

REPORT

ORIGAMI INSPIRED

FURNITURE

INDUSTRIAL DESIGN PROJECT ||

ID P602

A K A N K S H A R A T H O R E

146130007

G U I D E : P R O F . P U R B A J O S H I



INDUSTRIAL DESIGN CENTRE
INDIAN INSTITUTE OF TECHNOLOGY, BOMBAY
2015

DECLARATION



The work done as a part of the written submission under this report “*Origami Inspired Furniture*” is done as project two for post graduate program in *Industrial Design Centre, IIT Bombay*, India under the guidance of *prof. Purba Joshi*.

I hereby declare all the content of this project is an original work with appropriate reference information or links provided wherever due.

Any violation of the above will be cause for disciplinary action by the institute.

Akanksha Rathore.

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Industrial Design Centre

Indian Institute Of Technology ,Bombay

APPROVAL

SHEET



This project titled "*Origami Inspired Furniture*" is prepared and submitted by *Akanksha Rathore* in partial fulfilment of the requirement for the degree of '*Masters in Design*' in *Industrial Design*. It has been examined and is recommend for approval and acceptance

Guide:

Chairman:

Internal Examiner:

External Examiner



ACKNOWLEDGEMENT



This project is a result of constant inspiration from the faculty at IDC and my fellow classmates without their constructive feedback and encouragement it would have been a tough task to undertake.

I would like to express my gratitude to *Mr. Haresh Mehta* for his valuable and constructive suggestions during the planning and development of the product. His willingness to give his time so generously has been very much appreciated.

I would also like to thank the staff at studios for letting me experiment and helping with space and amenities.

Last but most importantly to my Guide *Prof. Purba Joshi* for being there whenever needed and encouraging throughout.



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INTRODUCTION

The heart of the appeal of origami: exploring the surprising magic of just how far you can change that square only by folding.

- Robert Lang

Origami is an art of transformation. The strong identity of its textures, patterns of its folds with the involvement of human mind and skill makes it distinct and significant. This project is an attempt to understand the material (paper), and its relation when subjected to origami. To take essence from these folds and lines and creating furniture that brings playfulness in environment surrounding us .

WHY?

Possibilities are what origami artists visualize where others take it as just a piece of paper



Origami resembles a system that is abstract and is a representation of an idea borrowed from the real world creating a dictionary of its own. These ideas with value added now goes beyond just representation and allows new ideas to grow from it and take space in real world. Also origami is a culture, and like every culture has origins, a unique philosophy, an essential concept going back in time.

While folding figures out of paper square, we have the possibility to meet something bigger than mastering skills of volume and space construction. We get the chance to penetrate the depths of the eastern philosophy.

-
- Why origami?
 - Philosophy
 - method

WHAT?

The appeal of folded paper is simple and innate: a play of surface texture, light, and shadow a tangible poetry

- Michael LaFosse



The idea of origami furniture breaks the monotony of the surroundings and add quirky bit to it. Furniture is an essential accessory to define the expression of any space and we see now a days rapid use of substitutes of paper with digital media and screens and so an origami inspired furniture adds tangibility and becomes a statement element of decor for the customer

Origami has a sense of calmness and meditative connotation with it and so bringing it in to our environment and making it a part of our living makes the objects and things surrounding us more meaningful. The textures ,folds and creases when implied to furniture opens a huge range of possibilities which just not is a beautiful to look at furniture but also can easily allow multiple functions by being transformable.

-
- Furniture
 - spaces
 - possibilities

HOW?

Making an origami model is, at heart, an engineering problem: how do I get the paper to do this? And so people who are interested in learning how things work, how the universe works, how nature works, would also be interested in seeing how a piece of paper works when you fold it up.

- Tom Hull



The strength of origami lies in allowing the material to be both rigid and flexible at the same time. In cases the characteristic features of origami, sharp edges ,facets and textures can be formulated on rigid material opening up immense possibilities in formal exploration with no constraints in terms of strength bearing and durability.

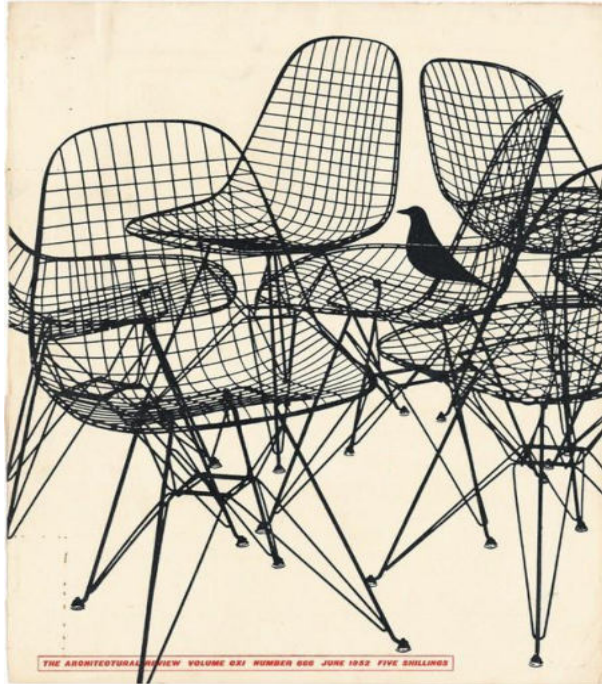
Here the possibilities are only limited by your mind.

.

- Paper
- Material and exploration
- Form and language

FURNITURE AND ORIGAMI

1 | Eames Chairs
cover of 1952



► **FURNITURE:**

The seating or the structure of a furniture can be explored in origami and accordingly the volume can be decided and adjusted. We get an opportunity to incorporate the elements of origami and so can position it on a wide range of /knock downs /space saving /stand alone /statement /transformable /DIY furniture.



2 | Origami inspired
eames_toy.

► **ORIGAMI:**

The folding of paper should aid and help in either the form of the furniture on the whole or the texture of the upholstery or else should make it easy to wrap and unwrap like folding and unfolding of huge origami structures. The folds and the volume created in the process has to be studied and given a face of a furniture. Such that there is a smooth transition between the two entities creating a fusion with each other

Origami can be incorporated in terms of its

- /structure
- /aesthetics or
- / transformability

FURNITURE AND ORIGAMI



3| TSC architects japan
origami house

| STRUCTURAL VALUE:

origami crease and folds can create a very stable and strong structure which can be used as strength member in furniture.



4| TSC architects japan
origami house

| AESTHETIC VALUE :

Origami patterns allows for various twists and folds to be used as a metaphor in giving furniture the form or also the tessellated pattern can be used as such in giving furniture the required look and feel.

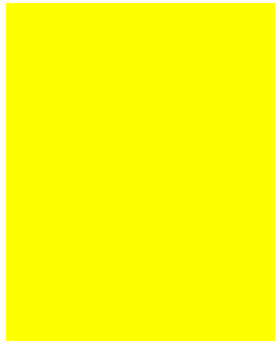


5| Vik & Vev
foldable table

| TRANSFORMABILITY :

The steps to achieve one state of paper fold to other turns out to be very interesting and can trigger the way a furniture unpacks itself.

DESIGN OBJECTIVE



To design a one seater furniture inspired from origami targeting the youth and the middle age living in an urban setup. The choice of the material can be paper or others as (Ply | Metal | Felt fabric | Plastics).

.

PEOPLE AND PRODUCTS

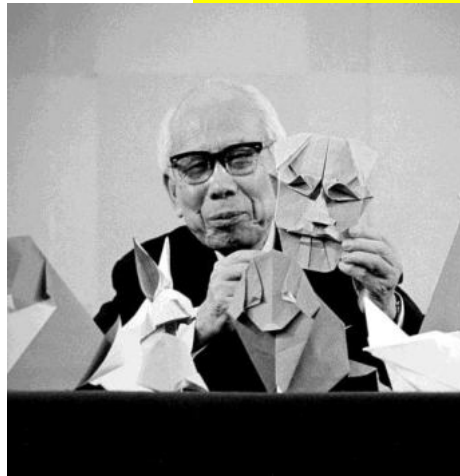
In an attempt to understand origami and how various renowned origamists approached and explored various aspects of it a brief study on all the below mentioned personalities was made.

/ Akira Yoshizawa

/ Robert Lang

/ Shigeru Ban

/ Haresh Mehta



6 | Akira Yoshizawa

Akira Yoshizawa :

Widely referred as “grandmaster of origami” Akira Yoshizawa is recognized for his work in raising origami from a craft to a living art form. Papermaking is thought to have originated from China and spread to Japan by the 6th Century AD. He came up with the technique of wet folding that involves slightly dampening the paper before making a fold for a more rounder and sculpted look.



7 | www.littleactressvic.blogspot.com

6 | Akira Yoshizawa

7 | Joisel Five musicians

8 | Wet Form Origami bull



8 | www.Giangdinh.com

PEOPLE AND PRODUCTS



9 | Robert Lang

ROBERT LANG:

Recognized as one of the leading theorists of the Mathematics of origami based on which he gave the Laws of Origami.

/ Every folding pattern is two colourable

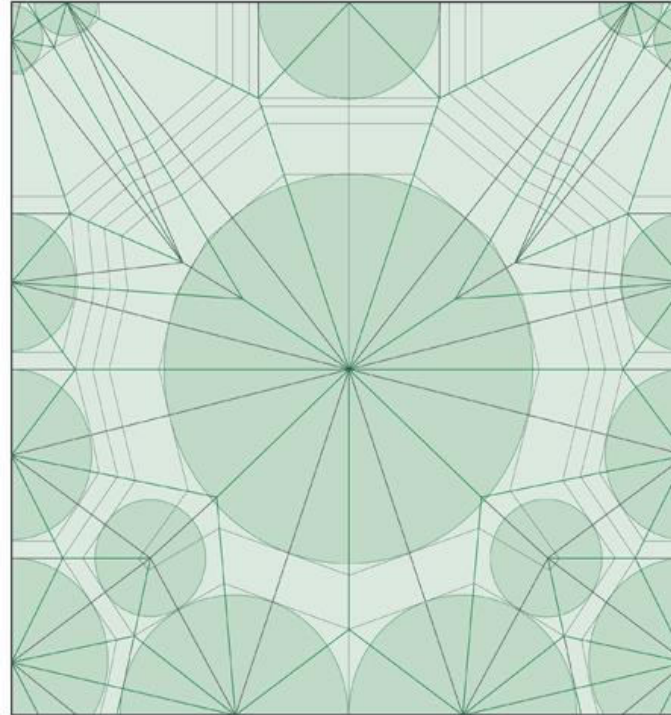
/ The total no. of mountain folds and the total no. of valley fold must differ by 2

/ The sum of every other angle surrounding an interior vertex equals 180 degree.

/ A sheet can never penetrate a fold.

He bridges the gap between origami and other disciplines of mathematics ,computation and engineering .

10 | oriper wordpress.com



11 | www.cabinetmagazine.org

9 | Robert lang with his origami models

10 | crease pattern for scorpion

11 | scorpion origami model

PEOPLE AND PRODUCTS



12|Shigeru Ban

SHIGERU BAN :

Though not having a contribution in the field of origami the pritzker prize winner architect is widely known for his deployable cardboard and paper relief structures used when faced with disasters. His work clearly puts forward the strength of the material paper and gives an easy solution for after disaster tragedy.

13| www.arup.com



14 | www.liturgy.co.nz



13| Centre Pompidou Metz

14| Christchurch, New Zealand
scorpion origami model

15| paper emergency shelter

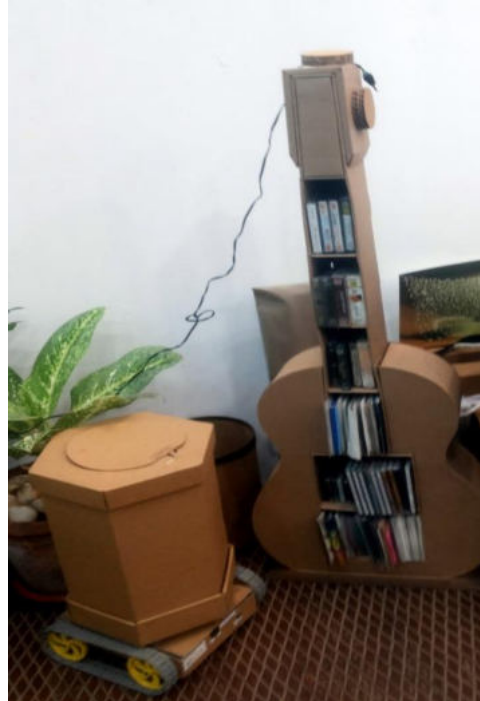
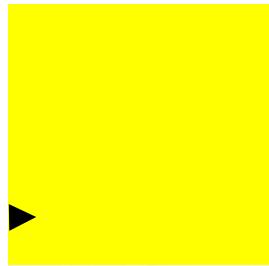
15 | www.japan times.co.jp

PEOPLE AND PRODUCTS



16 | Haresh Mehta

HARESH MEHTA: Based in Mumbai Haresh Mehta owns a studio and is known for the wide variety of cardboard furniture he makes. The main attractions of the furniture is the collapsibility using origami. His designs are a new take on to the furniture industry with the use of cardboard. Being an Origami enthusiast he explores and designs products in the range of luminaries/ packaging/ furniture and storage.



17|



18|



19|

16| Haresh Mehta

17| Cardboard remote operated dustbin and guitar shelf

18| cardboard furniture for kids

19| cardboard elephant Installation

COMPUTATIONAL

ORIGAMI: TREE MAKER

Robert lang came up with a software Tree maker that helps you write a computer program that could "design" a non-trivial origami figure based on a description of the number, lengths, and connectedness of the flaps.

Origami mathematics:

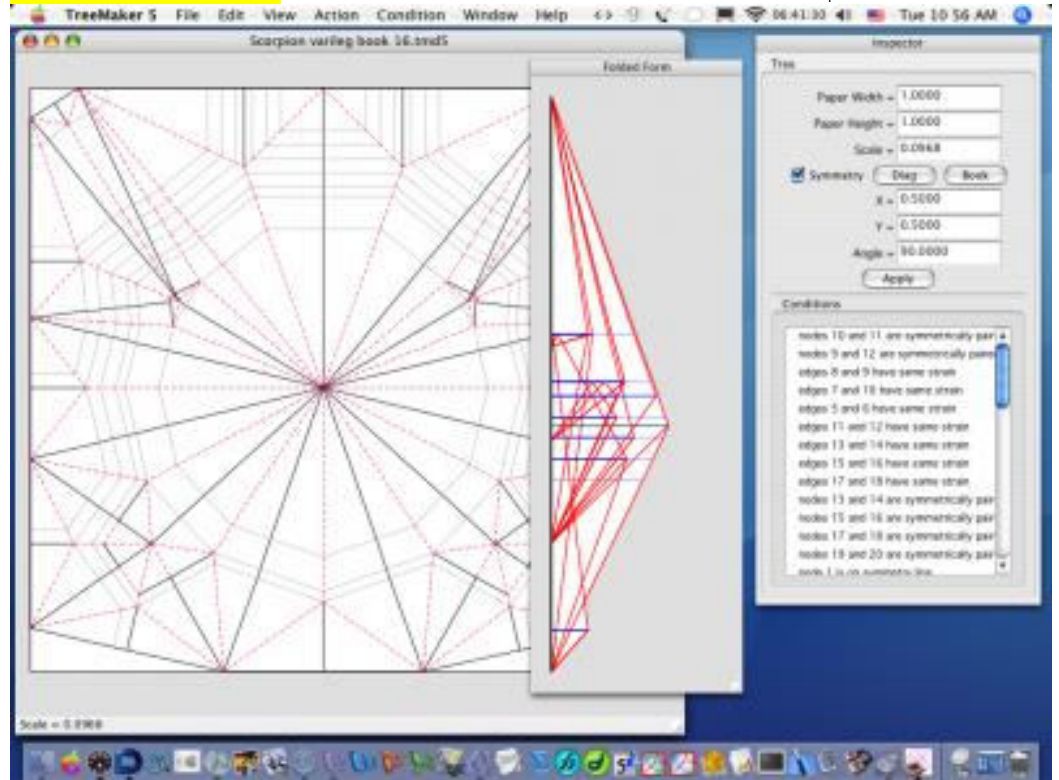
It includes the mathematics that describes the underlying laws of origami

Computational origami:

which comprises algorithms and theory devoted to the solution of origami problems by mathematical means

Origami technology:

which is the application of origami (and folding in general) to the solution of problems arising in engineering, industrial design, and technology in general.



20| www.langorigami.com



20| Screen shot of TreeMaker 5, showing crease pattern editing screen for scorpion origami model

21| Robert lang scorpion model

21| www.cabinetmagazine.org

DISTINGUISHED ORIGAMI APPLICATIONS



22 | plus.google.com
Space telescope take
inspiration from origami

| AEROSPACE:

In the present scenario origami is seen as an easy way to transport huge structures to space. The telescope "eye" is an example to this



23 | www.pleatfarm.com
Popcorn Bowl Packaging

| PACKAGING INDUSTRY.

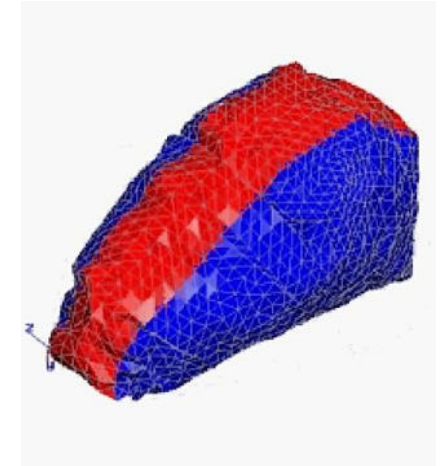
Because of its self supportive, stiff structures that need not use glue to create spaces it sees wide application in packaging industry.



24 | www.laweeky.com
Heart stent Prototype

| MEDICAL INDUSTRY

the stent used in angioplasty as an aid to clear blockage in heart has to be carried from vein at wrist to the muscles of heart and so uses origami



25 | www.herngyi.com
Origami
Simulation of
airbags in car

| AIRBAGS IN CARS

needs to open in fraction of seconds when met with an accident, the folds thus uses origami for the instant trigger opening of Airbags.

STUDYING SIMILAR PRODUCTS AND ORIGAMI APPLICATIONS

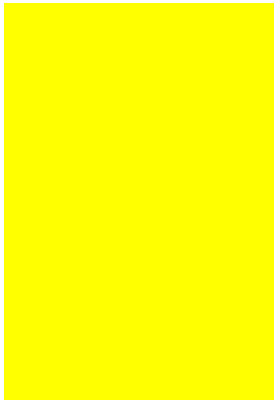
LUMINAIRES:

Origami inspired luminaires have been wide accepted. Facets, edges, corners and various tessellated patterns make origami fun to experiment with lights and shadows and so a study of origami clubbed with lights help understand the textures and tiles of origami better.



26 | www.splashnology.com

Marico Lamp in Inspiration in Origami



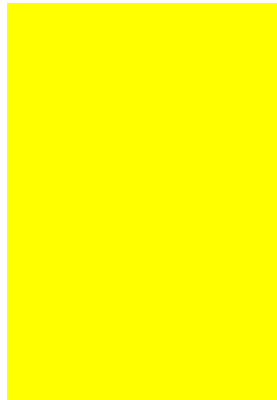
PACKAGING:

packaging deals a lot with volumes and usage of created spaces which turns out to be a key element it shares with furniture too. Also like in packaging the cover or say the package needs to have an appropriate strength a furniture too needs a balance between its rigid strength members and comfortable seating areas. It also becomes an interesting area to understand the dynamic nature of sinks and folds of paper.



27 | www.lushlee.com

Inspiration in Origami for tea packaging



STRUCTURES:

because structures need to be high on the scale of strength, most of them uses origami as an inspiration in terms of the way it looks and feels and so in case of furniture a study on origami structure plays a good example to see how the essence of origami is imparted on to hard and tough materials which may or may not show properties like that of paper.



28 | www.architizer.com

Karuzawa Museum Complex
Nagano, Japan
Designed by Yasui Hideo Atelier

LEARNINGS

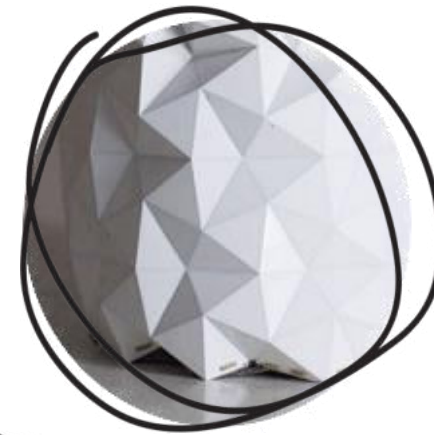
INFERENCES ON FORM AND NATURE

A form may or may not be (being-ness) achieved by origami folds but still can be made to look like one (seeming-ness).

With the study of various products a few features could be listed that defined origami-ness of an origami like looking form.



CRISP
LINES



TEXTURE

FOLDS



CONTINUITY



MOVEMENT



LEARNINGS

STRENGTHS OF ORIGAMI

Transformation

Folded Vast Structures

Striking Forms

Light Weight

Sustainable

DIY(invovement)

.

To make this furniture distinct and different from already existing ideas we use Origami as the highlight and so it should play on the strengths of origami to make more value out of the entire thought of using origami in the first place .

Apart from its striking form and language , origami transformations from one state of paper fold to other leading in different expression is an important feature of origami. It is this feature that allows huge models to squeeze to unimaginable dimensions and thus opening the possibilities for its application. If done in paper or other similar behaving material it turns out to be extremely light weight in contrast to the volume it can accommodate.

PHILOSOPHICAL

TAKE AWAY

/Origami is a constant attempt to achieve a desired goal .It requires patience throughout to do and undo time and again for that final outcome to realize.

/At each step of paper folding its a problem being solved, an instruction being followed to move closer to the desired. It bounds you to a discipline

/One must foresee. At each step you create a mental picture of the next step and then work on for that mental model.

/ Its constant goal setting and achieving the same. You can not rush into making, but need to stop and visualize, think before each step heading towards the set target.

/It involves cognitive thinking, spatial perception, fine motor skills, coordination between your eyes, mind and hands making it therapeutic.

DESIGN BRIEF



To design a furniture that stands out and breaks the monotony of the environment. It should be a seater convenient to use and must appeal wide range of people. The furniture should incorporate origami in terms of its form or folding or usage such that it brings the serenity associated with origami forms to the spaces it is used in.

With the designs we target the urban dwellers, the frequent shifters who do not want to spend much on costly furniture and are also on a lookout for something that would represent their quick and smart living by adding that quirky bit.

It should create a language that could be incorporated further to create similar structure or range in furniture. The furniture should cater to different market segments in terms of its pricing depending on the usage of material and technology involved.

DESIGN DIRECTIONS



On basis of the analysis and study the concept generation could be done on.

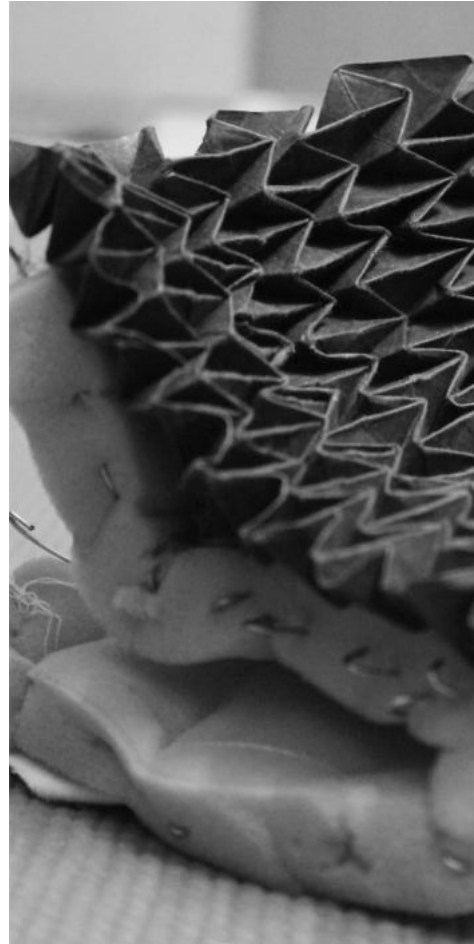
- Structural exploration(Origami inspired rigid structures.)
- Knockdown furniture with multiple uses.
- Space Saving Furniture (transformable)

Seater to flat pack

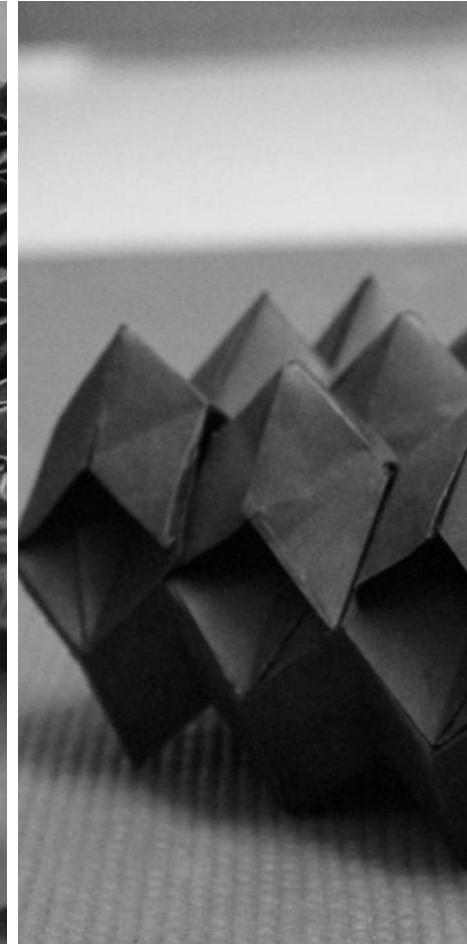
One setup to other setup of furniture

DIRECTION 1 (STRUCTURAL EXPLORATIONS) ▶

To explore the rigid structure inspired from origami following ideations were made it included inspirations from tips and tricks in origami like impossible paper collapsible egg shell structure, origami along curves, flexagons, also tessellated structures that change its visual aesthetic by closing and opening with varied pressures . The idea to incorporate graphics and narration to a flexagon structure or may be like that of PAC man to add value and playfulness to the collapsible structure of an existing furniture .

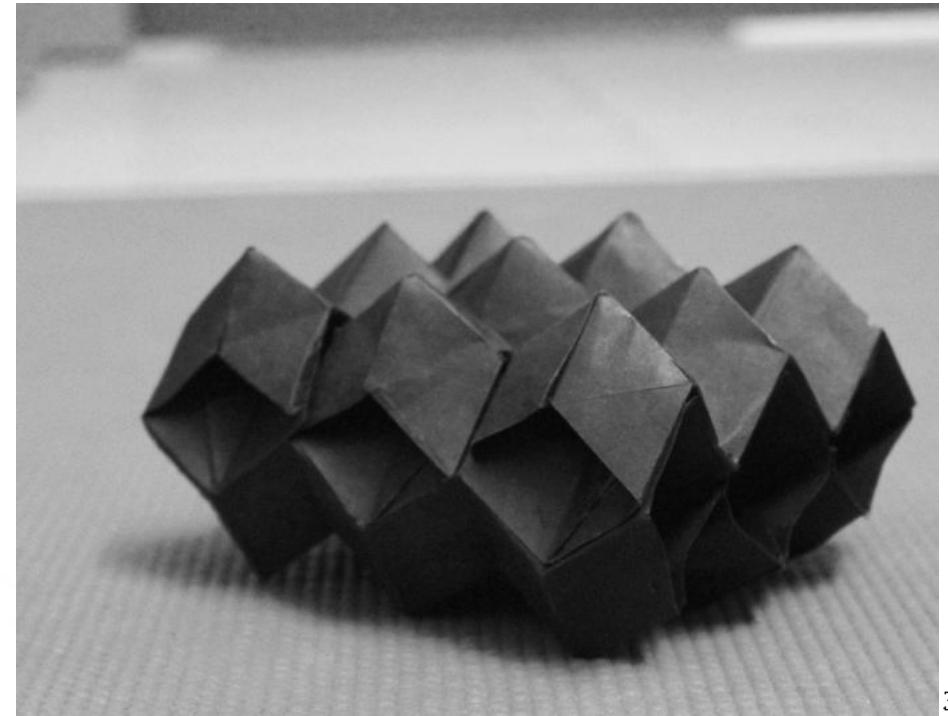
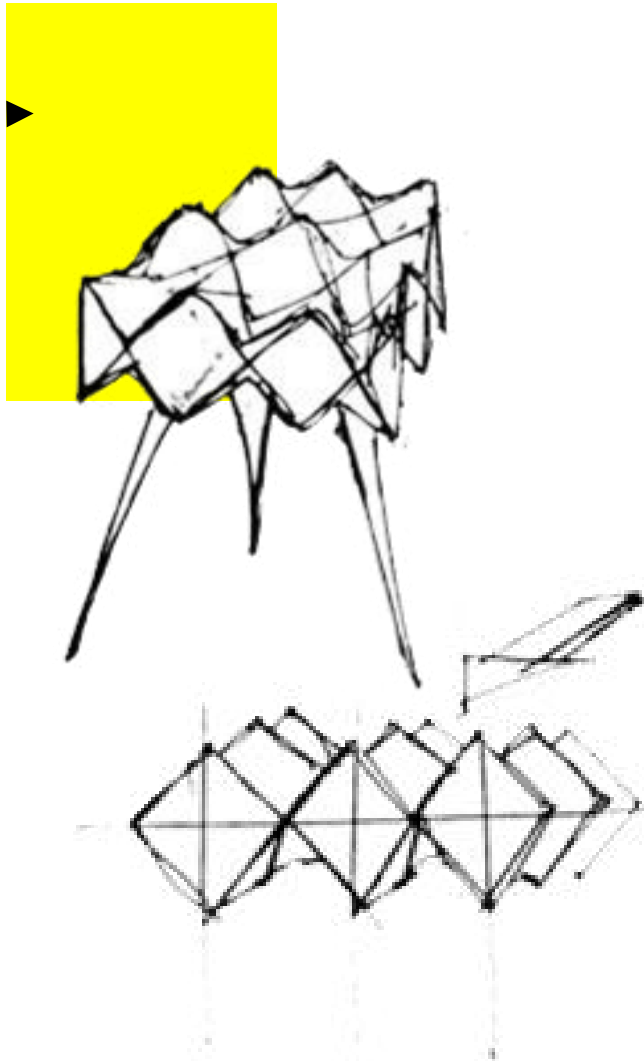


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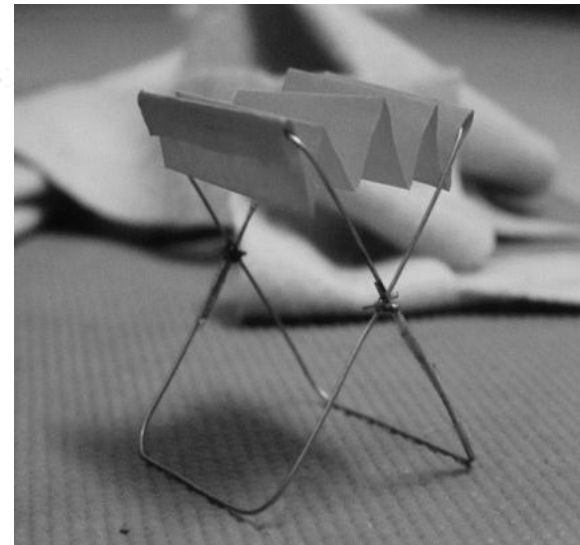
30|

ORIGAMI STOOL



31|

A stool with a collapsible top (32). The top takes its inspiration from origami egg structure (31), with minimum base structure to highlight the origami top.



32|

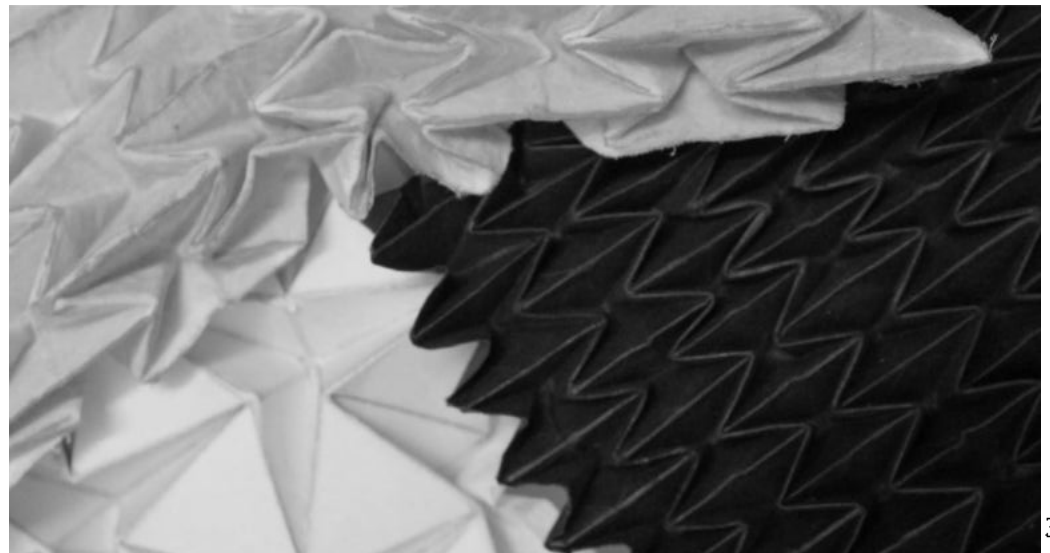
LOW LYING SEATER

► In an attempt to make a space shifting furniture that allows to fold and freeze as per the need of the user a few experiments were done to impart the furniture enough strength to hold the position it is folded in. At the same time allowing for easy maneuverability to let user easily have a control over the furniture.

The same was achieved by creating a mesh of wire in the cushion. The challenge was to achieve the same when done in human scale



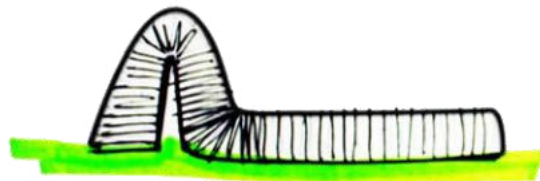
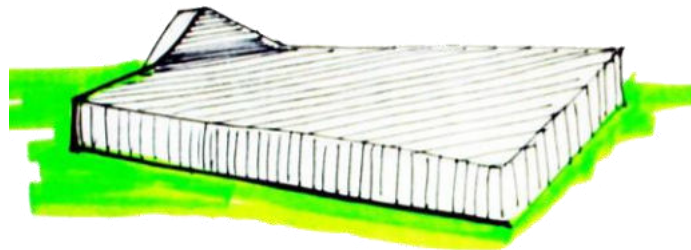
33|



34|

LOW LYING SEATER

▶ A wired cushion topped with an origami tessellated pattern that responds to the structure below and expands or contracts with respect to the underlying structure. The folds turn out as compressions or expansions in the origami and creates interesting visuals on the surface.



35| A quick sketch of the seater

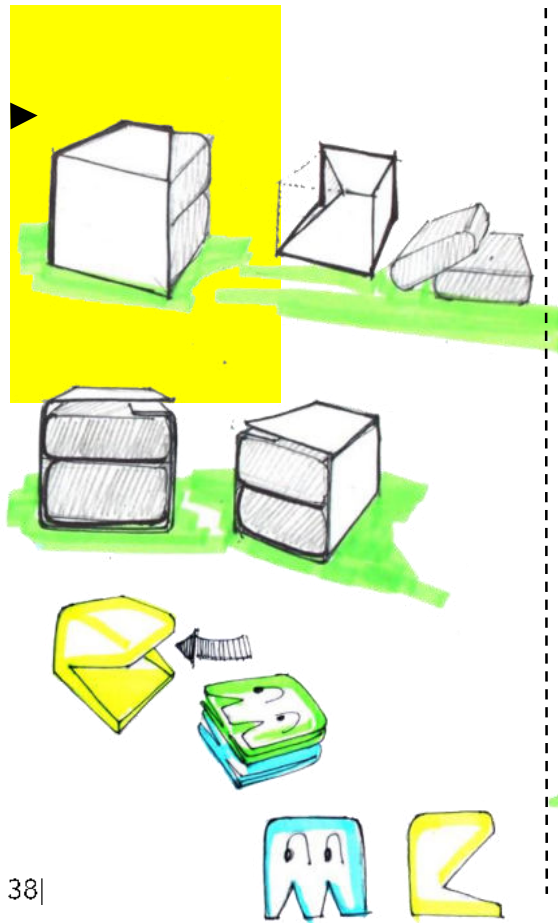


36|

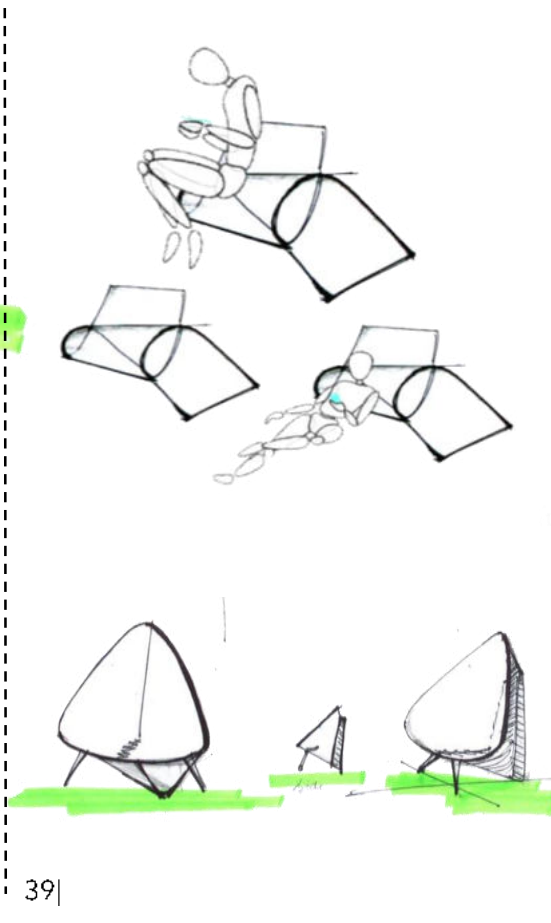


37|

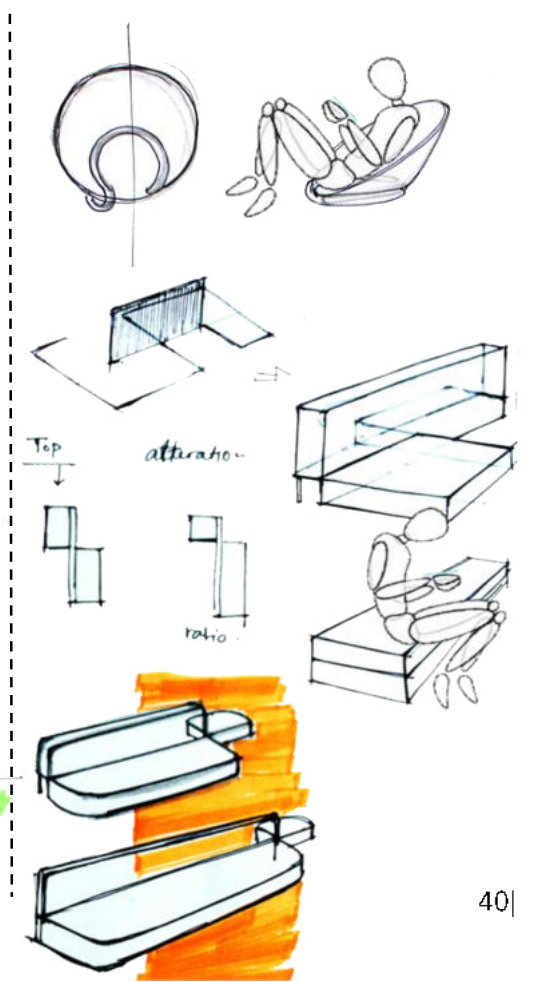
OTHER EXAMPLES



Exploration on folds of paper with one structural stool and other collapsible units. A trial to incorporate graphics for making it more playful.



Taking inspiration from crimp of folded envelope

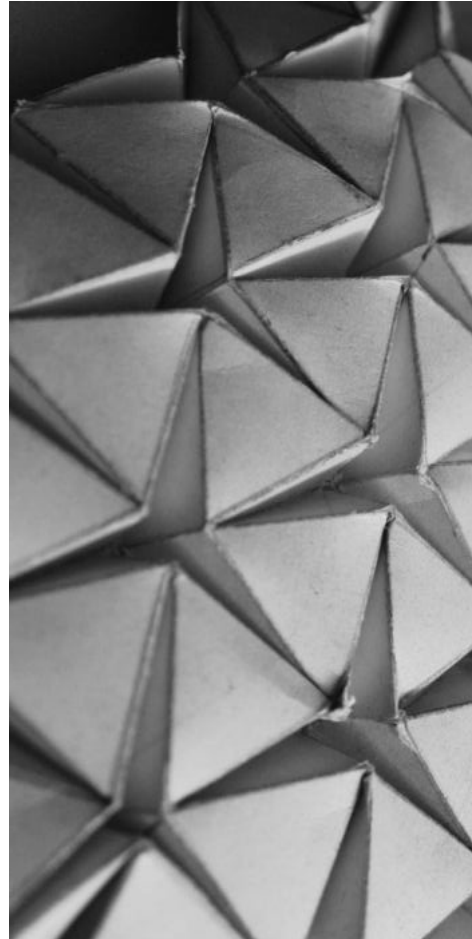


Impossible paper inspired sofa with different orientations ,other inspired from curved paper fold

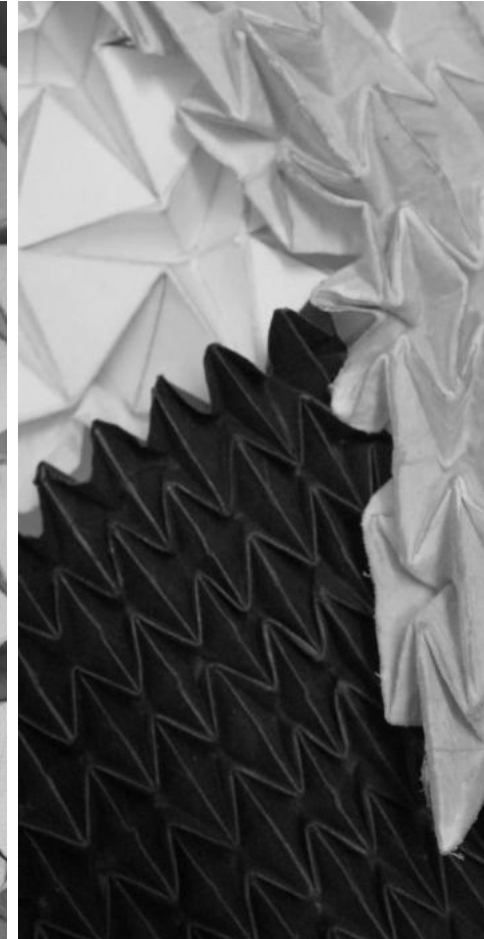
DIRECTION 2 (knock down/folding)

Knock down furniture that incorporates paper like folds in contrast to the materials it is made of (wood or metal).

The intention is to incorporate origami like folds into otherwise rigid structures. For the ideation in direction, furniture like a book shelf, a table and seating clubbed together or a shelf with a table that opens up possibilities for multiple orientations and usage were considered and the folding techniques of how the joineries would be were thought and looked for.



41|

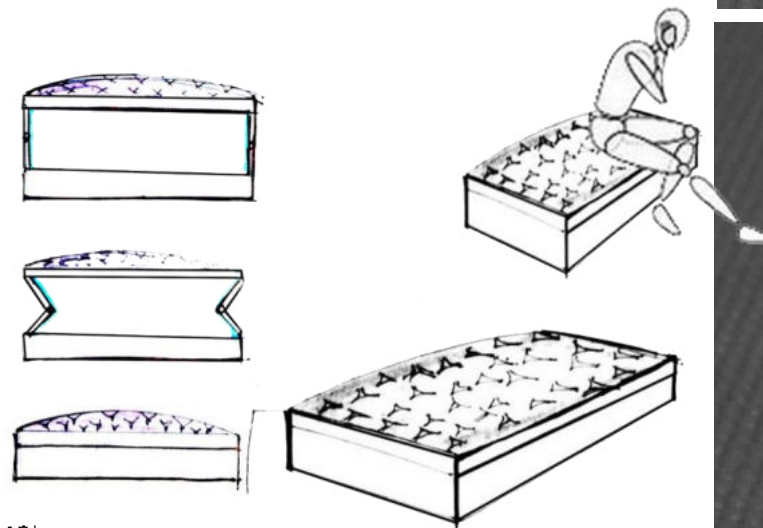


42|

SEATER CUM STORAGE SPACE

► A furniture that would open and close mimicking paper folds. To pattern this fold a tongue groove joinery lined with an elastic was thought of.

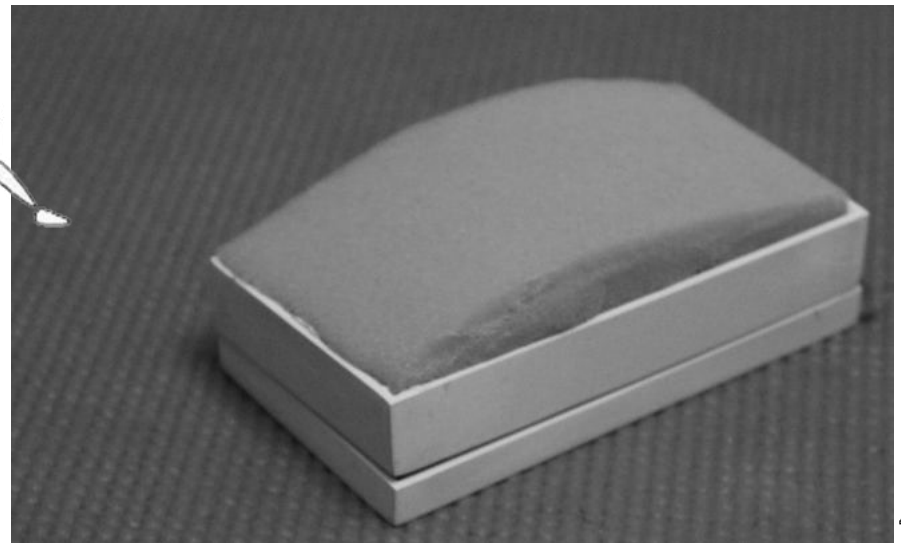
A seater that behaves as a stool when set and folds itself into a shelf case when folded.



43|



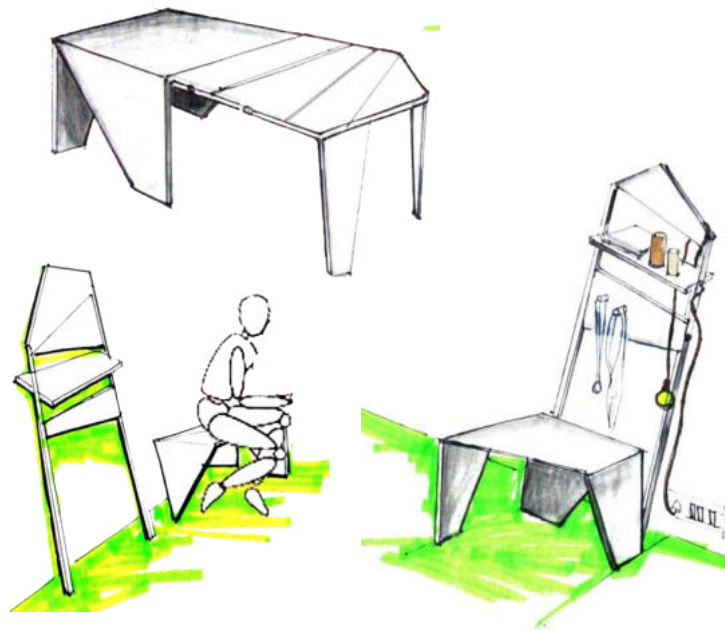
44|



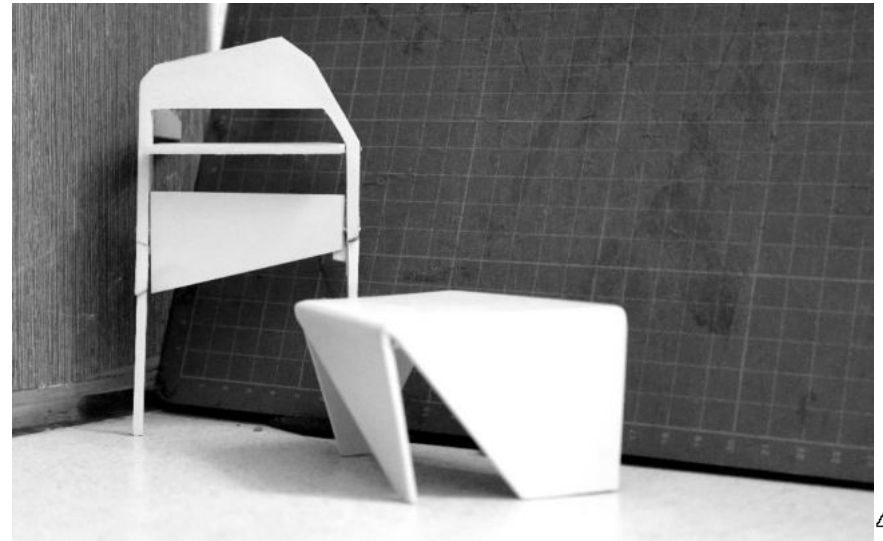
45|

SHELF CUM STOOL

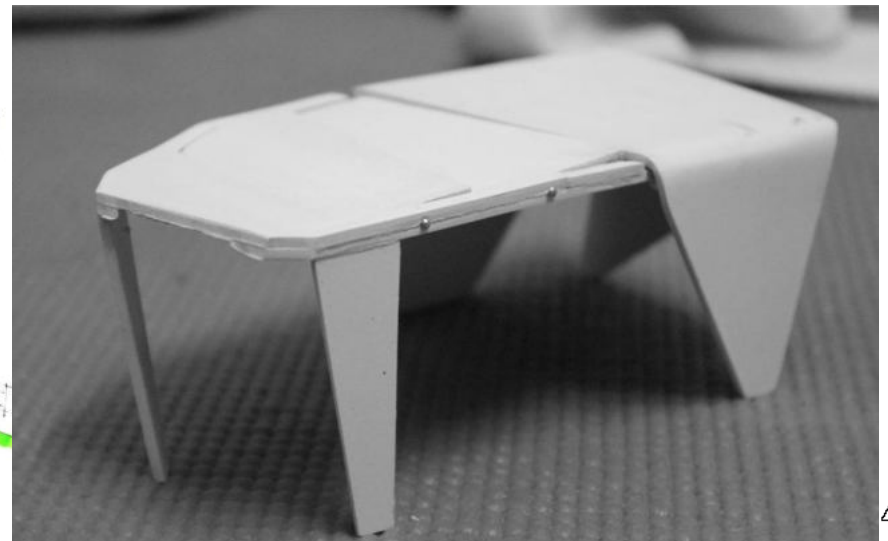
► A furniture that behaves as a wall resting shelf and a stool with multiple orientations. It serves the purpose of a table a shelf/ hanger a stool bed side table. The form is decided with conscious thought of bringing in facets, corners, and surfaces in to it.



46|

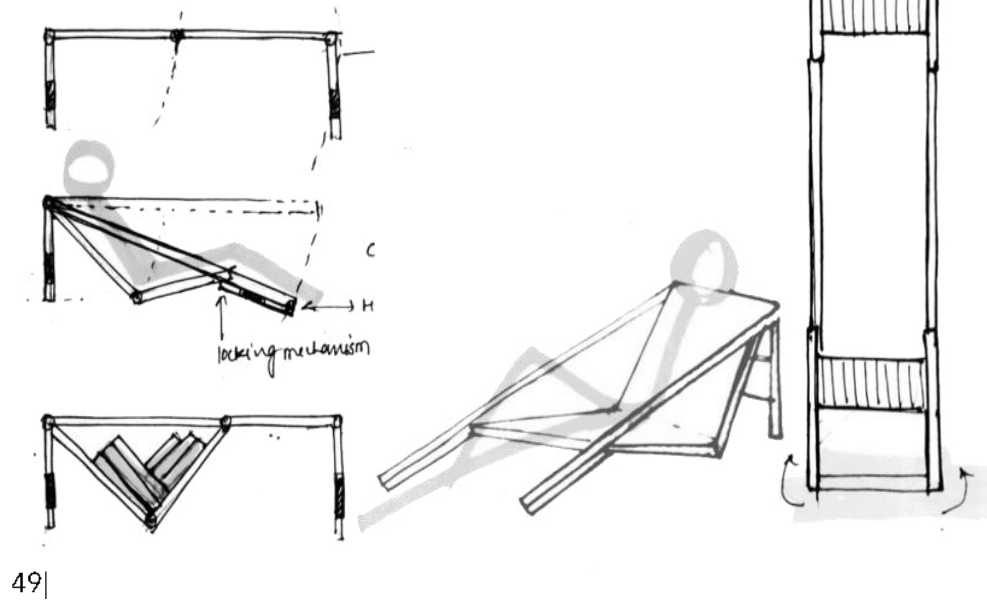
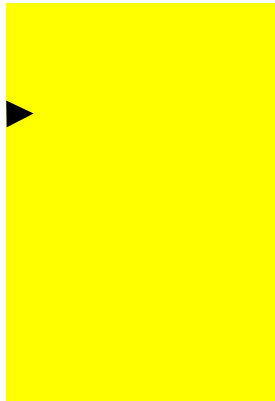


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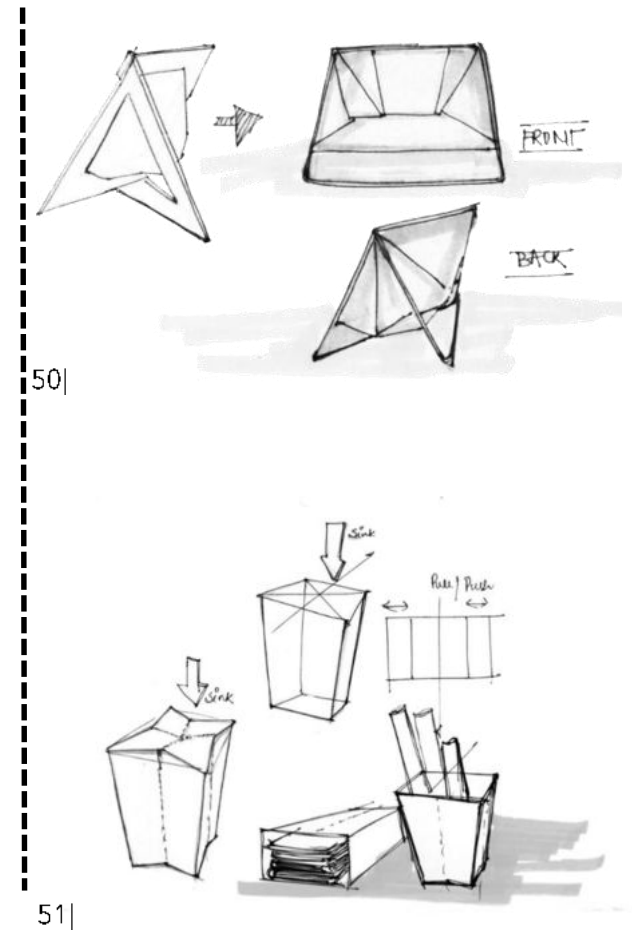
48|

OTHER EXAMPLES



49|

A coffee table that has a folding top which locks itself at different lengths making it a book shelf and a reclining chair as per the need. It can be easily folded and kept along a wall with minimum foot area.



51|

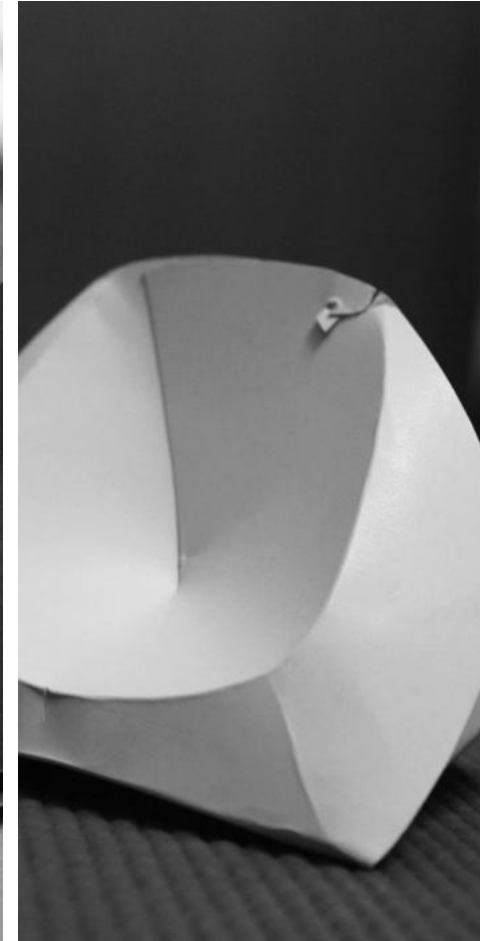
Folding frames that allow seating and turns flat otherwise.

DIRECTION 3 (space saving)

furniture that concentrates on Space saving. Borrowing its folding techniques from origami. The material here was limited to plastics, cardboard and felt. The ones that could allow hinges as well as strength members in the same sheet. The direction would involve user in the setup of the furniture from either a flat pack to seating. The furniture would take up little space, and would be light enough for you to move anywhere you want. Considering people like rearranging their space frequently. Positioning it as a range of products that includes a seater/ luminaries/ table etc.

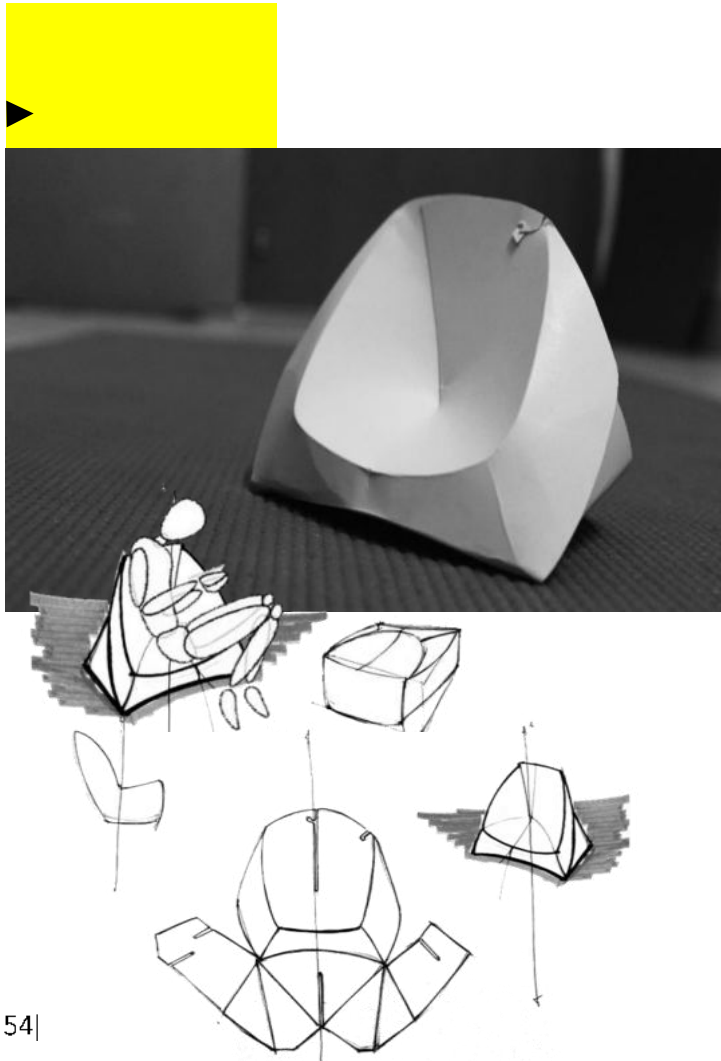


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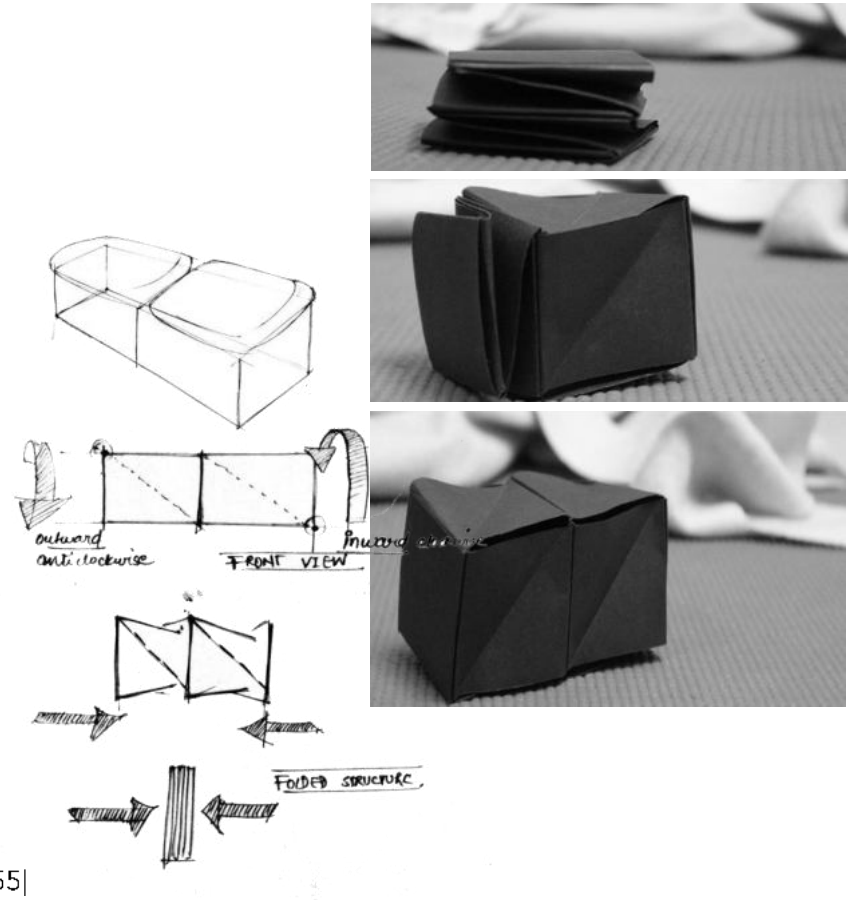
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FOLD CHAIR/ STOOL



54|

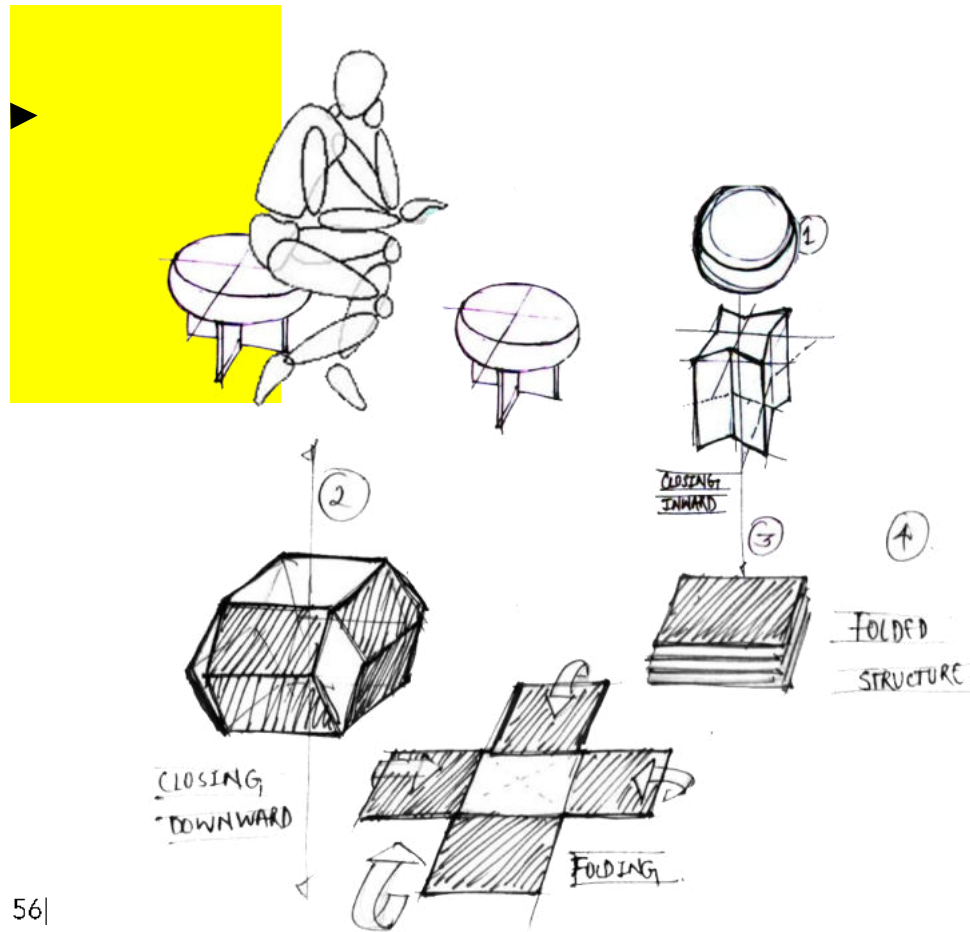
A single sheet fold that when locked in position creates enough space and tension in its structure to bear weight.



55|

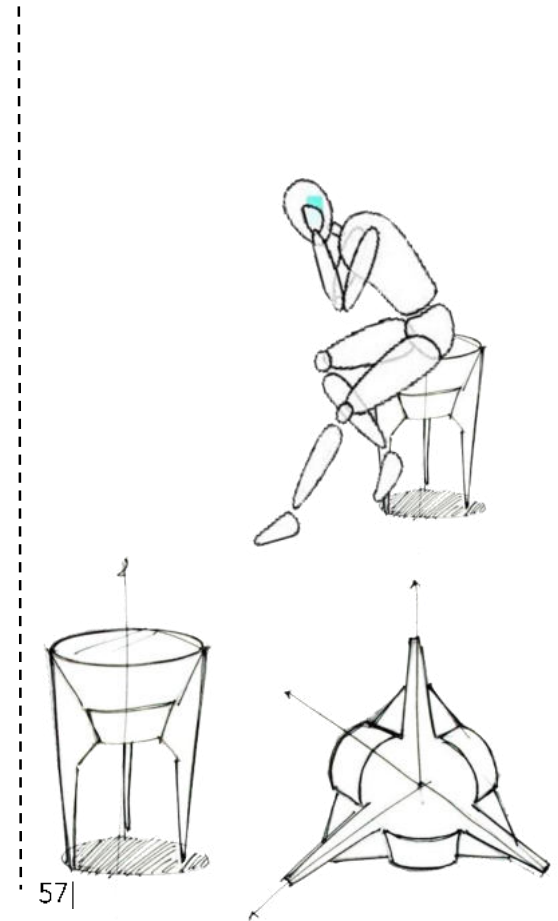
A two seater collapsible stool structure

OTHER EXAMPLES



56|

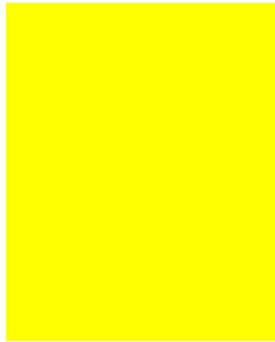
A mat cum stool seater that can be folded and reduced to a square area. The joinery in this case plays an important part as it should allow the multidimensional folds of paper needed for the design .



57|

A cut sheet layout which with the help of suitable joinery can fix itself in position and allow for weight to sit on.

CONCEPT GENERATION



Branching from the three directions. It was decided to come up with final concepts that would represent the direction it is derived from and could be realized in a prototype in the given period of time. As a result of which it was decided to carry forward with the direction of space saving furniture that alters its form to serve multiple purpose or is collapsible to be stored or transported easily.

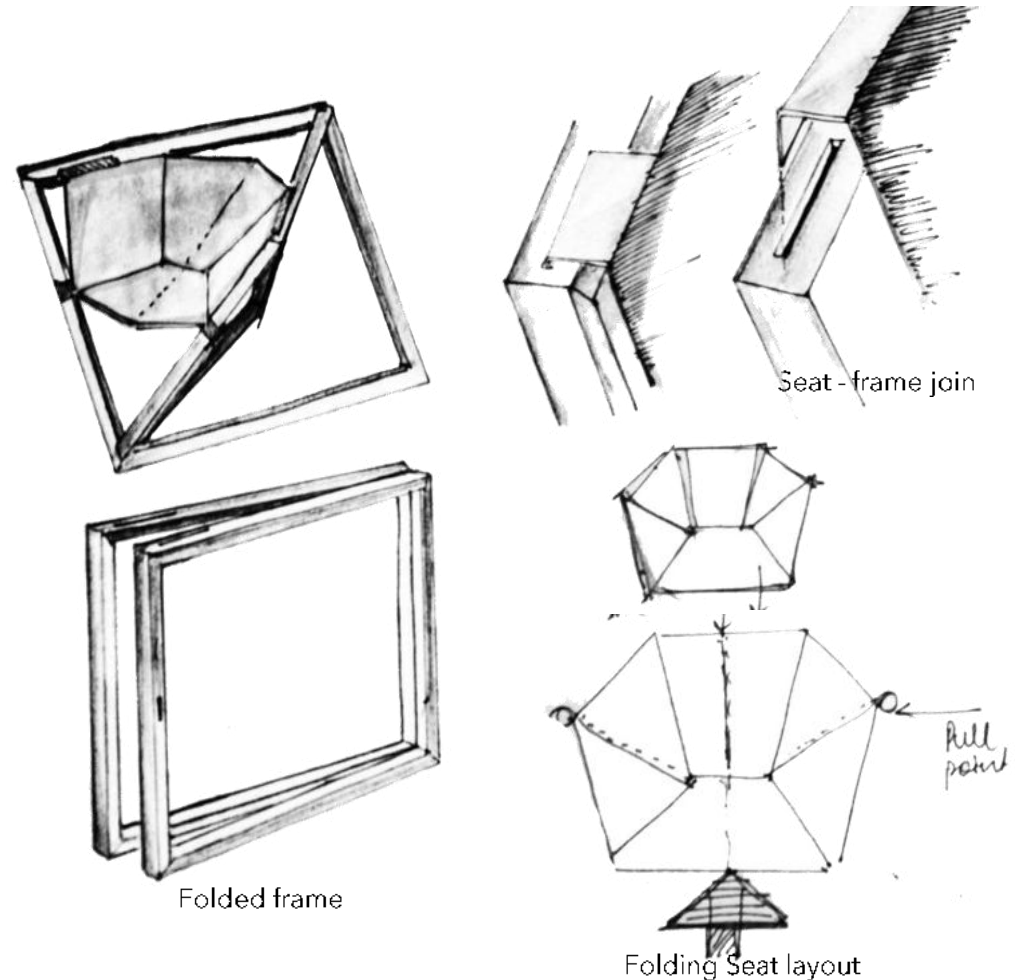
The decision was made keeping in mind the fact that with this, the very essential idea of origami (folding and expanding to change volumes and spaces) will be taken care of and can be used as an advantage.

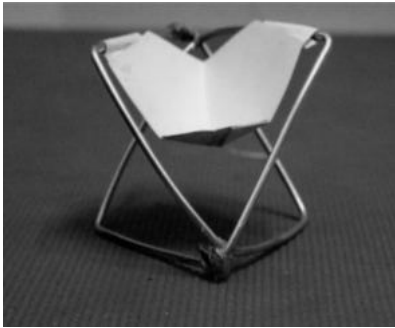
CONCEPT 1 QUADROR CHAIR

the idea is to have a frame of furniture with quadror joint (www.quadror.com)

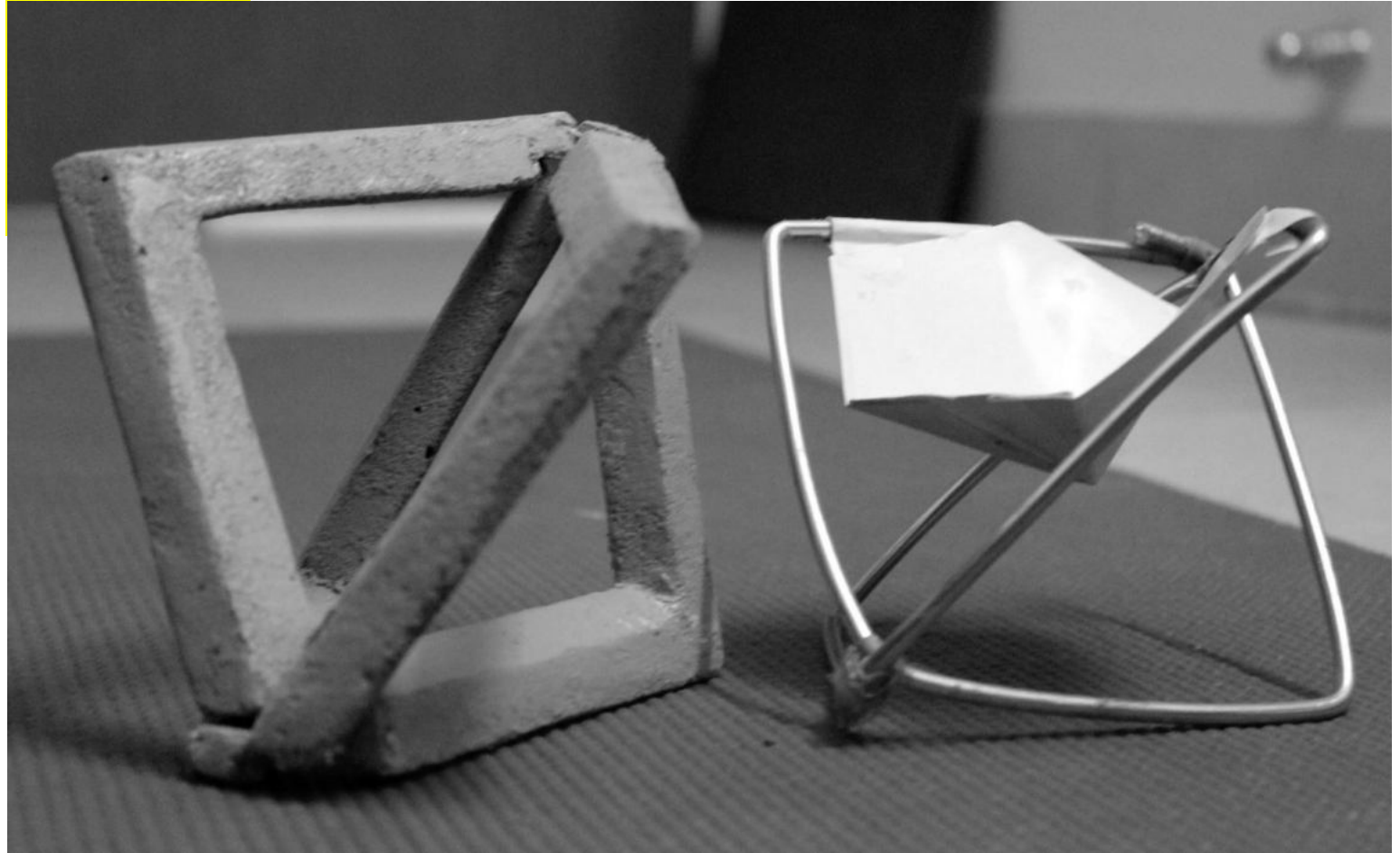
This allows easy collapsibility, and the space created can be used to have an origami folded seating .the entire structure folds into a flat plane when not in use and can be stretched open when needed. The frame could be made in metal or wood while the seating in synthetic polymer, with detachable joints at ends of the frame.

This makes the furniture easy to carry and ready to install. It can be positioned as a garden chair as well as an indoor chair with apt material for seating in respective cases.





59|



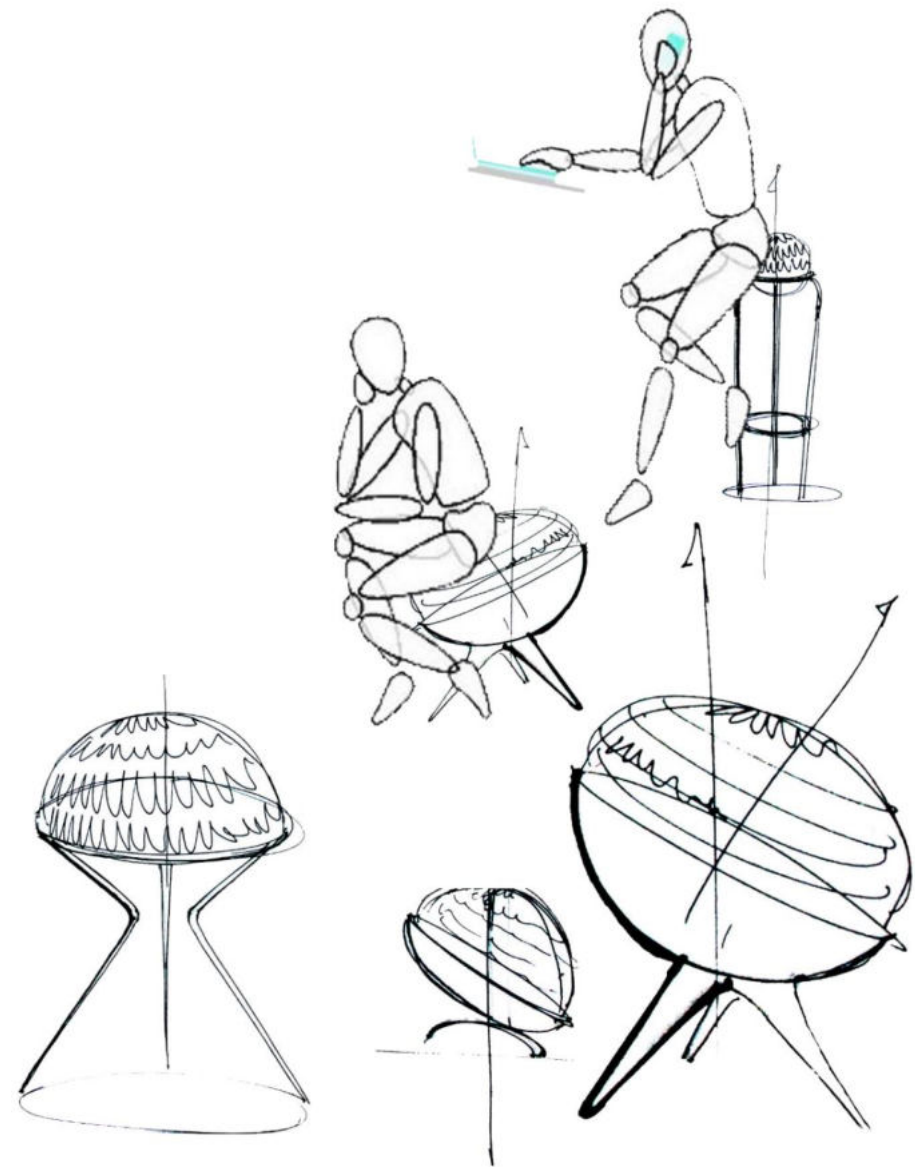
60| Quadror frame on the left with mock up of chair on the right

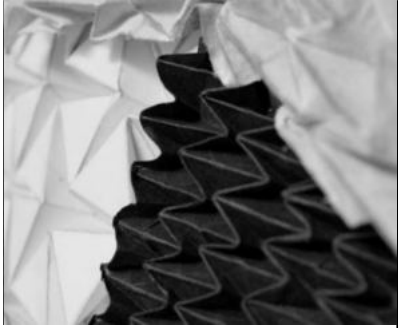
CONCEPT 2

ORIGAMI CUSHION CHAIRS

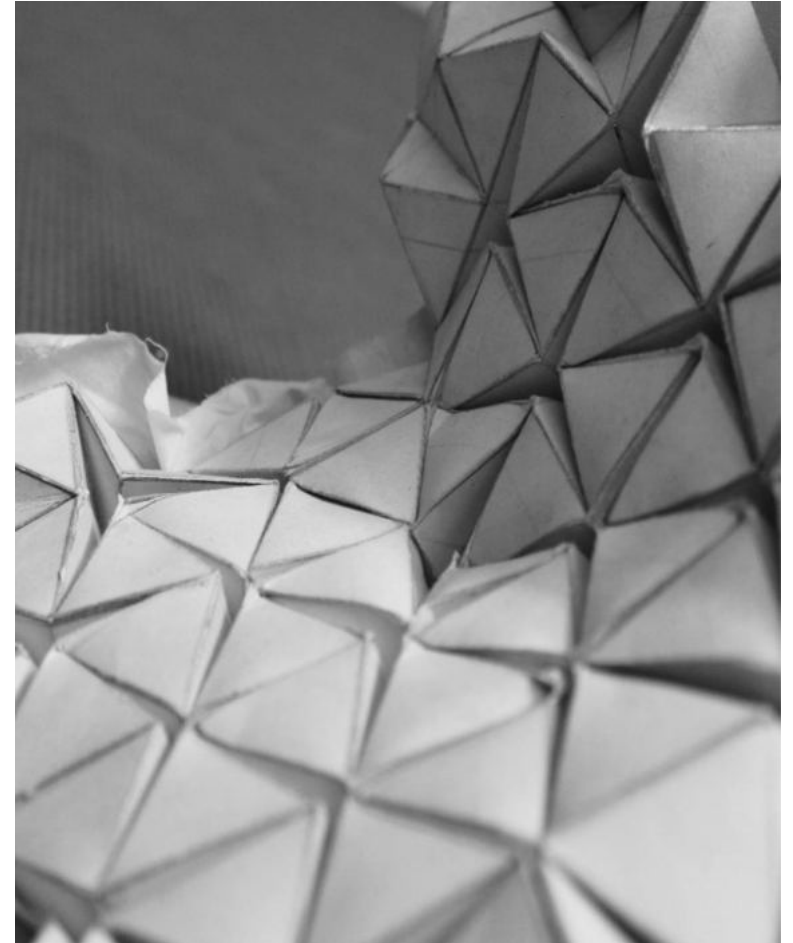
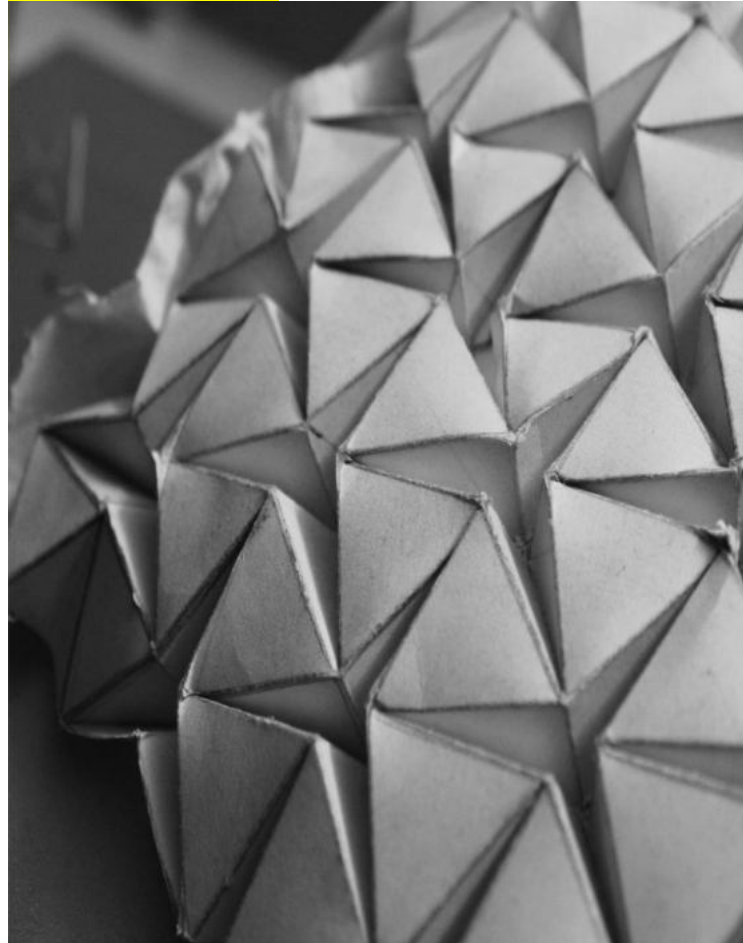
Looking into origami tessellation patterns and understanding both the rigidity of folds when zooming into the pattern and flexibility of the entire pattern on the whole. The concept was aimed to make it more like a responsive furniture that expands and contracts and mimics breathing in some sense to make it look more living and part of the system.

-
-





62|



63| Origami tessellated cushion that contracts when under weight and expands when released. The change in density of folds makes it visual and appears to be mimicking human breath.

CONCEPT EVALUATION



Branching from the three directions. Final concepts were decided to represent the direction it is derived from and could be realized in a prototype in the given period of time. The concepts were evaluated on

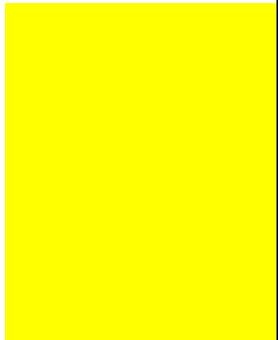
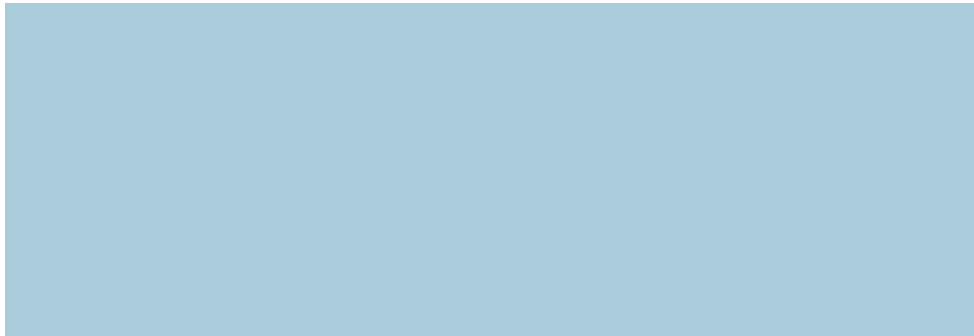
/Origami-ness of the furniture

/ Usability (if it has multiple uses)

/ Aesthetics

/ Playfulness or involvement of user

CONCEPT FINALIZATION



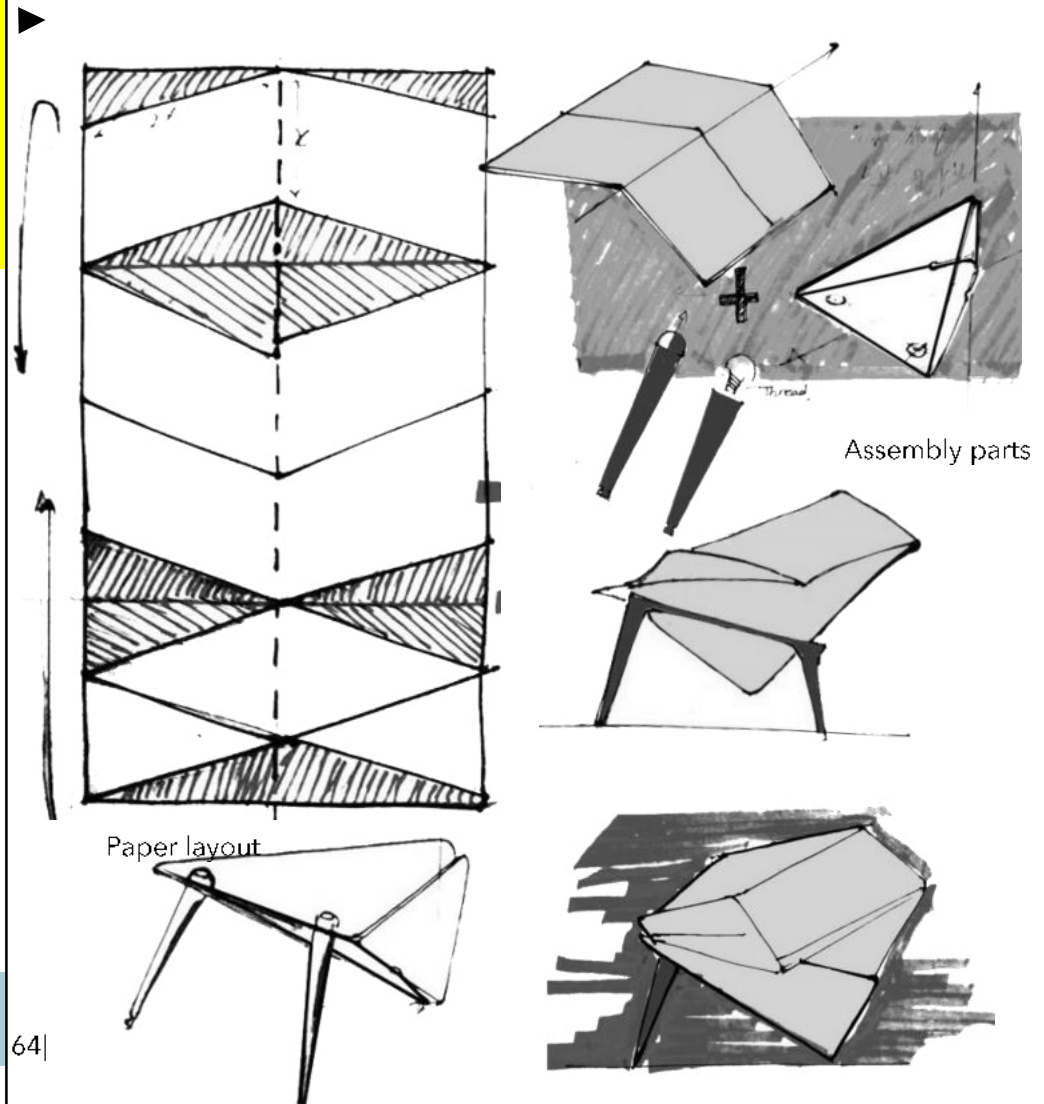
As per the criteria for evaluation it was decided to take forward the mat stool as it fits right for the usage in urban spaces, dealing with less area for furniture. Moreover, it gives a choice for using it as a mat or as a stool also allows the user to decide the material and use for their own purpose. The other choice was to experiment with the folded chair. It had a striking form that makes it stand out and thus marks a statement.

It behaves more like a late evening coffee chair that you have a personal connection with and thus needs to be special and something that one can connect to.

CONCEPT 3

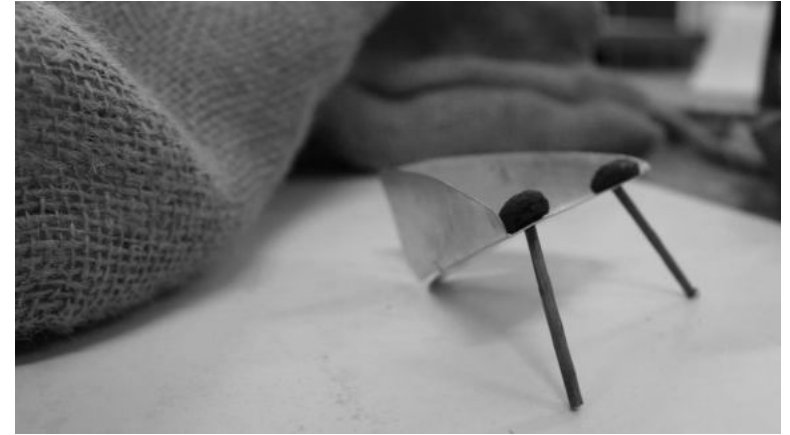
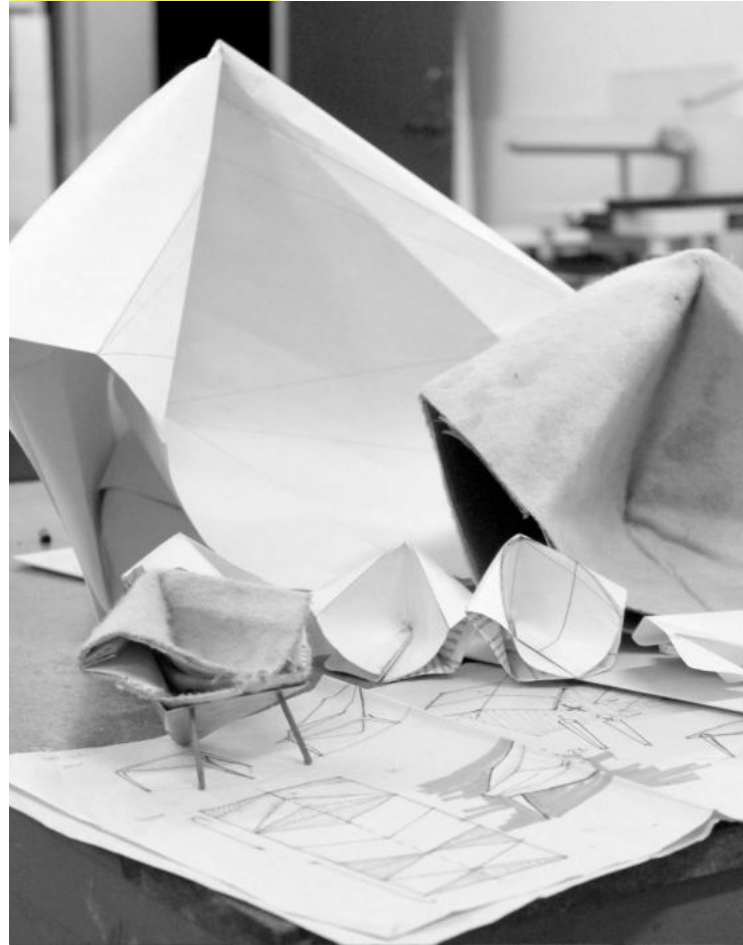
KNOCKDOWN
STATEMENT FELT CHAIR
URBAN COOKIE

The concept was to make a statement chair that would use a sheet of felt mat thickened and hardened at appropriate places for easy one time assembly. The chair is an assembly of a base with two legs that needs to be fixed with the felt seat on the top. The initial assembly brings in the involvement of user and connects with the user.





65|



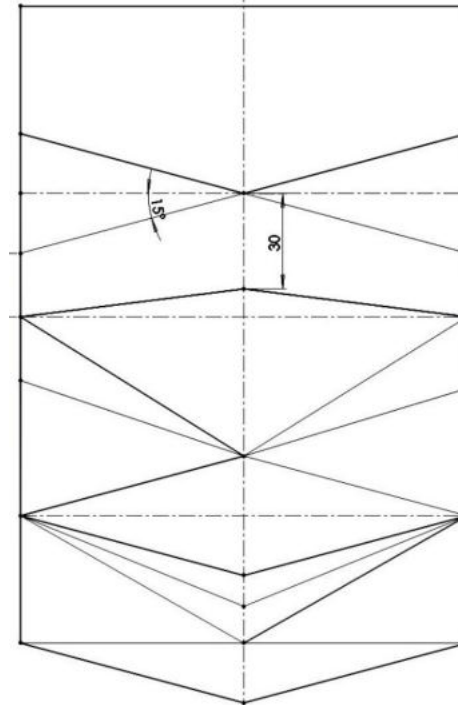
66| Origami tessellated cushion that contracts when under weight and expands when released. The change in density of folds makes it visual and appears to be mimicking human breath.

FELT CHAIR: MORE ABOUT IT

Materials: A molded polypropylene sheet upholstered with foam and felt to give the desired balance of strength and flexibility and mimicking paper in some sense.

Details: The nuances of the layout were considered thoroughly. Each crease pattern yields a different outcome all together and so several attempts to figure the right crease pattern were made to get the maximum utilized space out of the folded structure.

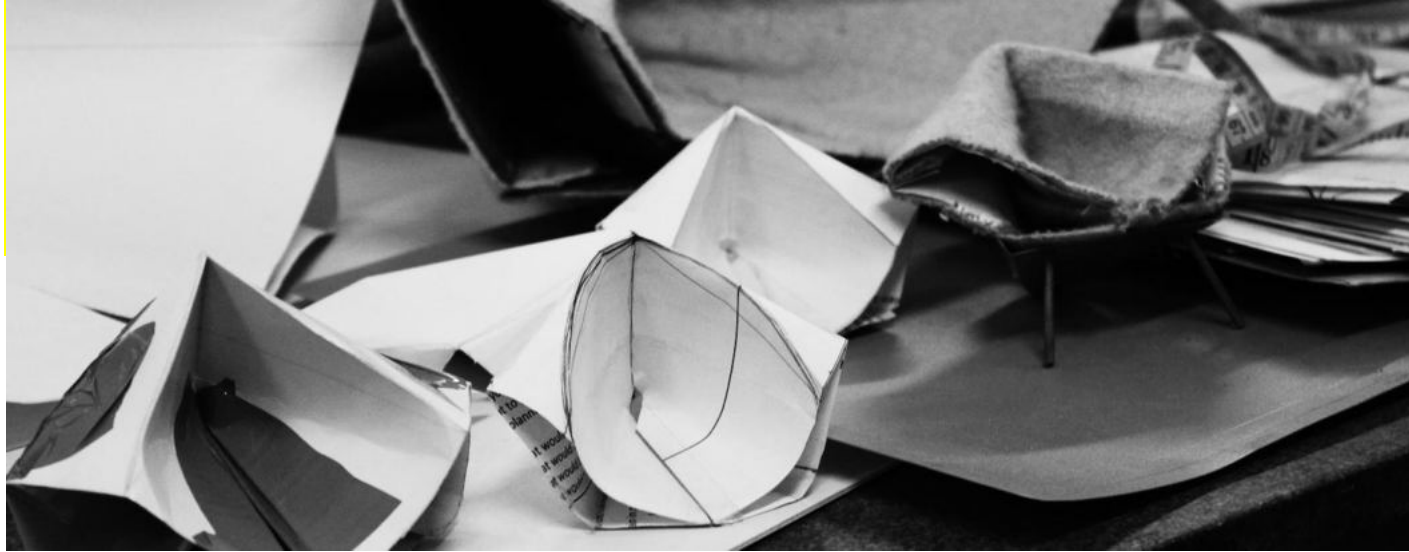
To hold the folded structure in tension for the seating space to be created a strength bearing metal structure is facilitated.



67| The layout of the chair structure (Left) .Paper model of the structure at earlier stages (Right).

68| Iterations in paper with different crease details central joins

69| A layout folded in flat mat ready to be folded to achieve the form



68|



69|

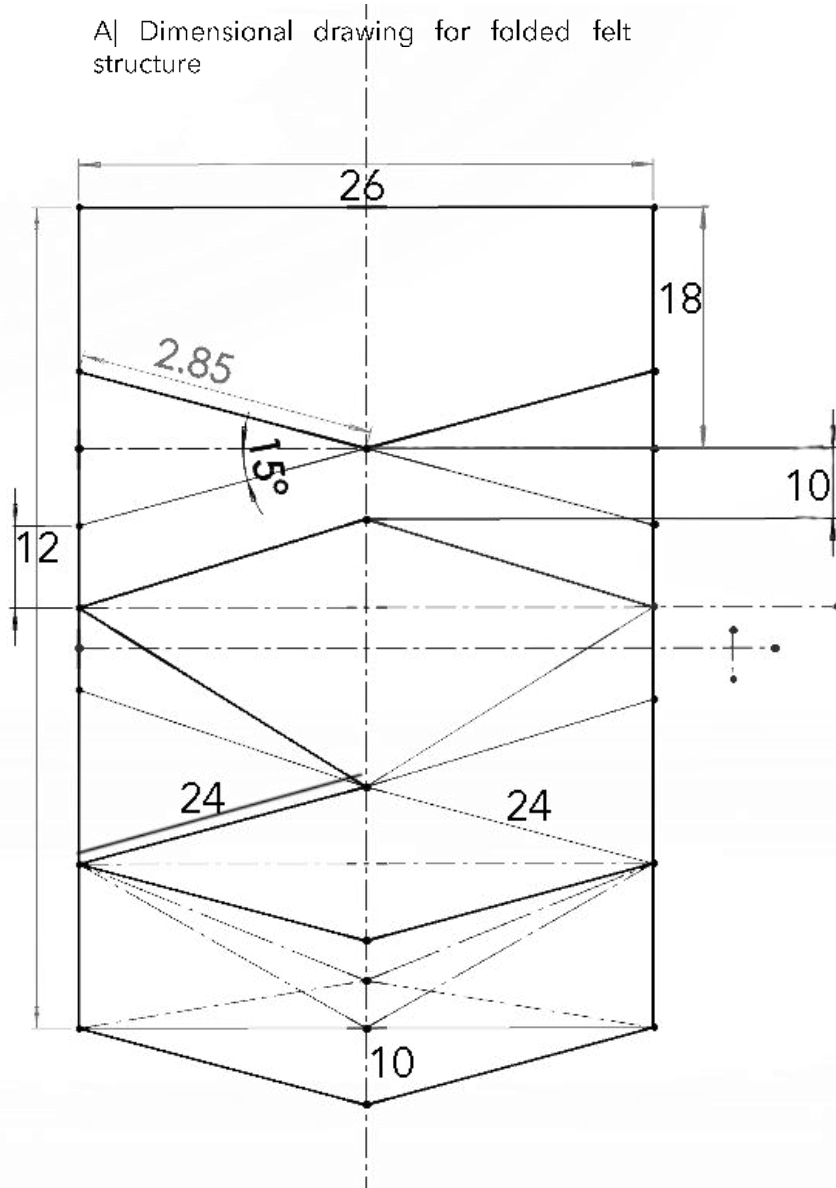
URBAN COOKIE



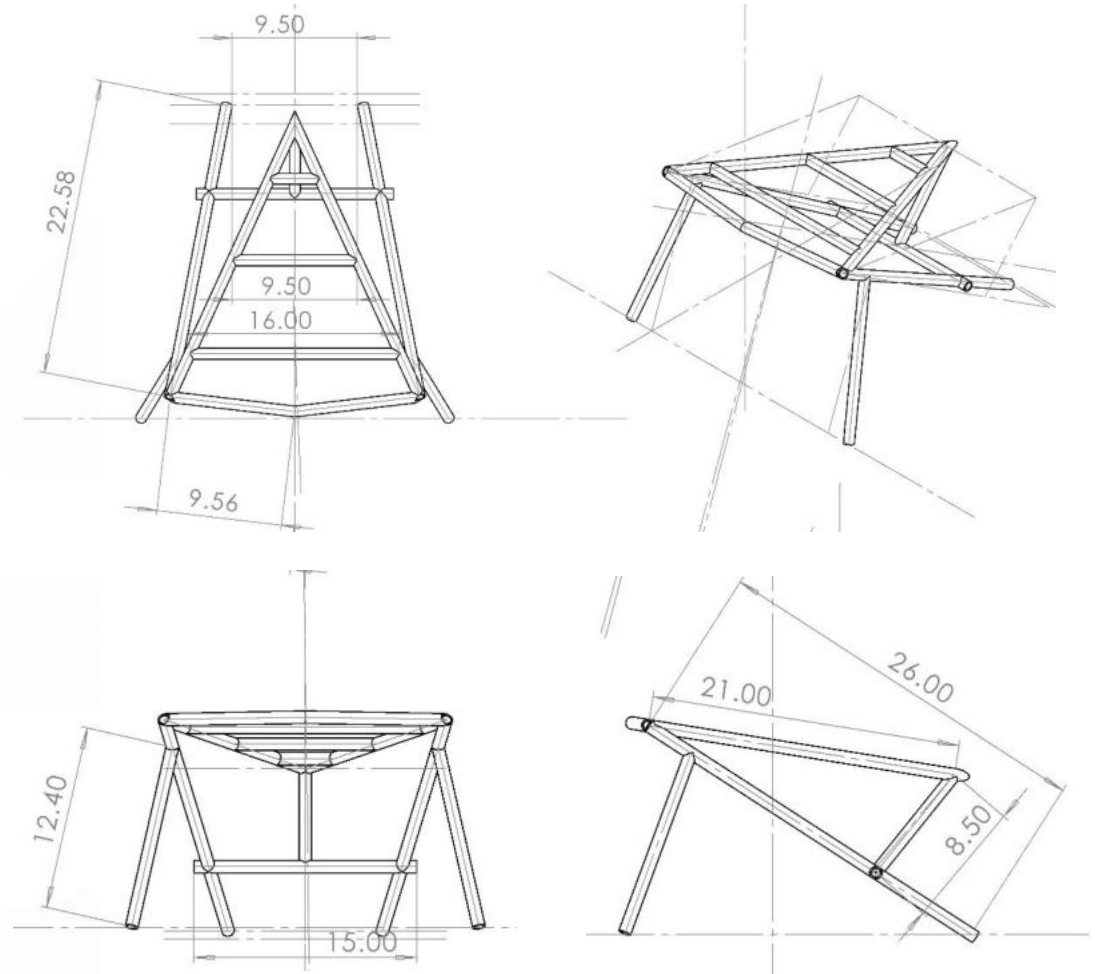
70|

DIMENSIONAL DRAWINGS

A| Dimensional drawing for folded felt structure



B| Dimensional drawing for metal frame.





71|



72| Taking the folds of origami and applying it on felt wool, with nominal metal legs to enhance the origami derived form.

CONCEPT 4

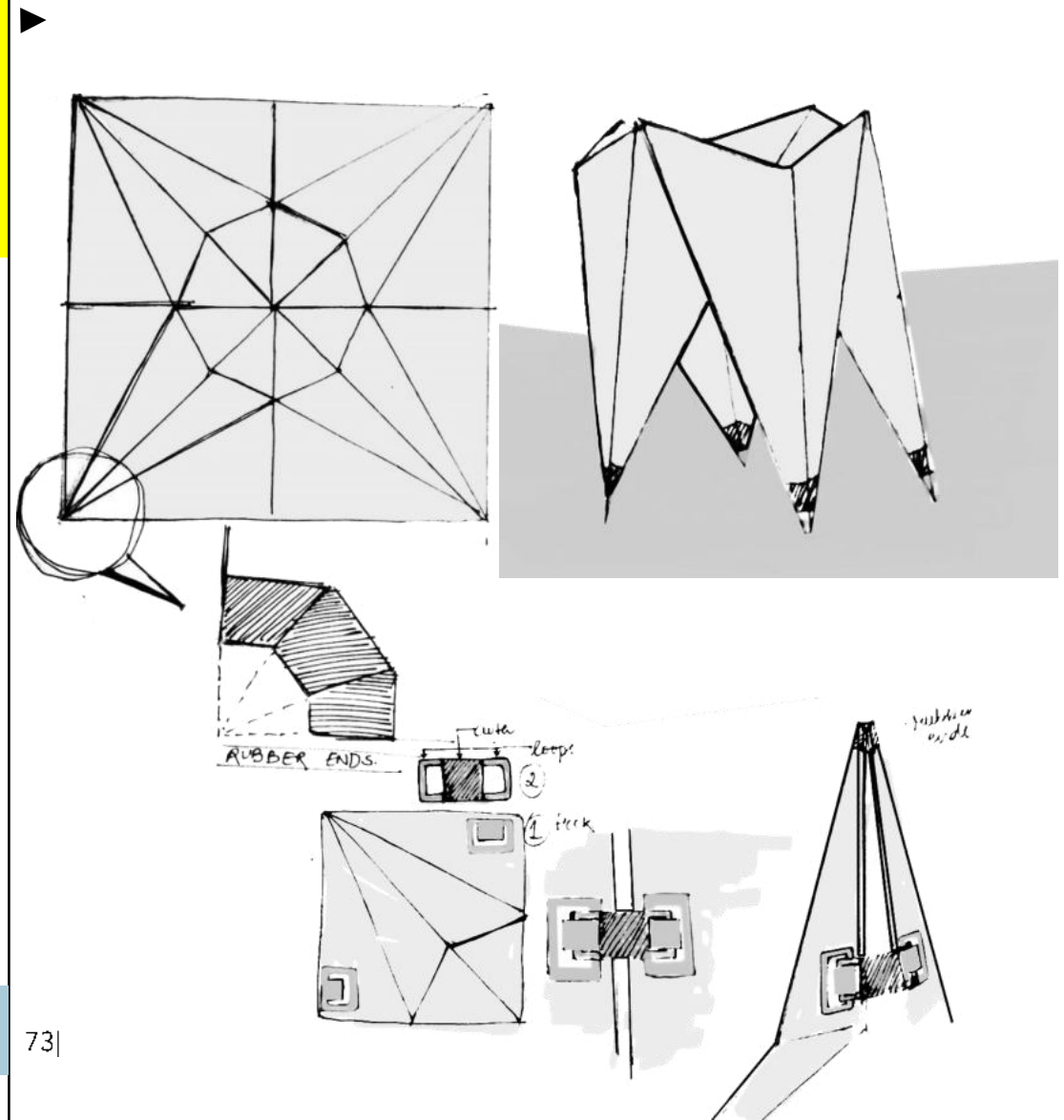
MAT STOOL

FOUR FOLD

A flat mat that is folded to make a one seater stool .The form with its facets corners and edges makes it dynamic .

For this piece of furniture to be more durable and lasting each corner was covered with rubber ends, making it convenient to bear heavy loads . the construction material could range from cardboard that is sustainable and cheap to leather and padded felt for more sophisticated environment.

To hold it in a stool position it demanded a constant force pulling in. To work that, joineries at each foot that would pull two ends closer were thought. It made it easier to assemble it in position.



73|

MAT STOOL: MORE ABOUT IT

Materials: Can range from cardboard which is both cost effective and sustainable to other costly and rich materials like leather, felt, and even metal. This can be customized and priced as per the need of the user for their material choice

Joinery: Like mentioned before the joinery should serve the purpose of holding the furniture in position also it should keep a check on the fact that people should not fold it more than the required which might cause the edges to collapse. Solutions like
/tying the stool with a rope across its diameter.
/Or, changing the form for one central join that would keep it in place were thought.

Details: The design had several details to look at like

| particular height to width ratio has to be decided for the top to have right bends.

| Chamfered ends for load bearing and stability.

While realizing the stool in cardboard several measures had to be taken

1/ The grain (fluid direction) of the cardboard paper should be in apt direction to give it the required strength

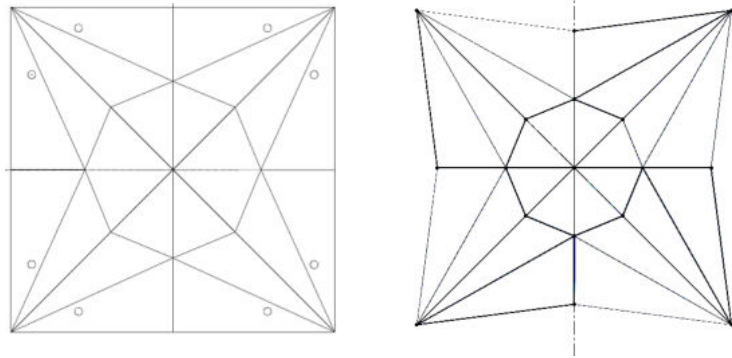
2/ the thickness of cardboard sheet determines what details had to be added like for thick cardboard, points where more than three points met a central hole allowed easy fold and less tear

3/ Because paper has a memory each line needed to fold differently .the ones needing a mountain fold is different from the ones folding into a valley.

4/ Also reinforcements at areas susceptible to point loads or huge weight prevents tear.

5/ The entire furniture is laminated to keep away water and moisture also it increases the durability

Height of the stool: 18 inches
Seating top diameter: 14 inches



The details of the layout determines its overall form and should be precise like, the first layout (left) gives a boxy form while the second (right) yields a taller height with reduced diameter to sit on.



74|

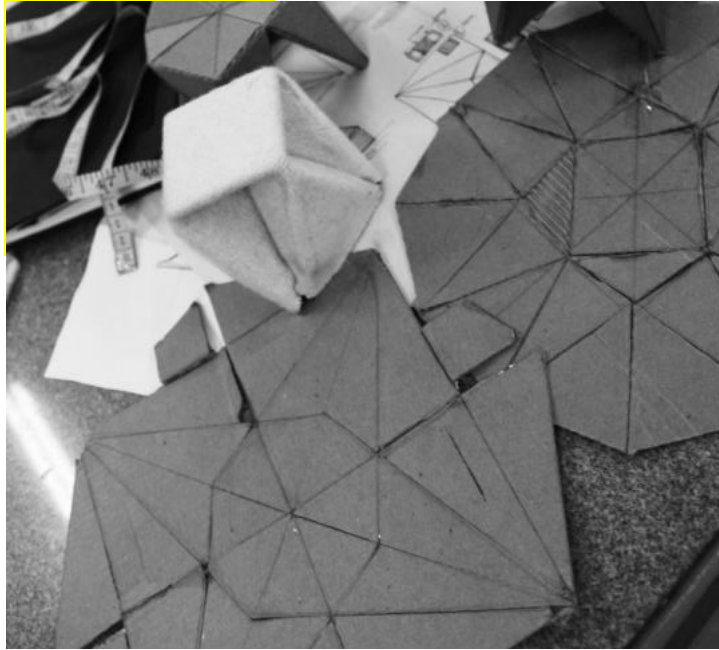


72| Iteration in cuts and folds in map to come up with best suited fold that would require minimum joinery.

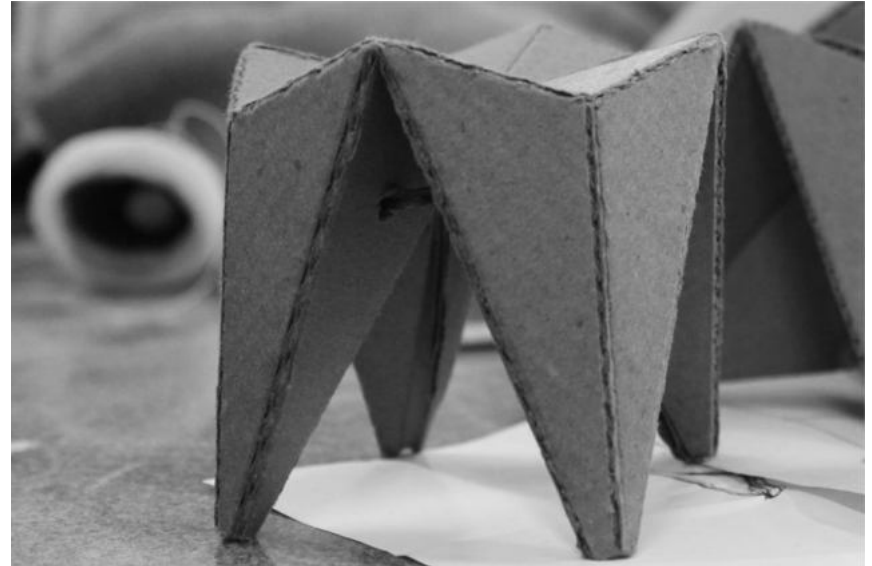
73| A rope running across the diameter to fix the stool (top right) in position

74| different folds to achieve different form (bottom left)

75| Added flaps in the mat to achieve a form for central joint (bottom right)



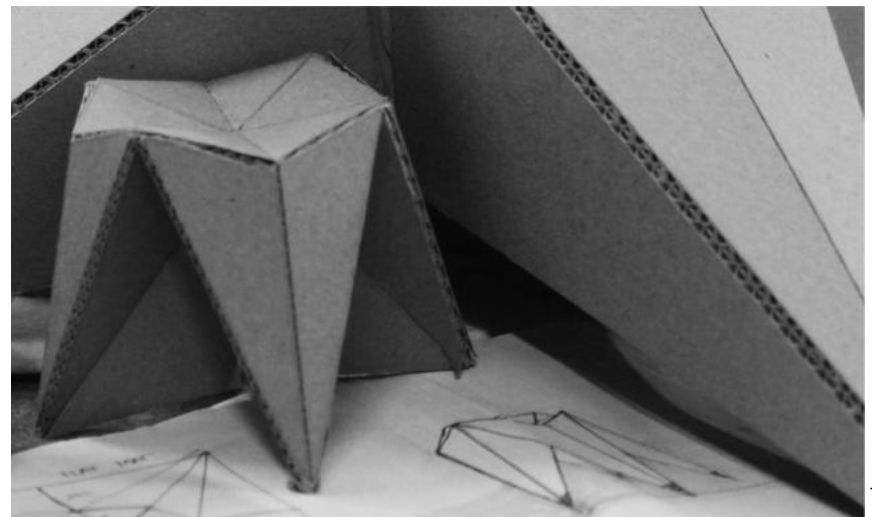
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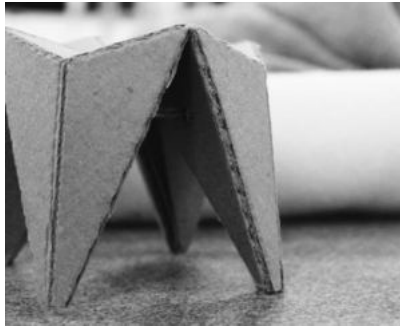
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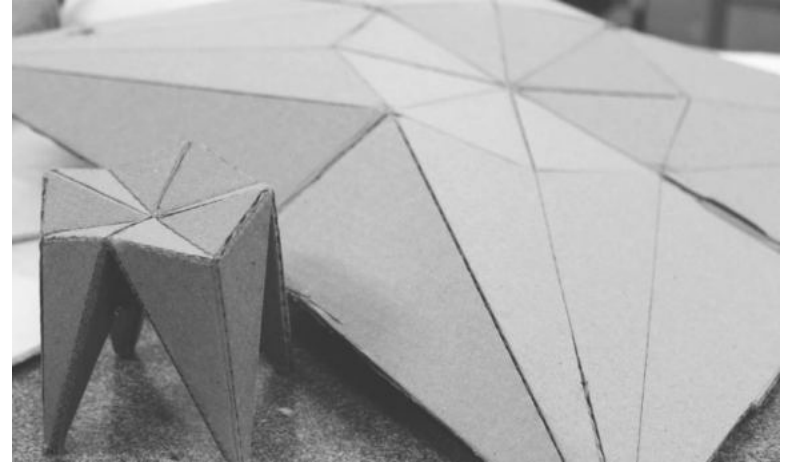
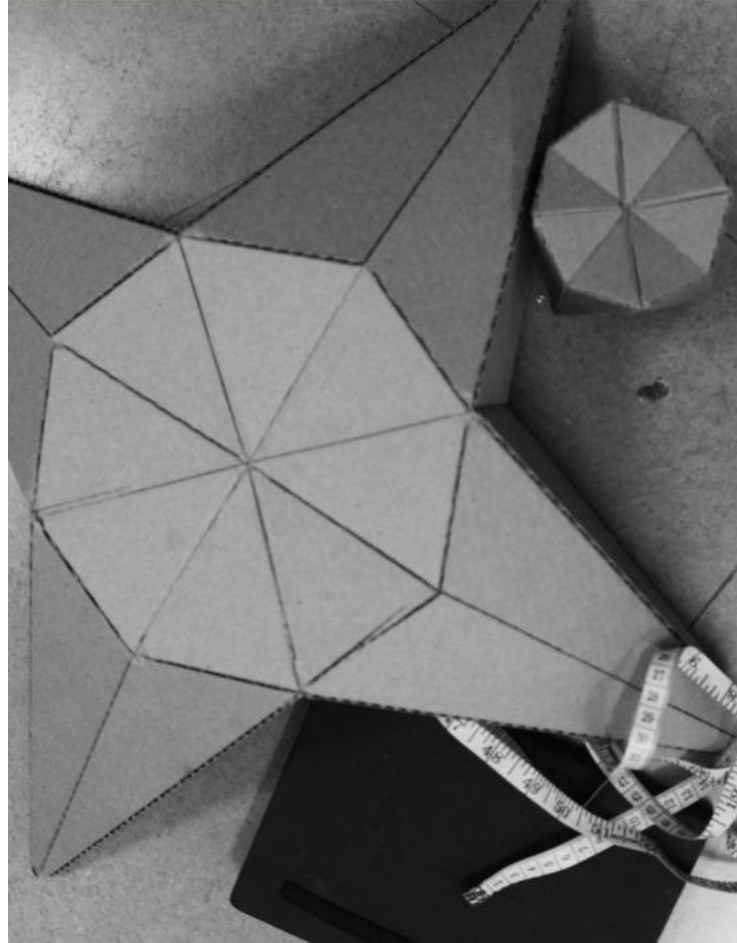
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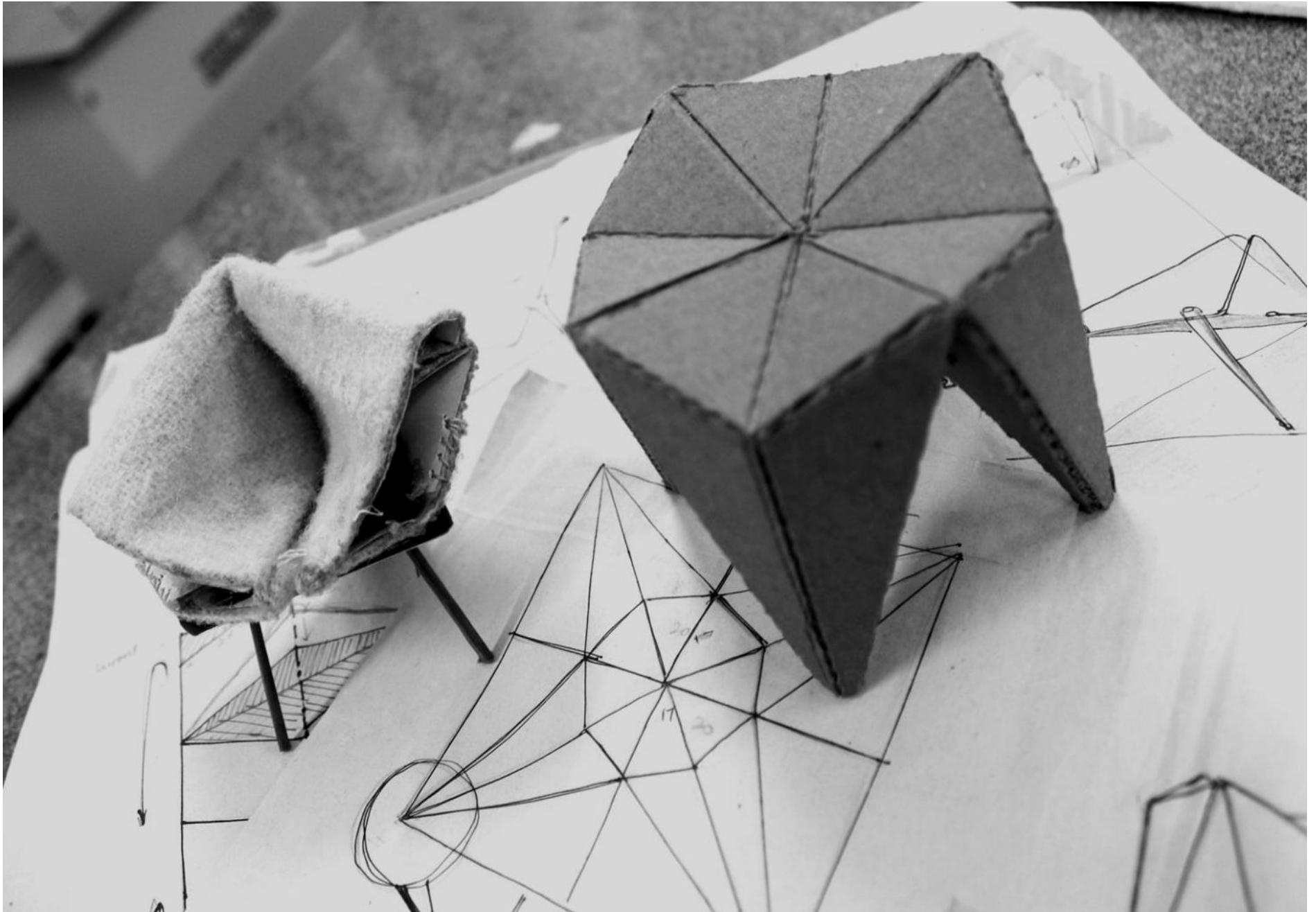
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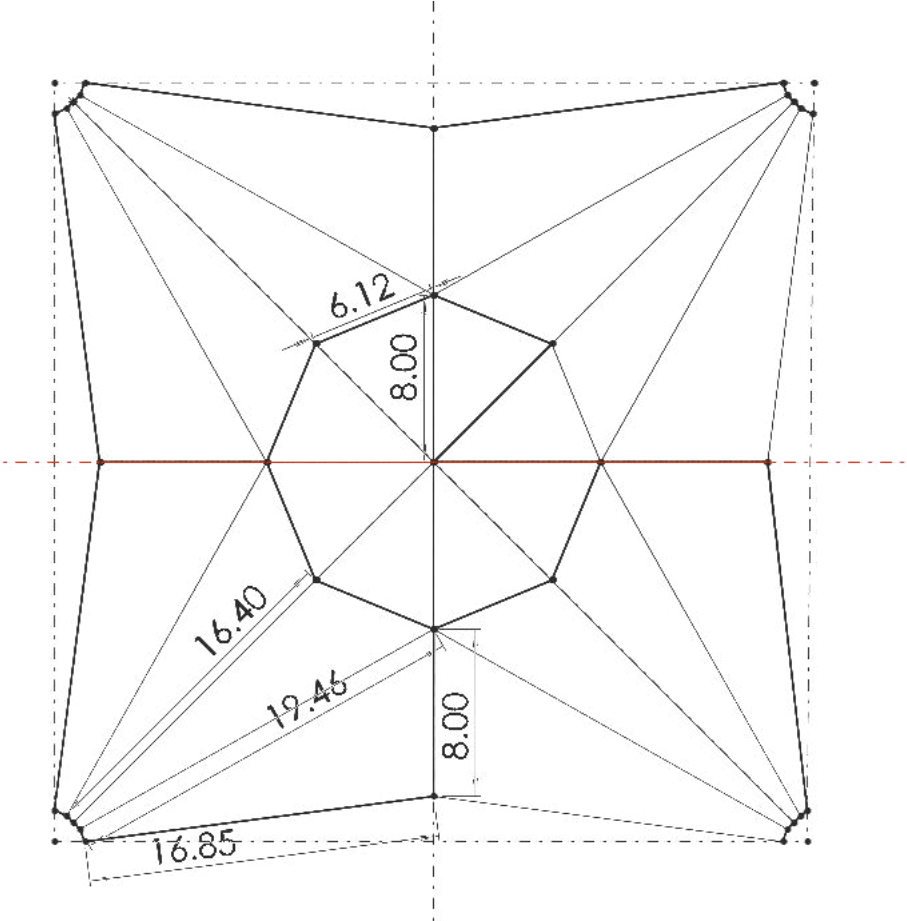


80| Mock up for the concept showings scaled model of the stool with half folded mat





DIMENSIONAL DRAWINGS

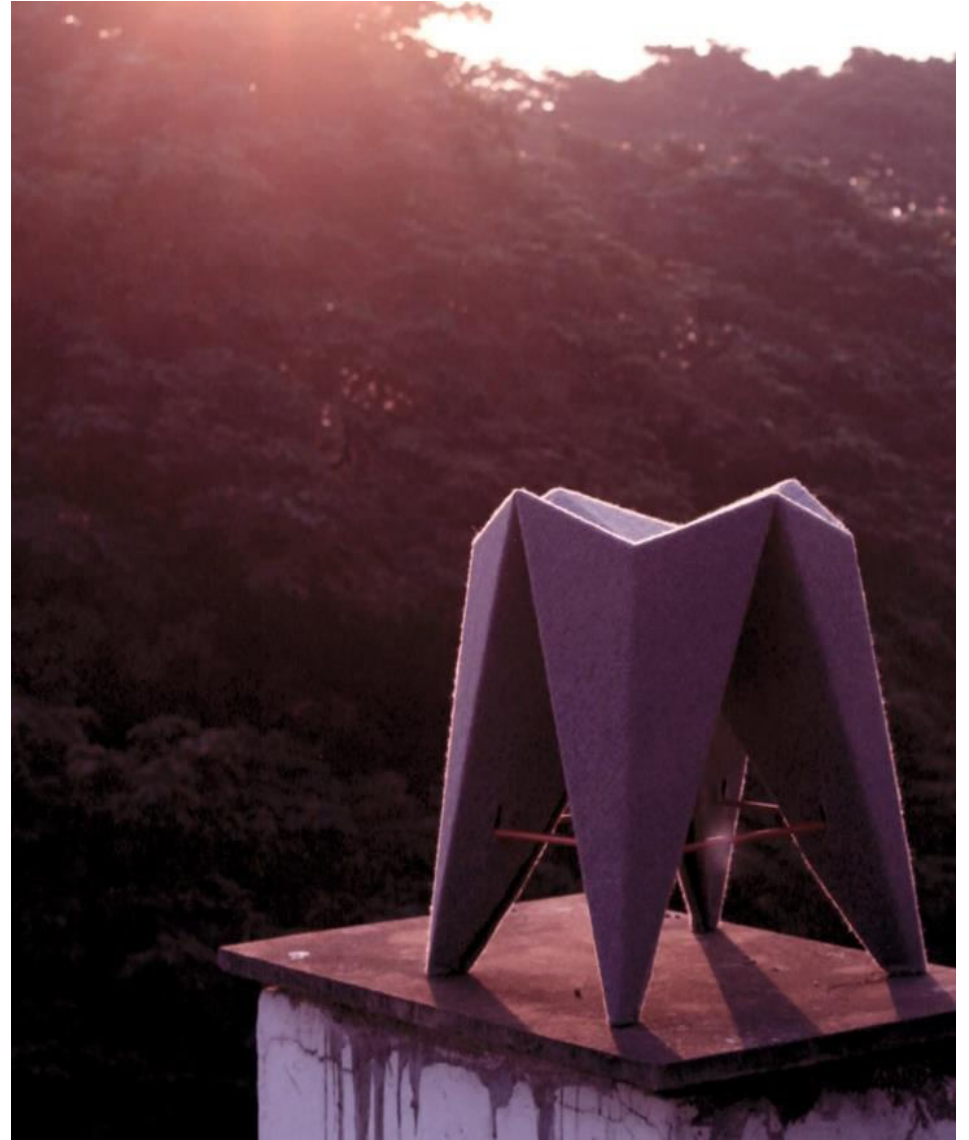


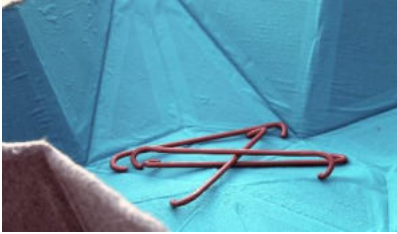
A| layout to be etched on cardboard with mountain and valley folds for appropriate structure and strength

FOUR FOLD

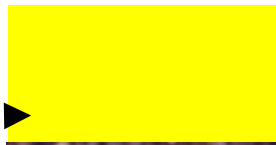


83|





84|



85| A flat mat folded to make a one seater stool .The Concept doesn't just validate origami in terms of form but also the action of creating volume and rigid surfaces out of a plain sheet.

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- C.2 <http://www.ayaskan.com/>
- C.3 <http://www.hometone.com>