

Designing *a* Retro Indian Office Chair

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Aproval Sheet

This project report entitled 'Designing a retro Indian office chair' by Arjun Abhilash, 18U130006, is approved for partial fulfilment of the requirements for Bachelors of Design Degree

Project Guide:

Chairperson:

Internal Examiner:

External Examiner:

Declaration

I declare that this written submission represents my ideas in my own words and where others' opinions or words have been included, I have adequately cited and referenced the sources. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated any idea/data/fact/source in my submission. I understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been appropriately cited or from whom proper permission has not been taken when needed.

A handwritten signature in black ink, appearing to be 'Arjun Abhilash', with a large diagonal stroke crossing through it.

Arjun Abhilash
18U130006

Acknowledgment

This project would not have been possible without the help and assistance of many people. I would like to thank Prof. Avinash for guiding me throughout the course of the project and to all the professors for their feedback and guidance. The feedback during each stage of the project helped me immensely to shape the project in the right direction. I would like to thank all the lab assistants in IDC, especially Deepak Sir who helped me with prototyping. I would also like to thank my family and friends, without whom this wouldn't have been possible.

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Abstract

For my P1, I decided to make a chair. For this, I started out looking at a wide range of iconic chairs and after discussing with my guide, I selected the Indian office chair by Piere Jeanneret. The project shaped to redesign this chair to make it modern. I researched a lot about the history and heritage of the chair. I also looked into different kinds of wood and joineries. I also did my parallel product study, which was mainly newer versions of the chair made by passionate studios. For ideating, I started out by exploring and trying a wide range of ideas. As I was exploring various concepts for the final design, I also started working with wood parallelly and made joineries and dowels so that I would have a better idea when I make the final chair. After the final concept was ready, I made a 3D model of the chair and then proceeded to make it out of wood.



Waka-Waka Studio

Project Area

From a very young age, I liked to make things with my hand and play with a bunch of materials. And I always tried to be creative whenever I made something, even if it's something that already existed. When I had to decide what to do for my P1, I realized I want to make something from scratch and I also wanted to design the product for myself. As I was really interested in working with wood from a young age, so I wanted my final product to be made out of wood. Then I started looking at a different kinds of furniture and finally decided to work on a chair.

A chair is one of the most basic pieces of furniture but it's also one of the most significant. Chairs come in all different shapes, sizes, colors, and finishes, some are designed for functionality while others are designed purely for aesthetics. Historically chairs were symbols of hierarchy, their importance was much more than the something we just sit in.

Expected learning outcomes

- *Experience in designing chair*
- *Work with wood and other materials*

Iconic Chairs

I started out the project by researching some of the most iconic chairs ever made because as long as people have been furnishing homes, they've been designing chairs to go in them. I was mainly looking at chairs that had some historical significance or some which had a revolutionary design. I went through a lot of chairs, from antique pieces that inspired modern interpretations to original designs that remain as popular today as when they were first introduced.

Panton chair

In the 1960s, designer Verner Panton began to experiment with an innovative, new product: plastic. Captivated by its flexibility, the Danish designer set about creating a seat that was more sculpture than furniture (but also extremely comfortable). The result is the cantilevered, S-shaped Panton chair, which was the first-ever molded plastic chair when released by Swiss manufacturer Vitra in 1967.



Cesca Chair

In 1925, Hungarian-American designer Marcel Breuer introduced the first chair made from tubular steel, the Wassily. Three years later, he (through Knoll) introduced the Cesca, a simplified design that marries traditional (the cane seat) and innovative (the cantilevered, steel base). The chair's s-shaped frame provides just enough bounce to make it comfortable without sacrificing support. The chair is in MoMA's permanent collection.



Indian office chair

Designed by Pierre Jeanneret for a set of administrative buildings in Chandigarh, India, designed by his cousin, Le Corbusier, these cane-and-wood chairs are some of the most sought-after by vintage collectors today. Often called Jeanneret chairs, they were produced en masse in the 1950s but, by the end of the 20th century, were being sold for next to nothing in India. With the rise of interest in midcentury design came a renewed demand for them—and they now fetch thousands at auction



Eames LCW Chair

After graduating, designers Charles and Ray Eames began experimenting with new materials and processes for making furniture. Part of this experimentation resulted in what they called the "Kazam! Machine," a mechanism for pressing sheets of thin wood veneer together and bending them. The LCW, introduced in 1946, is the result of this process, with a back and seat shaped to perfectly cradle a sitter of any size.



Tulip Chair

Finnish-American architect and designer Eero Saarinen famously hated the sight of many table and chair legs in a room, calling it an "ugly, confusing, unrestful world." In an attempt to streamline these necessary supports, Saarinen developed the Tulip collection, which trades four legs for one central pedestal, supporting a sculptural seat reminiscent of its namesake flower.



Wiggle Side Chair

In the 1970s, architect Frank Gehry began to experiment with scrap cardboard, an exercise that resulted in a collection of groundbreaking paper furniture. By alternating the cardboard's corrugation, Gehry was able to create stacks of it strong enough to support a human. The Wiggle's serpentine S-shape stands in contrast to its rough material.



Ball Chair

When it debuted at the Cologne Furniture Fair in 1966, the Ball Chair skyrocketed Finnish designer Eero Aarnio to fame. The futuristic shape was a hit in the mid-1960s and the seat quickly became a centerpiece of stylish modernist homes.



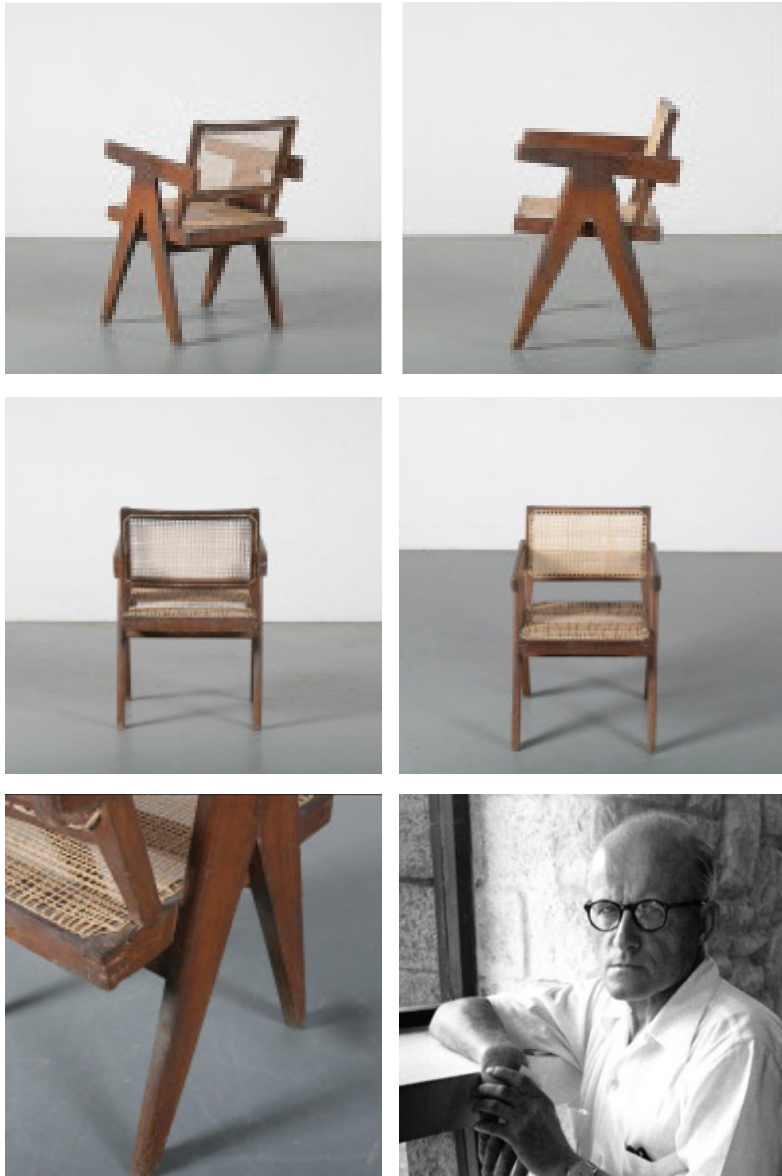
Selected Chair

Office Chair by Piere Jeanneret



Upon discussion with my guide, I decided to work on the Indian office chair by Piere Jeanneret. I decided to go specifically with the Indian office chair because first of all it was made for India. As it was an Indian chair, I was able to relate myself more to the chair and I also really loved the unique design of the chair.

The Pierre Jeanneret office chair/armchair is a historic piece of vintage design furniture. It was manufactured in and for the architectural city of Chandigarh, India in the 1950s. It is made of high-quality wood. The seat and back are upholstered with a cane, matching the design very nicely. It has a strong, geometric structure. This is a highly recognizable and celebrated design by Jeanneret for the city of Chandigarh. It would be a valuable addition to the office space, but could also suit very well as a side chair or decorative piece to the interior. The planned city of Chandigarh was conceived by Jawaharlal Nehru, then prime minister of India. Nehru and the Chandigarh government hired Swiss-French architect Charles-Édouard Jeanneret, known as Le Corbusier, to create a master plan for the city.



Pierre Jeanneret was hired by his cousin, Le Corbusier to design the city's furniture. Jeanneret designed furniture for the entire complex, using locally-sourced teak, which was a bug- and humidity-resistant. When Chandigarh began to deteriorate, nobody knew what to do with the remaining furniture and much of it was destroyed as people had no interest in the furniture. This was a huge loss for India and many people in India are not even aware of the chair. Most of the remaining chairs that have been restored have become antique pieces and are being sold for \$8000. This is also one of the reasons why I chose this chair because I wanted to promote the awareness of the chair and maybe even motivate people to make the chair by themselves.

Pierre Jeanneret

Pierre Jeanneret (22 March 1896 – 4 December 1967) was a Swiss architect who collaborated with Le Corbusier for about twenty years. In 1922, the Jeanneret cousins set up an architectural practice together. They designed many buildings, including a number of villas and vacation houses, and renovated existing buildings as well. For Pierre Jeanneret, the Chandigarh project was the pinnacle of his work as an architect and designer. The project affected him profoundly; he remained in Chandigarh after the city's construction was complete, rarely returning to Europe.

Design Brief

Once I selected the Indian office chair by Pierre Jeanneret, I wanted to redesign the chair, keeping the original some of the original aspects of the chair untouched. So I came up with a design brief for the project

Redesigning and modernizing the iconic Indian office chair by Piere Jeannert

Keywords

- Retro
- Contemporary
- Nostalgic
- Ergonomic

Research

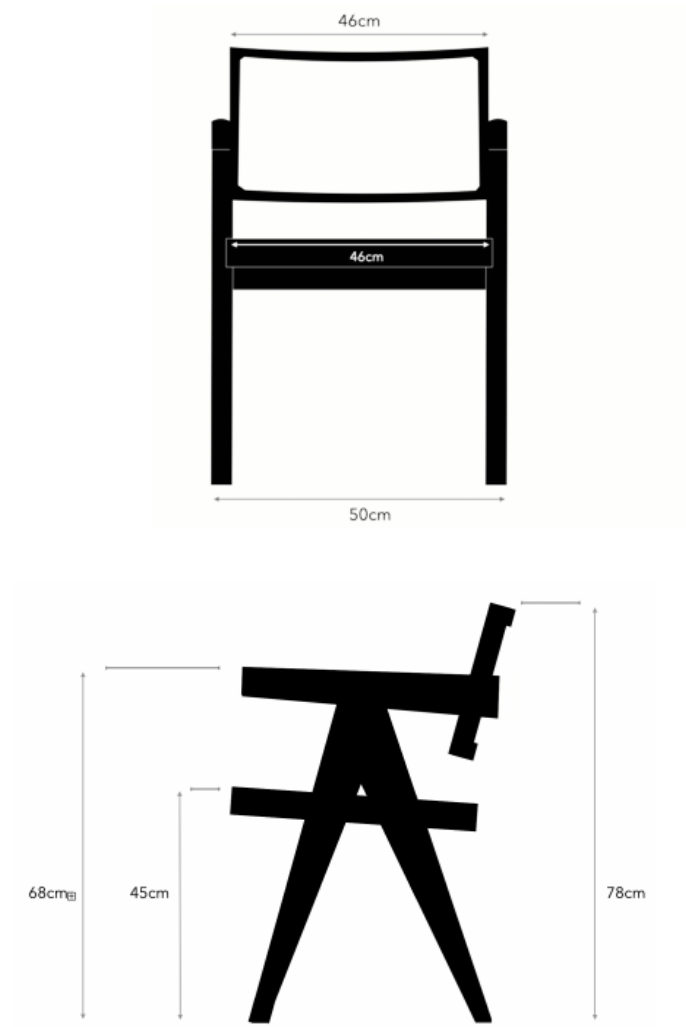
I started out my research, by trying to understand the chair. As it is very evident from the images of the chair, it is very angular and geometric. the chair is mostly made using straight pieces of wood, also some of the lines of the chair appear to be parallel to each other. One of the most striking features of the chair is the V-shaped leg. The design of the legs also makes the chair really strong and durable.

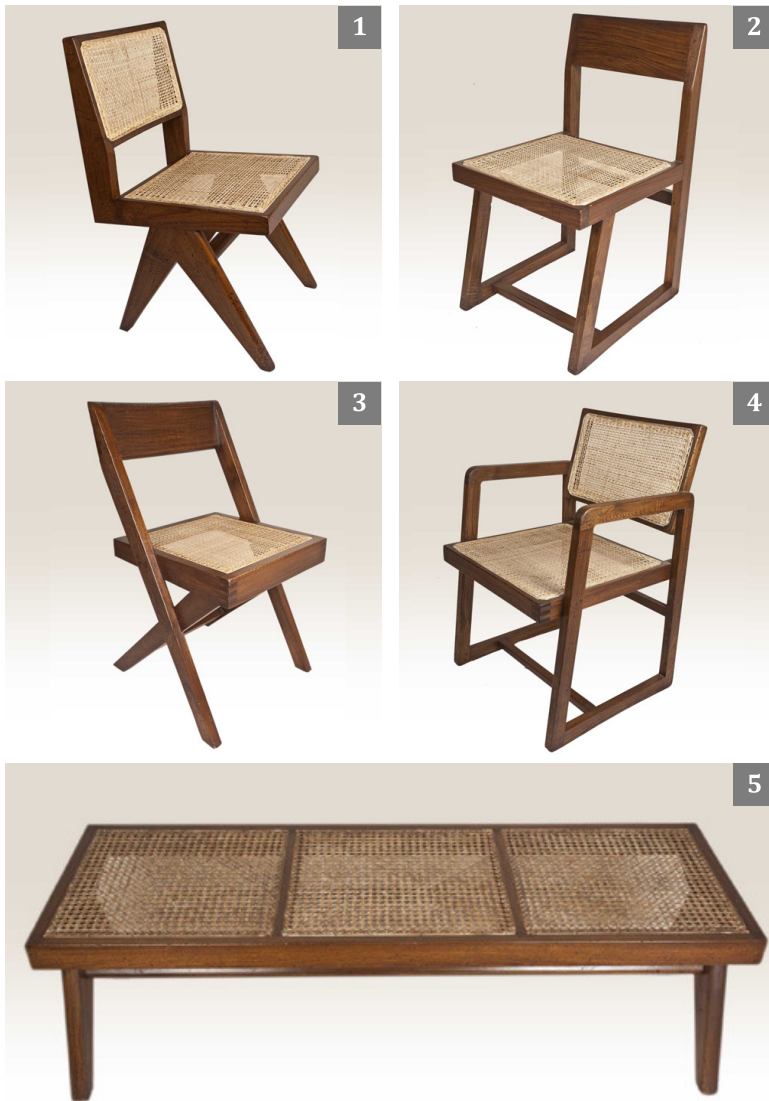
Design Period : **1950 to 1959**

Materials : **Teak Wood & Cane**

Dimensions : **50 cm*50 cm*78 cm**

Current Market value : **\$6,000 - \$10,000**





Other Pierre Jeanneret Furniture

Just like the office chair, all the other furniture that Pierre Jeanneret designed for Chandigarh city is very geometric and follows the same design philosophy. Most of his furniture is made out of teak wood and cane. The use of teakwood explains the durability of the chairs and that is why we are still able to restore the available discarded chairs.

- 1 Student Chair
- 2 Small Box Chair
- 3 Library Chair
- 4 Large Box Chair
- 5 Bench

Parallel Products

As a part of research, I also looked into some modern versions or re-editions of the chairs that are currently available in the market.

The Object Embassy

The Object Embassy is an Amsterdam-based studio, that specializes in Pierre Jeanneret chairs. The founder of the studio was really passionate about Pierre Jeanneret chairs, but couldn't purchase good quality ones because they were too expensive. He started the studio just to make Pierre Jeanneret chairs that are much more affordable. The Object Embassy's version of the chair also uses teak wood and ratan.



Upholstered Office Chair/ Zanav Upholstery



Cross Easy Chair



Pierre Jeanneret design Lounge Chair
€899,00



Pierre Jeanneret design Office Chair
€629,00

Phantom hands

Phantom hands is a studio based in Banglore, which makes handcrafted, design-driven furniture. They have a collection of furniture, Project Chandigarh, which is based on the chairs designed for Chandigarh city by Pierre Jeanneret. Their versions of the chair are modern re-editions, where they structurally and materially improved the original design. They collaborate with traditional artisans and textile workers to make their chairs.

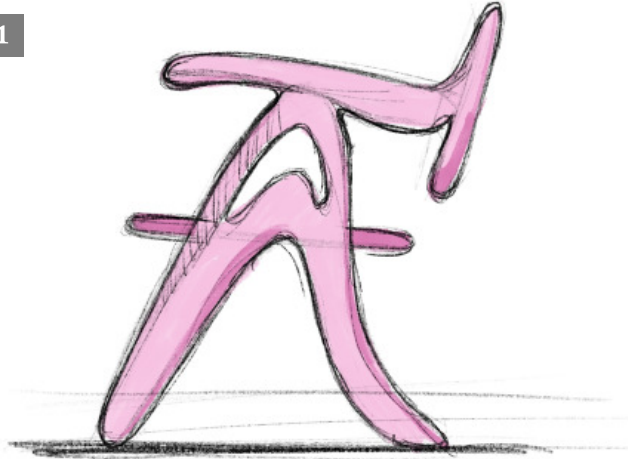


Object Embassy

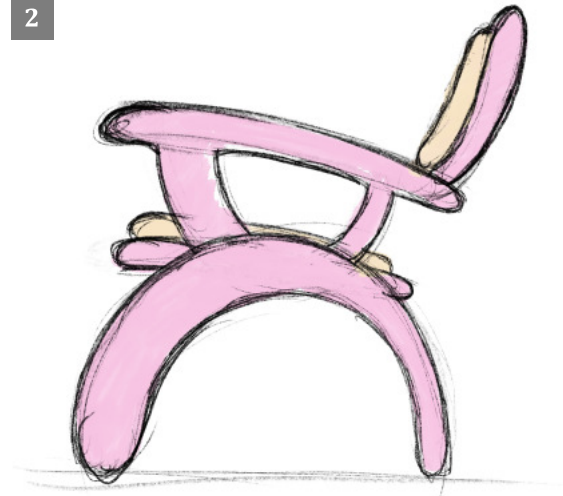


Phantom hands

1



2



Ideation

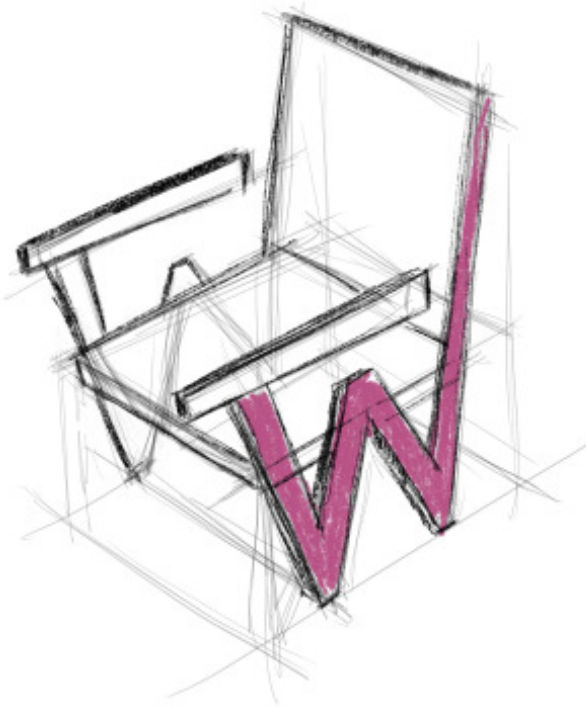
When I started ideation, I was mainly focusing on how to make the chair look cooler. So I was exploring a wide variety of shapes and forms, I was constraint by anything. As the original chair is very geometric and angular, I decided I will try something which has a very organic shape. As a result, I came up with some ideas which try to look like the original chair but in a more funky or curvy way. As one of the most striking parts of the original chair is the V-shaped legs, I also thought about mixing typography with the chair, by using different letterforms for different parts of the chair.

1

Tried to keep the V-shaped legs and made the whole form of the chair very organic

2

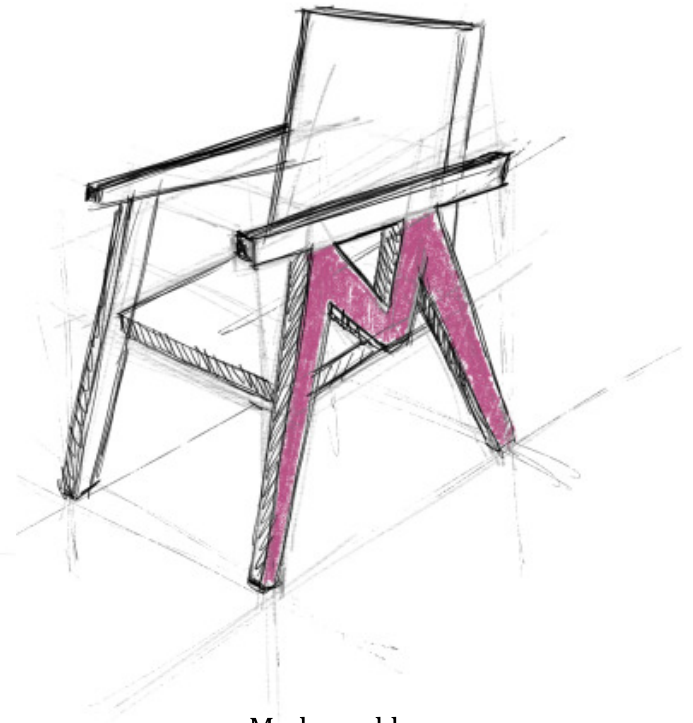
A very rounded and soft version inspired from baloon animals



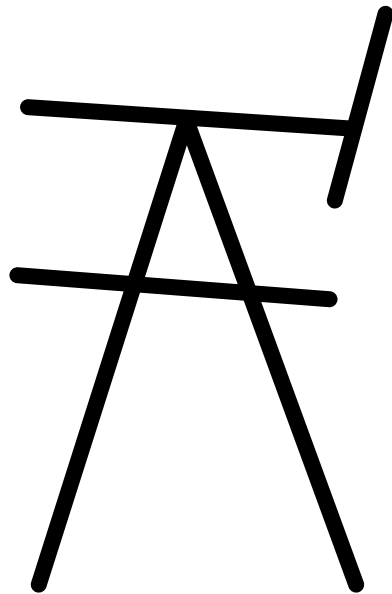
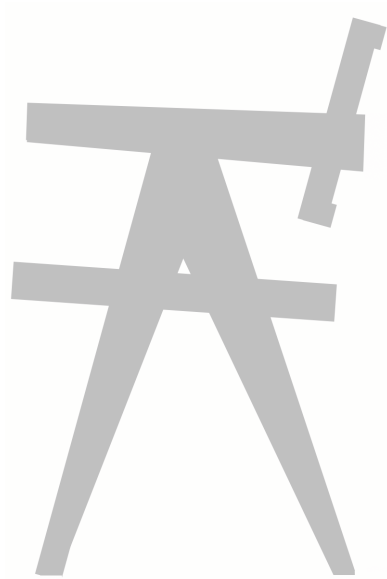
W-shaped leg



a-shaped leg

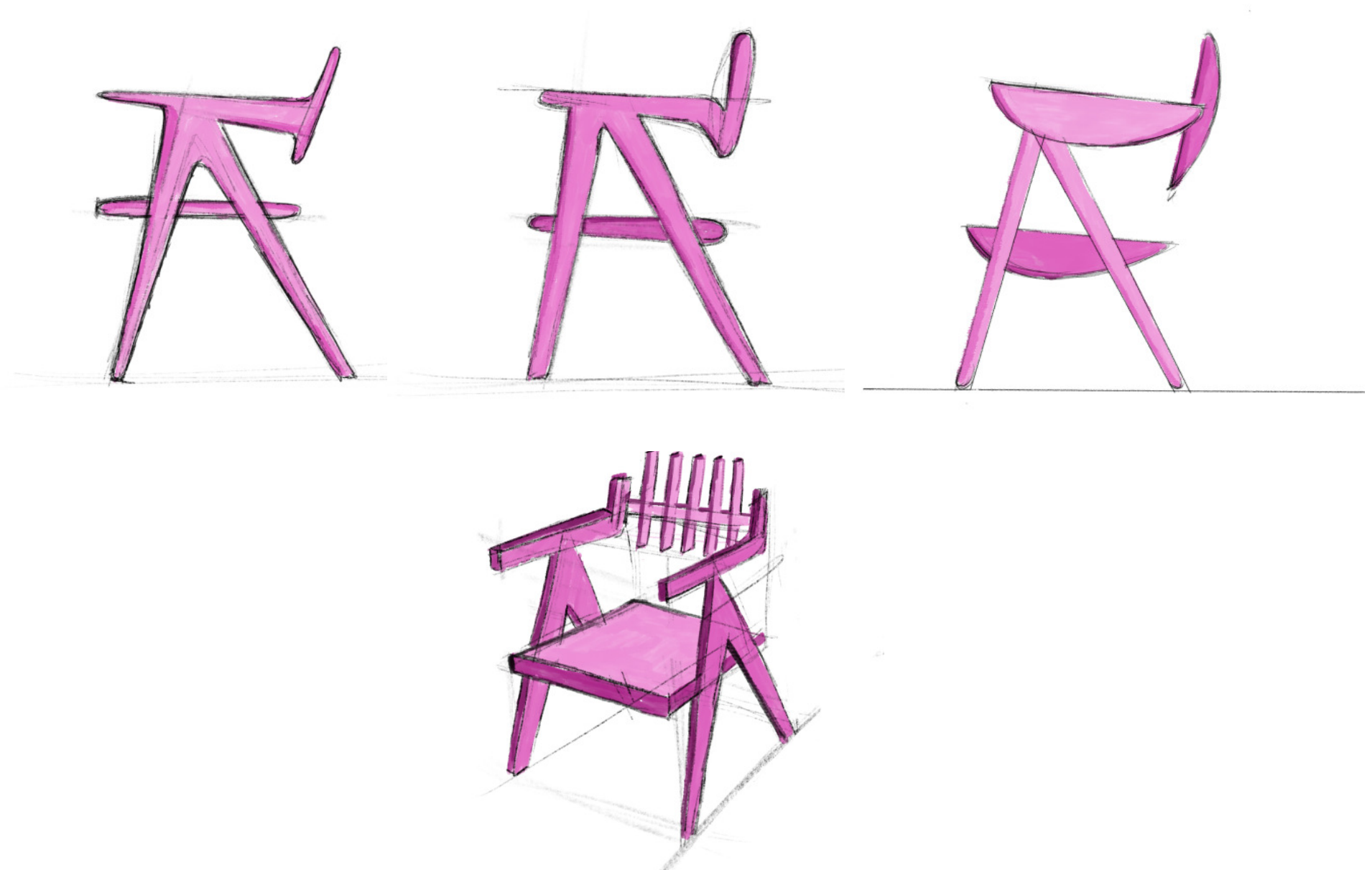


M-shaped leg



Constraint Ideation

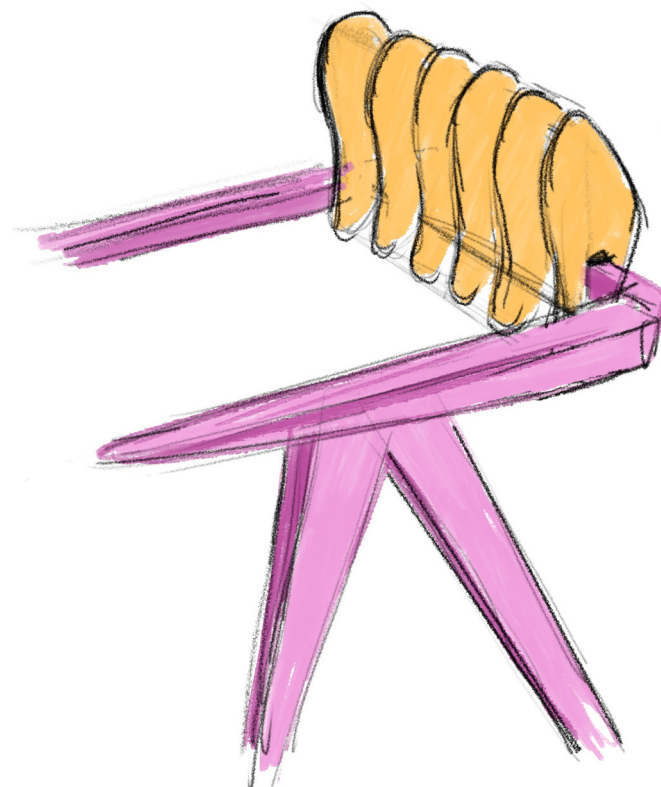
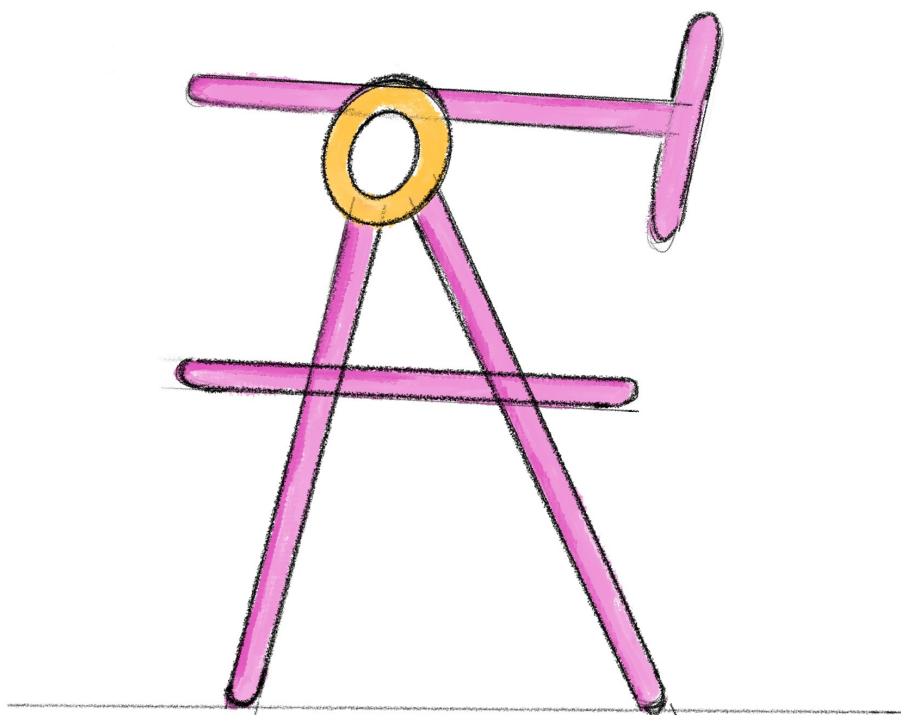
Most of the ideation that ideation I did was mainly around the side profile of the chair as that was most distinguishable part of it. After a round of feedback, I got a better idea of how to proceed with the ideation. I started ideating around the basic skeleton of the chair which is just straight lines, some of them are even parallel to each other. Working with the constraint was essential as I was losing the essence of the original chair in my designs. The constraint has also helped me to think deeper into an idea. As a part of this, I started sketching simple concepts very similar to the original chair with small changes.



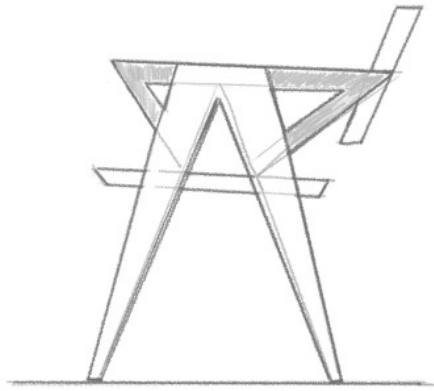


3D Printing

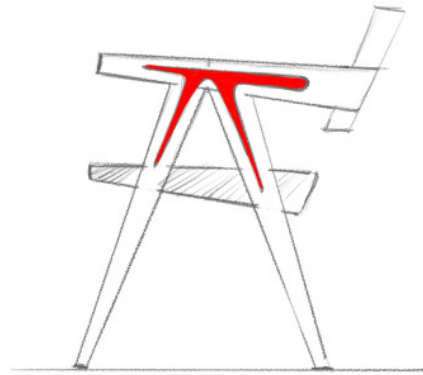
As modernizing the chair is an important part of my project, I was looking at different ways how to modernize my chair. The most obvious way is to change the form of the chair to something more modern. But as I dug deeper, I realized I could also incorporate modern methods of manufacturing to make the overall experience of making the chair feel more modern. So whenever I was sketching something, I was always had this on the back of my mind. I could mix the traditional process of working with wood and the modern process of 3D printing together.



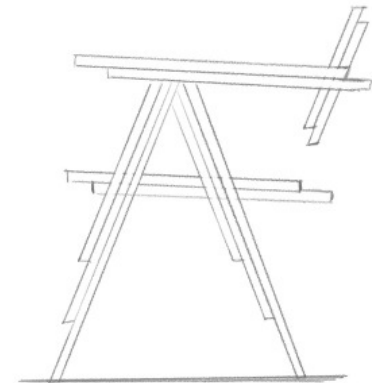
New Concepts



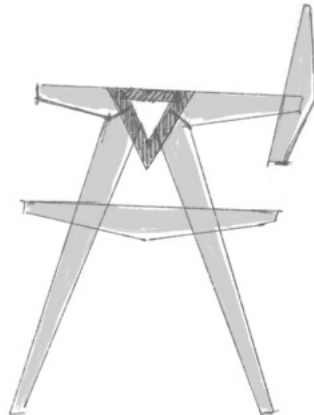
Concept 1



Concept 2



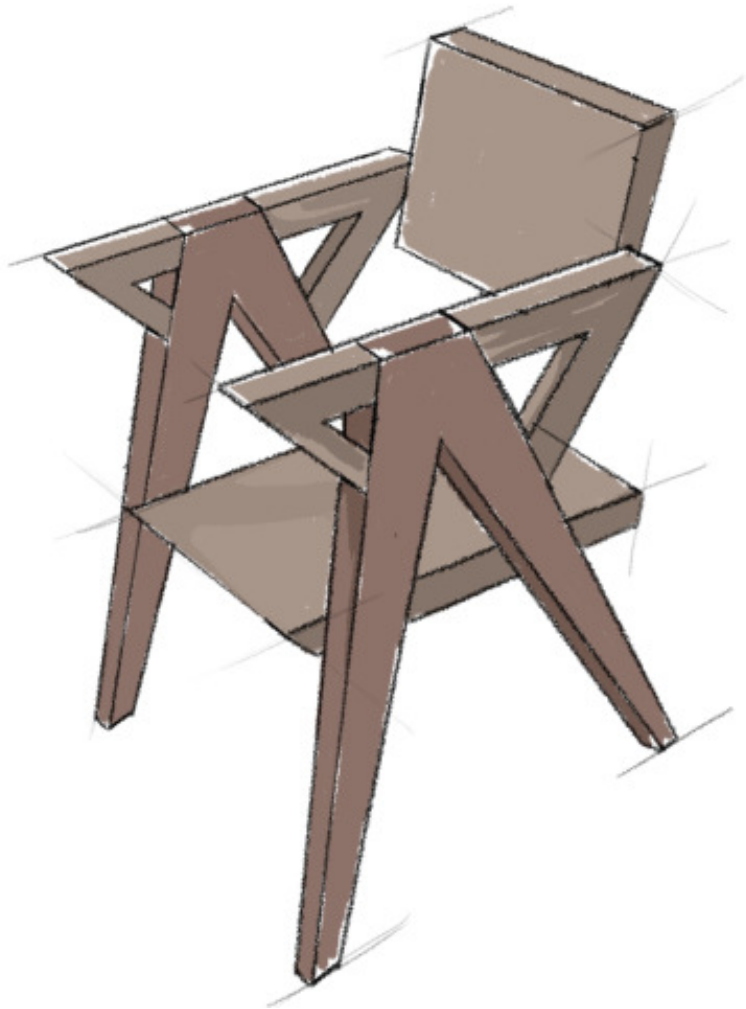
Concept 3



Concept 4



Concept 5



After further ideation, I made a set of concepts. Each concept had something unique about it. I also tried to mix different materials other than wood, like plastic(3D printing), metal, etc. Even though they were different, they were based on the same basic skeleton of the original chair.

As I was mostly sketching in 2D because I was just drawing the side profile of the chair and this wasn't ideal. As a result, I sketched one of the ideas in 3D, to get a better understanding of how it will look in real life.

Concept 1

The main idea was to use multiple V-shaped design elements. The armrest also had a V-shaped design.

Concept 2

For concept 2, I decided to use a part made out of different material to hold all the other parts together.

Concept 3

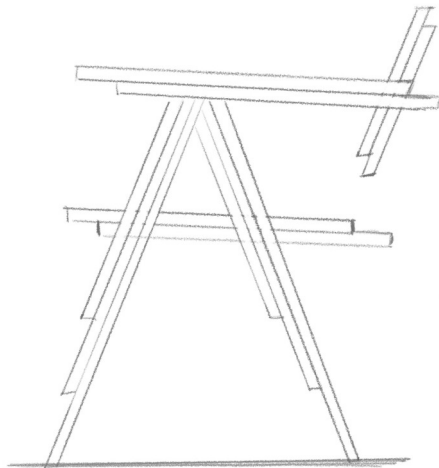
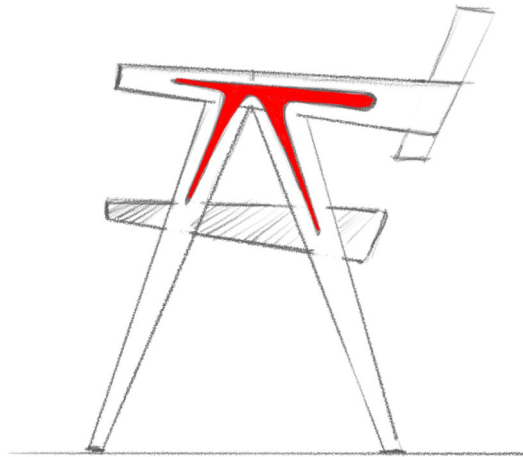
Concept 3 was inspired by a telescope. It has a very layered design and is very easy to manufacture.

Concept 4

This was very similar to concept 2, but the joint is more prominent and has a V-shape.

Concept 5

Here instead of the extra joint, there is a cavity in the shape of the side silhouette of the chair.



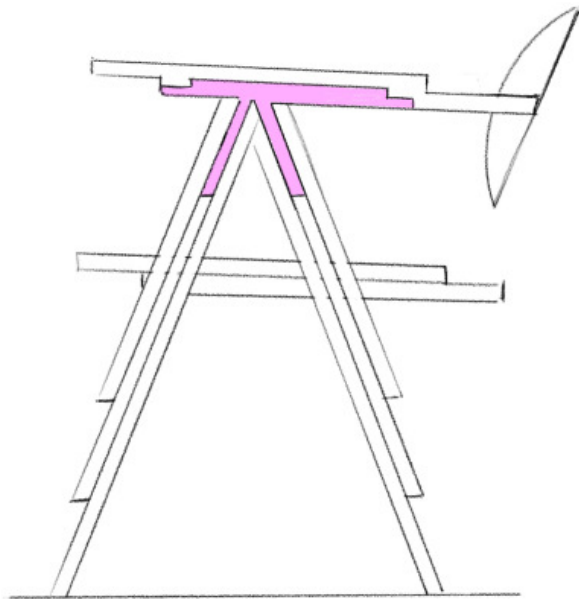
Selected Concept

When I had a set of concepts ready, I had a discussion with my guide. After going through all the ideas, we decided to combine concept 2 and concept 3 together.

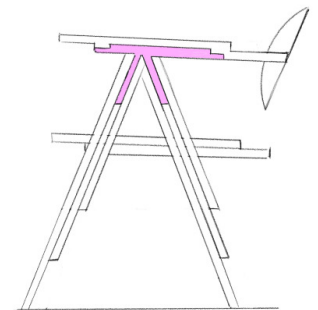
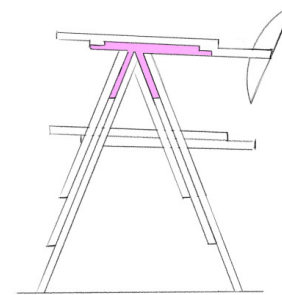
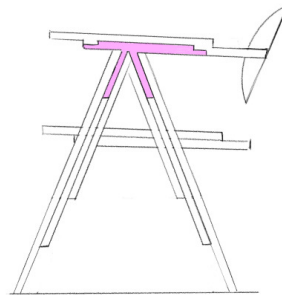
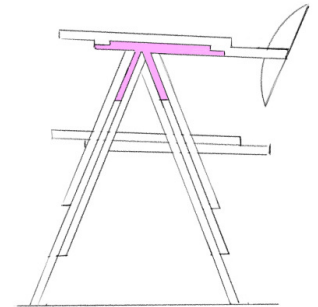
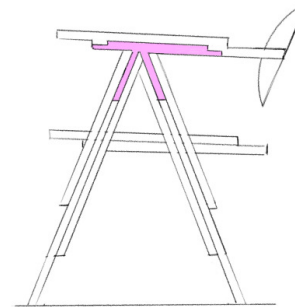
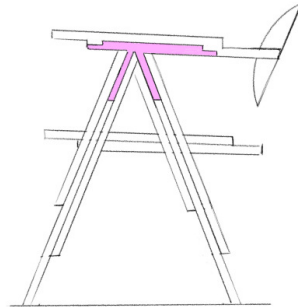
The main idea behind concept 2 was to use a joint made out of a different material, metal or 3D printed plastic. The main idea behind the concept was to give more structural rigidity to the legs. Concept 3 was inspired by a telescope. The main feature of this concept is the layered design. Concept 3 is very easy to manufacture and should have less material wastage.

The selected concept is an amalgamation of both these ideas. It has a layered, telescope-like form and also uses the joint used to bind the legs together.

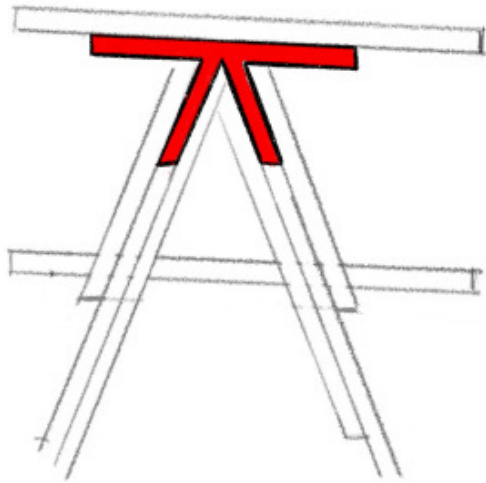
Leg Combination



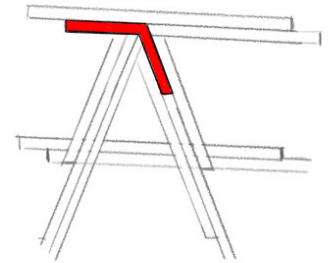
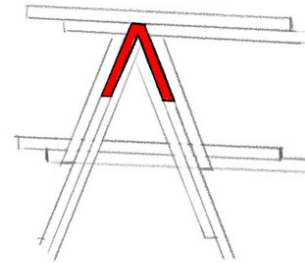
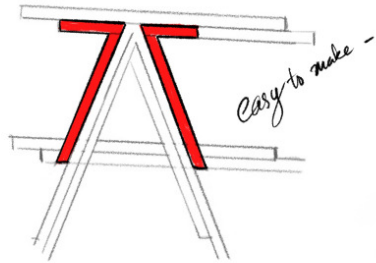
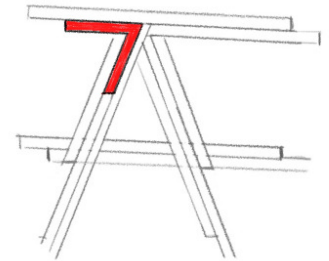
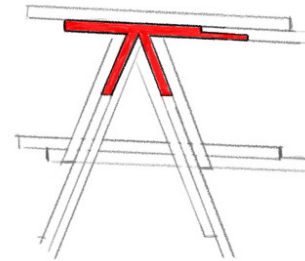
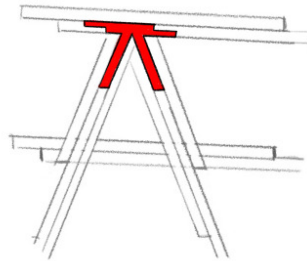
Selected version



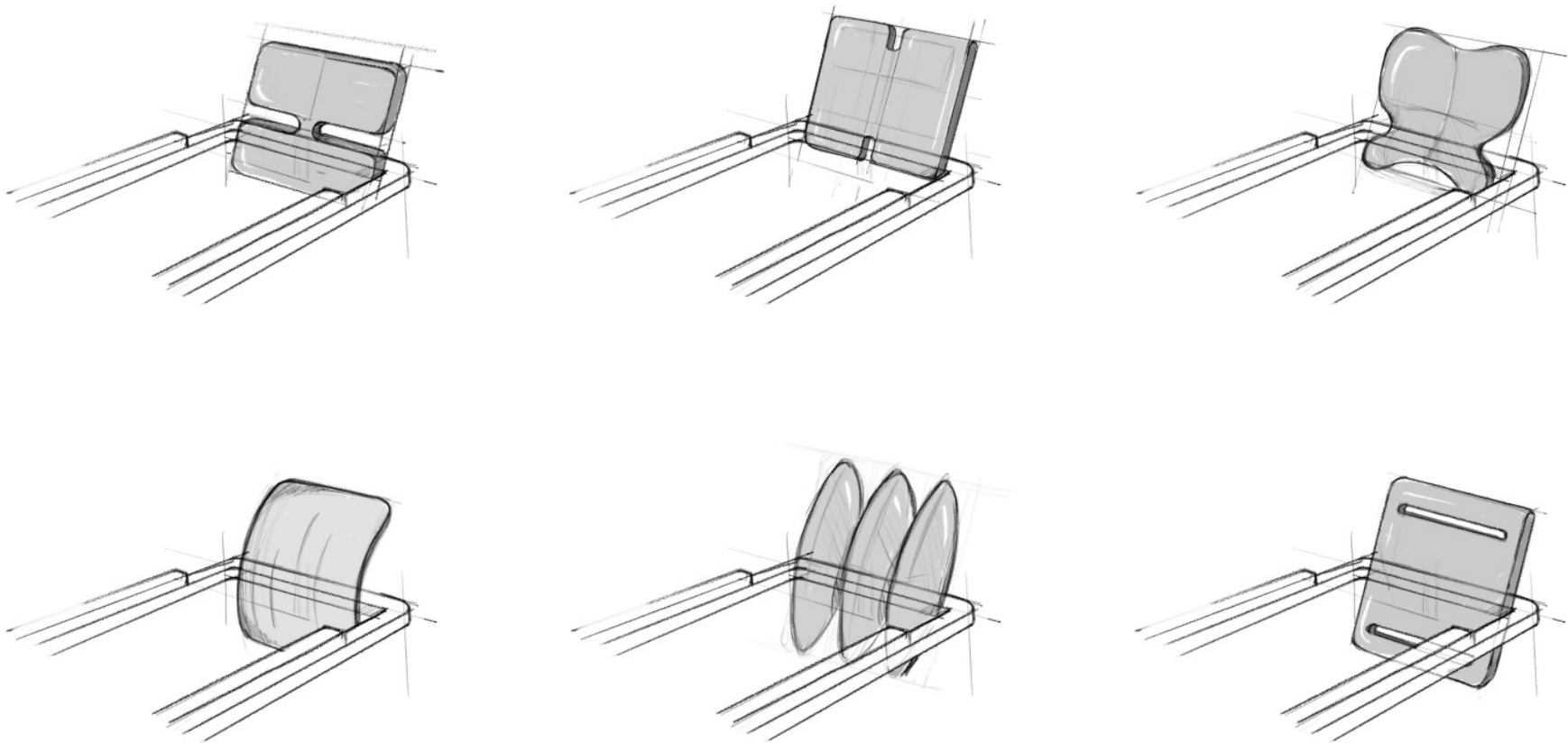
3D print Joints



Selected version



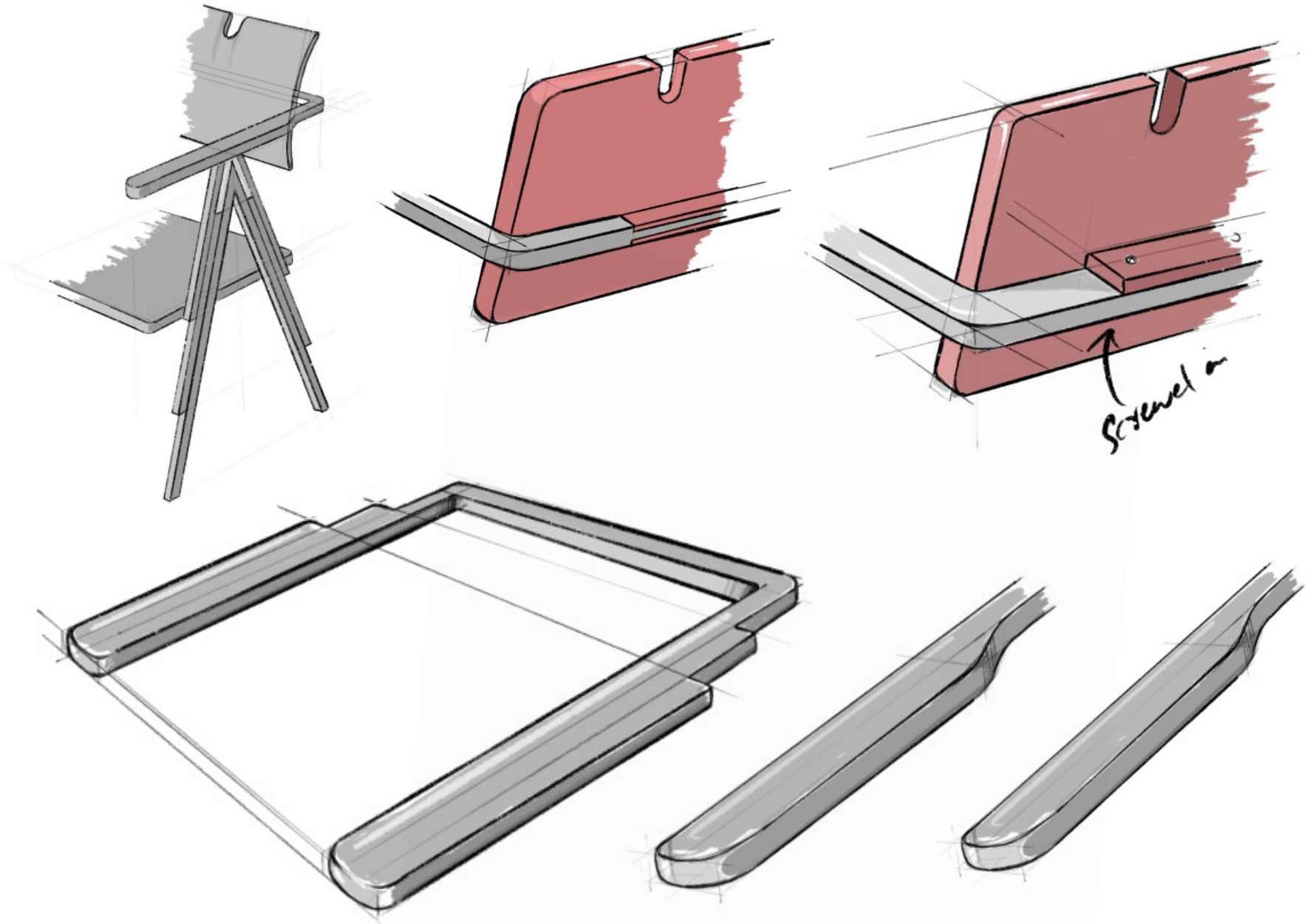
Backrest Variation





Final Concept

After I had the concept ready, I started out refining the details of each part of the chair. I started out with different designs for the joint which holds the legs together. Similarly, I made different combinations for the 3 pieced legs. I also came up with a set of designs for the backrest of the chair. After I had each part sorted, I made multiple sketches to illustrate how it all goes together.





Initial Prototype

After I had my concept sorted, I started to make a mockup of the armrest of the chair with wood. This was done mainly to get a better understanding of how to work with wood because of which I will avoid mistakes when I make the final chair.

I started the process with simple long rectangular pieces of wood which had a 1inch*1inch square cross-section. While making this, I really didn't consider the proper dimension of the chair. After cutting the wood to the necessary lengths, I glued them together and clamped them. After making the individual armrest pieces, I attached them together with a long piece of wood, which is also supposed to connect to the backrest of the chair. Once the glue dried and all the parts were attached properly, I sanded and finished the sides of the armrest properly.





Refined Concept

After I got feedbacks for my initial prototype, I made some changes to the concept. This was mainly aimed at making the chair sleeker. For this I made the armrest and legs out of 2 pieces instead of 3. I also made changes to backrest and made it even sleeker

Renders



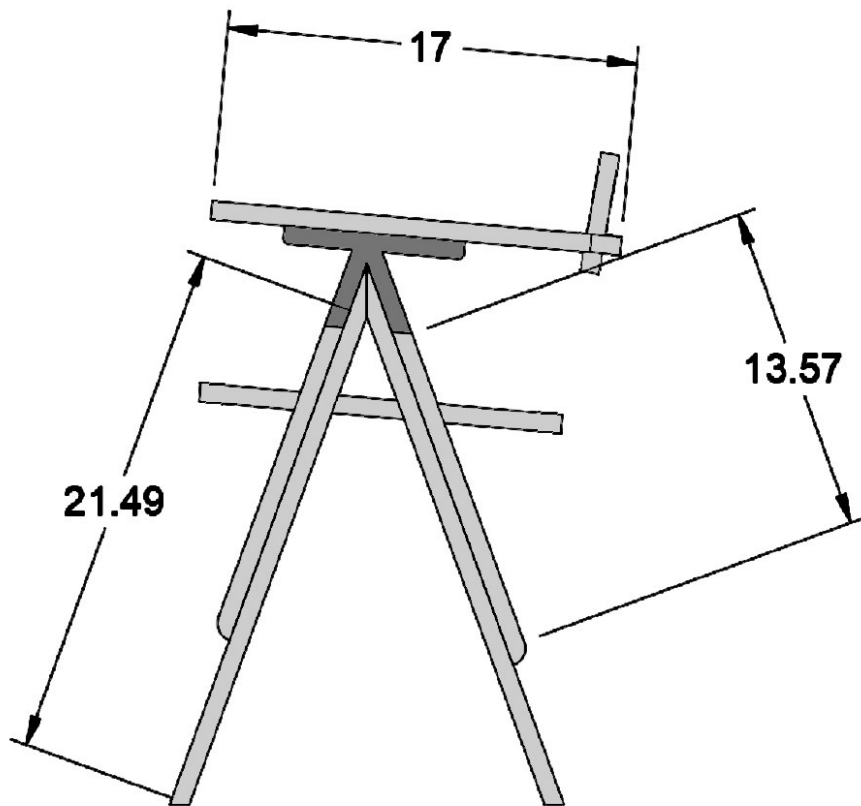


Making the Chair

When I was ready with my 3D model and dimensions, I was ready to make the chair.

Making dowels

When I was ready to make the final chair, I started out by making the dowels to attach different pieces together. I was making small dowels(4mm-6mm diameter). I started out by taking a small piece of wood, then I sanded down the edges to make it a cylinder. After I had the cylinders, I cut them down to the necessary lengths. Once I had the required length, I sanded the surface even finer to make the surface even.







Making the armrest

Making the armrest was very straightforward, as I have already made the prototype before. I started with wooden pieces of $\frac{3}{4}$ th of an inch square crosssection. After cutting them to the desired sizes, I drilled the holes for the dowels to go in. Then I applied glue and attached the different parts with dowels, and the applied pressure and left it to dry. Once it was dry, I trimmed the excess parts and sanded down the edges to get a better finish. Then the individual armrest was attached together with the help of a 16inch long piece of wood.





Making the Legs

Legs were the most challenging part. The process was the same as the armrest but it had more parts and joining different parts was a little tricky as most of them were at a small angle and I had to be more precise with everything. Also as I had to make two pairs of legs, it had to be really accurate where each part was gonna be, since I have to connect them together later.

After I had both the legs and the armrest ready, I attached them together. After they were attached, it was sturdy and felt really strong.







Backrest

For the backrest, I needed a solid piece of wood, for this, I attached 6 pieces of wood with 1-inch square cross-sections. After they were attached together, it was cut and shaped to the desired form. I also tried a different design where the length of each wooden piece was different.

Seat

For the seat, I used a large piece of wood of dimension 15 inches by 8 inches.



Backrest

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Seat

For the seat, I used a large piece of wood of dimension 15 inches by 8 inches.



Staining

When the glue was set, I was ready to stain the chair. I went with a walnut stain, to get the dark brown texture and finish. The process was simple. I mixed the stain with thinner and it was applied to the chair with a brush. Multiple layers of the coat were applied to get the desired color.



Before staining



After staining



Applying melamine

The next process was to apply polish and finish the chair. For this, I used melamine. This process was also easy. I mixed melamine with thinner and it was sprayed onto the chair. After applying the first coat, I had to wait 30 mins for it to dry. After it dried, the surface was sanded again to remove all the roughness. Then the second coat was applied and the surface had a great finish.



Finished Chair

Once both coats of the polish were applied, the chair was ready. I got the exact color I was looking for. Even the texture was on point. The chair wasn't very heavy and was easy to carry around. Then I took some pictures of the chair, and the chair goes really well with the outdoor setting as seen in the pictures.







Without polish

Conclusion

The project was very interesting for me, as I always wanted to make a chair. Occasionally it was a bit challenging, but with the help of my guide, I was able to overcome the shortcomings and go forward. I learned a lot from this project. The entire process was very fun. I especially enjoyed the ideation and prototyping phase. Everything about the prototyping was really enjoyable, even just making the dowels was a great experience and I got better at it after some time. Finishing the chair after applying the polish was one of the best feelings for me and it gave me a lot of satisfaction. The next process is to see where I can make improvements and develop them further.

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