

Project one
(Summer Training)

Ajay
Vaibhav



Pinn[▲]acle
Industries Ltd.

Acknowledgement

We would like to extend our deep gratitude towards Mr. Sudhir Mehta, Director –BTL, MD – Pinnacle Industries Ltd. for giving us opportunity and freedom to work.

We also would like to thank Mr. D.P. Shah - DDM BTL for his encouragement and valuable suggestions and the good time that he spent with us

Special thanks to

Bajaj Tempo Ltd.

- Mr. Jitendra Jagtap, Asst. manager – BTL
For valuable inputs and direction at every steps.
- Mr. Sinnarkar, Asst. Manager – BTL
For helping us time to time
- Mr. Phadke, Senior Engineer
for showing us the whole plant and nice company.
- Mr. Jadhvan, Senior Engineer
for his nice company and support.

Pinnacle Industries Ltd.

- Mr. Sharma, Prduction manager – Pinnacle industries Ltd.
For support during the manufacturing.
- Mr. Abhijit Dube, Area sales Manager.
For valuable inputs from marketing point of view for design finalization.
- Mr. Kanak
For manufacturing our design ideas

And staff of BTL and Pinnacle Industries.

- Ajay Desai
Vaibhav



Bajaj Tempco Ltd.

- 45 year old company with an annual turn over of 850 cores.
- Has two plants, one at Akurdi, Pune and the other at Pithampur, Indore.
- Makes Vehicles in four segments.

LCVs

Utility Vehicles

Three Wheelers

Tractors

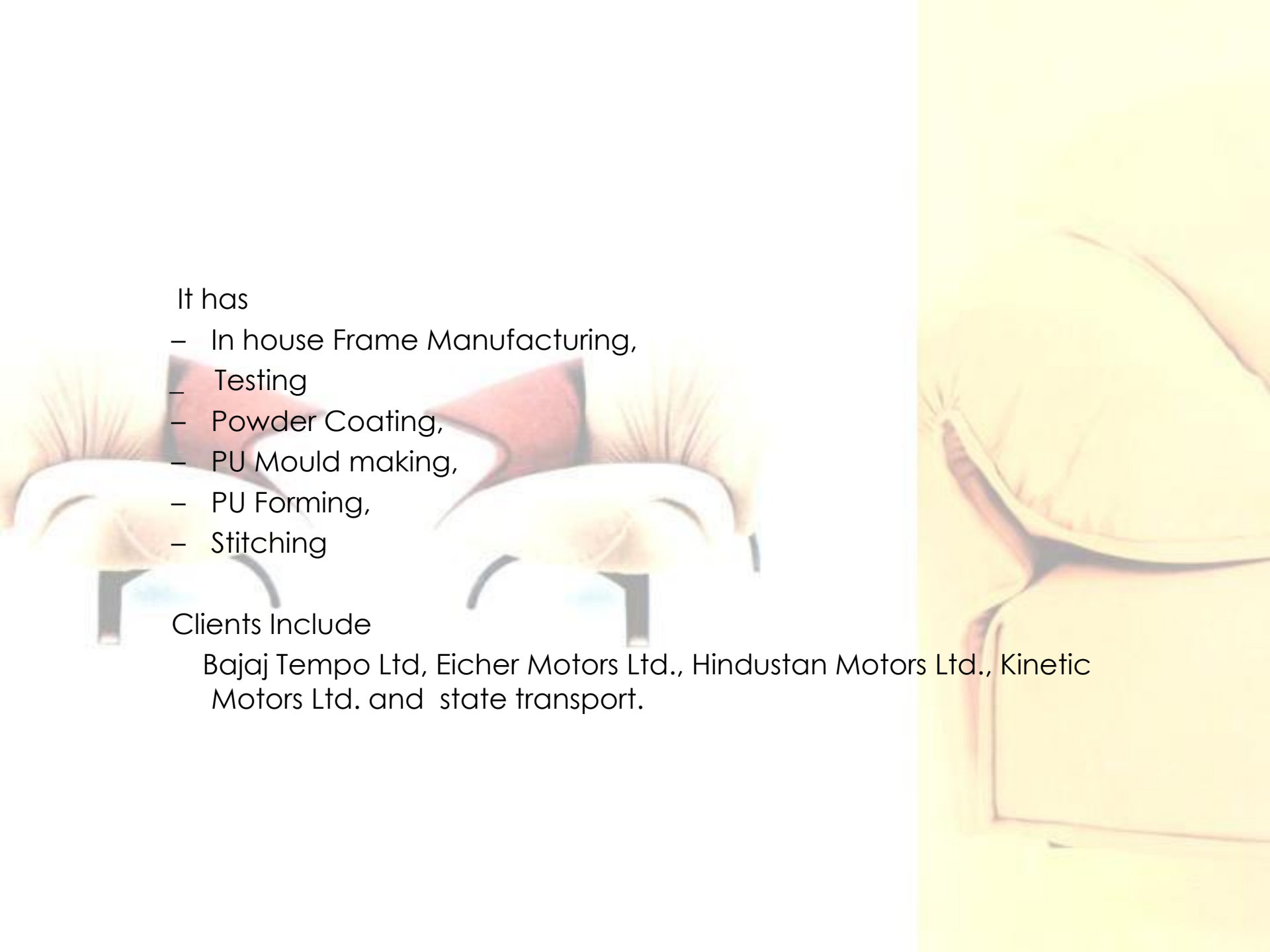
- Has a in house R&D center with 400 engineers & two industrial designers



Pinnacle Industries Ltd.

- Pinnacle Industries was formed in June 1996
- ISO 9002 Company
- Annual turnover of around 35 crores.
- MD Mr. Sudhir Mehta is also in board of directors of BTL.
- Has two divisions:

Seats : Automotive Seats and theatre Seats
Furniture: Designer Furniture in technical collaboration
with Saporiti Italia



It has

- In house Frame Manufacturing,
- Testing
- Powder Coating,
- PU Mould making,
- PU Forming,
- Stitching

Clients Include

Bajaj Tempo Ltd, Eicher Motors Ltd., Hindustan Motors Ltd., Kinetic Motors Ltd. and state transport.



schedule

Project duration : 2nd, June to 5th July

- 1st Week
 - Introduction
 - Plant visits , BTL & pinnacle
 - Observation of working
- 2nd week
 - Upholstery stand design for Pinnacle showrooms
- 3rd week
 - Graphics (Decals) for BTL
 - Trax and Traveler
- 4th and 5th week
 - Redesign of furniture for Pinnacle Saporiti
 - For their models Fower, recliner, lacy, confidential, paris, love seat and options for new legs.

Week 1: Plant visits

BTL

- Introduction

we were introduced to all the concerned persons in the BTL by Mr. Deepak Shah

Mr. Phadke took us for a plant visit and showed us the various areas like:

Press shop

had 10 German presses of Weingarten and Shuler out of which one was a 2000 tonne press and the remaining were 600 tonne ones

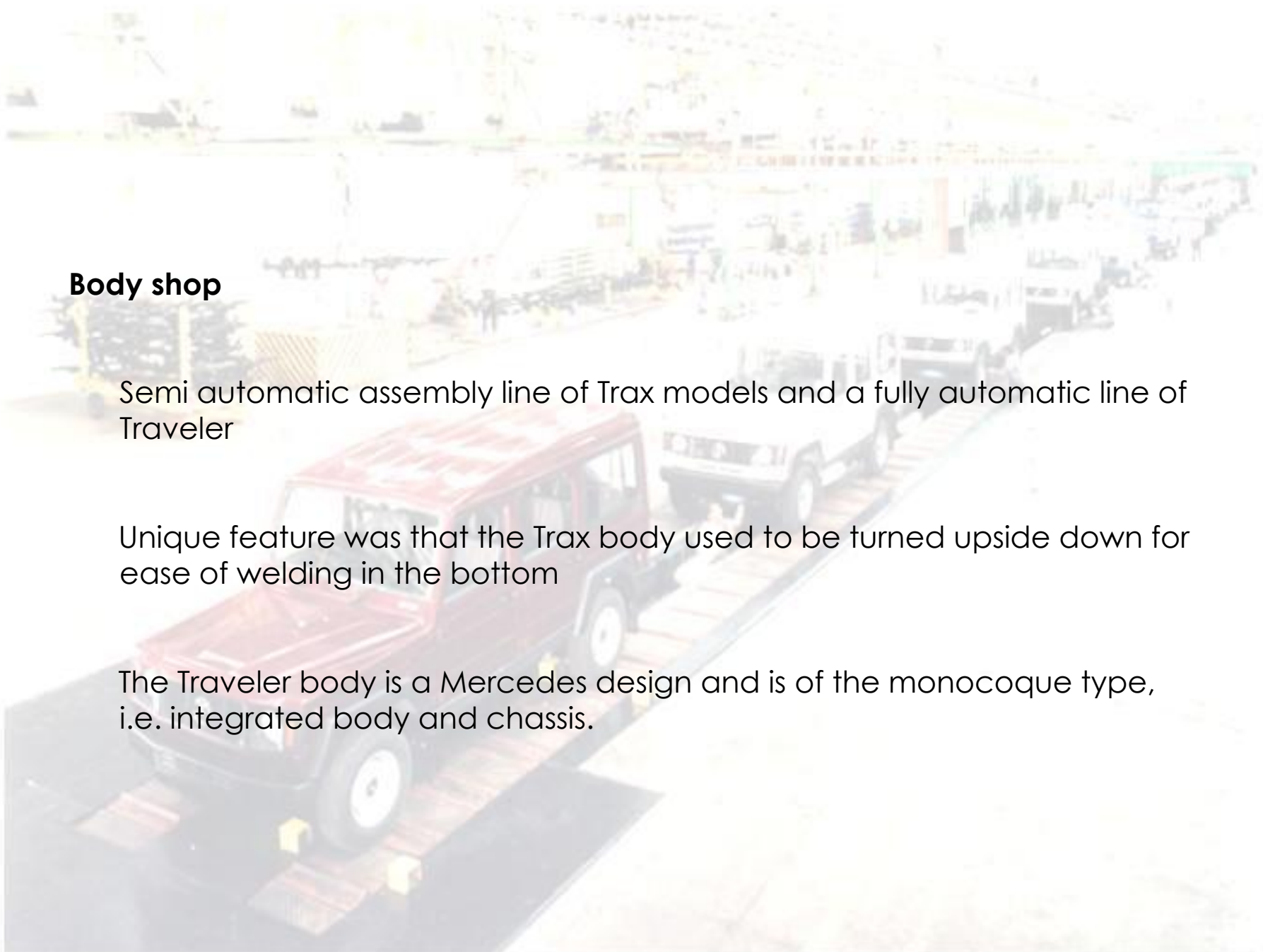
All the dies for the Trax were made at the Pune plant and of the Traveler were imported from Benz

Body shop

Semi automatic assembly line of Trax models and a fully automatic line of Traveler

Unique feature was that the Trax body used to be turned upside down for ease of welding in the bottom

The Traveler body is a Mercedes design and is of the monocoque type, i.e. integrated body and chassis.



Paint shop

To apply the primer there is a anodic ED bath in which the entire Trax and traveler body is dipped for uniform application of the primer even in the areas where the spray gun is inaccessible

the capacity of the bath is 1,20,000 liters

time taken is 4 minutes for each vehicle

thickness of coat is up to 40 microns

the body is then washed and heat dried for spray painting

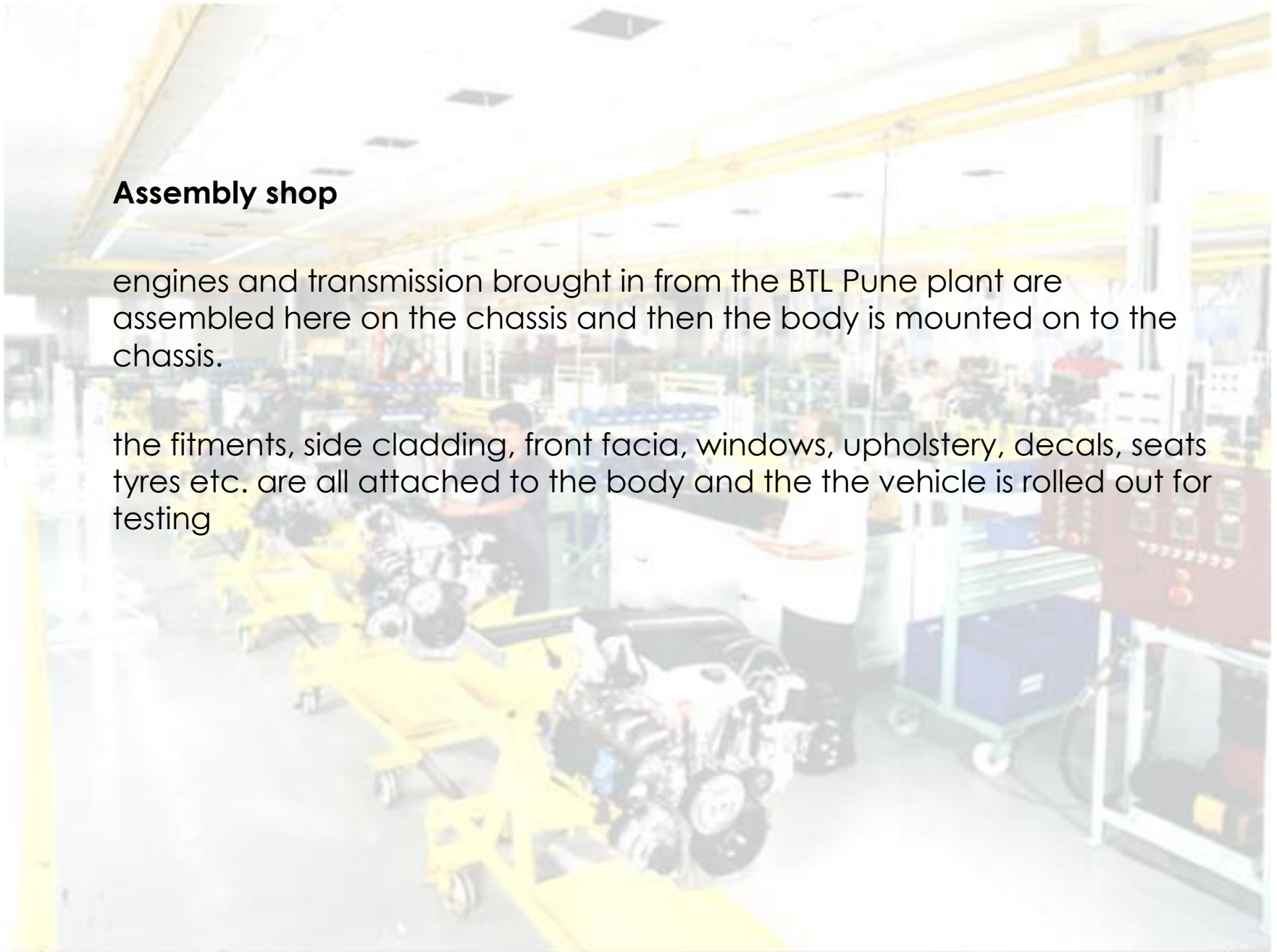
after painting a layer of PVC is applied at the bottom for rust proofing of the floor



Assembly shop

engines and transmission brought in from the BTL Pune plant are assembled here on the chassis and then the body is mounted on to the chassis.

the fitments, side cladding, front facia, windows, upholstery, decals, seats tyres etc. are all attached to the body and the the vehicle is rolled out for testing



Pinnacle

The next day we went to pinnacle industries with Mr. Deepak shah

He introduced us to the concerned people and showed us the plant with production people of pinnacle.

The company has following departments

Fabrication,

Mould and pattern making,

PU forming,

Stitching,

Assembly.



Fabrication shop

- All the internal reinforcement for seats in m.s. is done in this shop.
- There are computer controlled pipe bending machines, welding machines and general purpose machines.



- Pipe bending machine



- Mould and pattern making

Sample models for furniture or drawings come from Saporiti Italy from which the patterns are made

Patterns are made in wood or foam that is coated with LY 554 or CY 212 resin with hardener to make the foam surface hard.



- Mould is made around the pattern in FRP and is reinforced with m.s. square pipes. The pattern is then removed.



P U forming

- Releasing agent and wax is applied to the inner wall of the mould



- A mixture of Polyol 477 DOW and Isocyanate 113 DOW is mixed in desired proportions and poured in the mould



- The mould is then closed and the foam is allowed to expand.



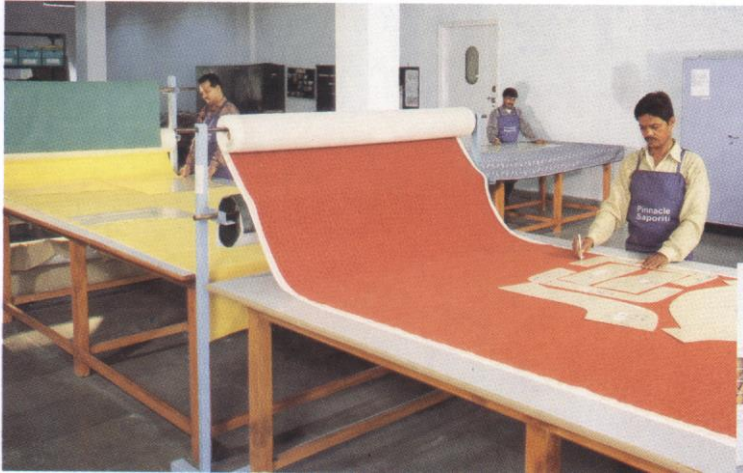


The setting time is around 4 minutes

The mould is then opened and the foam removed



Upholstery / Stitching,



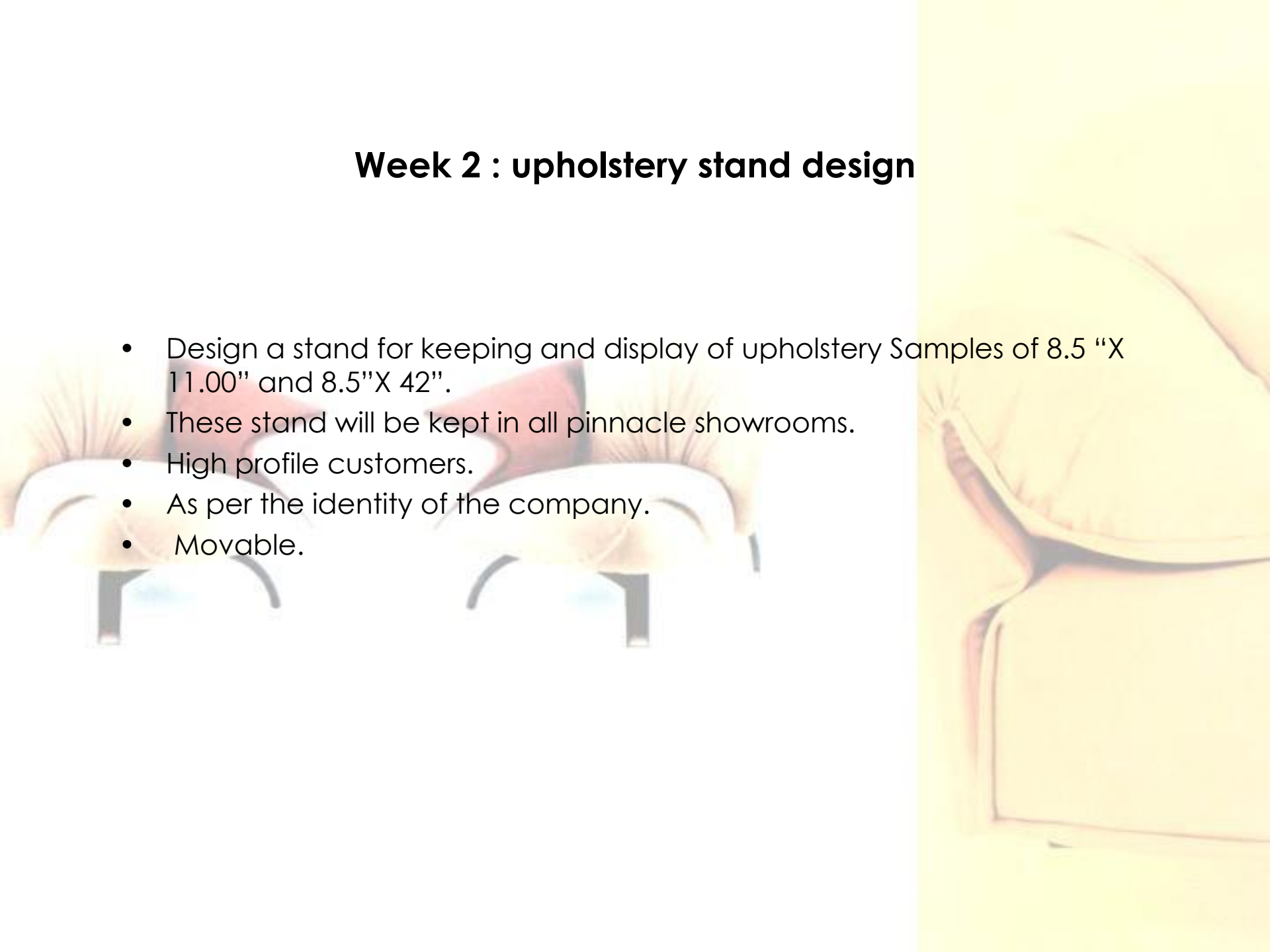


Assembly



Week 2 : upholstery stand design

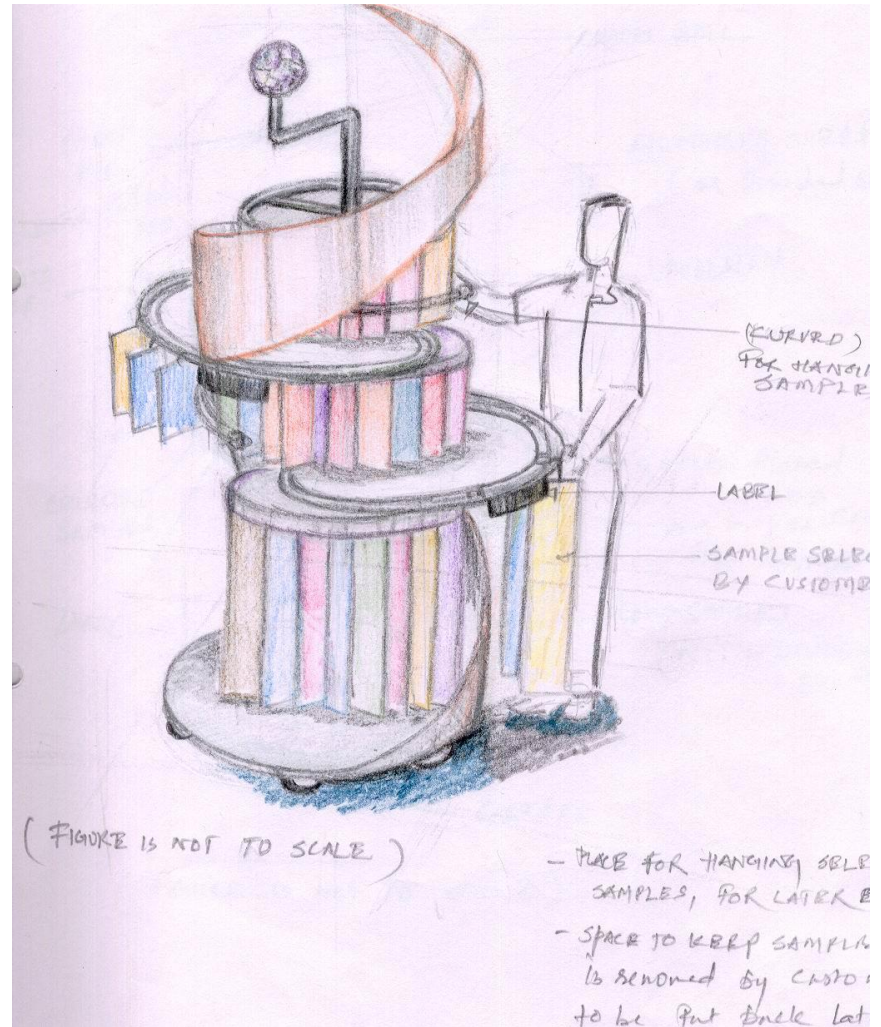
- Design a stand for keeping and display of upholstery Samples of 8.5 "X 11.00" and 8.5"X 42".
- These stand will be kept in all pinnacle showrooms.
- High profile customers.
- As per the identity of the company.
- Movable.



Points we considered

- Person should not move, rather the stand should rotate
- Care to be taken to accommodate atleast 2+1 people around the stand
- Individual categories should be comparable
- Panel for advertisement
- One designer element
- Some difficulty while pulling the samples out so that the customer does not pull all the samples out
- Ease while putting the samples in
- A space for keeping and displaying the selected items on the stand itself for final comparison

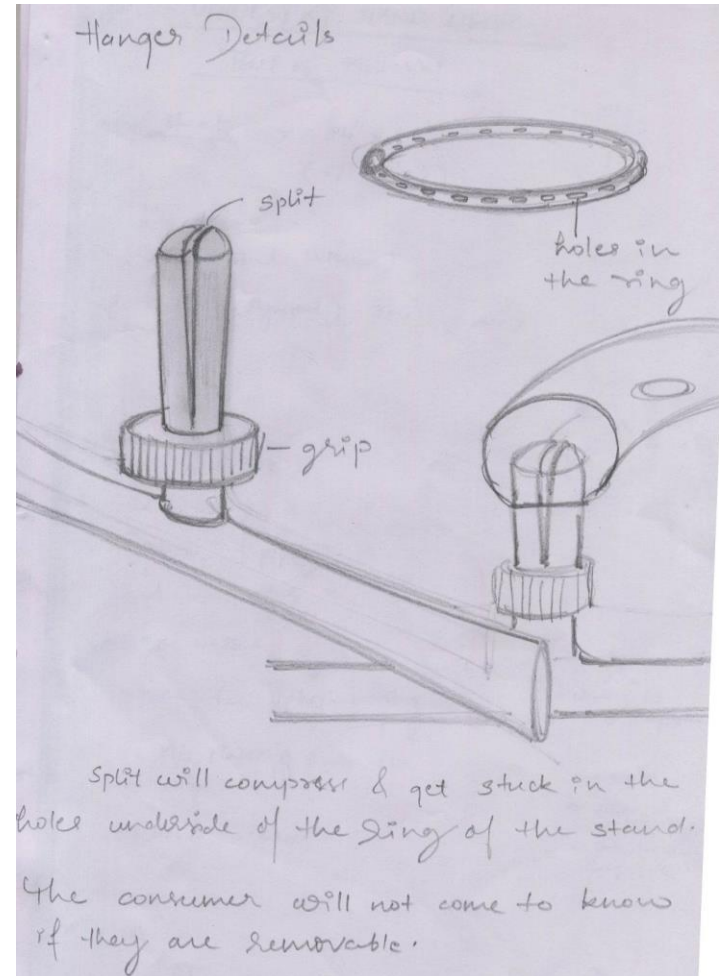
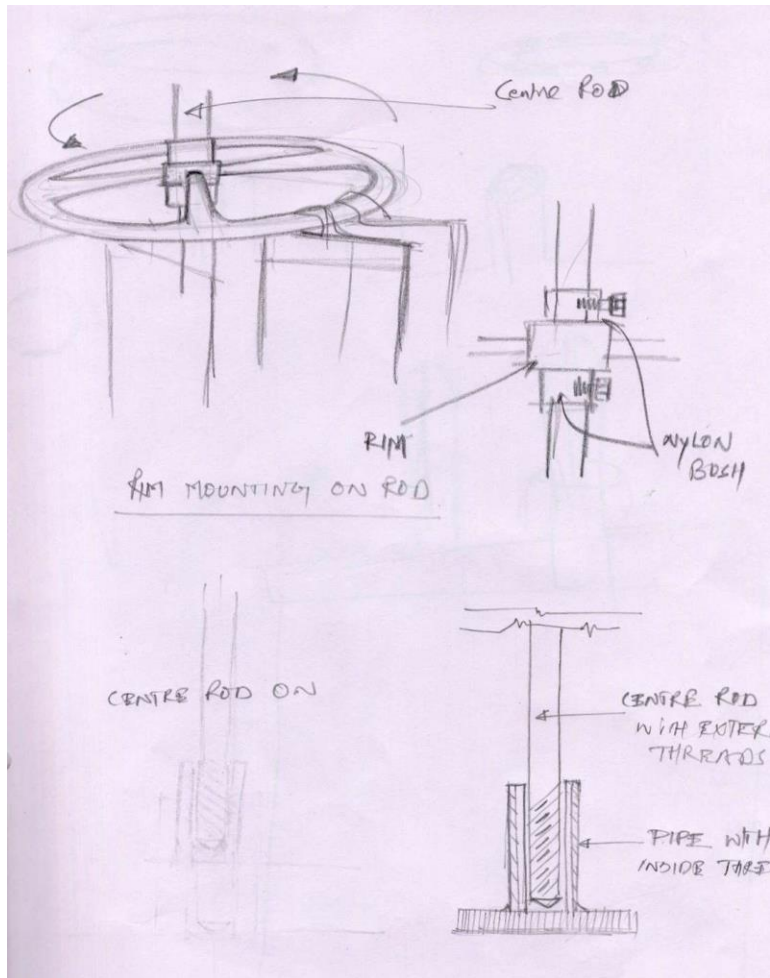
Concept upholstery stand



Technical drawing of a mechanical part, showing dimensions in feet and inches. The drawing includes a side view and a top view. Key dimensions are:

- Overall width: 3'-6"
- Overall height: 5'-9"
- Top view dimensions: 2'-5" (width), 1'-11" (height), 1'-1" (height), 2" (width), 11" (width), 11" (width), 11" (width), 6" (width), 2" (width), 3'-9" (width).
- Side view dimensions: 2' (height), 11" (width), 11" (width), 11" (width), 6" (width), 2" (width), 3'-9" (width).
- Internal features: A hole with diameter $\phi 15/16"$, a 2" wide section, and a 15/16" wide section.

Fixing Detail



Week 3 : Graphics for Traveller and Trax

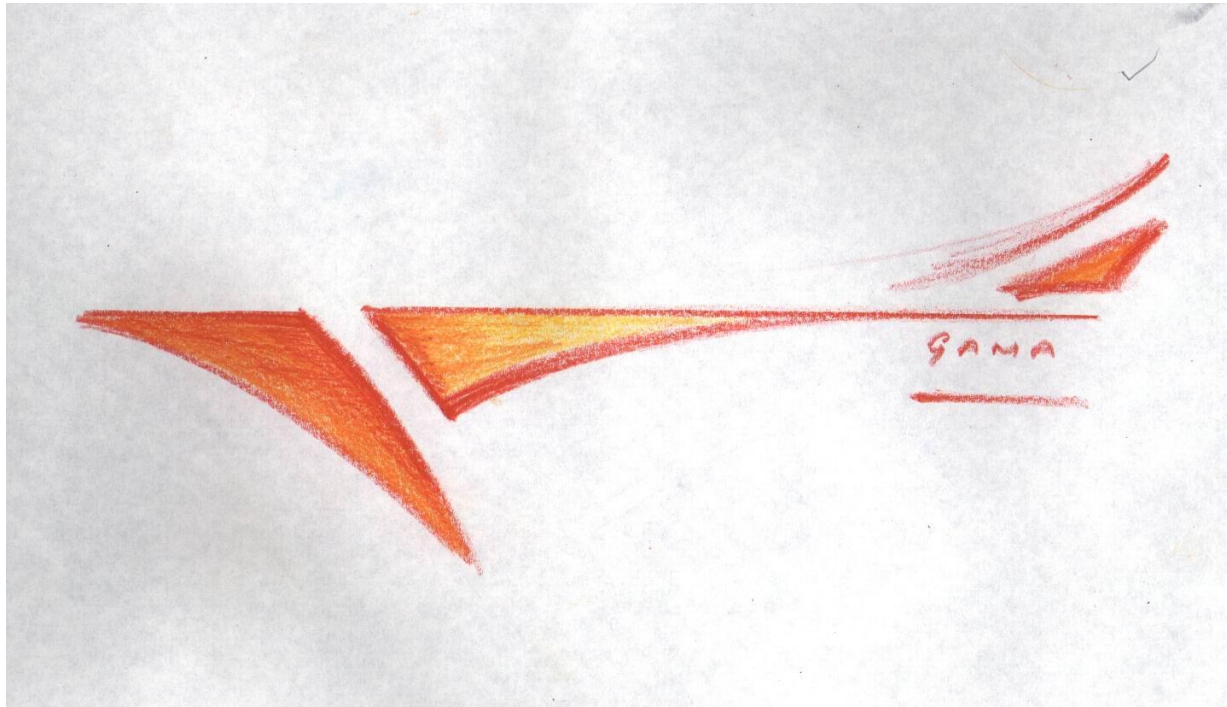
- The most cost effective way to bring about subtle changes in the vehicle is by changing the graphics.
- Graphics on the vehicles are changed every six to twelve months
- Cost of all the stickers on the vehicle is about Rs. 1200 to Rs. 2000
- Usually the trends in the market are followed to make a new design
- Sometimes the pole is shifted, as it was done for the Trax cruiser model
- The reaction to the same was not good



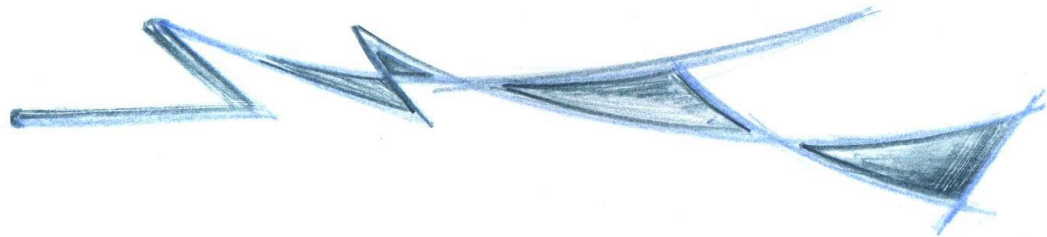
Methodology adopted

- **Studied the vehicle characteristics**
- **Profile of the vehicle**
 - The side view of all the models was carefully observed.
- **Understood technical constraints**
 - Hinges and sharp corners on the vehicle body were to be avoided while designing the graphics.
 - Also care was to be taken such that nesting of the same was possible while manufacturing.
- **Concept Generation**
 - More than a 100 elementary sketches were made for both Traveller and Trax and were displayed in the BTL office to observe peoples reactions.
- **People's opinion**
 - Their likes and dislikes were noted.
 - Some concepts were sorted for final development.

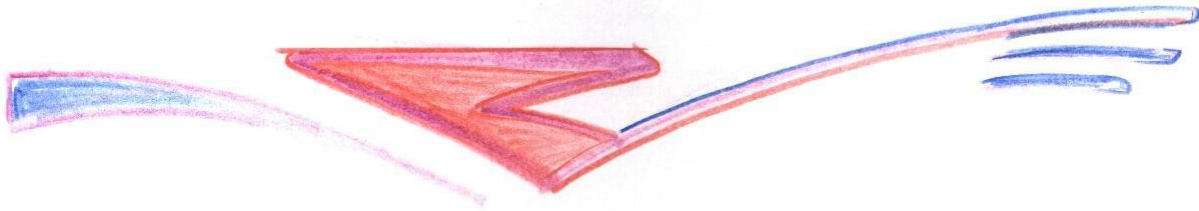
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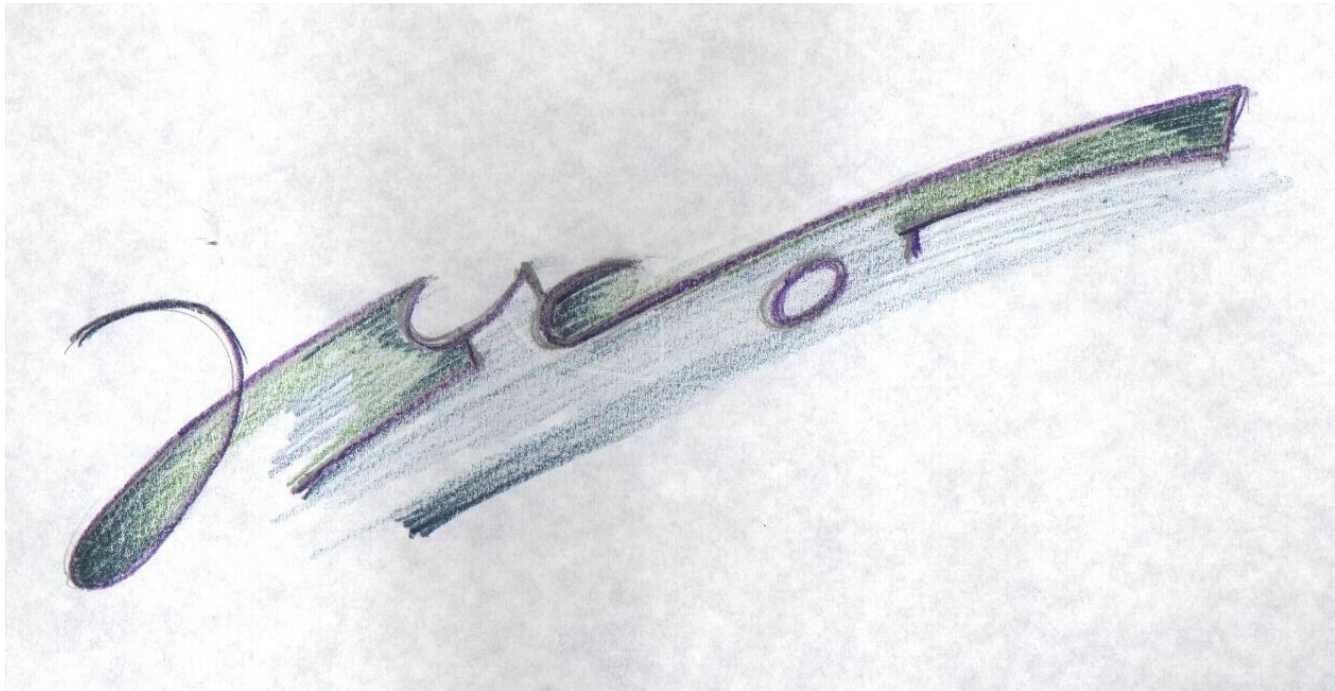
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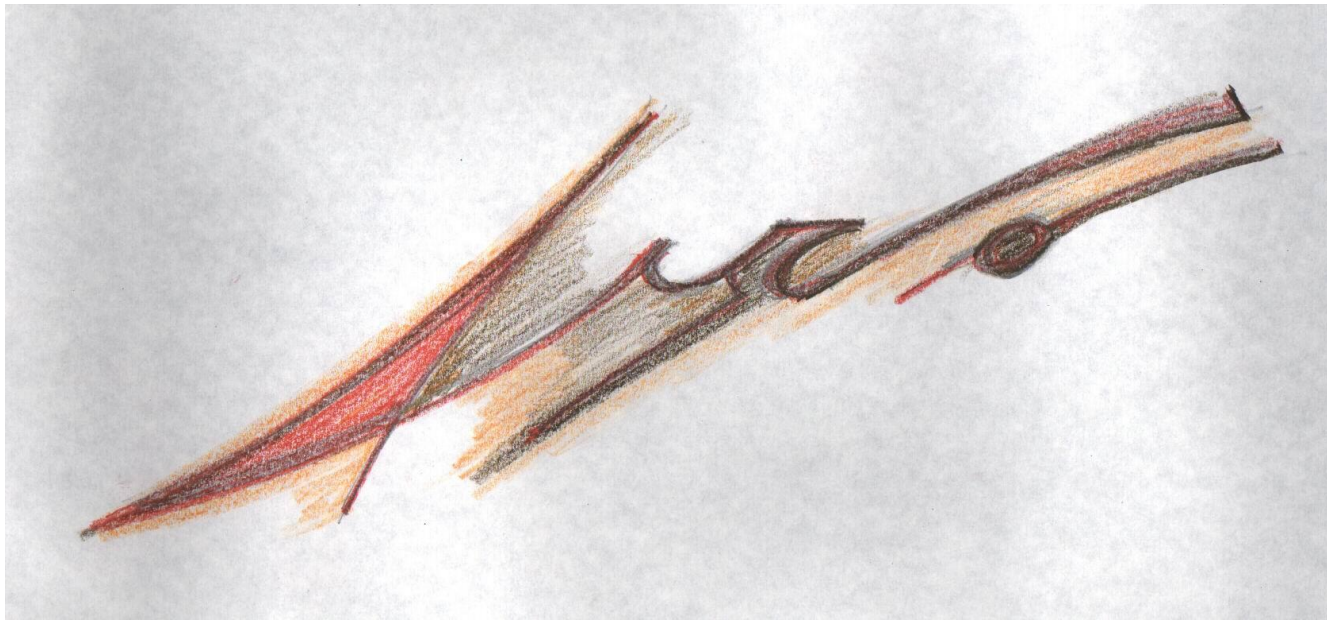
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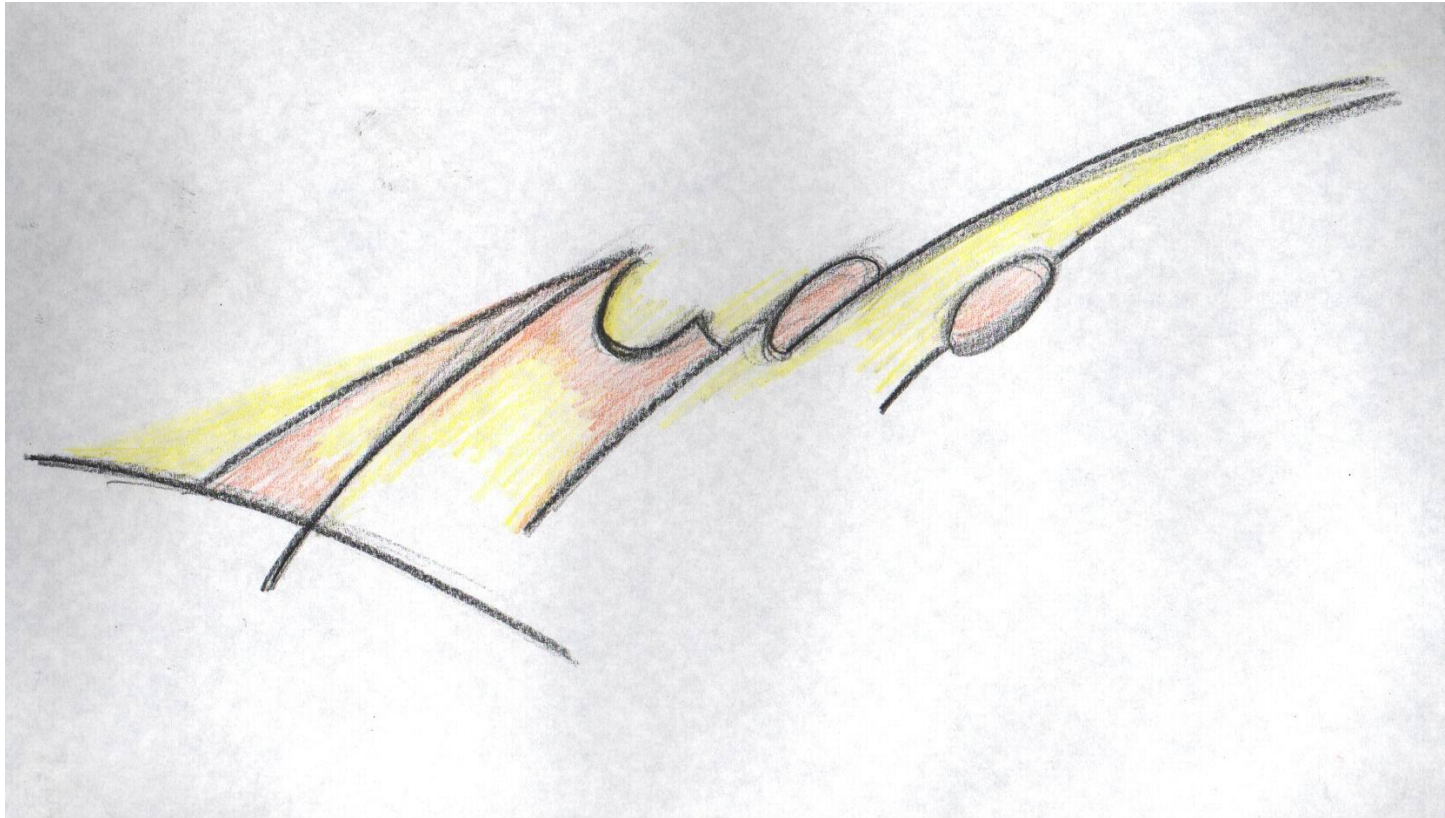
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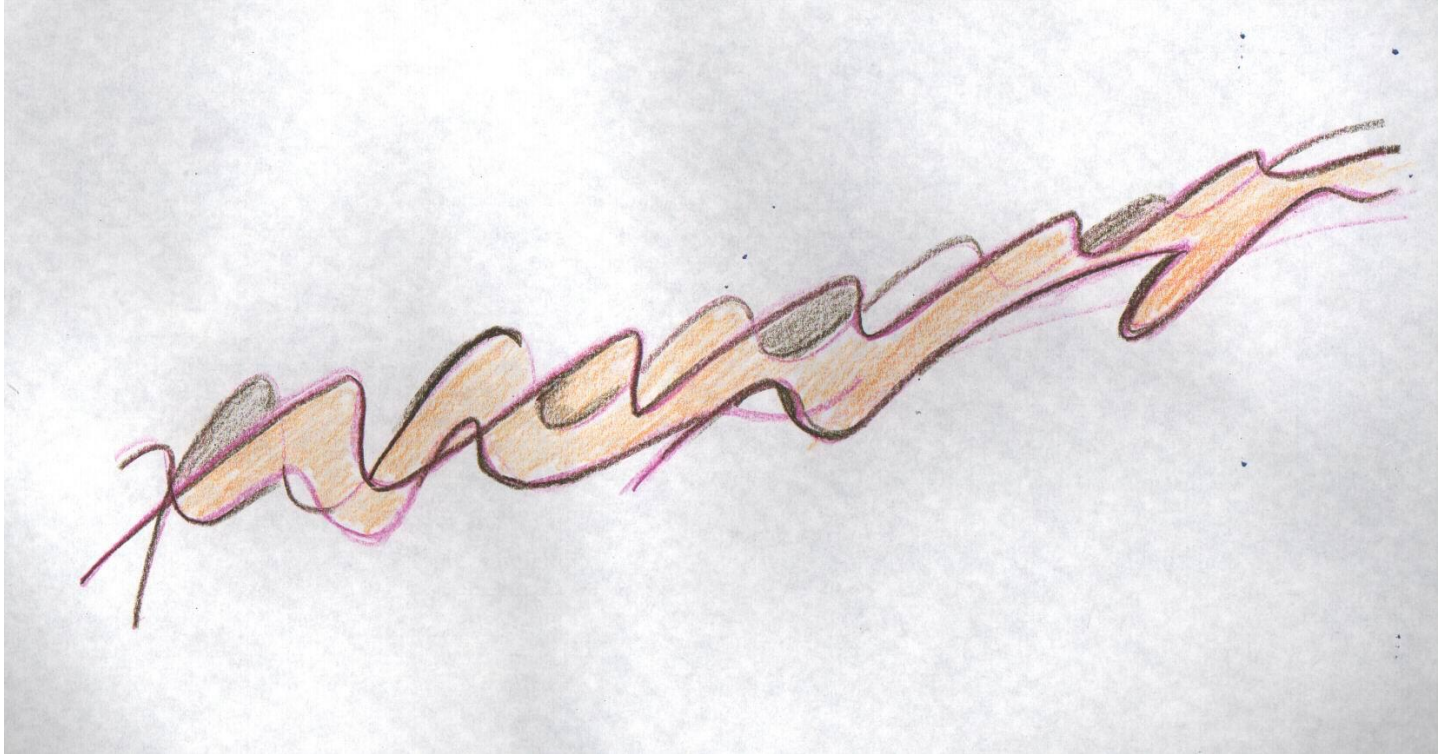
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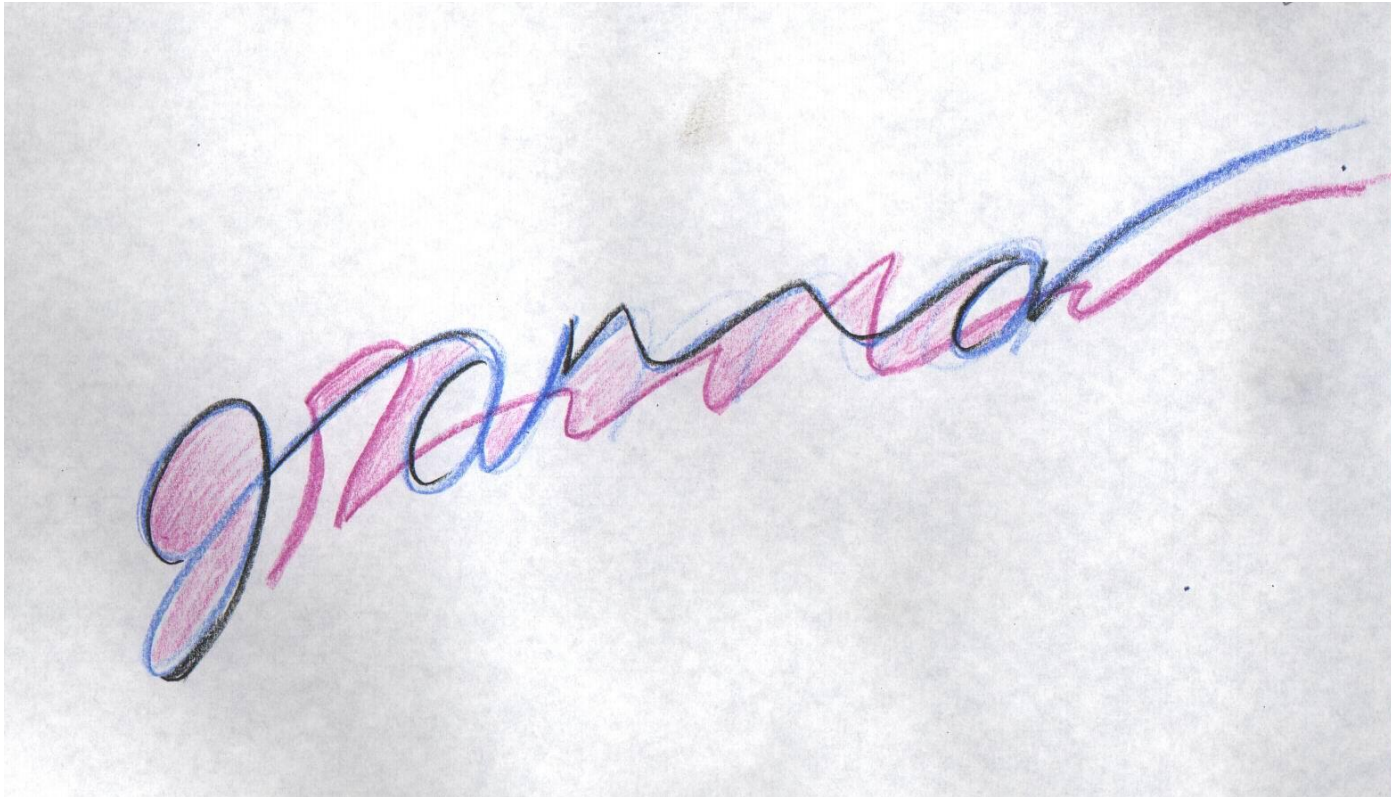
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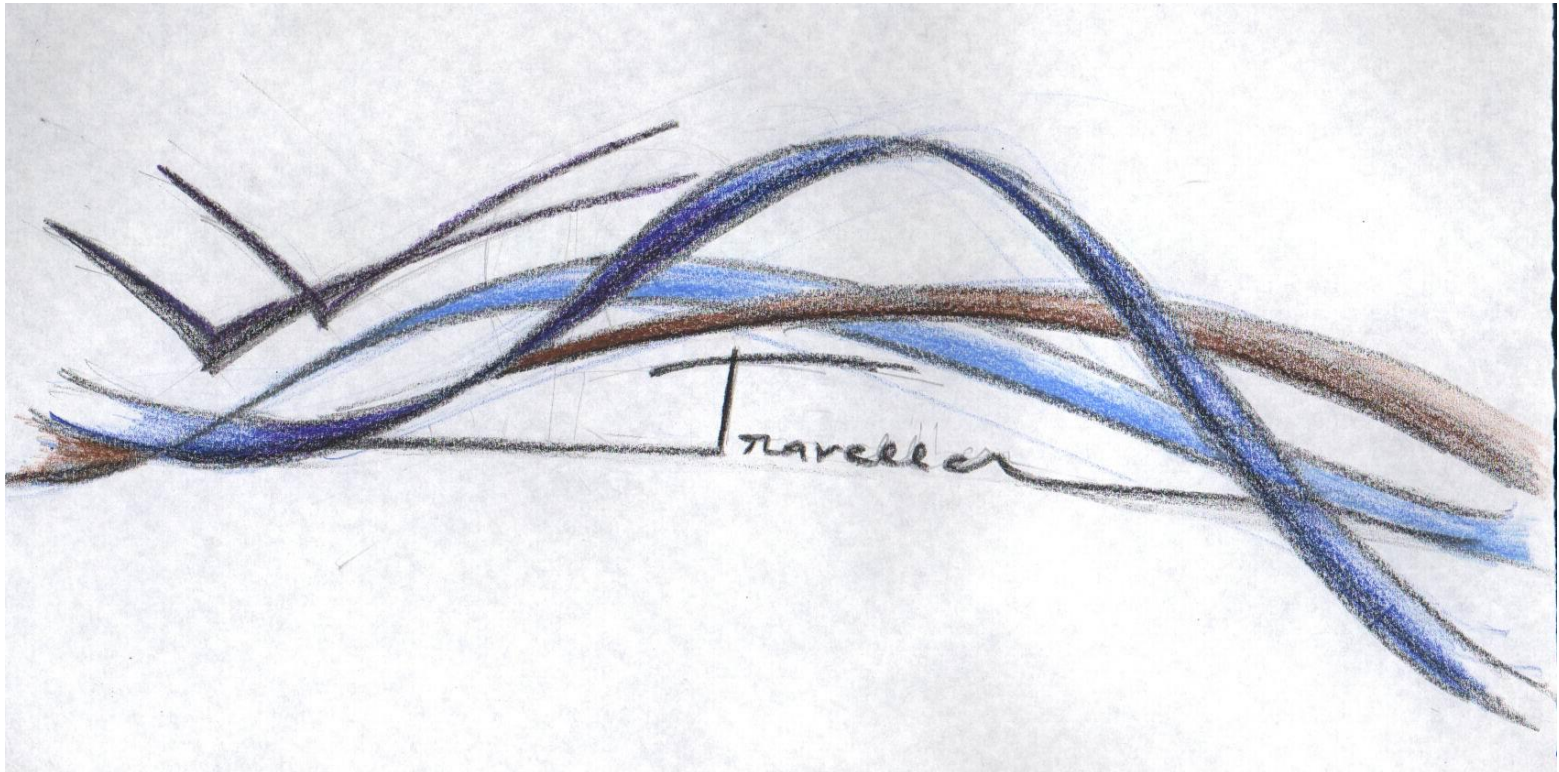
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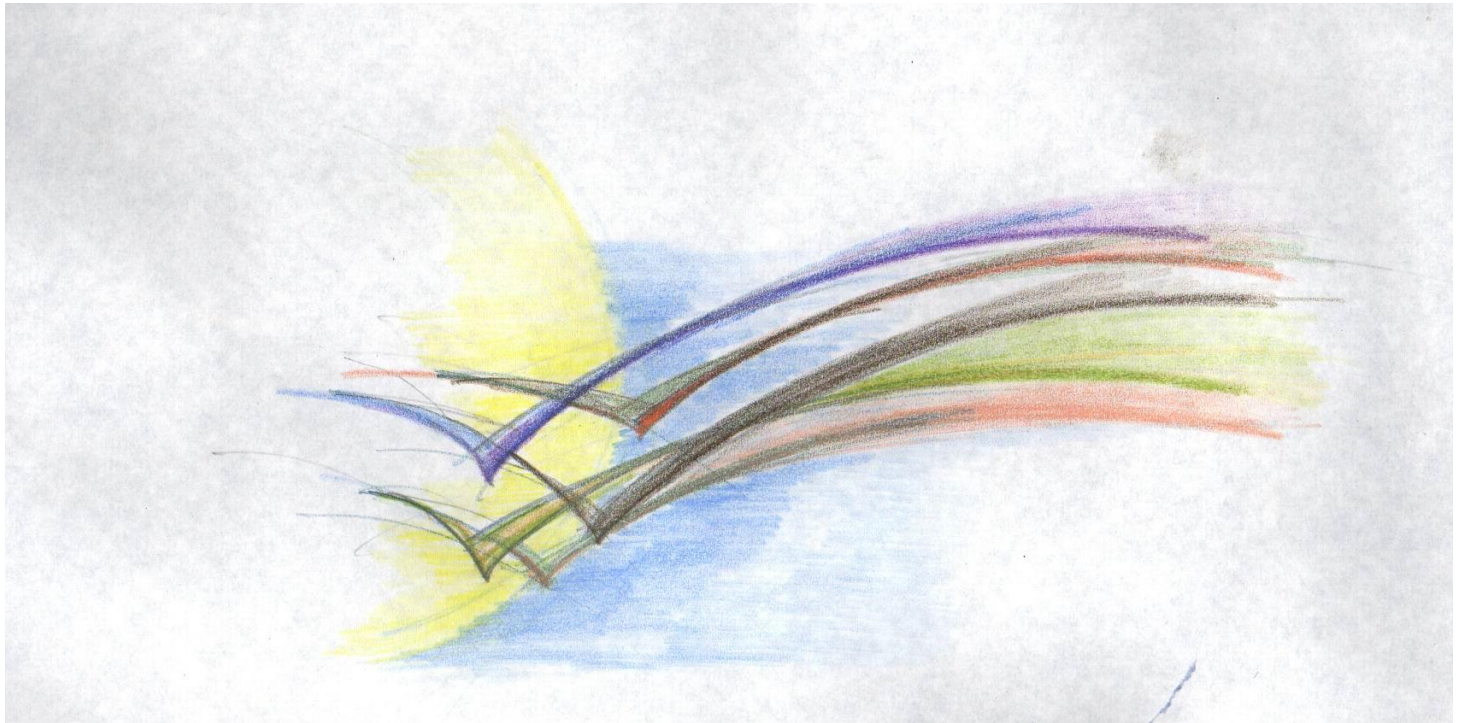
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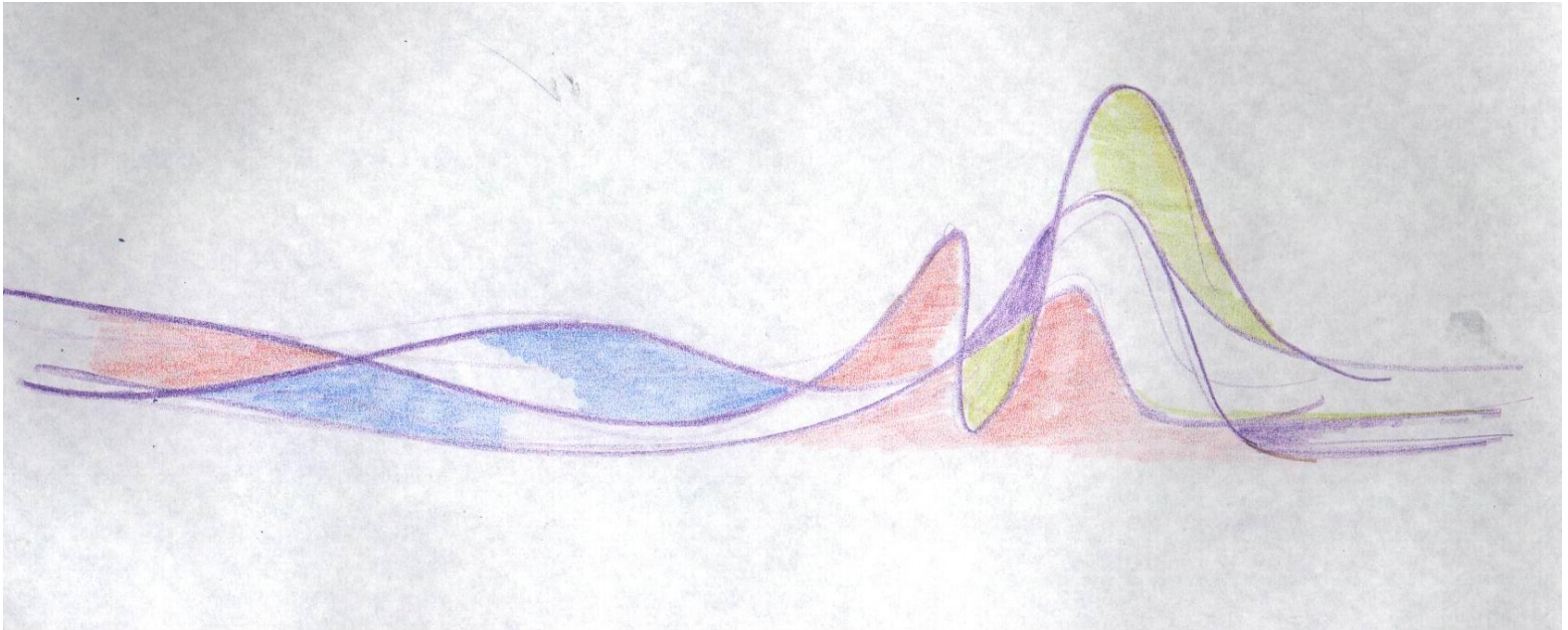
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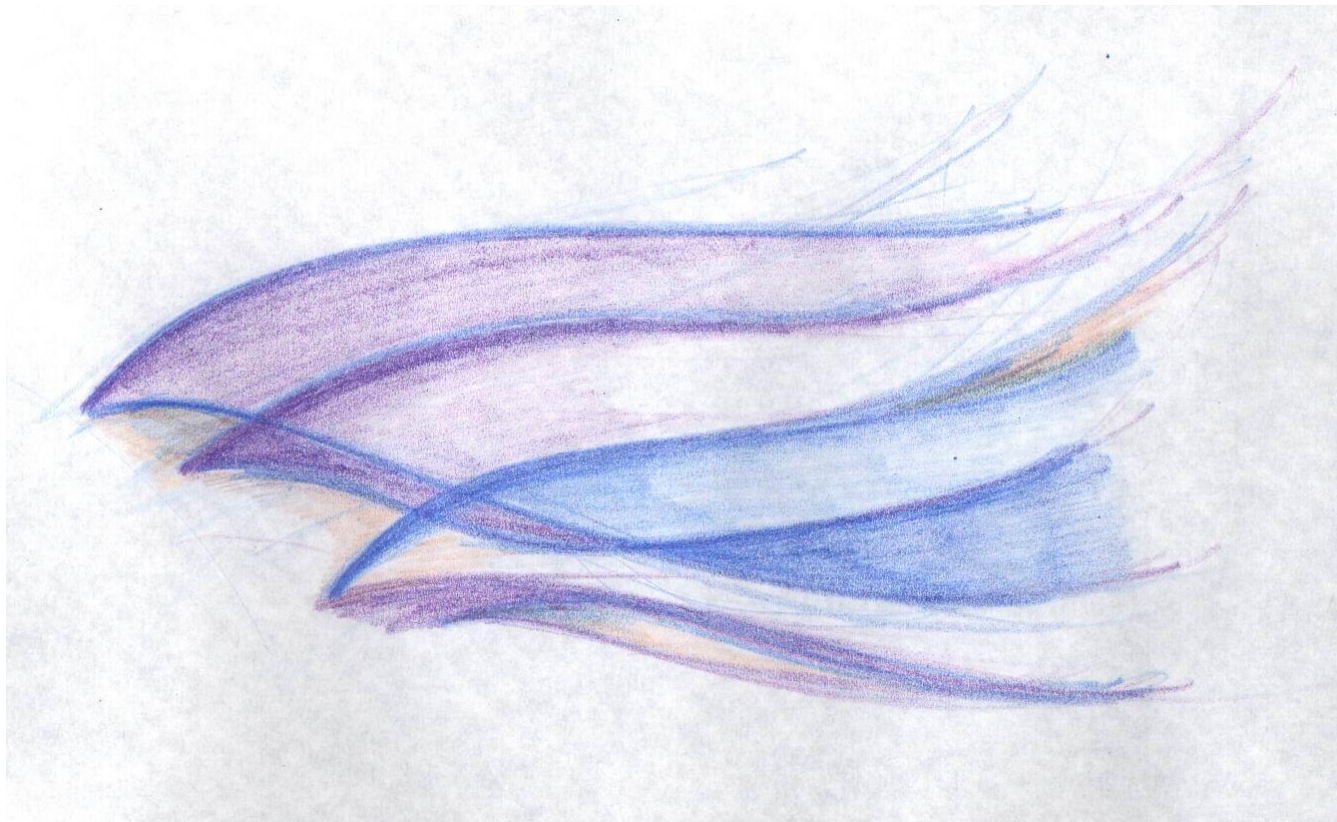
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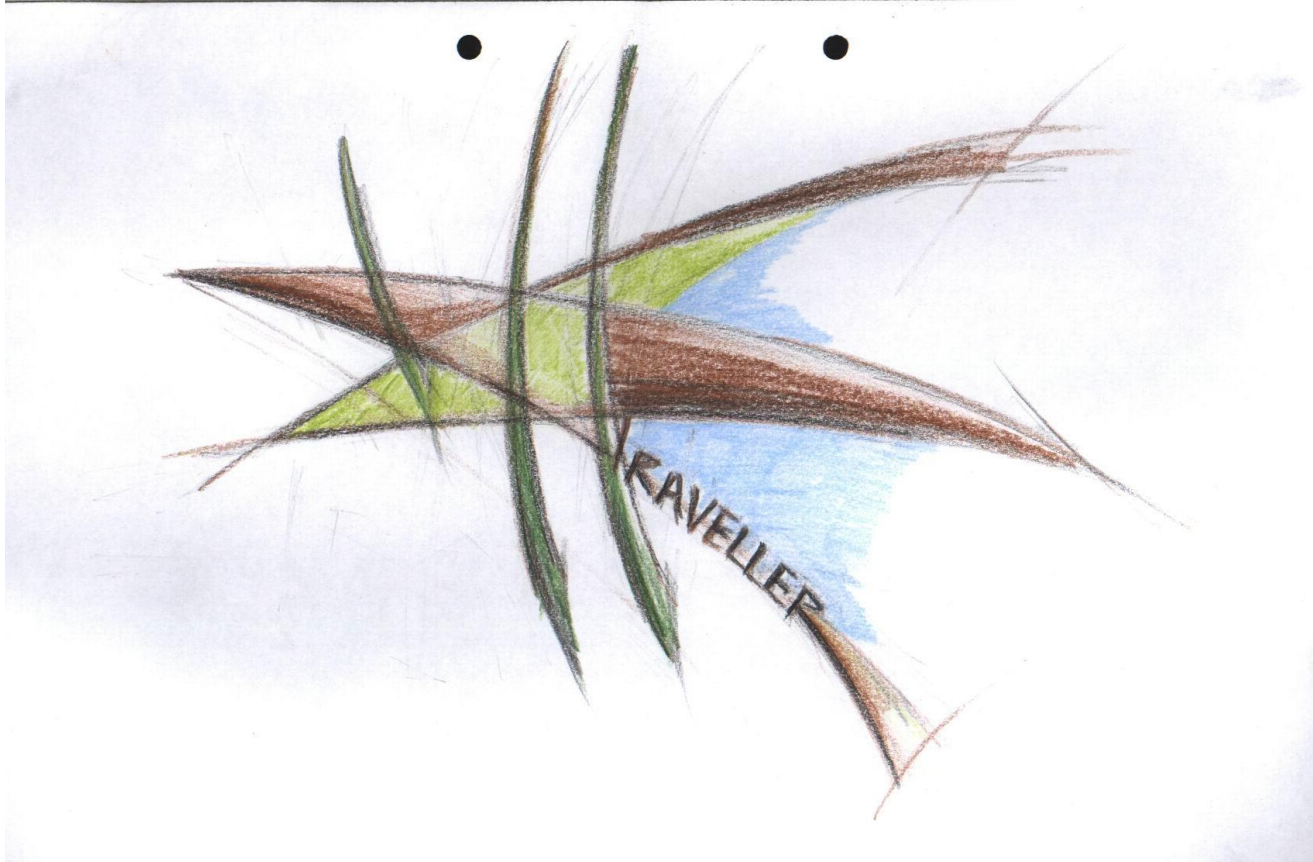
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week 4

Redesigning of furniture for Pinnacle Saporiti

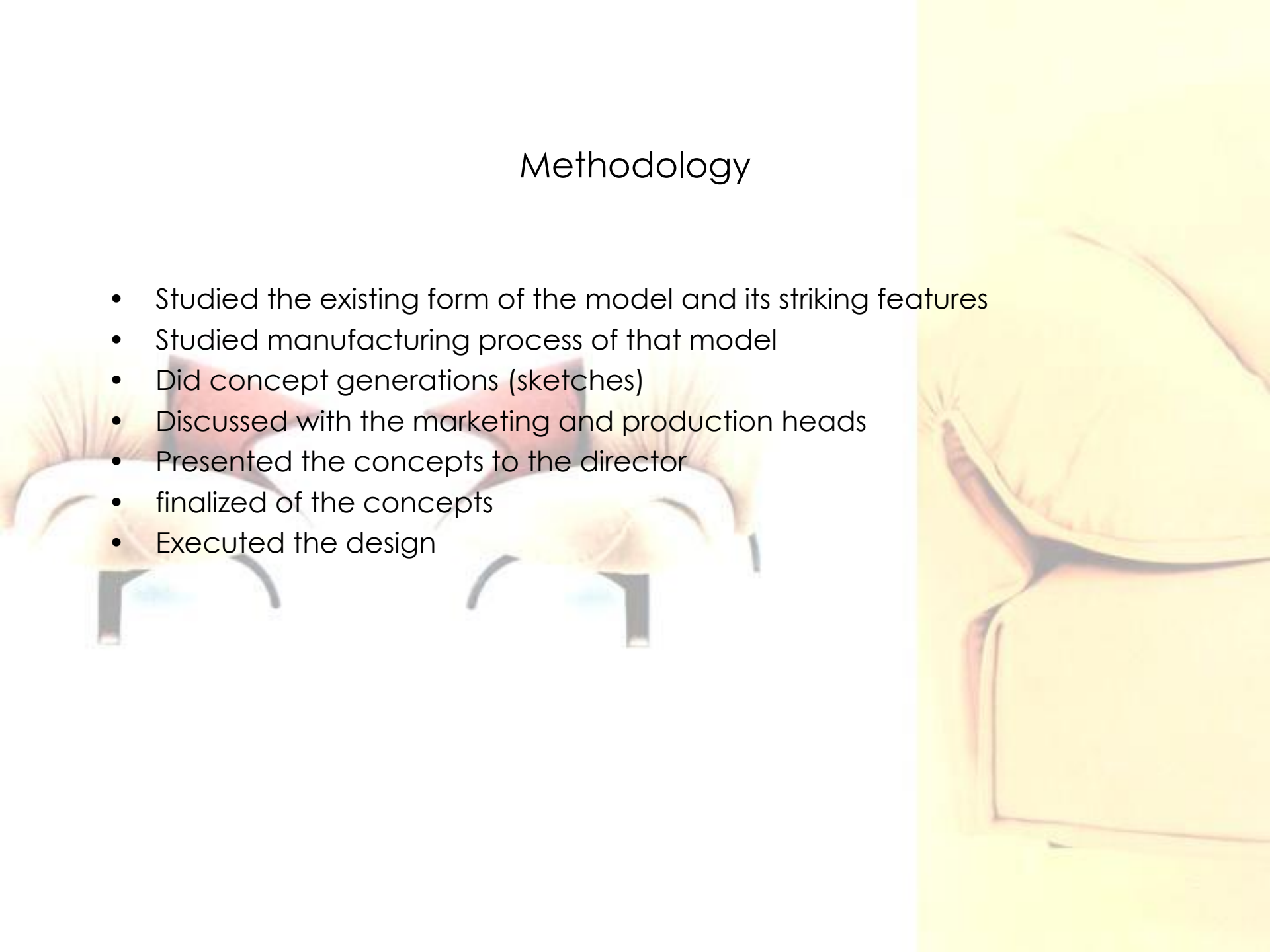
Brief given

- Making design changes in the existing furniture
- Should Not change the moulds
- Not lose the originality
- Cost effective



Methodology

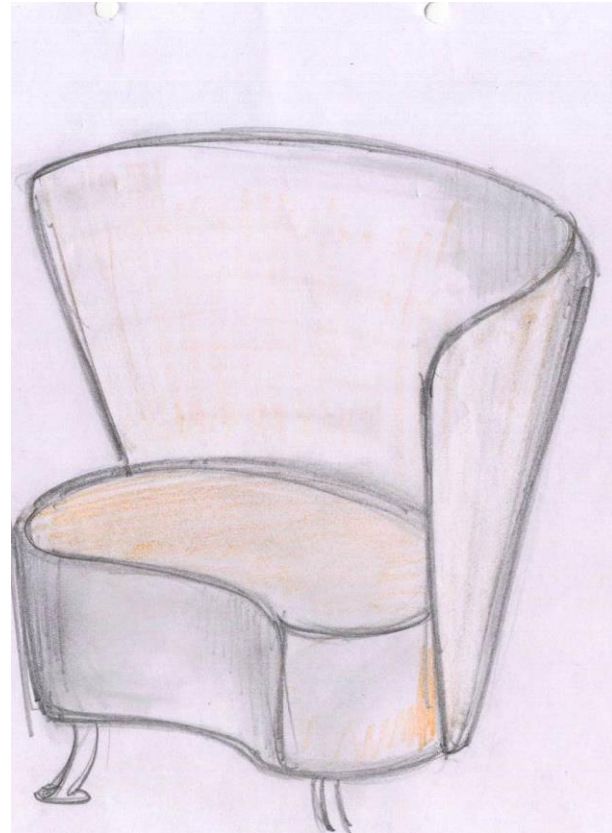
- Studied the existing form of the model and its striking features
- Studied manufacturing process of that model
- Did concept generations (sketches)
- Discussed with the marketing and production heads
- Presented the concepts to the director
- finalized of the concepts
- Executed the design



Model 1 : flower

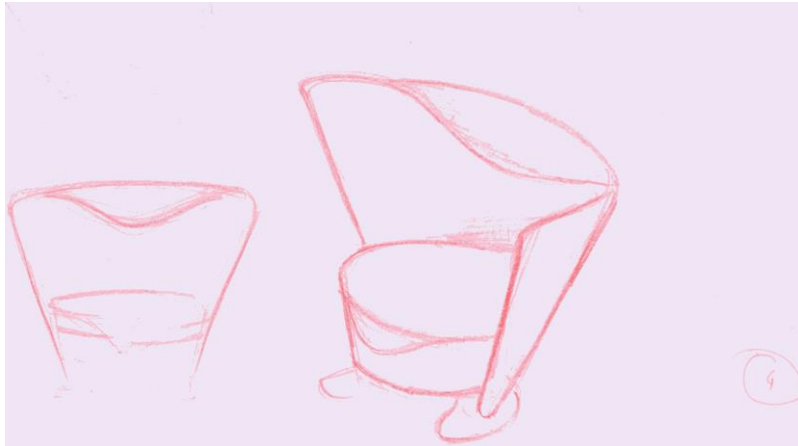


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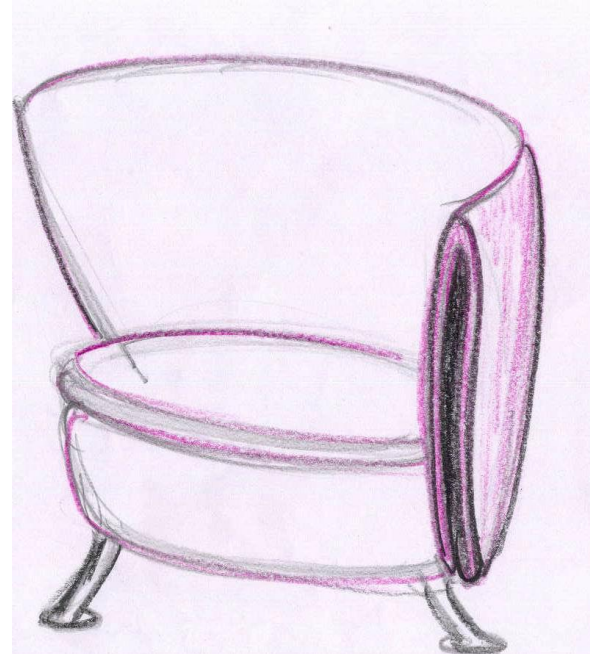
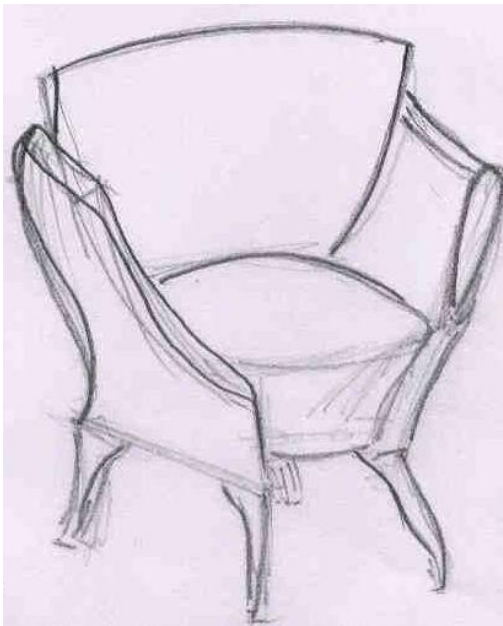


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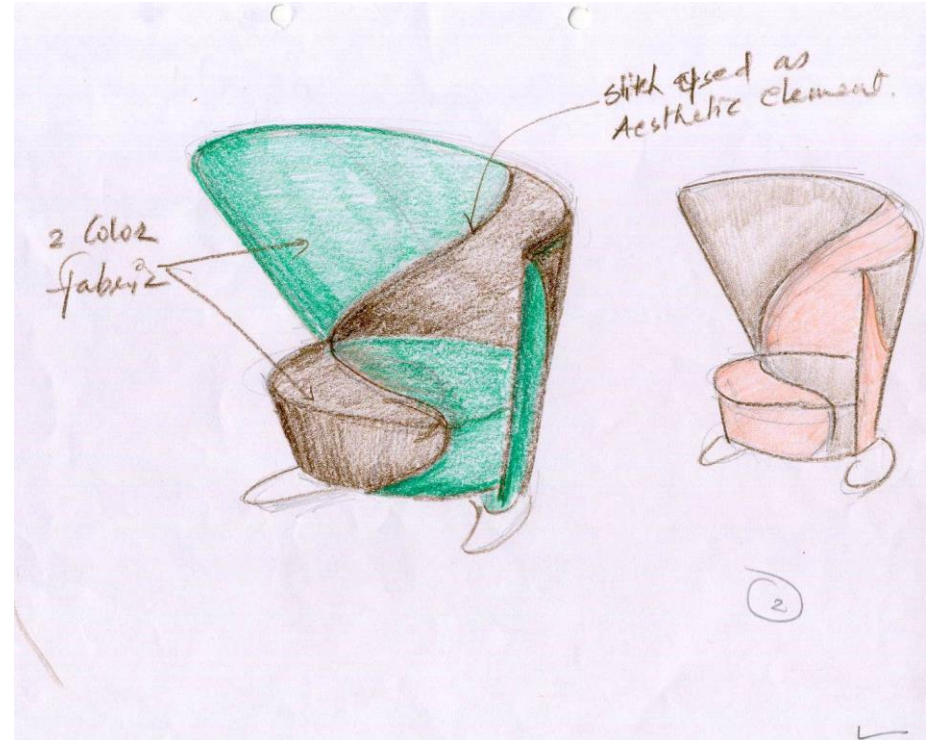
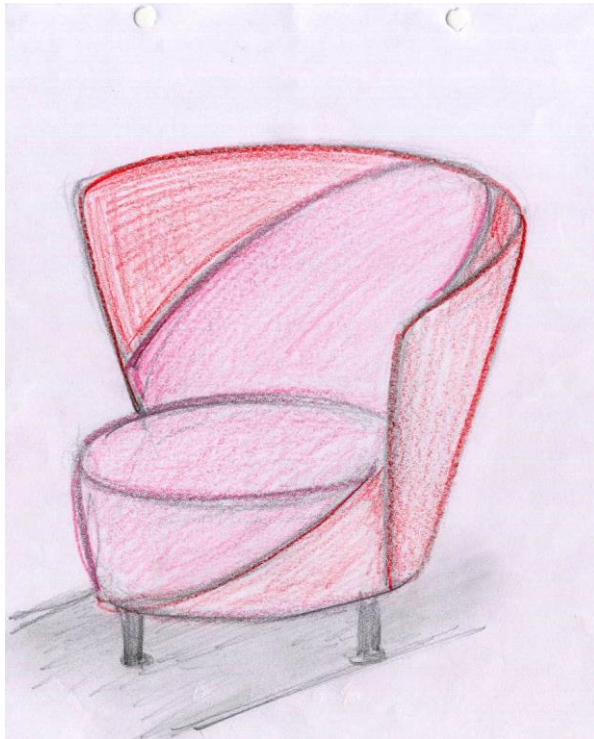




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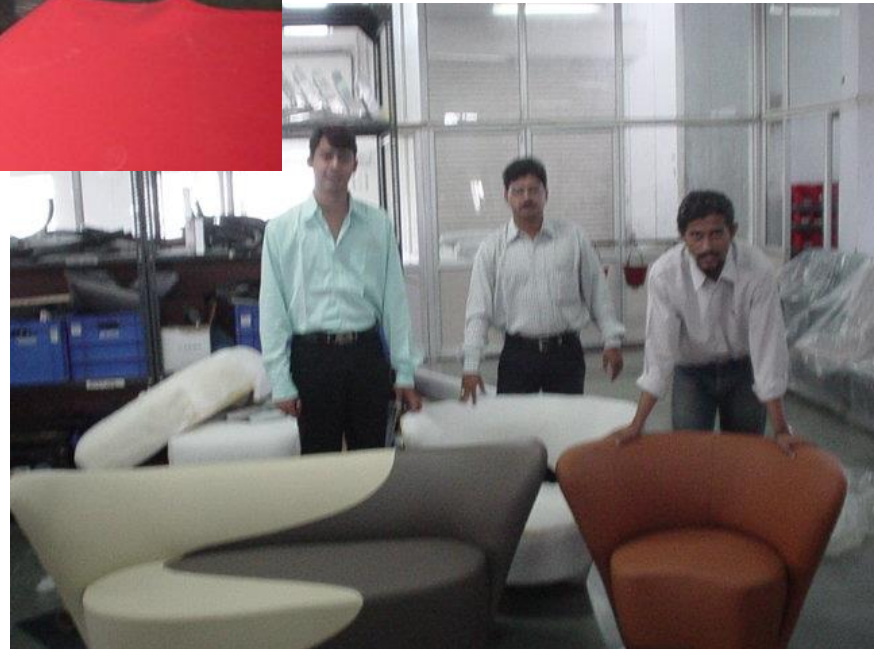


Manufactured ones



Manufactured ones

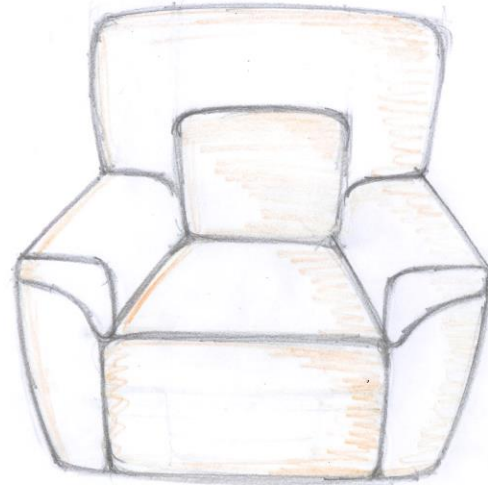
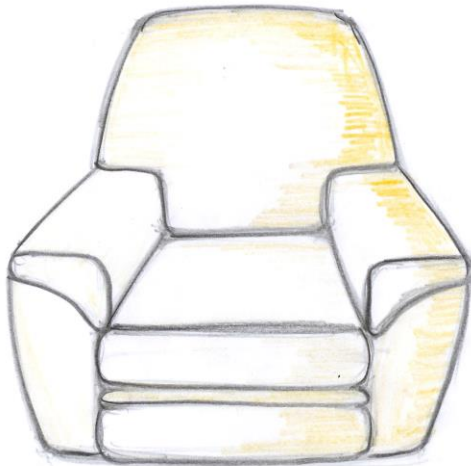




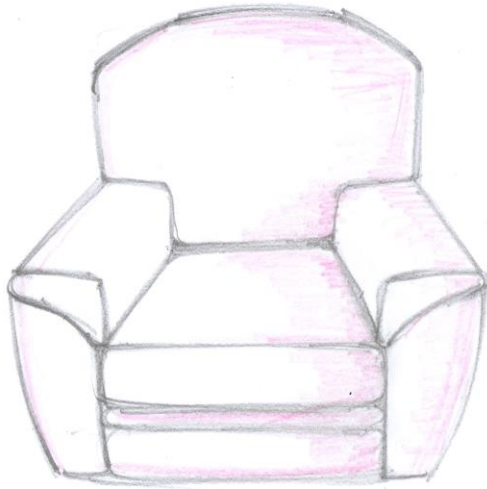
Model 2 : Milano



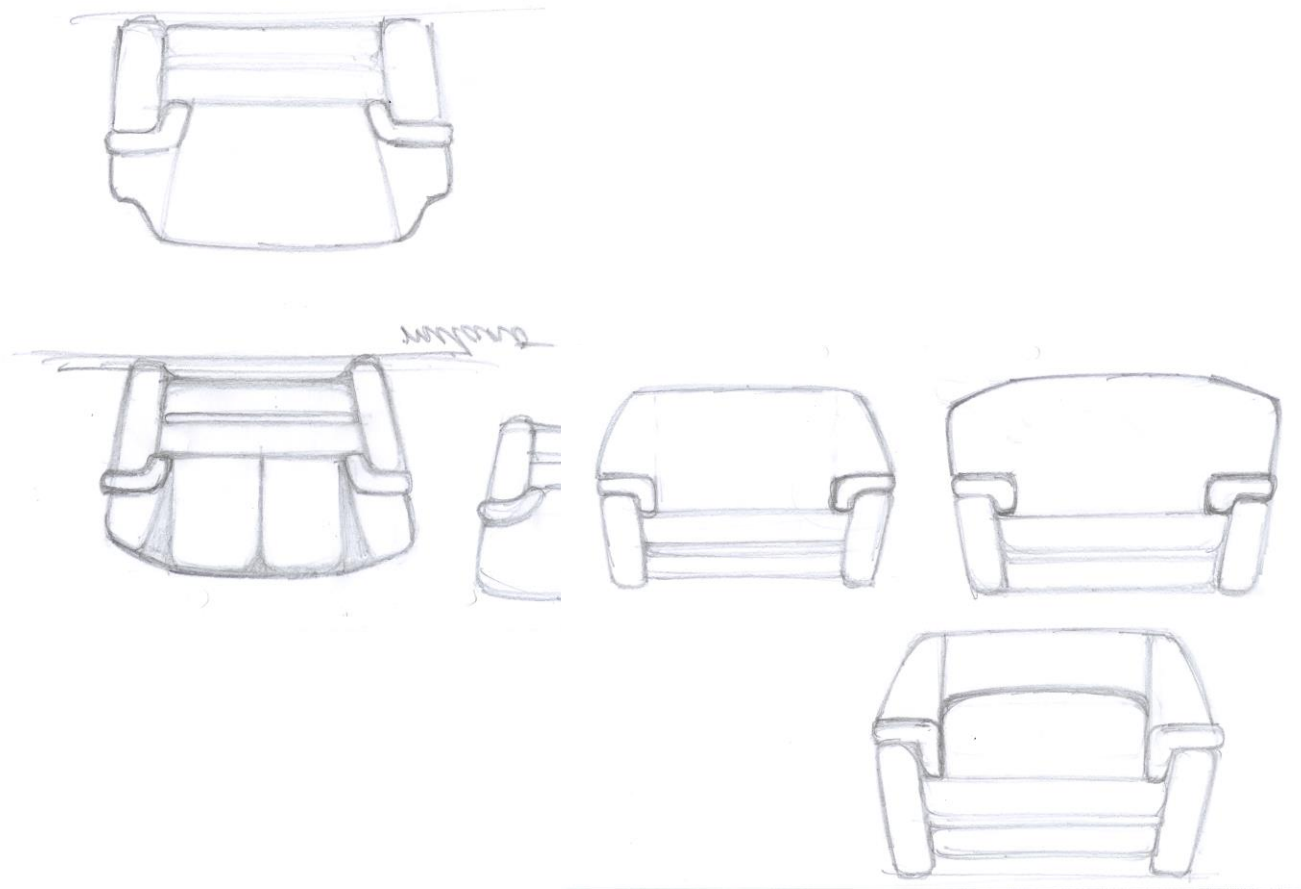
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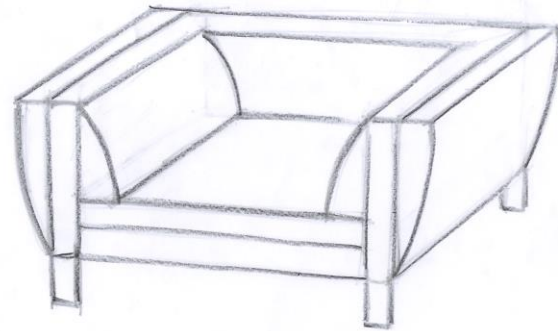
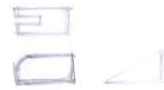
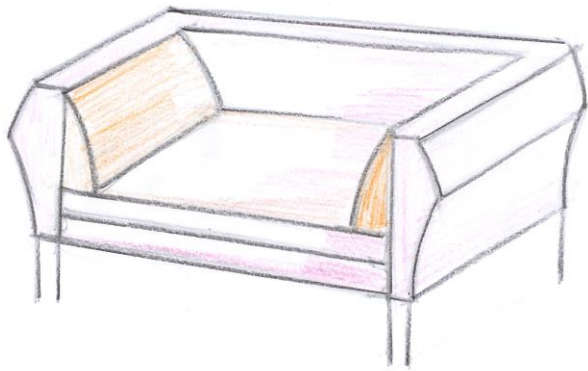
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Model 3 : love seat



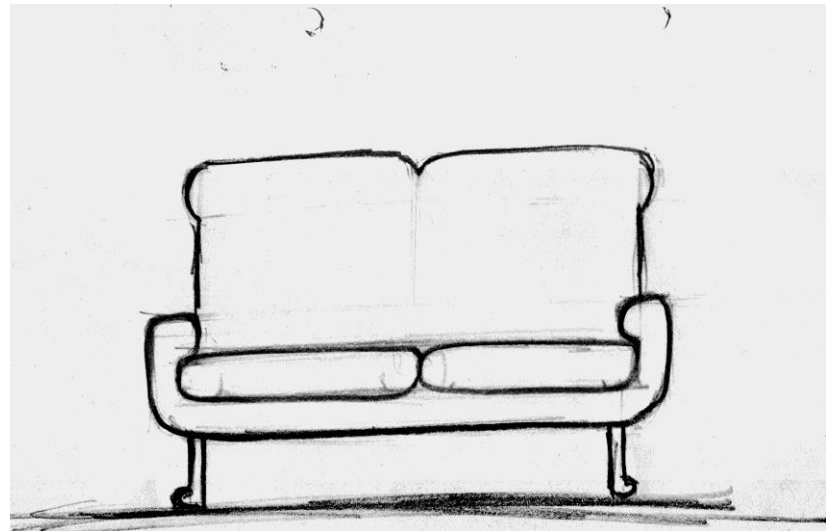
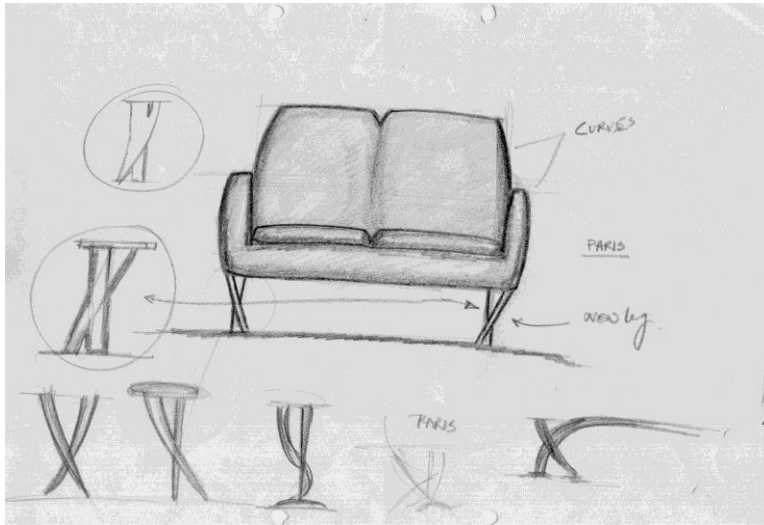
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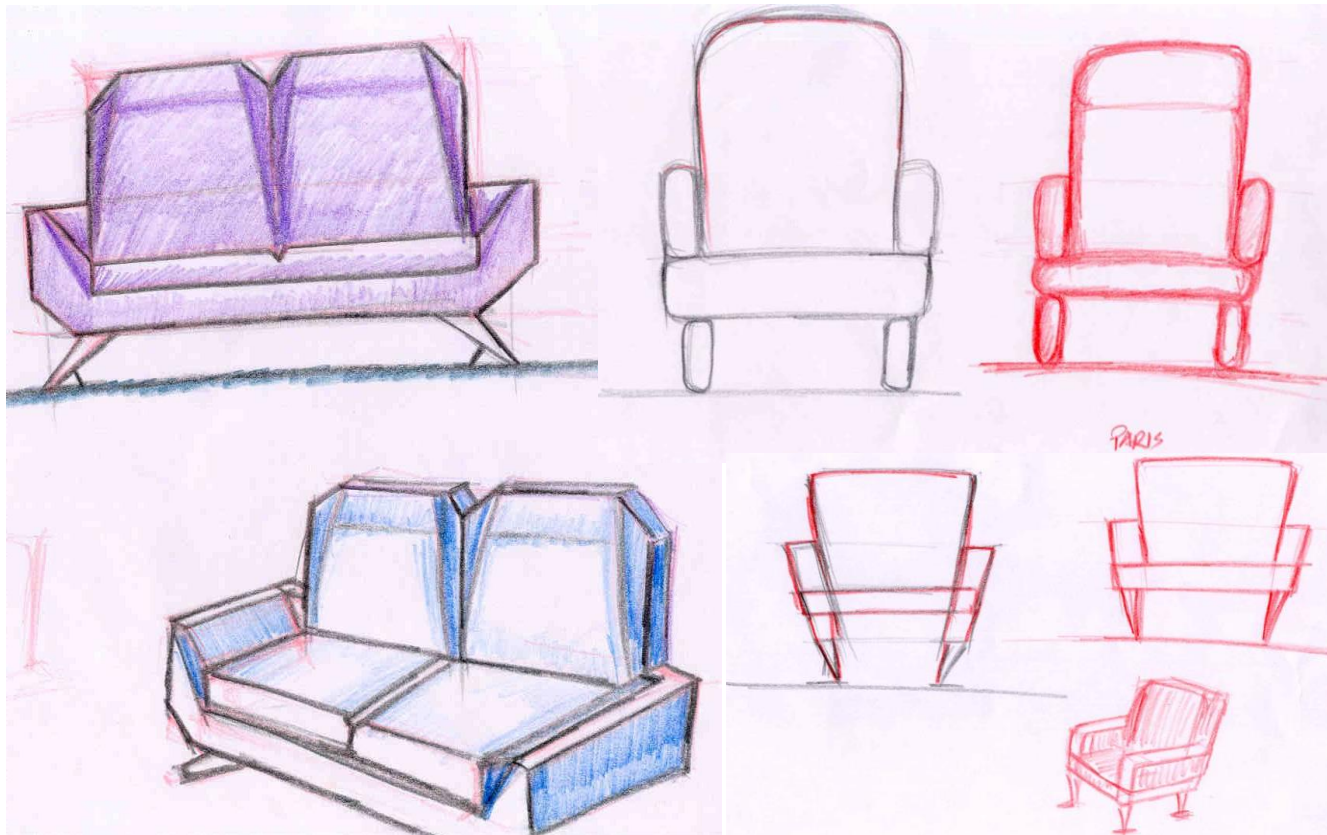
Model 4 : paris



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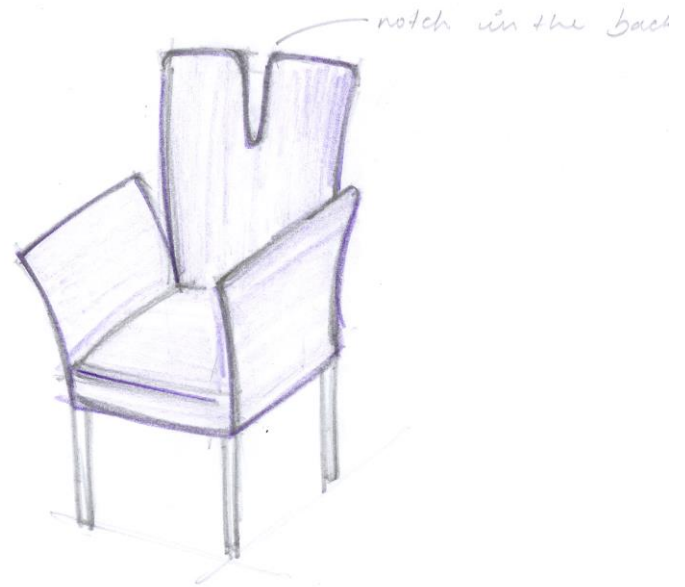
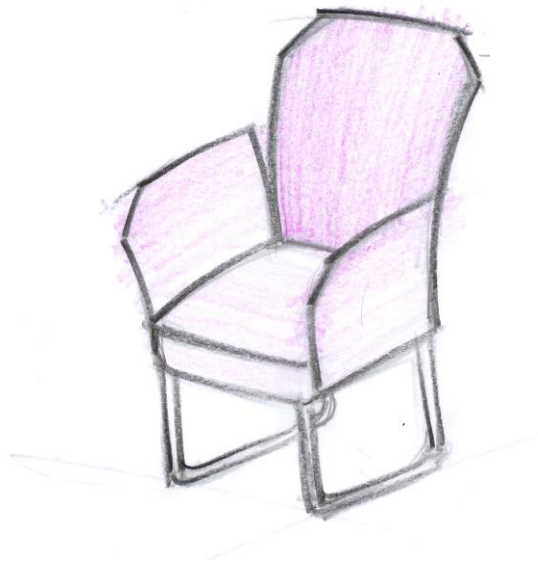
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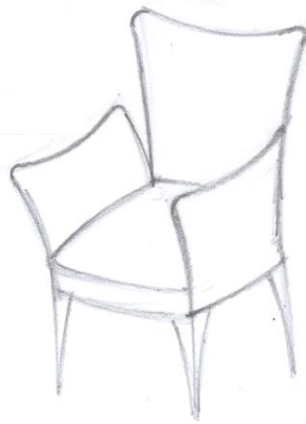
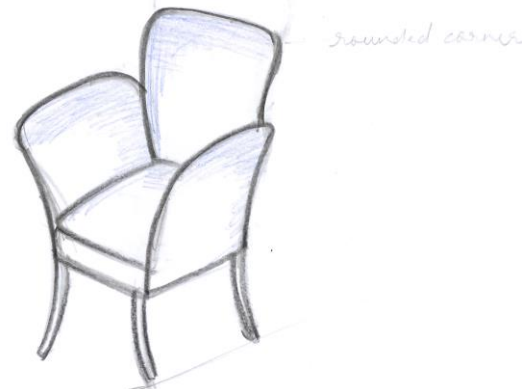
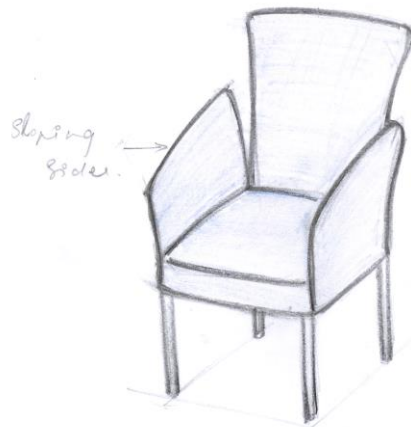
Model 6 : lucy



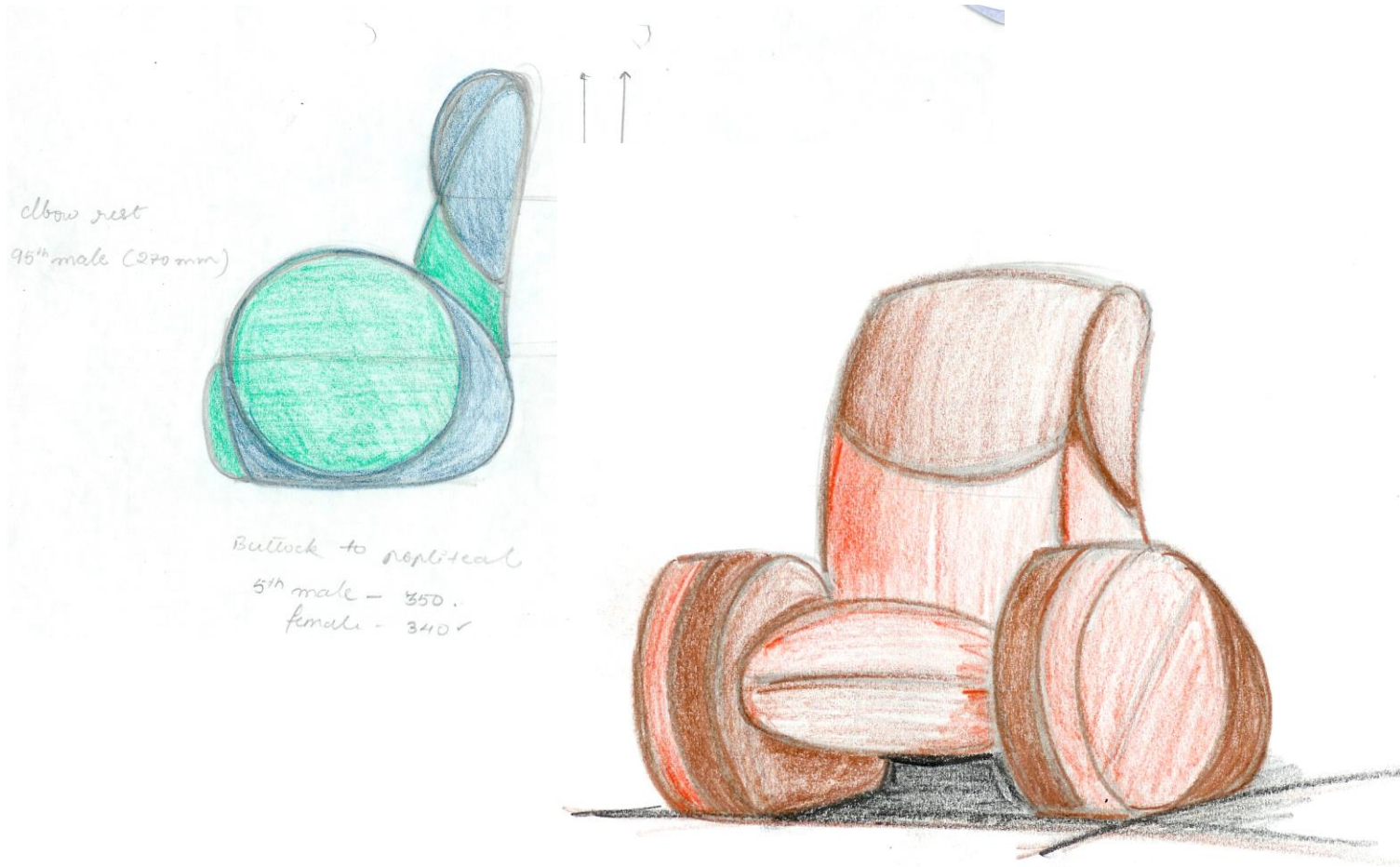
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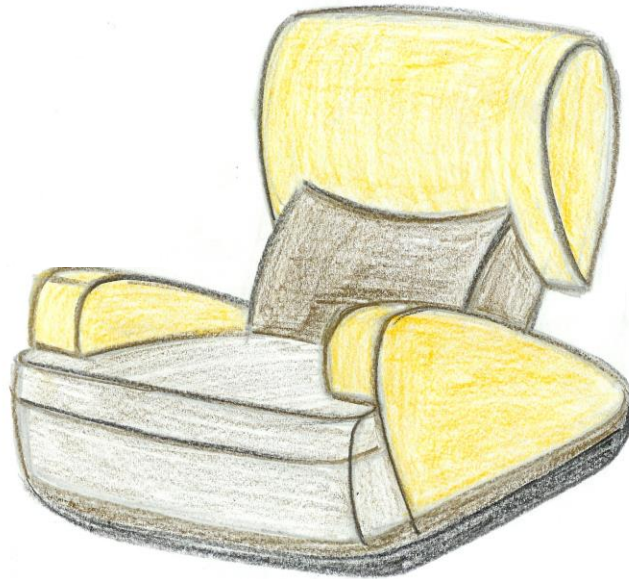
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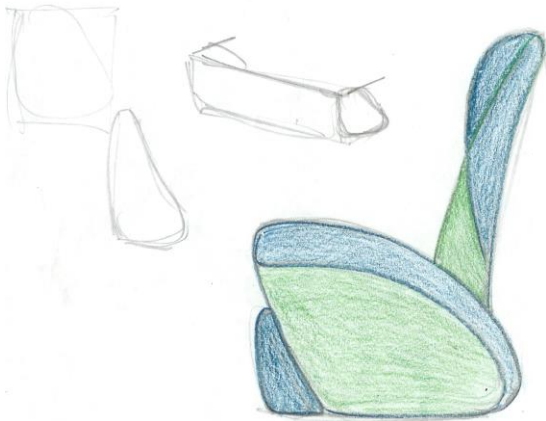
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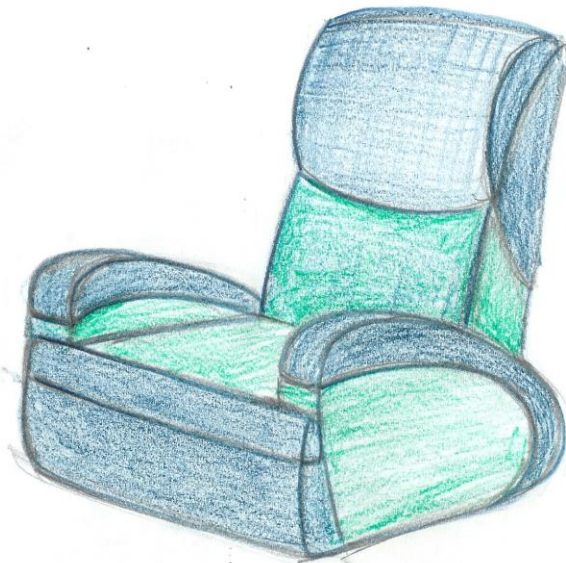
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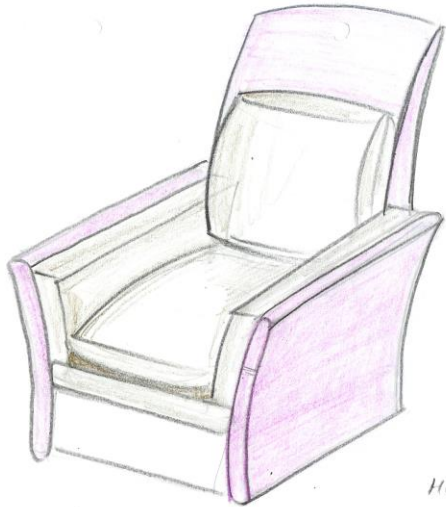
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Finalized



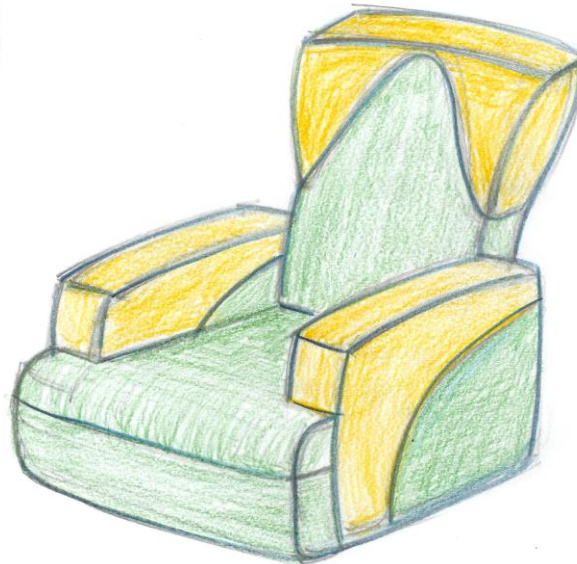
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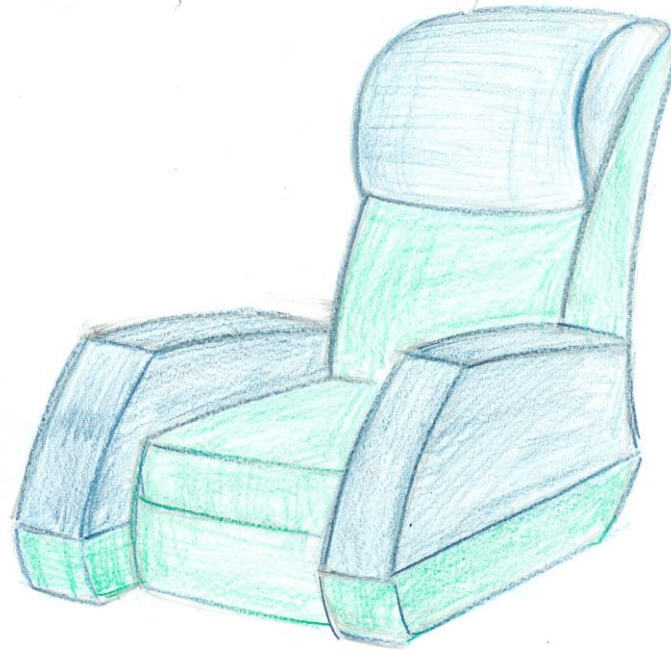
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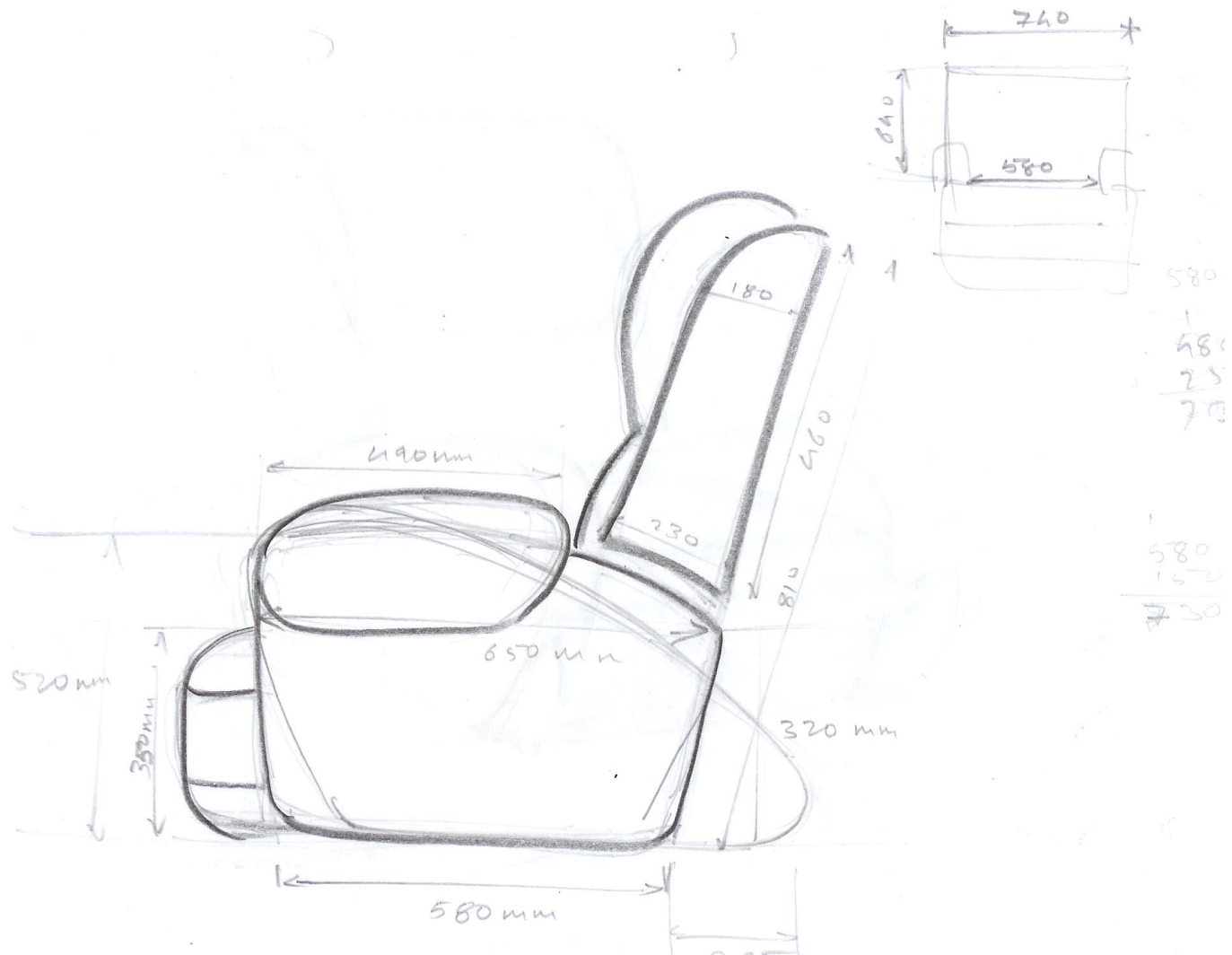
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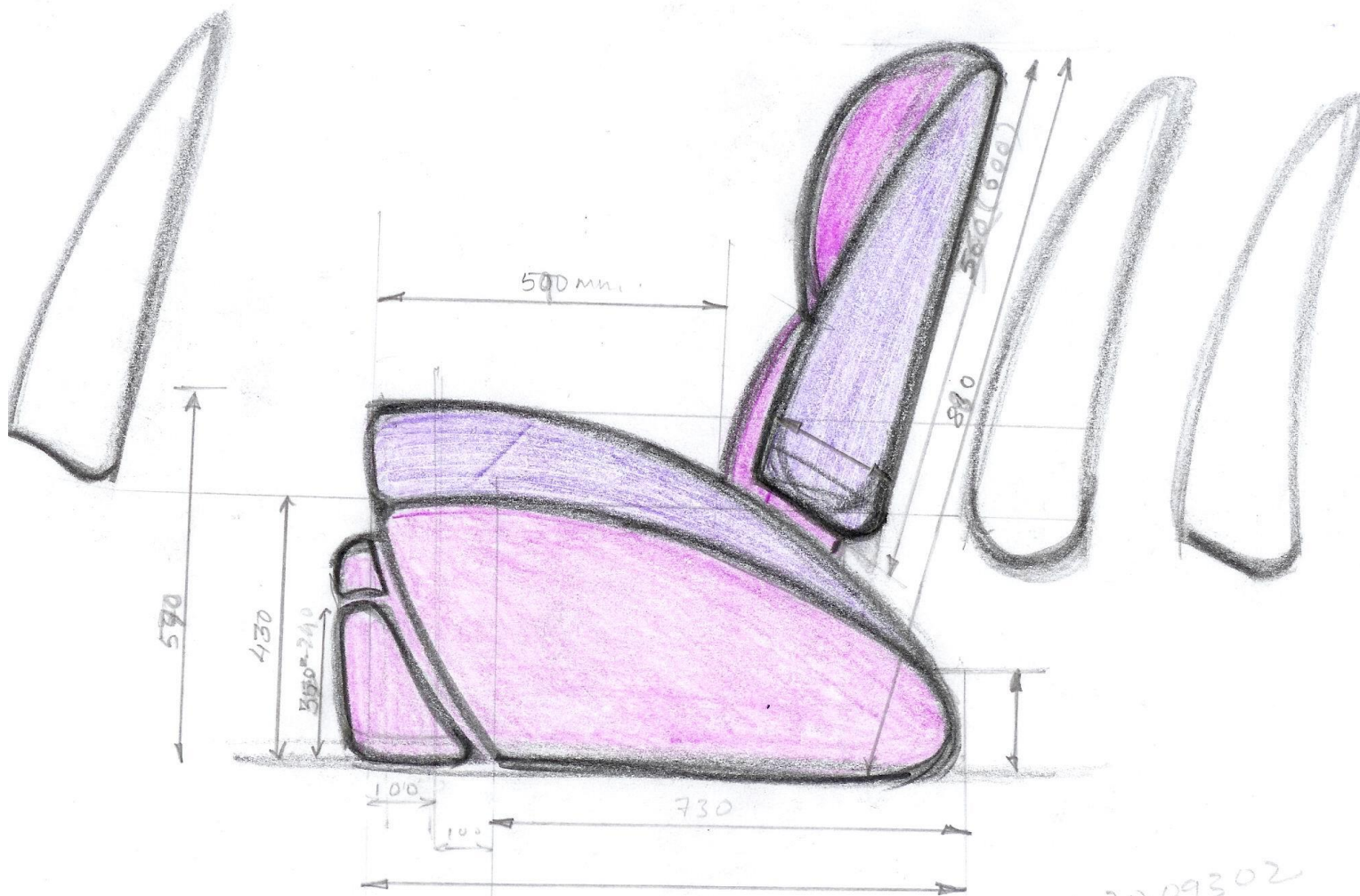
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Manufacturing





Thank you

