Sankheda elements

- Totally made up in wood
- Knock down furniture
- Use of Allen bolts for clean detailing

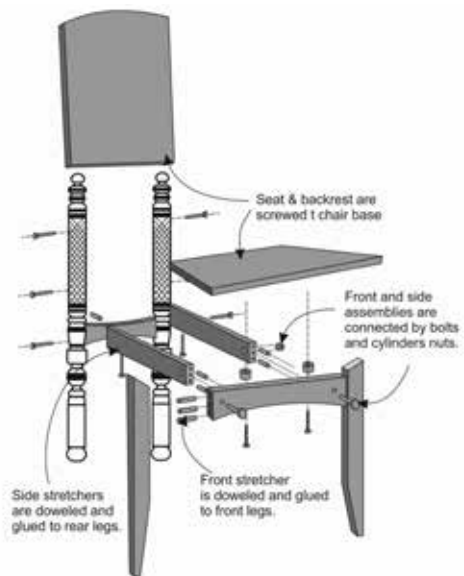


Fig. 10.7
Image Source : Author

10.5 Approach 2

Ideation 1

Use of clean lines & simplified form of the structure. Richness of the turned elements resembled through vertical elements.

- Simple Form
- Upholstered Seat Pad
- Turned Sankheda Legs

Dining Table



Fig. 10.8

Image Source : Author

Dining Set



10.6 Approach 2

Ideation 2

Use of clean lines and form with the vertical pillars as holding elements for the richly turned Sankheda elements.

- Totally made up of wood
- Use of Dowels
- Use of Allen Bolts for cleaner details
- Abstraction of Graphics

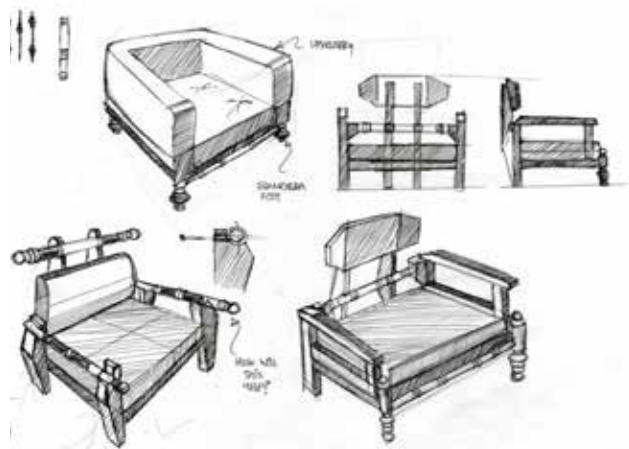


Fig. 10.9

Image Source : Author

Single Seater



10.6 Approach 2

Ideation 2

Use of clean lines & simplified form of the structure. Richness of the turned elements resembled through vertical elements.



Living Room Set



Fig. 10.10
Image Source : Author

10.6 Approach 2

Ideation 4

Living Room Set



Fig. 10.11
Image Source : Author

10.7 Approach 2

Ideation 4

Use of clean lines & simplified form of the structure. Richness of the turned elements resembled through vertical elements.

- Simple Form
- Upholstered Seat Pad
- Turned Sankheda Legs



Single Seater



Fig. 10.12

Image Source : Author

10.7 Approach 2

Ideation 4

Use of upholstered high density foam seat pad with a well mounted upholstered backrest

- Low Seater
- Totally made up in wood
- Use of Allen bolts for clean detailing



Fig. 10.13
Image Source : Author



Coffe Table



Double Seater



10.7 Approach 2

Ideation 4



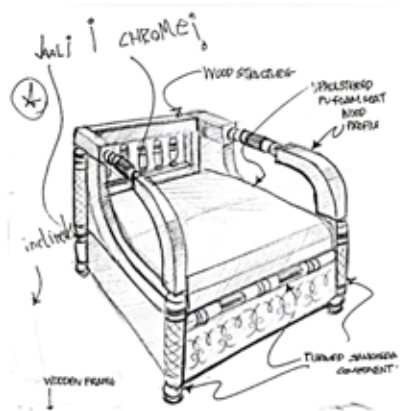
Fig. 10.14
Image Source : Author

10.8 Approach 2

Ideation 5

Use of upholstered high density foam seat pad with a well mounted upholstered backrest

- Totally made up in wood
- Use of dowels
- Use of Allen bolts for clean detailing
- Abstraction of graphics



Living Room Set



Fig. 10.15
Image Source : Author

11

Approach 3

11.1 Approach 3

Considering Sankheda as it is as an independent Craft furniture Brand.

Proposal

In approach 3 , the proposal is to consider Sankheda traditional art as an independent brand as it is without any major variation in the structure& the process of manufacturing of the furniture.

The area is more stressed into bringing this rich traditional craft into Industrial Design framework and explore various aspects like:

Ease of Assembly

Use of product

Ease of use.

The market demands more practical furniture with strong joineries, easy for production, maintaining all the original characteristics and legacy of the famous Sankheda furniture.

Initially, the existing structure of Sankheda was analyzed. It consists of mainly the integration of vertical & horizontal elements assembled by tongue & groove joints method.

Once, we analyze the faults within the product, we can make adjustments to improve the proposed ideas. See how the idea along with existing structure is going to come together & how one can aid in its development, in its improvement.

Firstly the triangulation of elements to form a structure were explored . Here , it was observed how to break away the existing Sankheda vertical & horizontal geometry into angular & flexible geometry.

Mock models of 1:5 scale were made & checked for geometry , ergonomics & proportions.

11.2 Approach 3

Initial Explorations



Fig. 11.1

Image Source : Author

11.3 Approach 3

Making of Mock Ups

Various miniature wireframe & bamboo mock up models were done referring the ideations.

The scale of 1:5 was preferred during the making of mock up. The recline angle of 5 degrees was considered for the mock up



Fig. 11.2

Image Source : Author

11.3 Approach 3

Making of Mock Ups



Fig. 11.3
Image Source : Author

11.4 Approach 3

Ideation 1

Use of upholstered high density foam seat pad with a well mounted upholstered backrest

- Low Seater
- Totally made up in wood
- Use of Allen bolts for clean detailing



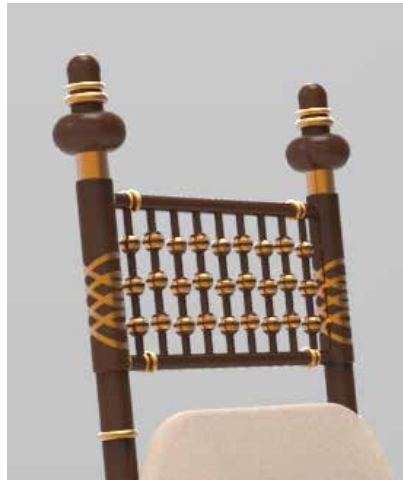
Fig. 11.4
Image Source : Author

11.5 Approach 3

Ideation 2

Use of upholstered high density foam seat pad with a well mounted upholstered backrest

- Low Seater
- Totally made up in wood
- Use of Allen bolts for clean detailing



Low Seated Ethnic living room chair



Fig. 11.5

Image Source : Author

11.6 Concept Evaluation & Selection

CONCEPT EVALUATION CRITERIA	APPROACH 1	OFFICE UPRIGHT CHAIR				LOUNGE CHAIR			APPROACH 2	LIVING ROOM FURNITURE					APPROACH 3	LIVING ROOM FURNITURE	
		IDEATION 1	IDEATION 2	IDEATION 3	IDEATION 4	IDEATION 5	IDEATION 6	IDEATION 7		IDEATION 1	IDEATION 2	IDEATION 3	IDEATION 4	IDEATION 5		IDEATION 1	IDEATION 2
MODERN & CONTEMPORARY		6	7	5	6	7	7	8		7	7	9	6	7		8	6
CONSTRUCTION & PRODUCTION SUITABILITY		5	5	5	5	8	7	8		5	7	8	6	7		7	7
FORM & STYLE		6	6	5	5	6	6	7		8	7	9	8	6		7	5
CULTURAL RELEVANCE		6	5	6	5	7	7	8		6	7	8	8	7		8	6
MATERIAL CHOICE APPROPRIATENESS		5	5	4	5	7	6	7		6	6	8	7	7		7	5
ERGONOMICS & PRACTICALITY		6	6	6	6	7	7	7		8	8	9	6	7		6	5
MARKET ACCEPTANCE		7	7	6	7	8	7	8		7	7	6	7	8		7	6
TOTAL		41	41	37	39	50	54	56		47	49	57	48	49		50	40
AGGREGATE		5.85	5.85	5.28	5.57	7.14	7.71	8		6.71	7	8.14	6.85	7		7.14	5.71

All the ideations were evaluated based on a scale of 1 to 10..

Ideation 7 from Approach 1
8

Ideation 3 from Approach 2
8.14

Ideation 1 from Approach 3
7.14

Fig. 11.6

Image Source : Author

11.7 Further design considerations for the final Range of Furniture

Once the concept selection was done
It was decided to develop a single
living room set for urban middle class
customers.

The following accessories can be possibly
explored with the same design language
maintained in the series.

Lounge Furniture – Chair (low Seater)
Stool (Low Seater),
Recliner

Book Case

Coffee Table

Side Table

Sofa Set

Lamp Shade

Window curtain rail

12

Ergonomic and Anthropometric Evaluation

12.1 Ergonomic Consideration

A rig consisting of a seat pad & back rest was prepared. The dimensions were taken based on the ergonomic considerations. This rig was tested with different kinds of users according to their weight, height & gender. Their opinions were recorded in various sitting conditions & the final dimensions were derived.

The general seat width can be considered as 479mm for general purpose. It is between 449mm for male & 529mm for females.

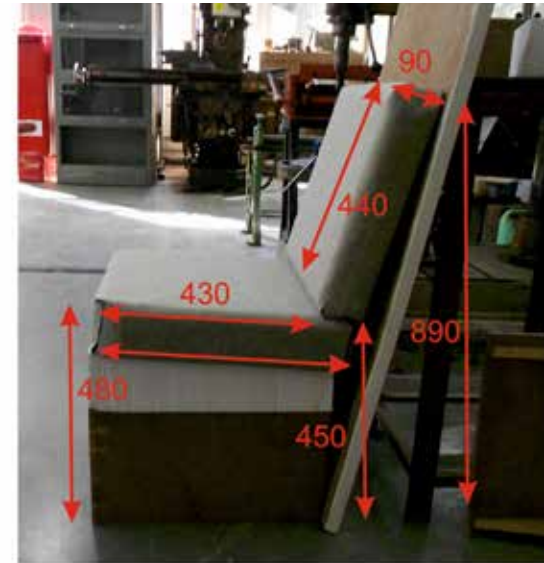
The major consideration during the design of chair must be the comfort with which the user is going to sit for long time.

This can be applicable to low seats, sofa and chairs.



Fig. 12.1
Image Source : Author

The effective seat length can be 400 mm and more for the comfortable seating without disturbing the knee length. The effective seat length should be 1/5th than the buttock to popliteal length starting from back. Seat height is mainly considered between 400 to 470 mm.



The reclining angle for normal chair can be 5 degrees whereas the seat pad can be tilted by 3 degrees. The seat cushion softness should not create too much depression while sitting on it. The surface of the seat pad should not be slippery. The depression can be 10 to 20mm.

Ref. Anthropometric dimensions, by Deb kumar Chakrabarthy.

12.2 Ergonomic Evaluation User Testing

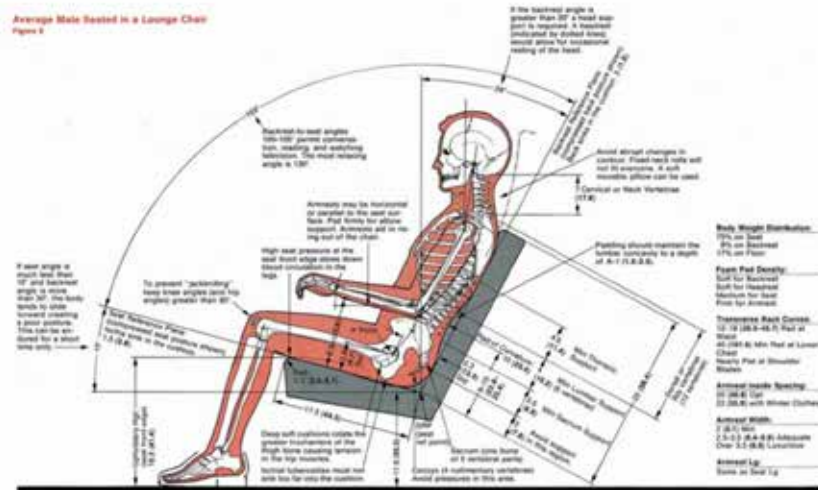
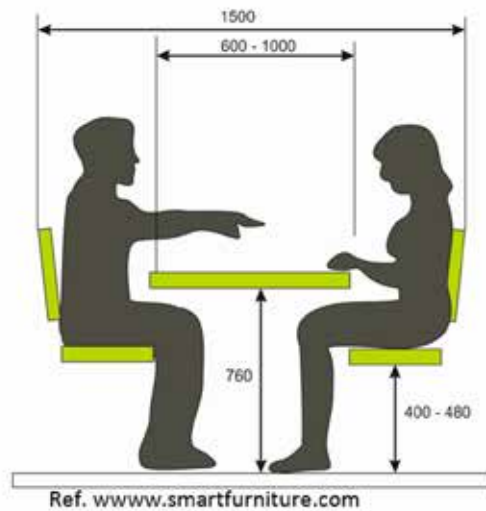
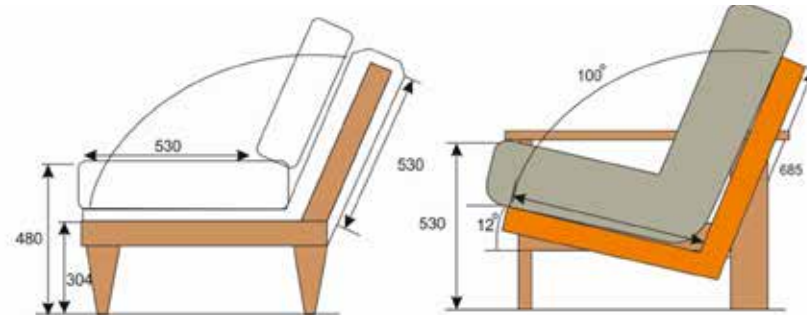
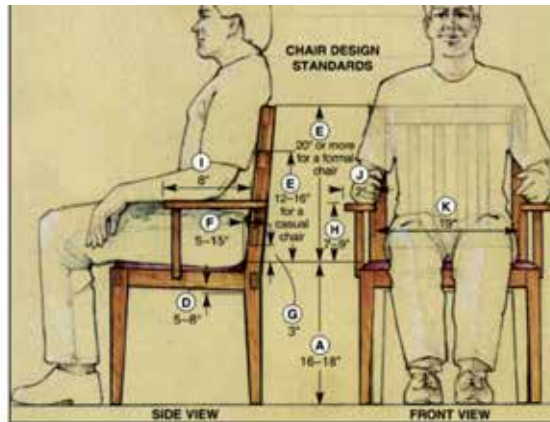


* The opinions from female participants were taken & considered. The identity of them were assured to be undisclosed with their consent.

Fig. 12.2

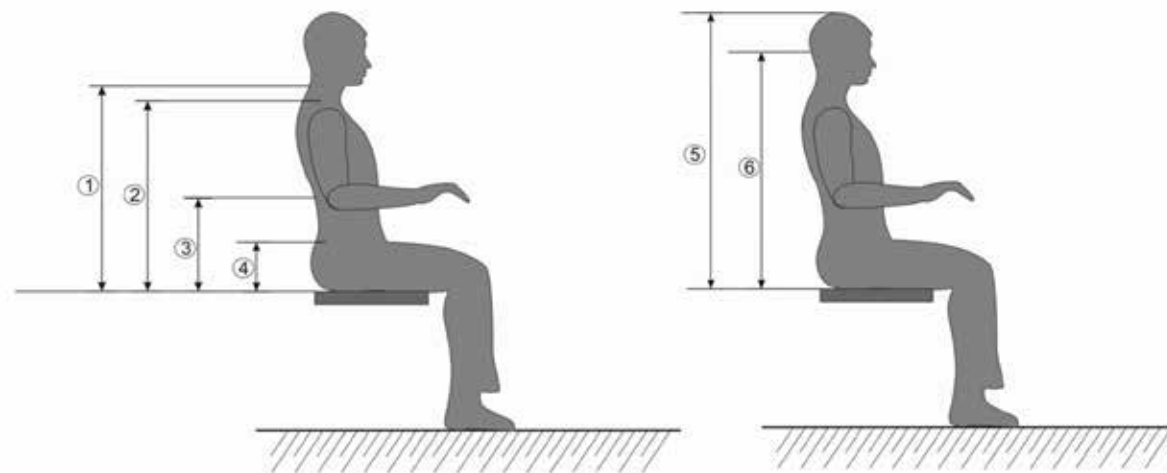
Image Source : Author

12.2 Ergonomic Evaluation



12.2 Ergonomic Evaluation

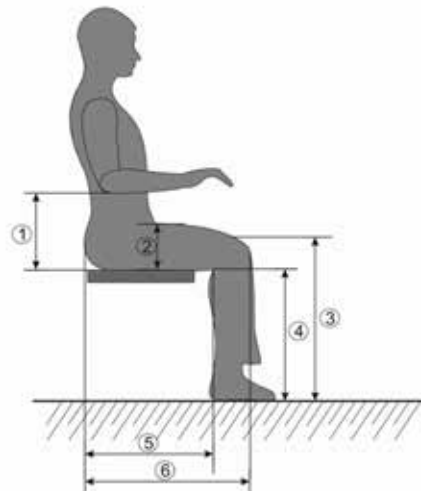
Sr. no.	Parameter	Dimensions (mm)			Mean M	Combined 50 th percentile *	Combined 95 th percentile *
		Ulemba	Datta	Gaurav			
1	Cervical (Trunk)	677	702	654	677.6	605	667
2	Mid shoulder	617	605	598	606.6	594	630
3	Upper Lumbar	275	266	294	278.3	298	352
4	Lower Lumbar	169	214	201	194.6	100	159
5	Normal sitting	851	894	840	860	805	886
6	Erect sitting	888	905	869	890	824	901



Ref. Anthropometric data dimensions of classmates & author as per 13th January 2015 * DATA BOOK

12.2 Ergonomic Evaluation

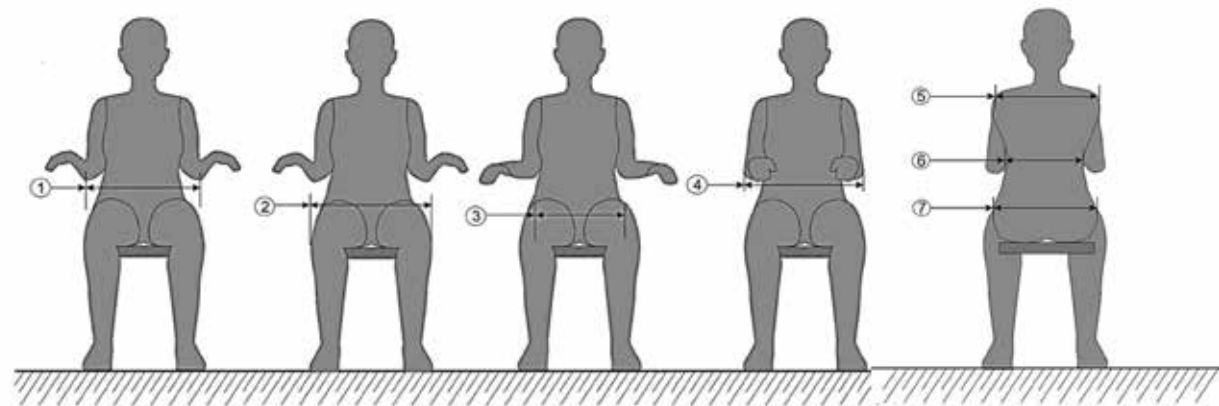
Sr. no.	Parameter	Dimensions (mm)			Mean M	Combined 50 th percentile *	Combined 95 th percentile *
		Ulemba	Datta	Gaurav			
1	Elbow Rest	215	244	222	227	210	268
2	Mid thigh	134	111	129	124.6	124	158
3	Knee	504	499	516	506.3	509	563
4	Popliteal	420	418	423	420.3	419	466
5	Buttock to popliteal length	454	444	481	459.6	451	509
6	Buttock to knee length	548	567	568	561	549	613



Ref. Anthropometric data dimensions of classmates & author as per 13th January 2015 * DATA BOOK

12.2 Ergonomic Evaluation

Sr. no.	Parameter	ulemba	datta	gaurav	Mean M	Combined 50 th percentile	Combined 95 th percentile
1	Elbow to elbow (relaxed)	496	513	574	527.6	369	479
2	Knee to knee (relaxed)	370	369	332	357	359	529
3	Thigh to thigh	428	442	434	434.6	369	479
4	Elbow to Elbow closed	382	361	367	370	396	479
5	Bi- acromion	295	339	323	319	371	415
6	Abdomen	282	273	271	275.3	257	323
7	Hip - Breadth	361	359	372	364	326	406

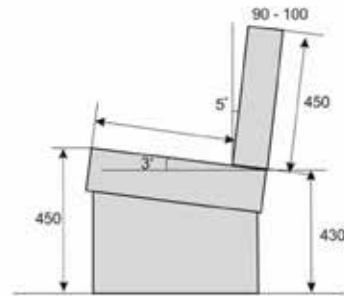


Ref. Anthropometric data dimensions of classmates & author as per 13th January 2015

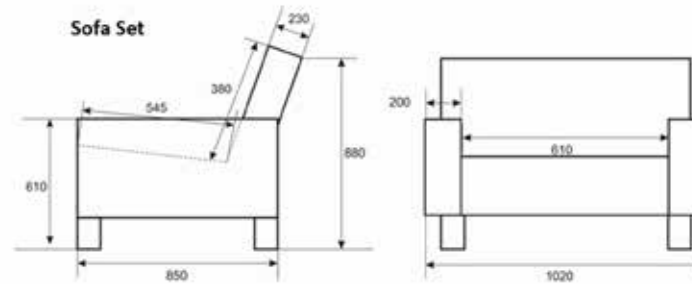
12.3 Derived furniture dimensions

Derived dimensions of Seat

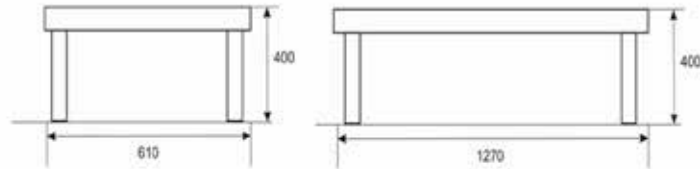
Living room chair



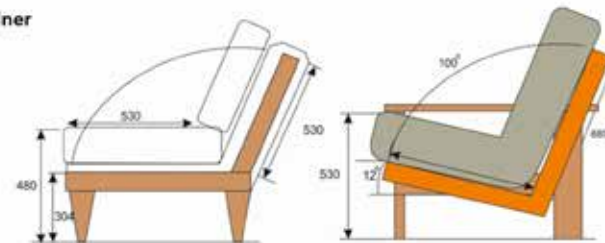
Sofa Set



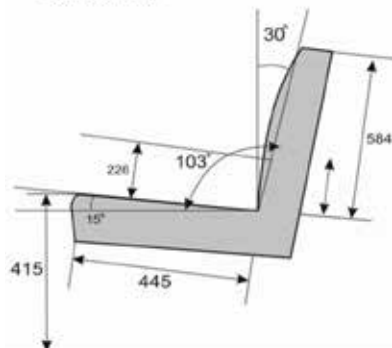
Coffee Table



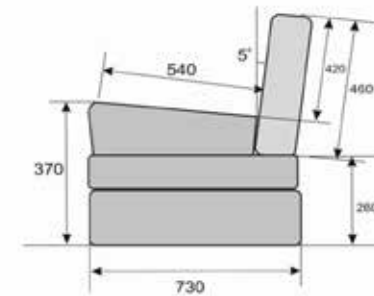
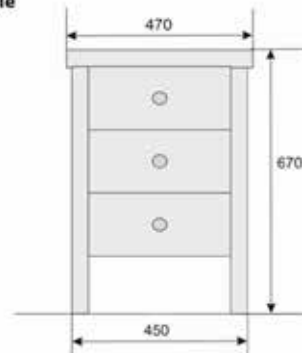
Recliner



Lounge chair



Side Table



13

Final Selected Concepts

13.1 Final selected Concept

Approach 3

Ideation 1 Refinement

Points Considered

- Totally made up in wood
- Use of dowels
- Allen Bolts for clean detailing
- Abstraction of Graphics
- Simple form & structure
- Elegant & Ease of Assembly



Fig. 13.1

Image Source : Author

13.1 Final selected Concept

Approach 3

Ideation 3 Refinement

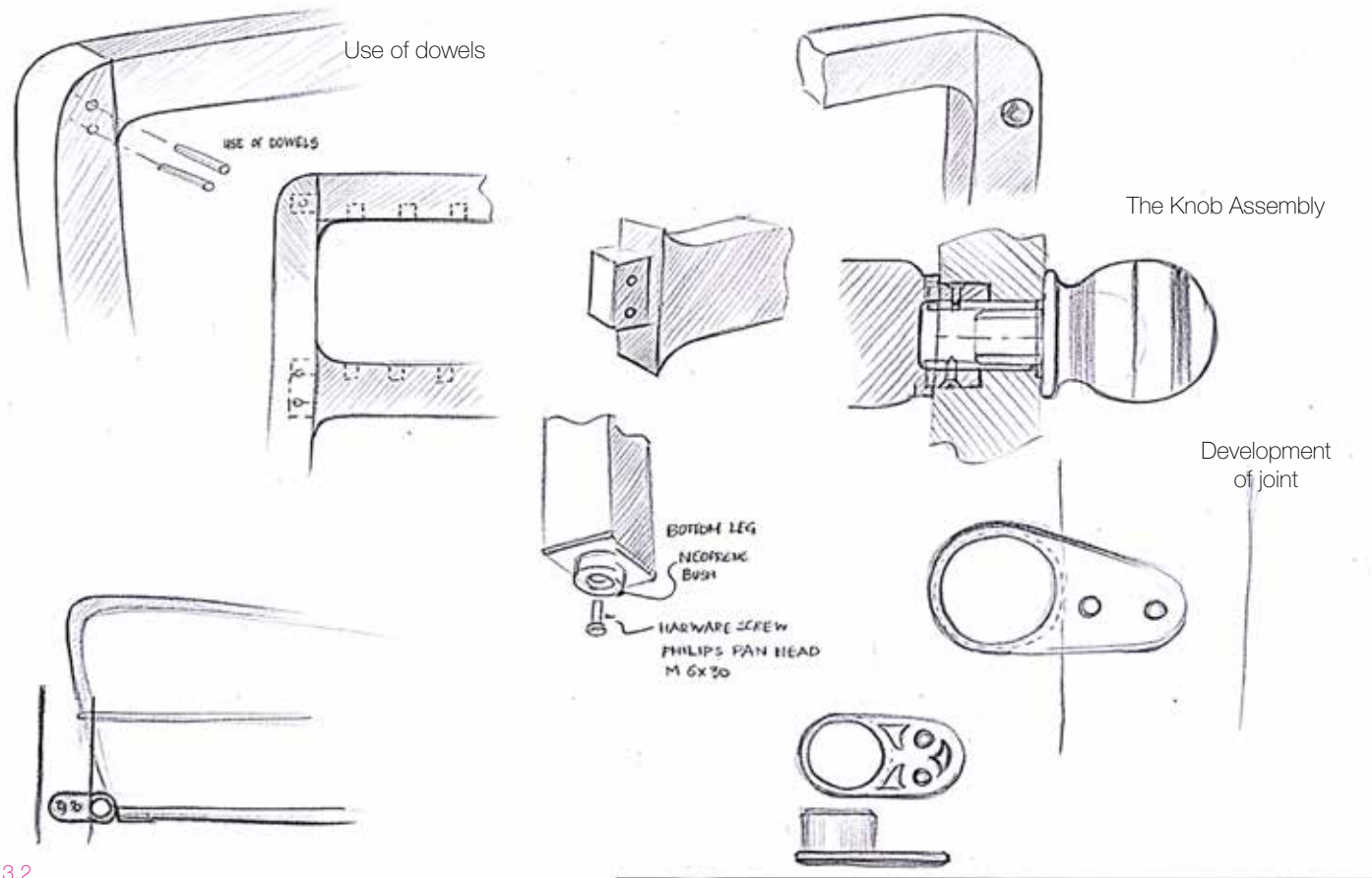


Fig. 13.2

Image Source : Author

13.1 Final selected Concept

Approach 3

Ideation 1 Refinement

Points Considered

- Rich in modern trend
- Ergonomics
- Structural Aesthetics
- More meaningful Vocabulary
- Abstraction of Graphics
- Material Consideration
- Knock Down Assembly
- Packaging

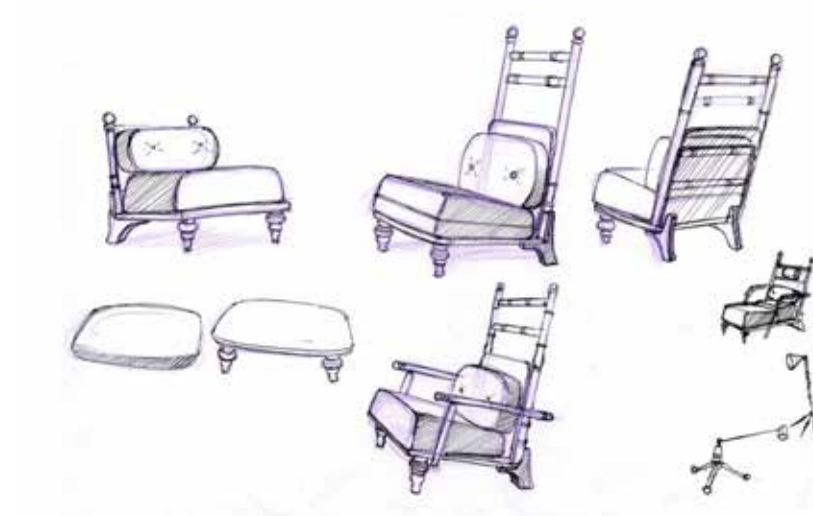
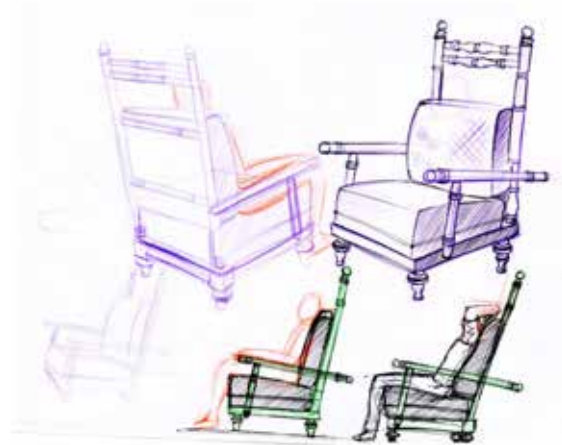


Fig. 13.3

Image Source : Author

13.1 Final selected Concept

Approach 3

Ideation 1 Refinement



Recliner



Sitting Chair



Low Seater



Fig. 13.4
Image Source : Author

13.2 Development of Industrial joints

Alternatives in Joineries

Industrial joints can be introduced to make the joinery a strong more defined aspect of the furniture wherein the value of the furniture can be increased.

Methodology

- First the structural ease of the structure is to be analyzed.
 - Then the work on formal variations on the type of the joint can be done.
- One can make surface decorations on the joints.

Final refinement can be done.

The next thing it is important to think about how its going to be produced.

- What sort of material to be used?
- Will there be more than 1 material used?
- How will these materials interact with one another ?
- How will it be possible to

Process used :- Metal Injection molding (MIM) to produce complex shapes in large numbers from metals that have high melting point.

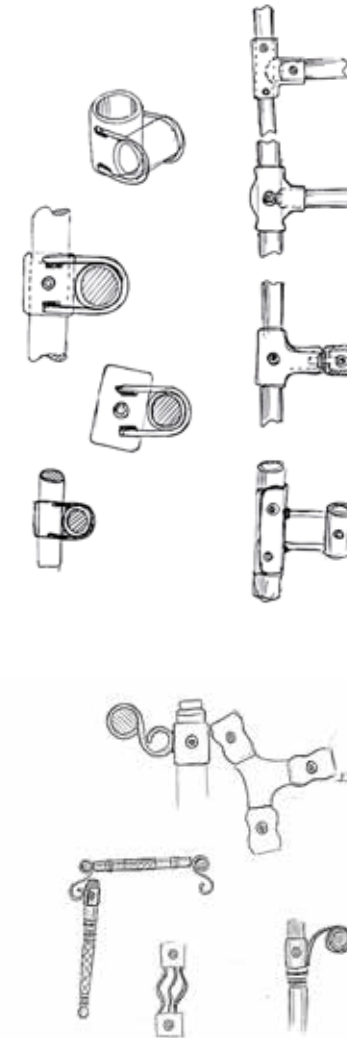
For eg. Stainless steel, low alloy steel, Tool steel stainless steel.

Next question is, whether the materials are cost effective or not. Depending on whether the item is designed to be produced for the mass market in which case the lower the cost , the better,

I had to think about the process which are going to be required in order to produce the product.



Fig. 13.5
Image Source : Author



13.3 Development of Industrial joints

Ideations

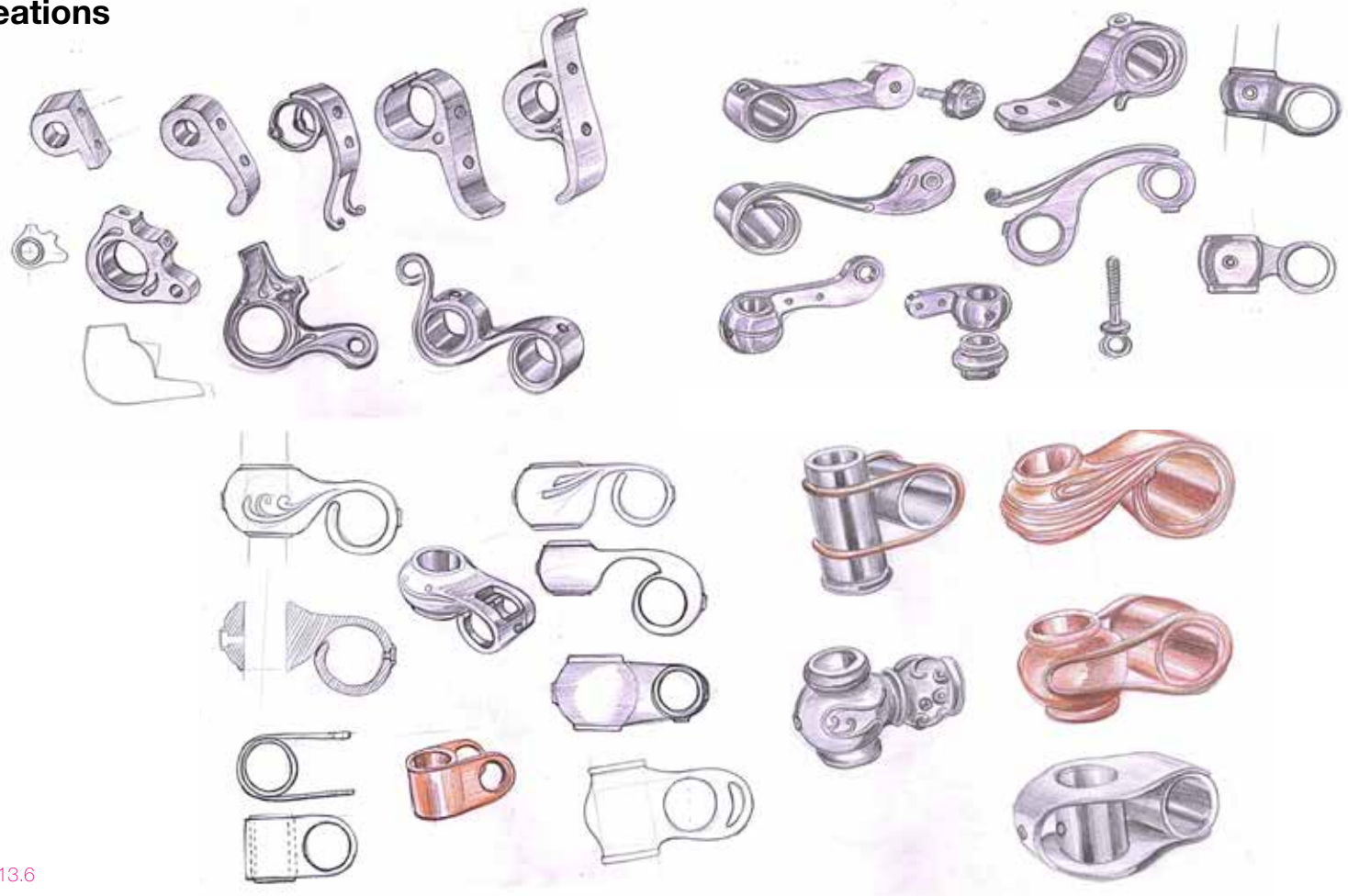


Fig. 13.6
Image Source : Author

Different types of metal joints possibilities for joining the vertical & horizontal elements

13.4 Further Detailing

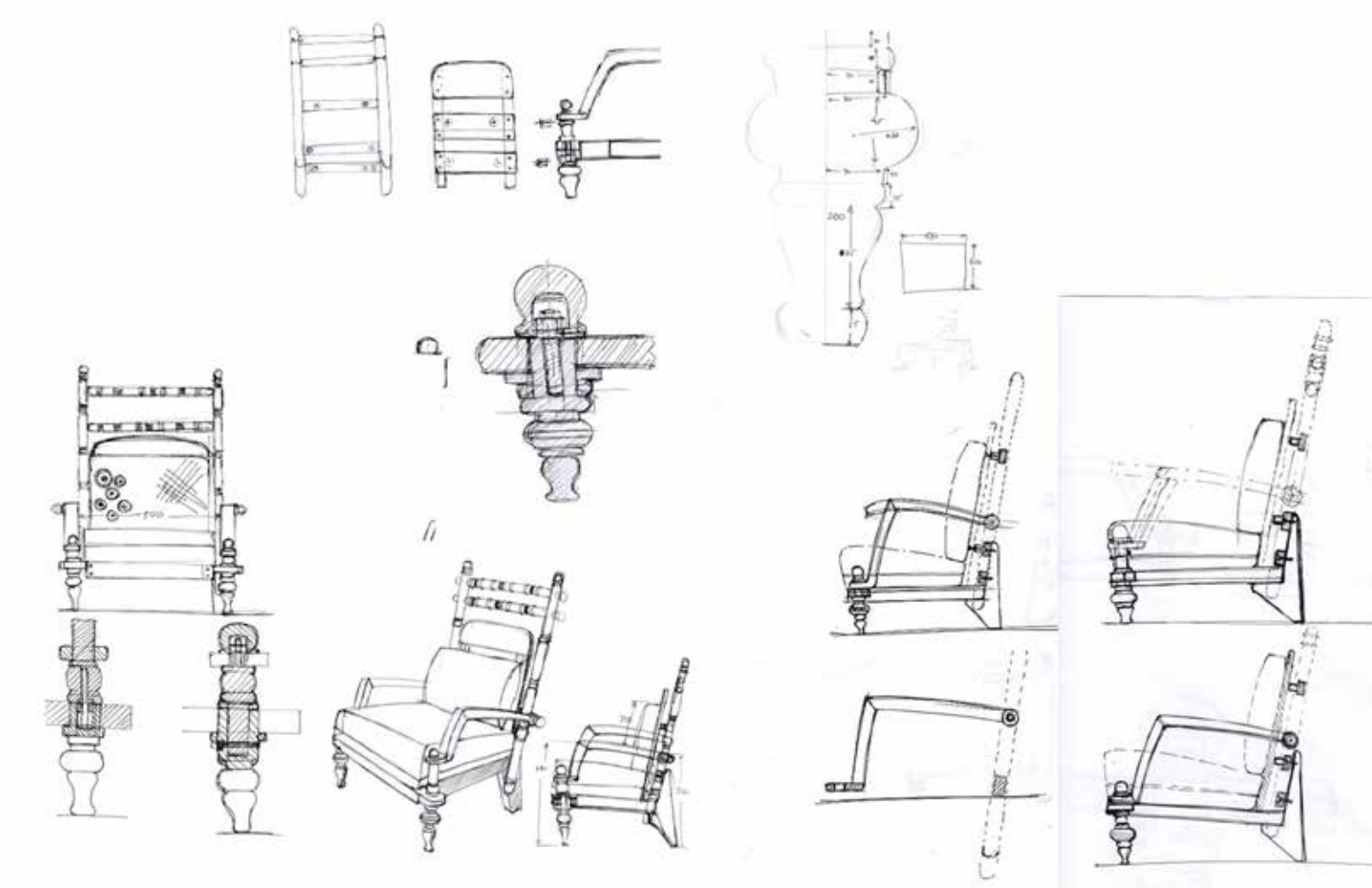


Fig. 13.7

Image Source : Author

13.5 Detailing



Exploded View



Fig. 13.8
Image Source : Author

13.6 Various parts of Assembly

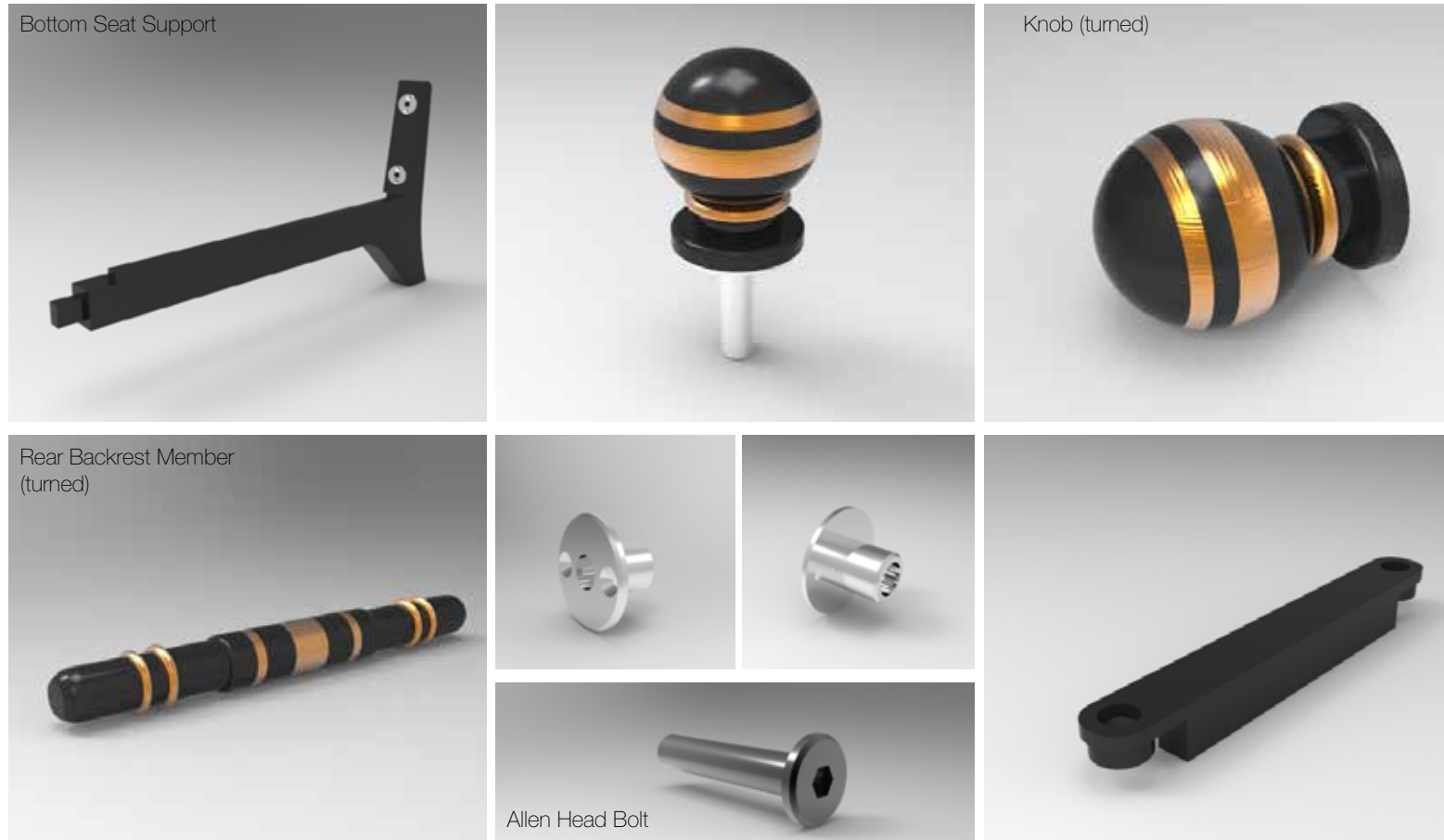


Fig. 13.9

Image Source : Author

13.7 Final Rendering

Single Seater Chair



Fig. 13.10
Image Source : Author

13.8 Final Rendering

Single Seater chair with Armrest



Fig. 13.11
Image Source : Author

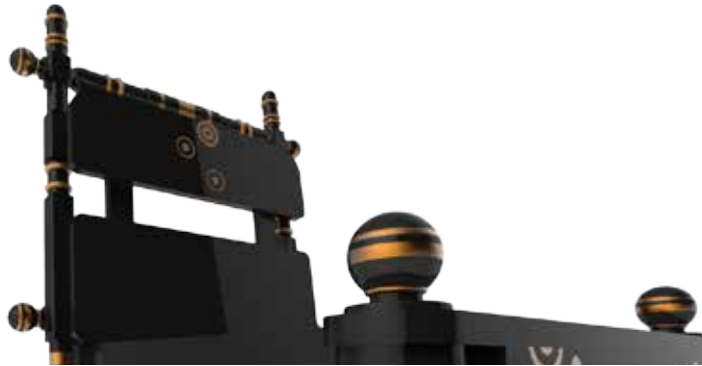
13.9 Final Rendering

Low Seated Chair



Fig. 13.12
Image Source : Author

13.10 Final Rendering



Colour Options

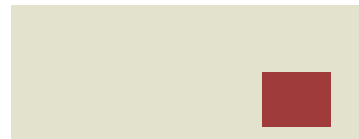


Fig. 13.13

Image Source : Author

13.11 Final Rendering



Fig. 13.14
Image Source : Author

13.12 Final Rendering

The Final Range



Fig. 13.15

Image Source : Author



14

Furniture Packaging

14.1 Structure Packaging

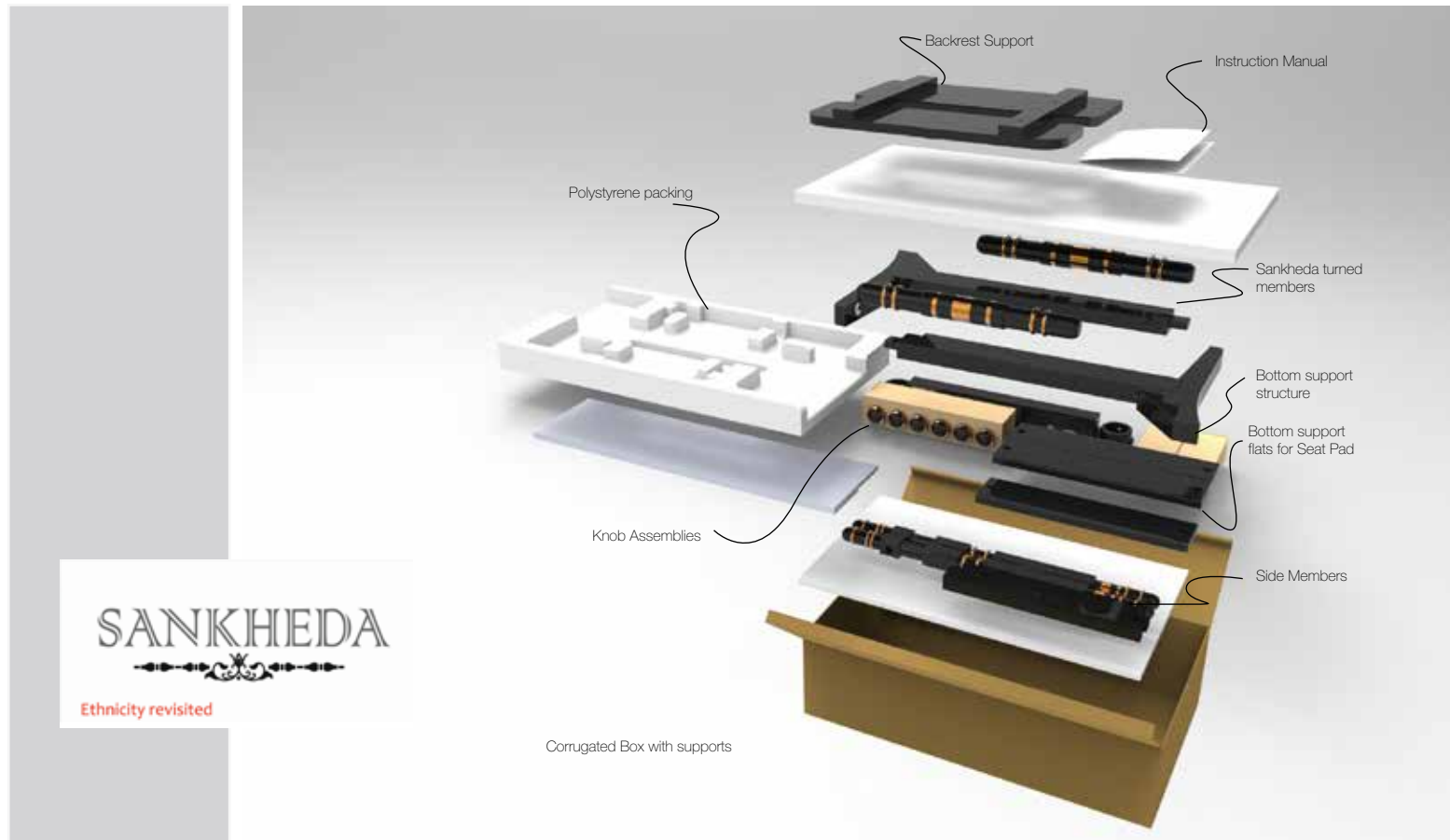
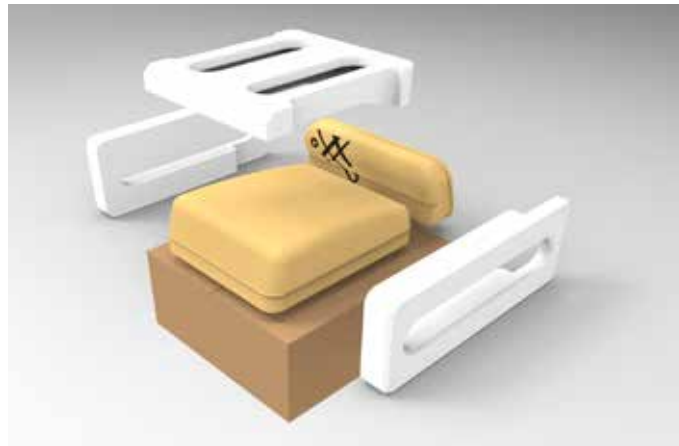


Fig. 14.1
Image Source : Author

14.2 Packaging for Seat pad & Backrest



Packaging for Hardware & plastic sleeves

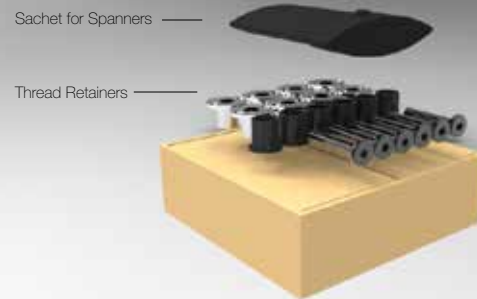


Fig. 14.2
Image Source : Author

Packaging for Bottom Leg Assembly



14.3 Final Packaging

Considering the packaging of a single low seated chair

The furniture components can be shrink wrapped in a bubble wrap & protected with polystyrene packing for shipment & transportation.

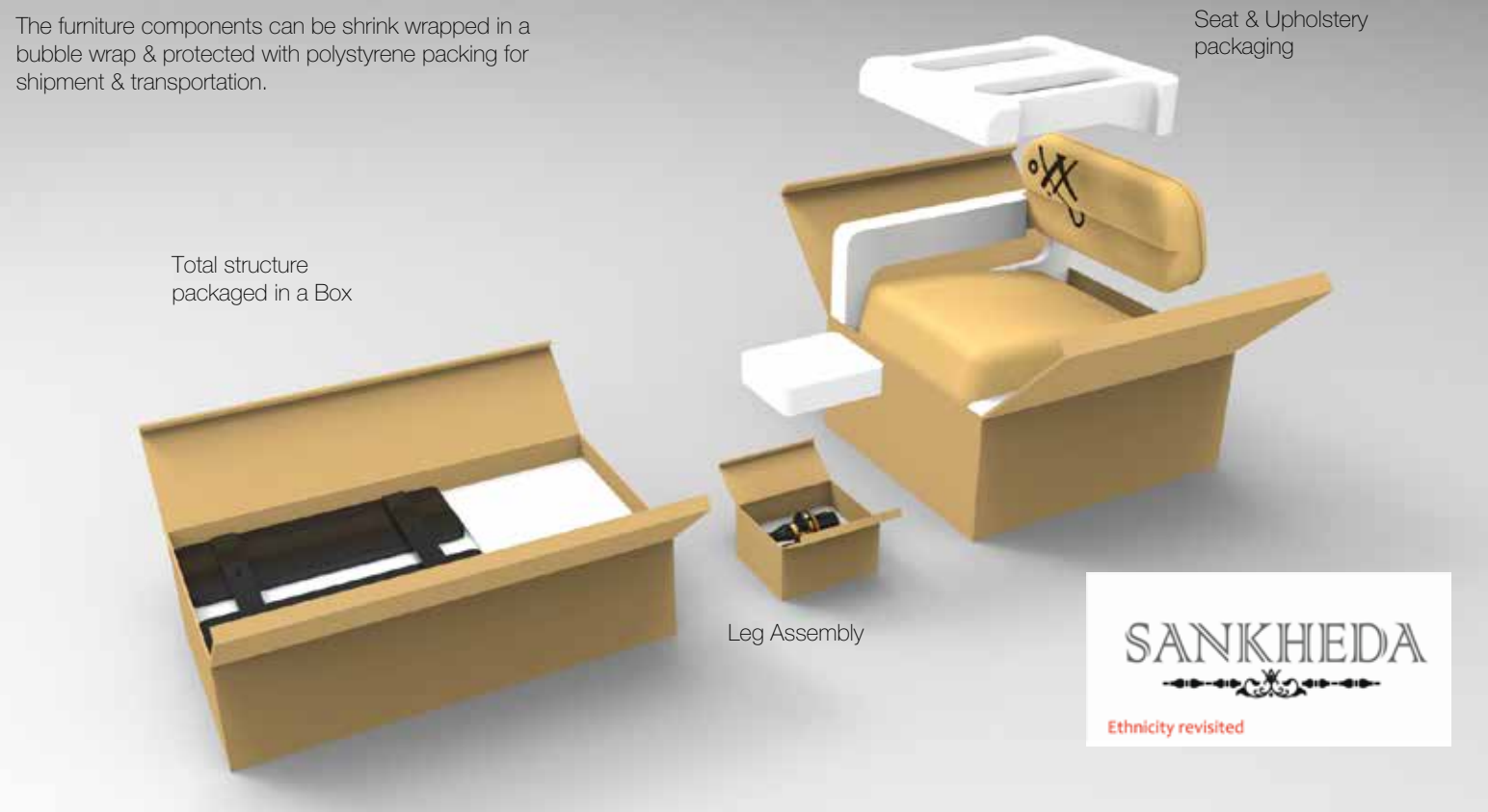


Fig. 14.3

Image Source : Author

15

Branding

15.1 Branding

This form of ethnic yet modern range of furniture can be branded for the uniqueness of the hand crafted details along with the industrialized look in the local & international furniture market.

Brochures & website data can be generated & a blog regarding the craft promotional activities and resource improvement can be initiated.

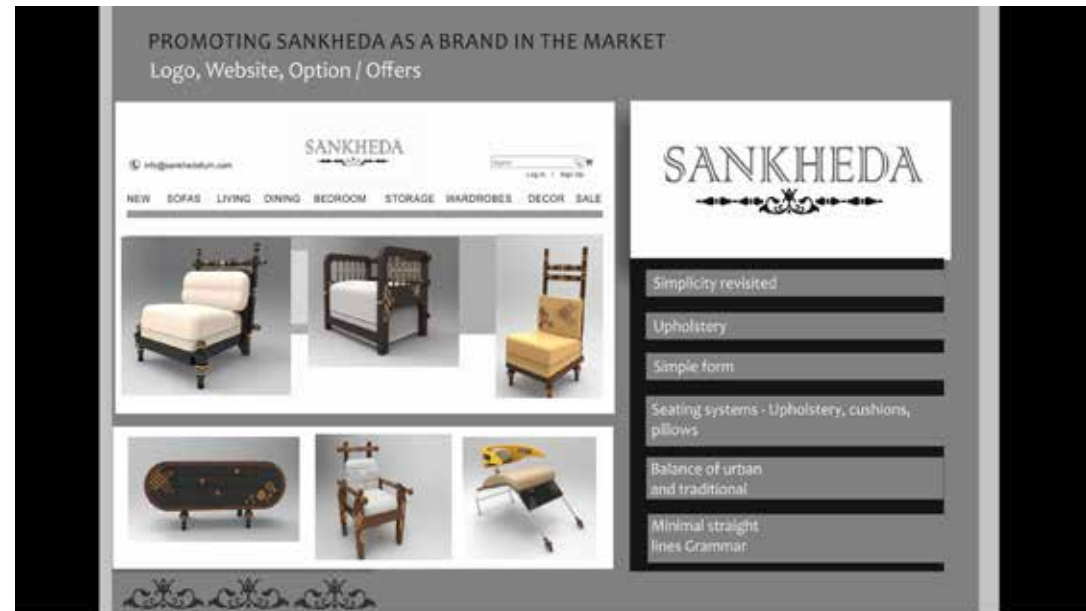


Fig. 15.1
Image Source : Author



SANKHEDA



Ethnicity revisited

*Lets rediscover the magic of colours
of Sankheda in Gujrat.
Sankheda Gujrat ki Pehchaan.*



Image Source Ref: www.gujrattourism.com

15.2 Further Scope & Enhancement

Promoting Craft through Tourism

Gujrat is one of the most popular states in the country for tourists around the world. Gujrat has scenic beauty from rann of Kutch to Sham e Sarhad. It is the home for the most ancient Harrapan civilization.

Yaatraddham in Tourism can be used to promote the furniture to larger customers. One can charge for higher rental price to accommodate in a handcrafted furnished suits with traditional authenticity

Global positioningDirect marketing & selling via the internet

This rich traditional craft can get much accolades if it is positioned at a global

with promotion of the contemporary furniture in the international design magazines & social websites.

Sales Promotion through Exhibition, Publicity & Advertisement & Organizing craft festivals

The publicity to this craft can attract urban collectors and dealers at big furniture companies to carry a joint venture with the craftsmen & this can help in generating income & much required revival of the furniture. This could be done by organizing the Crafts mela & Exhibition events all across the countries.



Ref: <http://www.interestinginfos.com/interesting/narendra-modi-government-achievement-narendra-modi-yojana-list/attachment/narendra-modi-make-in-india/>

15.3 Conclusion

The project was done using a derived design methodology. The end goal of the project is to bring the traditional craft to a substantial level of feasibility that the amount of work done in the form of explorations can be implemented in the field of Art & Craft which can become a socially responsible vision.

The efficiency of the product can be evaluated only after comprehensive refinements.

An exploratory product design approach was implemented in this project, which involved research on traditional craft, problem finding, exploring various ideas & branding.

As an Industrial designer, i did not use critical enough analysis of the products furniture available and their disassembly.

I actually could have delved deeper into breaking down existing and my own ideas to be more fermented for a more richer understanding of the individual components that would make the product a success.

Research should include testing the materials and interacting with them & seeing how different materials might work together. Actually I should have done them as a research & I need to remember that in the future.

I have also evaluated ergonomics & actively used the findings in my designs so I feel I have made improvement on conducting effective research. With these explorations I have undertaken I feel I have analyzed it more and actively included it in the working process.



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Images Source:

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