



Politecnico di Milano
School of design
Master of science in
Design for the fashion system

TRANSFORMABLE

BAG DESIGN

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Abstract

From the analysis of the handbags history from ancient times to the present, handbags have been strongly influenced by technological and societal changes. Handbags is the same with clothing regardless of its origin, development, or characteristics. Modern women have more choices, more accessories, with their everyday clothing, the fast-paced life makes people abandoned the flashy items. Handbags became more practical because of the diverse social activities. Different from the traditional handbag, Modern handbag design should to take into account the needs of modern life and the emergence of new lifestyles. Efficient and practical fashion goods such as clothes and handbags which is easy to accept by more young people. In this thesis I explores the transforming fashion and transforming bags design in order to figure out how a product can change in a variety way. And then talk about the smart materials and technology which can help in the transforming process.

This project want to provide a collection of bag which is transformable, can be changed into several shapes, from flat to the three-dimensional, the inspiration came from origami and classic paper bags designs, using the folding techniques to achieve deformation effect. The goal is to transform a flat sheet square into a finished sculpture through folding and sculpting techniques.

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Chapter 1

History of handbags



← F1 : Belt bag, 14th century



← F2 : Handmade girdle purse, made for Marquart von Sternberg. 1370s

1.1 Origin and Development

14-17th century - At the beginning of human civilization, the pocket wasn't introduced into clothing design. Handbags were created as an essential component until the 13th century. In the 14th century the term "handbag" and "bag" began. By the 1400's both men and women used handbags, they would adorn their handbags to reflect their wealth and social status. And according to different uses, it is designed into a variety of styles, such as bags with clasps, leather pouches and purses with long drawstrings and differs according to the fashion trend, lifestyle and status of the owner. In this century handbags started to become a well-known accessories, more and more people would have heard of handbags than ever. There is a kind of handbag that appeared in the 14th century and had been used till the 16th century that called belt bag. It was a small bag made from calf and goat skins and possibly other fabrics. It had a looped handle which could be attached to the belts. In the 16th and 17th centuries, handbags have more practical features. Most women wore girdle pouches under their expensive petticoats. As embroidery became a trend in the 17th century, girls began to learn embroidery skills since a little age as an essential value for marriage when they grow up. This led to a rise in ornately stitched handbags development.

18th century - In the 18th century, the French revolution led to a great change all around the world. Before the French revolution full skirts were very popular. Women's fashion is correspondingly changing under the influence of this movement, the waistline moved up towards the chest, the dress is more slender. There is no extra space for the pocket in this special shape dress. The ladies all go to looking for a handbag which can hold personal items. This is the time handbags and purses became indispensable and people began to realize their importance. They called them "reticules". People use the purses not only for practical uses and functions, but also as a decoration.



↑ **F3 : A silk embroidered 17th century wallet used or transporting letters.**

19-20th century - The 19th century is the Victorian Era, one of the most important periods in history which makes dramatic changes in both fashion and industry. In 1843 travel with rail road and train become fashionable, people need more items than usual but nothing significant had been made for this need, it requires portable luggage. The term 'handbag' was a result of this development. Technology was developing and new things emerging. Varieties of handbags emerged in terms of designs, materials, accents and colors. A kind of chatelaines mainly used for decorate belt hooks or clasps worn at the waist with a series of decorative accessories including a bag-like receptacle. It was fashionable for women to carry a handbag to match their outfit.

The 1920's there is a revolution in fashion. Women no longer concerned about if the bags match the outfit perfectly or not. In the 1930's the rise of art deco influenced fashion to a certain extent and creating new things for the fashion area. Many bags and purses created in different shape with different materials, such as plastics, beading and zippers.

F4 : Outlander Mid 18th century Peonies Dress →





← *F5 : Women in world war II with their matching shoulder bags.*

The 1940's , because of World War II, there is a shortage of supplies, handbags suddenly become a luxury, ladies' bags most made of rough canvas material or some material easy to get, designers design a series of shopping bags and bike bags. All the bags during the 1940's became a lot bigger more practical. After the war about the 1950s, post-war economic situation push handbags to icon status. It was not just about social status and social economic divides but also about accessorizing your outfits with the more match handbags you had. The biggest thing in the 1950's was emerging of design houses that came about; Chanel, Louis Vuitton and Hermes. In the early 1980's the sports bags become popular because that people start concerning about health and fitness. As the 1990's designer handbags begun to appear in front of us, they finally become the most wanted fashion accessories ever and will never die out as the trend shows.



F6 : France - Handbag by Hermès – Crocodile, lined with leather and silver, 1931 →

21th century - 21th century, bags has become a symbol of identity and the Nobility. In the middle century, people's lives are filled with electronic product. As the rise of laptops, messenger bags, camera bags become popular among young people. Later, the bag world become diverse, the prevalence of minimalism, the embroidery, the applications of animal fur, such as snakeskin, leopard skin, crocodile skin. For centuries, the trend of fashion accessories like fashion, keeps changing rapidly. The status of bag is increasing and become an indispensable part of ladies' dressing gradually. In a sense, bag accessory has become a symbol of status and identity. Nowadays the fashion surround us everywhere with named brands, exclusive shops, mean to create a lifestyle for ordinary people based on their brand culture. Based on different mainstream culture, different economic situations, different occasions, Woman's bag has evolved a variety of forms constantly. Change in the world of style, technology and culture have greatly influenced what we see in a handbag today.



1.2 Traditional Handbag Vs Contemporary Handbags

Handbags are not just appeared in modern times, in old times people would use them to take their own personal items, we call them traditional handbags of the old times and now we call them contemporary handbags.

Difference

People of old times store their items depending on the size of the bag are called traditional handbags. Traditional handbags were made for practical uses, typically it has regional characteristics and they represent the human civilization. People use the materials which were easy to obtain from natural world and with excellent workability to processing, traditional handicrafts, has a unique artistic style. Traditional handbags had variety of types, such as a bilum bag, a shoulder bag made of baobab tree fibres, Ojibwa bag, Yoruba Diviner's bag, Burmese Kachin bag or wallet, Scandinavian Sámi purse, Betel bag, modern handbag in a traditional Hakka Chinese-style floral, etc.

Contemporary handbags have a great innovation and progress in materials, processes and technology compared with traditional handbags. And always keeping up with fashion trends. Spawned a lot of brands, each brand has its own characteristics and styles. Such as, Chanel, LV, Hermes, Gucci. In appearance, the variety of materials and modern technology give the possibilities to the design, it had been more beautiful compared to the traditional handbag. In terms of structure, the internal structure is more complex, functionality has improved to cope with modern life. Types of contemporary handbags include the tote, the messenger bag, the backpack, the satchel bags, wallets, pouches, shoulder strap bags, cosmetic bags, duffel bags, the hobo bag and many others.



↑ **F8 : Old Bilum Bag Papua New Guinea
Ceremonial Bag Mixed Shells Vintage
Oceanic Collectible**



↑ **F9 : Yoruba Beaded Cloth and Leather
Diviner's Bandolier Bag**

1.3 Contemporary handbags and it's significance

From the analyses of the history of the handbags from ancient times to the present. Handbags have been strongly influenced by technological and societal changes, such as the development of money, jewelry, transportation, cosmetics, smoking, cell phones, and social division. Handbags is the same with clothing regardless of its origin, development, or characteristics, there is an evolving process with the political, economic and cultural development, changing with changes in market and consumer demand.

After the 20th century, Modern women have more choices, more accessories, with their everyday clothing, in order to highlight their individuality and enhance personal charm, bringing aesthetic enjoyment. Different from the traditional handbag, Modern handbag design should to take into account the needs of modern life and the emergence of new lifestyles. With an eye on urbanization, population growth and efficiency, tiny spaces were a big theme at this era. According to the United Nation's World Urbanization Prospects 2014 report, Urban housing supplies are already straining worldwide with 54% of the global population of 7.2 billion living in cities. As the economy and lifestyles change the need for combining purposes within the home to save space is a necessity. Modern furniture has always been a minimalist and innovative design strategy. Modern home accessories has been focus on space saving ideas. The innovations in its multi-purposes, function, and appealing design make it the perfect solution to any size space.

Efficient and practical fashion goods such as clothes and handbags which is easy to accept by more young people. Modern women have multi-faceted lives, modern clothes must address a lifestyle that includes work, family, sport and travel. As well as handbags had became more practical because of the diverse social activities. There came more variety, such as the briefcases for work, strolling and visiting bags for daytime, elegant evening bags. So the changeable properties of a bag can bring an unlimited possibilities such as multiple uses to achieve it's contemporary significance.



↑ *F10 : Chanel 2.55 bag*



↑ *F11 : Longchamp tote bag*



↑ *F12 : A Clutch made by 3D printing*



↑ *F13 : Backpack, textiles change with the environment*

Chapter 2

Transforming fashion

2.1 What is transforming fashion?

"Digital technology is such a fundamental part of everything we do. It is part of our culture and the way we communicate and we are always exploring all the different ways to make something more exciting or a better experience for a consumer or employee through technology." - Christopher Bailey [1]

When the fashion what particular about the inheritance of beauty met the technology with creativity which refresh our eyes, and their collision is not fierce like Mars clashes Earth but interactive in harmony. It is neither simply a futuristic clothing styles nor a single technology product cross-border, but a new "Hi-tech" Style.

The era of advance science and technology, every new technology and every new product come out, almost always bring a consumption boom sweeping the world. While the big fashion certainly won't miss this feast of science and technology, they take part in this torrent of high-tech with a built-in program or provide packaging and other ways to participate in the design. To arm themselves with the latest high-tech is the future trends of every fashion brand and fashion media.

The birth of the new high-tech fabrics, allow human beings can withstand the increasingly harsh climate on the planet, communications, networks, and other trendy stuff will become standard components. Should this happen, all the known pop elements and classic silhouette can be displayed in the high-tech materials arbitrarily.

Today's fashion contest, not only the product style and marketing contest, but also the contest for high-tech, technology and fashion always complement each other. High-tech fashion design and produce fashion products through science and technology advancement. The technique used in high-tech fashion derives from technologies developed in chemistry, computer science, aerospace engineering, automotive engineering, architecture, industrial textiles, and competitive athletic wear. Fashion projects rapid change and forward thinking, it is good to use the latest technologies in producing methods and materials. As technology becomes more related with one's everyday life, its influence on the fashion everyone wears continues to increase.

What is transforming fashion ?

Transforming fashion refers that through the assistance of high technology or special material, fashion design products can be automatically or manually changes in some aspects, such as color, form and scale.

[1] **Christopher Paul Bailey** MBE (born 11 May 1971) is the chief creative and chief executive officer (CEO) of Burberry



2.2 Transformable apparel design

- **Changing the color**

"I kept the forms and materials simple, but I tried something new by changing colors" - Kunihiro Morinaga [2] Anrealage combined technology and fabric together, to create new breakthroughs.

The ANREALAGE Fall / Winter 2013 Collection "COLOR" showed with simple styles of clothes like jackets and coats which printed with flower, stripes, and patchwork resembled checkered patterns. But, these seemingly ordinary clothes had their unusual aspects. As the table turned around, the garments showered with lights and begin to turn green or purple. Parts of dots, flowers, camouflage, and more patterns appear streaked in cyan and yellow gradually.

Because the garments are made from dyes and threads which contain chemical compounds called photochromic. The innovative fabrics are all UV-sensitive, so that to turn all-white looks to colorful pastel ensembles under UV Light. The colors of the garments change once showered with UV rays outdoors and the colors return to white under fluorescent light indoors. The material will change color due to the heat generated by the light, and not because of a certain type of light. Special lighting equipment is set up at the venue to create an installation. The amazing garments transforming color presented above caused by the photochromic dyes and threads. This is one method to changing color, there also some other ways to changing color.

[2] **Kunihiro Morinaga**, the creative director of cult Japanese label Anrealage.



F15 : The ANREALAGE Fall / Winter 2013 Collection "COLOR"



F16 : Rainbow Winters, The "Rainforest", Water and Sun Reactive Dress

Rainbow Winters is a unique clothing line designed by Amy Konstanze Mercedes Rainbow Winters featuring printed garments that change color in response to sunlight, water, and sound. It is a responsive clothing line printed with thermochromic and hydrochromic inks that interact with the elements. The 'rainforest' showpiece changes color on reaction to sunlight and water, morphing from a black and white world into living color. Without sunlight or water the flower and bodice remained white. Sunlight activated the flower turn purple. Water activated dress transforms the flower and bodice into full color. The water-reactive ink disappears revealing the color underneath the dress whilst the sun-reactive ink turns purple. Interactive fabrics always contain thermochromic, photochromic or hydrochromic inks, changing color in response to sunlight, UV light, water, sound or stretch and transforms before your eyes, switching patterns at different viewing angles. In a certain sense, changing color means changing patterns, it takes more possibilities into design.



F18 : The underpinnings of the transforming dress, Hussein Chalayan, 2007

- **Changing the form**

"If you don't take risks in the world, nothing happens, you just stay static" – Hussein Chalayan

In the Paris Fashion Week Spring-Summer 2007, a high-tech dress which can be raised and closure by remote control were highly anticipated. The transforming process is really amazing, the hat narrowing, the brim spinning like fan blades, the collar of dress start to shrink, the coat changes from large to small automatically, the front fly open, exposing the skirt inside, the skirt getting shorter and shorter, skirt louvers fluffly high and the surface appear many small solar panels.

Hussein Chalayan use shape memory fiber to create this dress, to achieve the effect of deformation of clothing. Wires within the tubes connect to motors at the bottom of the dress. The motors reel in wires attached to the outer layer of the garment, altering its shape.



F17 : Transformer dress by Hussein Chalayan, 2007



What the "transforming dress" used is the shape memory fibers. Shape memory fiber containing cereal starch material, the fabric has a comfortable feel, it is soft, shiny and bright, can be compared with silk. And, because of its purely biological property, it's skin-friendly, it offers excellent performance in moisture absorption and UV-resistant, antibacterial, mildew resistance. This material can also be completely biodegradable, it is a perfect eco-friendly, green fibers.

However, the most distinctive feature is its memory. By increasing surface friction of the fiber, the shape treated will be retained, it's like having a "memory" function. If you rub this fabric by hand, it will wrinkled, but soon the wrinkles will disappear and return back to the original shape.

Thus, memory fiber can always "remember" its original shape that the designer assigned to it. The treated fiber change its' shape at a lower temperature or external compulsion. But it reinstate when been heated or washed. Hussein Chalayan's "transforming dress" fashion show achieve the effect of transforming through temperature and humidity control. Currently, the exploring of this shape memory fiber has arrived to product usage stage.

Another example of transforming dress in Hussein Chalayan's collection is his "airplane dress", a molded dress containing electronic components, that made it change its structure and reveal new shapes as the show went on, just like a plane adjusting its wings during a flight to catch the wind. When the model walked onto the runway, a little boy got on with a remote control in his hands. Then he started controlling the dress and making it change shapes.

This dress first shown in Chalayan's spring/summer 2000 collection. It is made of a composite material created from fiberglass and resin cast in a specially designed mold, it has side and rear flaps opening to reveal a lot of foam pink chiffon. These flaps are operated were operated mechanically by remote control. Chalayan explored ideas about the relationship between nature, culture, and technology.

The Hussein Chalayan Autumn Winter 2013 collection featured innovative two-in-one dresses that transform with a single tug and was inspired by "the dichotomy between domestically earthbound environments: disembodiment and metamorphosis". The garments designed for Chalayan's Black Line aim to combine daywear and evening apparel into a single garment. Garments are tugged at the neckline to release poppers across the shoulders and reveal a layer of material tucked beneath. This layer of fabric cascades down the body, hiding the previous top underneath and creating a new outfit.

These deformations controlled by the models manually pulling the collar, causing the outflow of the inner layer, As early as 2007, Hussein Chalayan had already been showed automatically transforming dresses with high technology. Use the restitution of memory metal at room temperature to complete the transformation.



↑ *F21 : Transforming dress by Hussein Chalayan, 2013*

In Hussein Chalayan's Paris Fashion Week show SS16, two models wearing white thigh-length jackets standing under a shower in the centre of the catwalk, as water poured down, their clothes completely dissolving, show another totally different form. It looks like a scientific experiment. In front of a live audience, these water soluble garments – white shirt dresses – disintegrated to reveal two different designs, dresses decorated with thick black stitching and white applique petals, each one attached with Swarovski crystals.

← *F20 : Dissolving outfits by Hussein Chalayan's SS2016*



F22 : 132 5. Issey Miyake Spring/Summer 2015

- **Changing the scale**

Japanese fashion designer Issey Miyake has designed a range of clothing that expand from two-dimensional geometric shapes into structured shirts, skirts, pants and dresses. It looks like paper-foldings as they take form from a flat piece of fabric. Issey Miyake Unfolds Origami-Inspired "132 5" Eco-Fashion Collection. Process informed work generated by Issey Miyake's Reality Lab. Flat surfaces are folded, creased and ultimately transformed using traditional origami sequential patterns. Unfolded and remapped, sequential.

Ten basic two-dimensional patterns make up the collection, the eventual garments being decided by the lines the patterns are cut along and their position. Many clothing variations can be created by utilizing the patterns in various scales and combinations.



F23 : Issey Miyake 1325 collection



1325 has a special meaning, the number "1" indicates that each item of clothing is made with a piece of cloth, "3" represents the three-dimensional silhouette, "2" indicates that the fabric folded with its two-dimensional shape, the last "5" means that every piece of clothing can have several ways to worn. Every garment of 1325 were used exquisite pleated fabric made from recycled polyester fibers. 1,2 and 3 till 5 different dimensions: the name of the collection implies to the temporal dimension, the one of the movement inside a space that each item of clothing needs.

At first glance, the pieces in the line look nothing like clothing. They resemble geometric pieces of fabric. How pieces of fabric which had been folded flat turned into dresses, jackets, shirts and tops when picked up (above)? Because they can be folded flat, the structured outfits are easily stored in one's cupboard.



F24 : Pieces of fabric turned into dress



This new idea derived from a chance encounter, someone in Miyake team someday happened to see Dr. Mitani's 3D origami model online, Miyake heard that and began to put the dynamic into fashion, so it took several years of him to study the shape and fabric, including one kind of new fabrics which is developed with Teijin Group, this is the fabric that soft and light and able to keep the crease after been folded.

The concept comes from origami and regeneration, the whole dress like a foldable 3D three-dimensional sculpture, after the folded flat turned into three-dimensional structure, to sewn into a skirt or blouse which can be worn on the body, for this series, Issey Miyake chose to use the material –re PET, made with recycled plastic bottles, after dyeing process, so that these fabrics has a special luster.



F25 : Dr. Mitani's 3D origami model

2.3 Transformable bag design

• BAO BAO : ISSEY MIYAKE

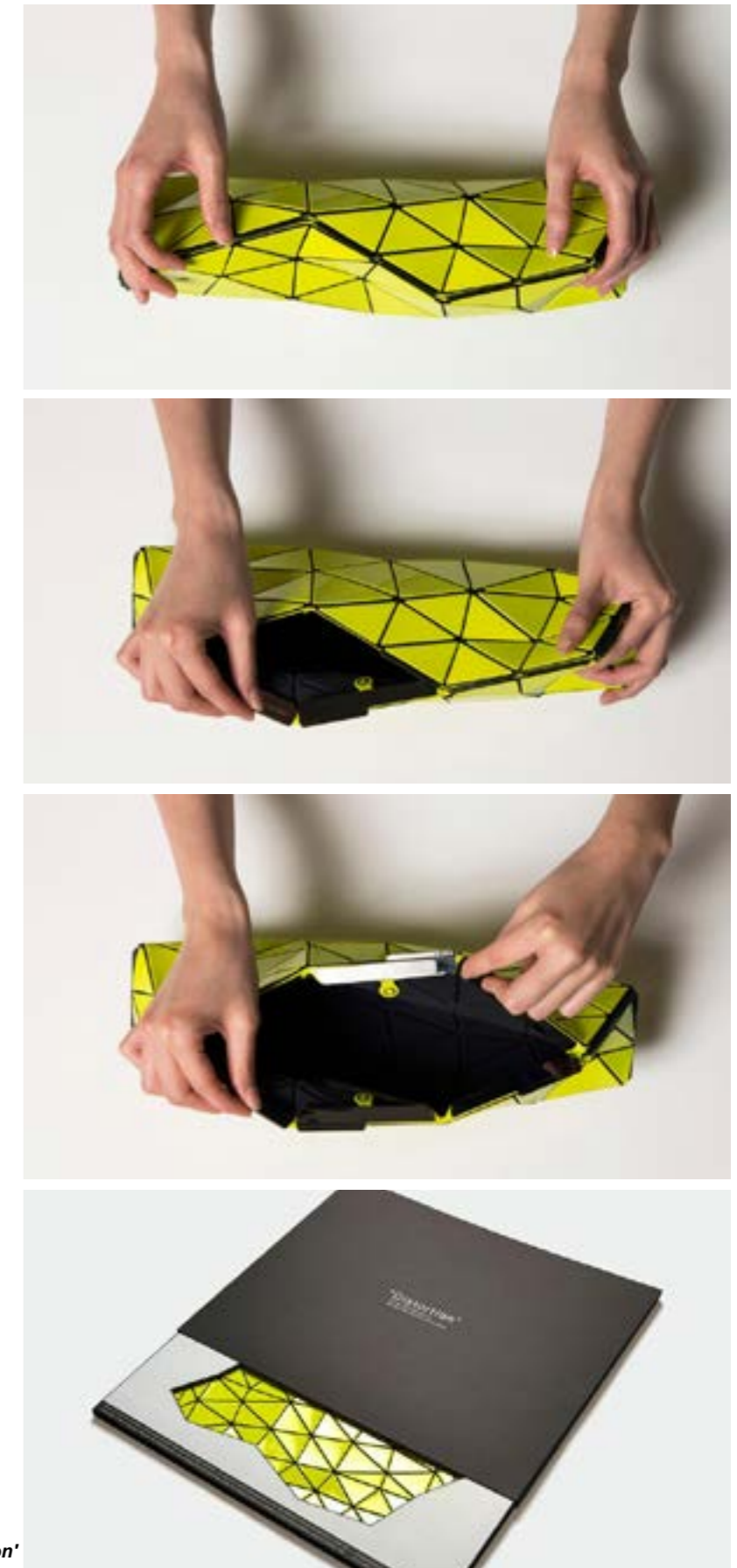
The gimmick of the design is the main strength of this masterpiece. The entire bag is made of triangle pieces which allow the bag can be folded into different shaped. The idea is "Shapes made by change". However, it is not just the bag which Miyake created that was created but traditional Japanese craft. Origami is the traditional Japanese paper folding craft, which has been practiced ever since the Edo period. Nowadays, Origami is not just a paper, it is a complicated beautiful structure that has inspired a lot of designers to design the collections with the patterns based on those of the Origami.

The design made of new materials and technology creates a unique sculptural silhouette. Both light and soft, it folds, accommodates and transforms itself after handling to create dramatic new shapes. BAO BAO ISSEY MIYAKE is a line of bags and pouches with the theme of "shapes made by chance." It features a flexible functionality perfect for busy modern lifestyles. Since its inception in 2000, it has established a unique array of products through its pursuit of shapes born out of simple pieces and diverse materials.

BAOBAs' biggest feature is that it can be distorted in any shape, the way they shape themselves around the content and the body, and this function evolved from the concept of geometry appearance, four triangles spliced into a square through proportional calculation and combination, and in accordance with different number of triangles arranged in variety of shapes. Beside the appearance, glossy metallic materials and colors are also a major feature of BAO BAO ISSEY MIYAKE, in addition to the basic white and black, a variety of bright colors make BAO BAO ISSEY MIYAKE cool and lively, presenting a kind of futuristic that common leather bags do not have. BaoBao bag by Issey Miyake is contemporary and super functional. Issey Miyake extends the meaning of accessories implementing the concept of functional art into our hectic lifestyle.



BAO BAO ISSEY MIYAKE and N&R Foldings have joined together to create a futuristic bag named Distortion. The bag comes in the form of a two-dimensional sheet with different triangular shapes, to be assembled by the purchasers themselves. The irregular shaped bag is constructed of triangular pieces attached to a kind of mesh material that through a series of steps transforms into a three-dimensional bag. The rigid triangles laid out on the flexible material give the bag its faceted, organic shape. With the help of metal pins, the bag stays together for you to use. As the sheet becomes three-dimensional, its form becomes distorted, which is how the name of the bag came to be. Available in limited numbers in the 3 colors- yellow, white or black.



F26 : Bao Bao park edition 'distortion'



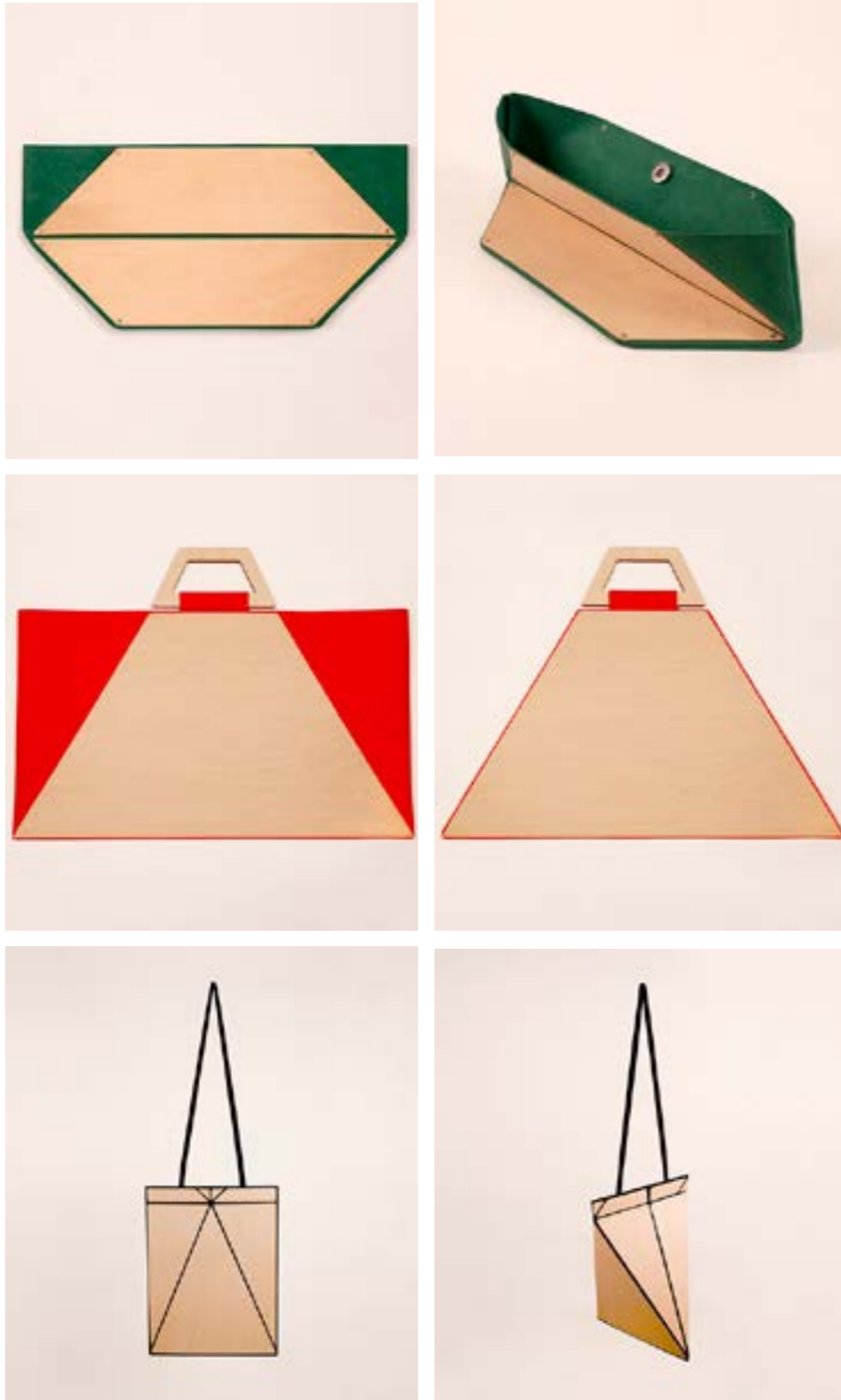
• PUZZLE BAG : LOEWE

The 'Puzzle' bag is the first new bag designed by Jonathan Anderson for Loewe, and was first introduced in June 2014 at the Men's SS15 collection presentation in Paris. "It was about deconstructing a conventional bag to create a flat object with a tri-dimensional function." Name implies, this handbags is smart and changeable just like a "puzzle", this three-dimensional design is super unique, different shapes of leather material gather together, it's like to deconstruct the rectangular cube, showing a wonderful geometric three-dimensional, unprecedented shape, the structure and material combinate perfect. At the same time Puzzle Bag can also be folded flat, it's easy to store. There are five different methods to wear it: crossbody, messenger, over the shoulder, satchel style, or even remove straps to make it a very popular Clutch. The Puzzle bag is composed of 41 different leathers, 9 textile pieces, 45 cloth armors, plus the metallic and zippers.

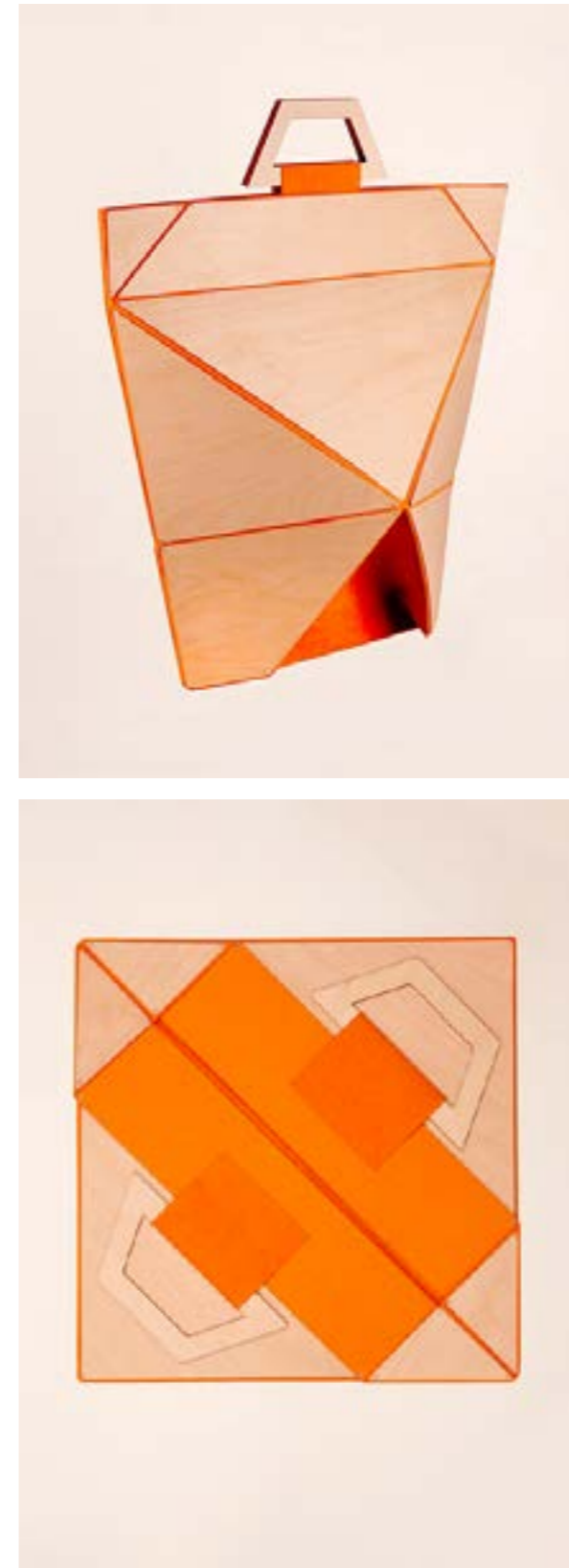
For the Fall/Winter 2015 season, the Puzzle was presented in dégradé tones of blue, green, and pink suede, and also available in an extra-large size for men and a large size for women. The strap designed with only two metal studs for length adjustment, reducing the weight of the handbag greatly. Besides the flexible straps, PUZZLE can change the shape and size vary with different wear method. Loewe bags with the theme of origami has several themes such as Loewe origami cubo. Loewe pillow unique and elegant origami, Origami Lia Loewe and fashionable. Fun and unique, the Origami Ala Tote is more than just its appearance of being a beautifully colored tote bag. Made with soft Napa, the bag is lined with suede on its interior, this bag not only encompasses the art of origami, the Origami Collection might be Loewe's greatest fashion invention ever – a bag that can be folded and hide under your bed, saving you a lot of space.



↑ F27 : Production process of a LOEWE puzzle bag



F28 : Facet bag by YINGXI ZHOU



• FACET BAG : YINGXI ZHOU

The 'facet' line of bags by maryland-based designer yingxi zhou consist of angular structures that are influenced by origami forms. She named this collection of bags "Facet" to resembling a folded piece of wood transformed into a bag. Origami was the main inspiration of this project, as you can clearly see that each Facet bag features unique origami shapes. The malleable shapes are made from maple veneers and fabrics to create a series that is well-suited for storage and shipping when folded, and serve as a useful geometric container when not. each of the pieces from the range can be broken down to lie flat, and the fashion accessories are also available in a variety of different colors and sizes. This series consists of 5 colors and sizes— tote bags, clutches in red, orange, blue and green. Each bag is unique and appealing in its origami shape.

• OMNI BAG : KUMEKO



↑ F29 : The Omni bag

The Omni bag is designed by Kumeko, a Prague based design studio, Designer Alexandra Fefelova says : ' A big part of the Kumeko ethos is the focus on preserving old-fashioned handcrafting techniques', Omni comes in four sizes: the smallest is essentially a purse, and the largest is sized for laundry or storage. we can change the shape of the bags according to our needs. Considerate user details will be seen, especially for city-dwellers in small apartments,

in the Omni's Transformer-like versatility. The smaller two bags can transform into three different shapes, and the larger two have four possible iterations. And once emptied, they all pack flat and stow neatly away. They are pure white with nothing unnecessary decoration and are made of strong tarpaulin, which is a kind of durable and waterproof material which suits many occasions easily.

• AKANBE BAG : TAKASHI HOJO



↑ F30 : A KANBE BAG, TAKASHI HOJO

This multi-purpose bag design by takashi hojo, it has an eye-catching and fun format. It can transform freely between a tote bag and a sheet with a smile face button. The easy to fold "Akanbe" bag with amusing face smileys as handles makes it a pretty convenient item to lug around for a picnic day. This soft felt basket has a cute face, but it's much sturdier than it looks. Made from a single sheet of felt, it folds up into a convenient and portable tote bag or basket, perfect for storing magazines and toys, carting groceries etc. Made of felt and cute as a button, this tote is sturdier than it looks. Indoors or outdoors. The Akanbe tote even collapses to be conveniently used as a sheet. Simplify life with a whole lot of fun.



• **2UNFOLD : HARD GRAFT**

The 2UNFOLD is a unique laptop case and bag that can be worn in a variety of ways. It's really comfortable to haul around as it has a number of different carrying positions, and loads of extra storage for your other stuff. 2Unfold laptop bag from fashion design studio Hard Graft is a multi-use bag that's super versatile and has multi personalities. 2Unfold can be adjusted to your needs and used as a small backpack, a compact clutch, an urban briefcase, small messenger bag, a folio or a spacious shoulder bag. You can fold it and attach straps according to your wishes and use one bag for various occasions. You can use it as a briefcase for your 15" or 17" MacBook Pro, or as a shoulder bag or backpack. You can just as well fold it up into a courier bag to tuck in your 13" MacBook Pro.



↑ F31 : The 2UNFOLD bag

• **GABS : FRANCO GABBRIELLI**



Each Gabs Franco Gabrielli bag transforms and changes shape to amuse and surprise. Original and unique items to suit the seasons, occasions, clothing and mood, Gabs Franco Gabrielli bags evolve and transform according to the changing requirements of lifestyle, with a stunning elasticity and shape. A few simple steps to transform each Gabs bag into a new object, reinvent each model, making it compact, or giving new shapes and volumes.

Each bag has a pocket inside with zip closure and a leather insert that, if introduced, helps maintain the shape, allowing the perfect transformation from flat bag to bucket-style, to a boxy shape. Precious additions, such as small notebooks, are very useful when travelling or taking notes. A colored and functional shopping bag is also included in each model. The shoulder strap, present in every model, gives convenience and comfort to every bag.



↑ F32 : Gabs Franco Gabrielli bag

• YIELD PICNIC BAG: YIELD DESIGN CO.



← F33 : The Yield Picnic Bag

San Francisco-based Yield Design Co. created this multi-purpose Yield Picnic Bag that goes from being an everyday tote bag to a blanket. Made of a highly durable, camping grade water-resistant material, the bag will not only haul your lunch or even your groceries, it will turn into the perfect spot for you to sit on to enjoy a picnic on the fly. The Yield Picnic Bag unfolds from bag to blanket, accommodating anything from a day spent in the park to a quick break for lunch. The bag is designed for flexibility. The simple design utilizes one continuous zipper that not only opens the bag up, it functions as its handle when you're carrying it.



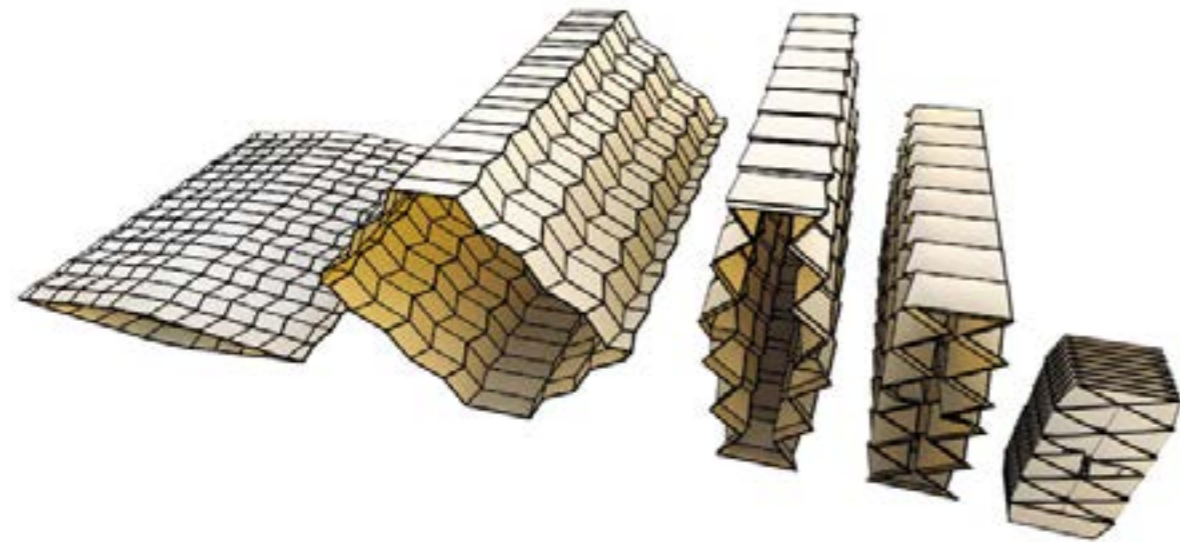
2.4 Folding techniques for creation

Folding Paper: The Infinite Possibilities of Origami, Paper was introduced to Japan from China around the 6th century AD, Origami is now attracting attention in the fields of science and technology as well. Using computer technology, engineers have developed design methods called computational origami, treating origami as a mathematical tool to expand the potential of a craft that was until recently a pastime for kids. The originality and methods of origami engineering are attracting worldwide attention, because they are being applied in many fields, from the space industry and automotive sector to medical treatment and fashion. Especially well known are miura-ori folds, a folding method developed for the design of structures for space exploration. Origami is unusual in a number of ways, especially the folding methods, how the object is formed, and its ability to be folded either in or out. All these features make origami concepts useful in building construction. The key to success, is to use flat "rigid origami" panels and assemble them into a strong, flexible structure. This traditional Japanese pastime for hands is being transformed by researchers in different parts of the world into cutting-edge technologies. Many designers use folding techniques in their work to make three-dimensional forms from two-dimensional sheets of fabric, cardboard, plastic, metal and many other materials, crease, pleat, bend, hem, gather, knot, hinge, corrugate, drape, twist, furl, crumple, collapse, wrinkle, facet, curve or wrap two-dimensional sheets of material and by these processes of folding, create three-dimensional objects. Since almost all objects are made from sheet materials (Such as fabric, plastic, sheet metal or cardboard), or are fabricated from components used to make sheet forms (such as bricks - a brick wall is a sheet form), folding can be considered one of the most common of all design techniques.





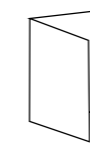
F34 : "Diamond-cut" can, applying miura-ori folds. The connecting triangles make the can stronger, while keeping it lightweight



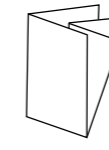
F35 : Rigid origami panels moved into different configurations. Beginning flat, the structure becomes a three-dimensional body with the potential for vertical and horizontal expansion. It can even be folded small.

Basic folding techniques

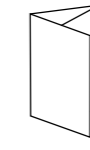
Only vertical and/or horizontal folding lines



Half Fold



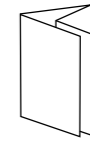
Cross Fold



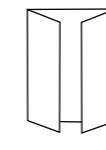
Tri Fold



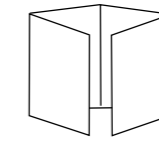
Roll Fold



Parallel Fold



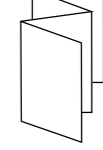
Gate Fold



Double Gate Fold

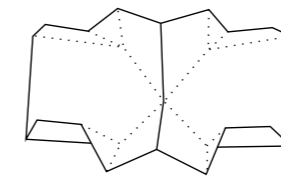


Z Fold

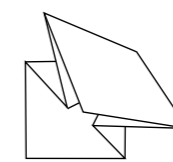


Accordion / Zigzag Fold

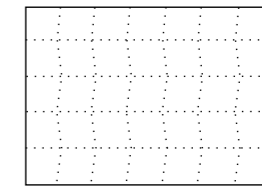
Including inclined folding lines



Pop-out Fold



Stauche Fold

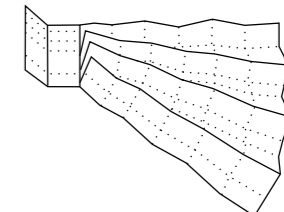


Miura Fold

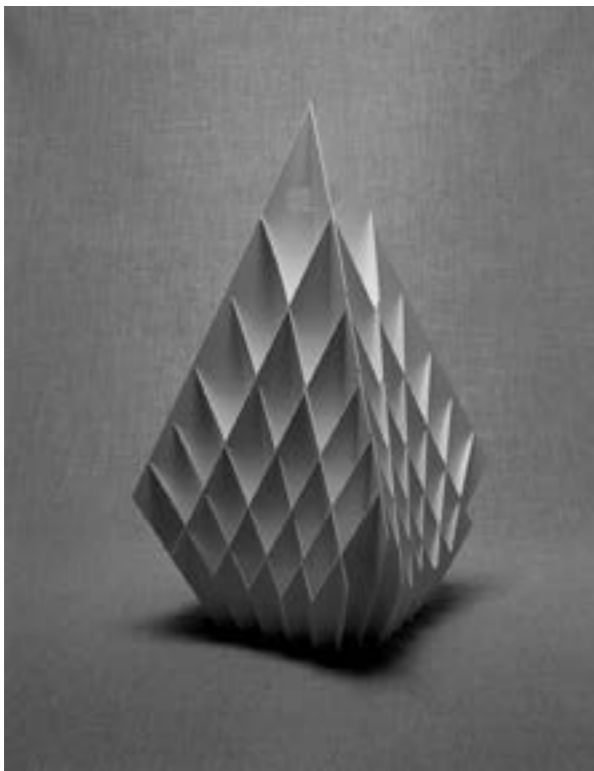
Including Slits



General Principle



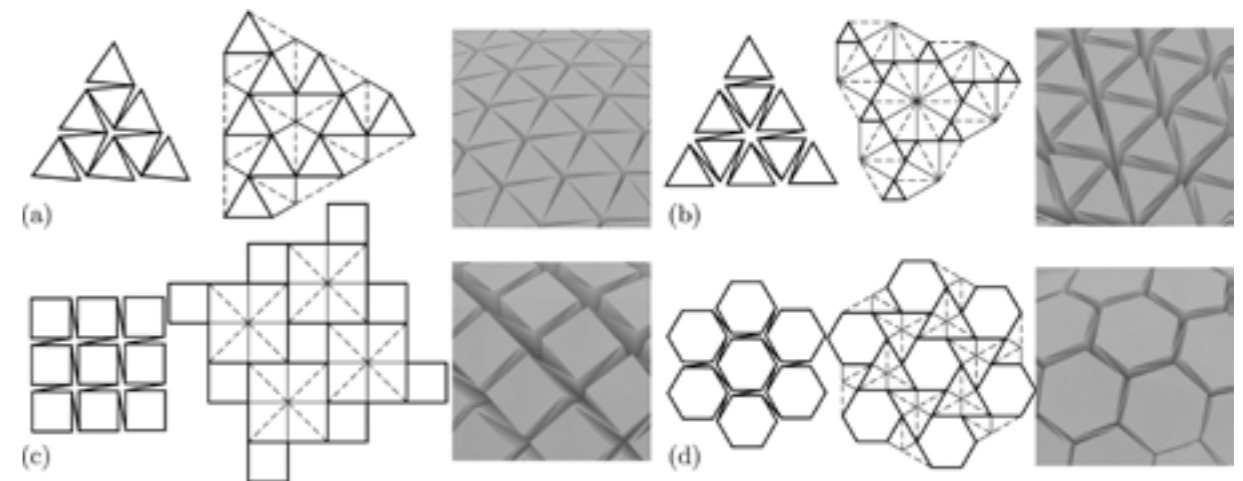
Falk Fold



F36 : Origami art pieces with ubiquitous of materials

Tessellations

Tessellations are the new trend in the origami world. A tessellation is a symmetrical design where the pieces fit together like a jigsaw puzzle with no gaps or overlaps. There are Corrugations, Molecules, Curved Tessellations, and so many other subcategories. That is the patterns you fold and which you can repeat over and over, extending the design. Classic origami tessellations always have an odd number of layers and produce interesting effects when the model is backlit. One layer will be slightly transparent, while the others will be progressively darker. Tessellations are usually folded in three steps only: Grid, Precrease (all other folds than the grid) and collapse. The principles used to make origami tessellations are based in geometry. Tessellations are usually made from grids that are created by dividing the paper into equal parts in both directions.



F37 : The application of rigid origami principles for a building

Chapter 3

Materials and technology

3.1 Techno materials and new fashion lifestyles

While traditional fabrication methods of weaving and knitting remain, new fabric and technologies are emerging gradually.

Knits are able to form seamless garments which shaped to fit any figure. The "Seamless garment technology" is the ultimate knitting technology in the weft knitting. Seamless technology provides highly elastic outerwear, underwear and elastic sportswear technology, neck, waist, buttocks and other parts do not need to seam molding, it's comfortable, thoughtful set of products, fashion and changes in one, and not only consumers love, but also deeply touched by the designers, and become the inspiration of theirs.

Nonwovens are cheap to produce and are adaptable to multiple end uses. Experimentation with a variety of finishing techniques for nonwovens has introduced a new aesthetic option for designers such as Hussein Chalayan, who fashioned dresses of Tyvek nonwoven fabrics.

Holographic fibers can be used to reflect colors and images from the wearer's surroundings. When fibers made into fabric applying with holography and light interference, clothes can obtain the color properties from the interference of light. This can provide new fabric color options. Adding with different active layers, the fibers can change their interference properties. Optical fiber incorporated into fabrics can be used to transmit messages.

New processes and experimentation makes sustainable clothing, it refers to fabrics made with eco-friendly fibers such as sustainably grown fiber crops or recycled materials like corn, soybeans and bamboo. It also refers to how these fabrics are made.



F38 : NIKE PRO ELITE KNIT: Seamless, breathable and lightweight

Another eco-friendly advancement is the genetic development of naturally colored cotton, naturally colored cotton is already colored, and thus do not require synthetic dyes during process, moreover, the color of fabrics made from naturally colored cotton does not become worn and fade away compared to dyed cotton fabrics.

Shape memory alloys (SMAs) made of nickel and titanium can be produced in wire or sheet form to be incorporated into fabrics that retain memory of their original shape.

Fabric finishes are providing new options for designers. Fabrics can be coated with microencapsulated substances such as vitamins, fragrances, insect repellents, or bacteriostats. Microspheres gradually release active agents by simple mechanical rubbing, when the tiny capsules burst, the substance is released onto the skin. Microencapsulation is also used in thermochromic and photochromic fabrics, which change color with changes in temperature or light. The fabrics themselves are not thermo or photochromic, but their microencapsulated colorings are. So far, thermochromic microencapsulation is almost entirely limited to the lingerie and swimwear sectors and industrial clothing such as protective and safety clothes.

Phase-change technology, produces fabrics that adapt to changes in temperature with the potential of providing garments that heat and cool the body. Phase change materials (PCMs) can be incorporated into fibers or sandwiched between layers of fabrics. The PCM can absorb and distribute excess heat throughout the fabric before storing it. As the environment cools, the PCM solidifies and releases the stored heat to the wearer.

Textile designers develop beautiful and practical fabrics through chemical and mechanical processes. Experimentation with simple finishing techniques, such as calendaring or mercerization, can give fabrics a variety of textures, from smooth and lustrous to crinkled or sculpted. The finishing process can greatly change a fabric's visual and tactile qualities as well as performance characteristics like stain resistance, wind resistance. Thermoplastic fibers can be molded with heat to create permanent three-dimensional surfaces.

Printing is another method of transforming the textile surface through experimentation with new technology. Ink-jet printing can move a design from the computer screen to the fabric with speed and flexibility. Relief printing with synthetic rubbers and metallic powders creates textural surfaces that are beautiful and functional.

Modern fashion is making convenience for consumer's changing electronic lifestyle, including garments with pockets design for mobile phones, sportswear with connections for electronic music players, and stylish handbags to put laptops. "Intelligent" fashions incorporating wearable computers, communication systems, positioning systems, and body sensors. Fashion is a reflection of the times, and thus incorporates current scientific and technological developments. Fashion changes constantly, and we can look forward to growing advanced materials and technologies or even new purposes for fashion.



F39 : The Optic Fiber Jellyfish Dress, Richard Nicoll, Ready to Wear Spring Summer 2015 Collection in London



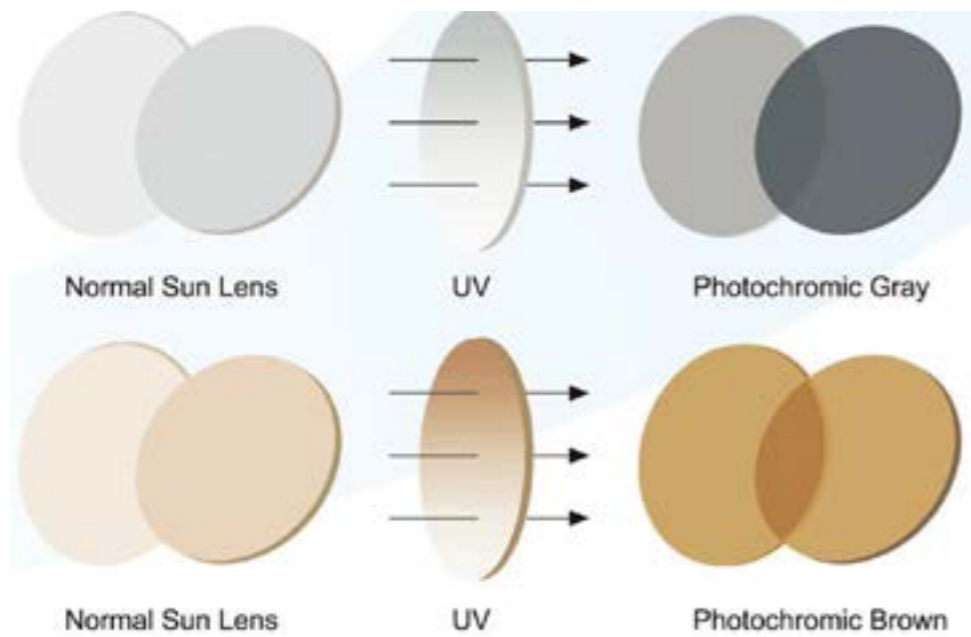
F40 : Tokyo Fiber Senseware '09 exhibition by Kenya Hara. SMASH™, a special polyester filament non-woven fabric, it's thermoplasticity, the shape can be easily changed when heated.



↑ *F41 : Digital print dress by Alexander Mcqueen SS 2010 fashion runways*

3.2 New materials make a variety of transformations

- Photochromic materials



F42 : Photochromic sunglasses



F43 : Photochromic screen print changes from clear to purple in sunlight, Amy Winter, Orange Petal Dress.

Photochromic materials change reversibly color with changes in light intensity. Radiation changes the material molecular structure and reveals the color. When the light source is removed, color disappears. Several organic molecules exhibit photochromism, but some inorganic compounds also do. Changes from one color to another color are possible mixing photochromic colors with base colors. They are used in paints, inks, and mixed to mold or casting materials for different applications. Light sensitive sunglasses darken in response to increased intensity/brightness of sunlight and so reducing glare e.g. when driving a car or when skiing at high altitude when the snow reflects extra light into your eyes. Transparent to visible light molecules when exposed to UV radiation change their shape and absorb part of visible light. Returning to lower UV level, molecules return to their previous shape and go back to transparent. Clothing can incorporate photochromic inks that have patterns that change with change in light conditions. Embroidery thread that change color when exposed to sunlight or other sources of UV.



- **Thermochromic materials**

Thermochromic substances change in color or become transparent depending on their temperature i.e. when the material is heated or cooled. Thermochromism is the change in color of a material with change in temperature. Thermochromic materials change color reversibly with changes in temperature i.e. rise or fall in temperature.

They can be designed to change color at a specific transition temperature (or narrow range), which can be varied by doping the material with other compounds. Thermochromic materials are used to make paints, inks or are mixed to moulding or casting materials for different applications.

Thermochromic dyes are based on mixtures of leuco dyes with suitable other chemicals, displaying a color change (usually between the colorless leuco form and the colored form) in dependence on temperature.

Thermochromic paints use of liquid crystals or leuco dye technology. After absorbing a certain amount of light or heat, the crystallic or molecular structure of the pigment reversibly changes in such a way that it absorbs and emits light at a different wavelength than at lower temperatures.

The thermochromic dyes or fabric is widely used in fashion design industry, Designers creating unlimited possibilities through combining technology and fashion, In the show, they make a stunning effect by changing the color of clothing at the scene, usually the stage set with a heating device, in the process of catwalk shows, the clothes is been heated to cause a color change.





F46 : Hydrochromic umbrella which changes color when rain falls

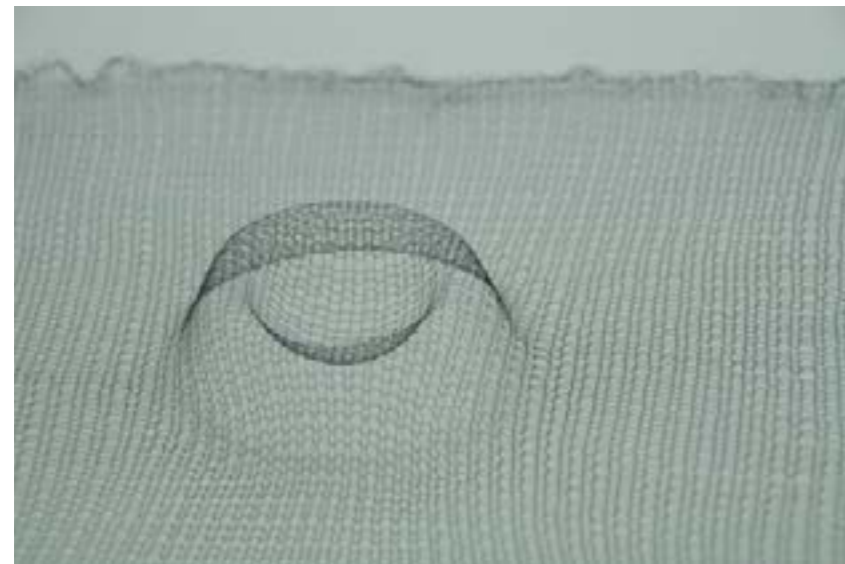
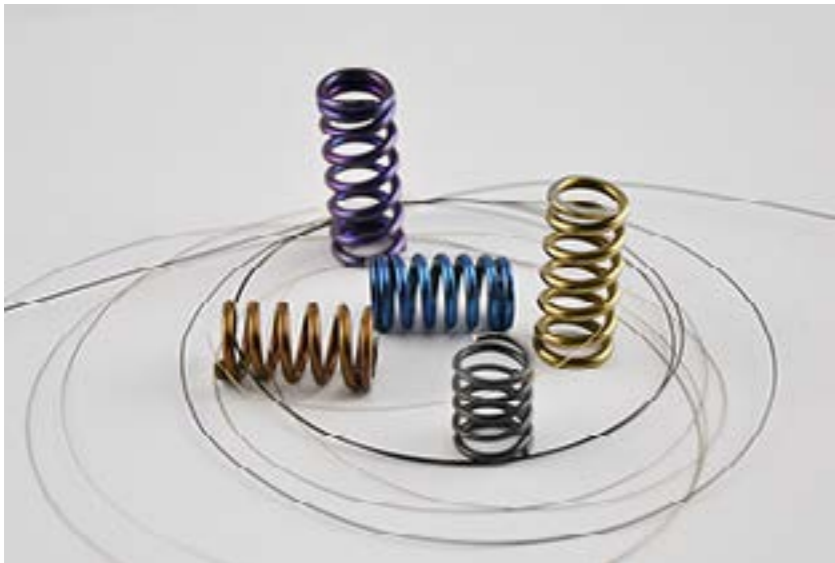


F47 : Hydrochromic swimwear - 4D Swimsuit after contact with water

• **Hydrochromic materials**

This material is one that change color when humidity increased. The color is reversible or irreversible. The nature color of reversible ink is white. As long as the ink encounters water, it becomes transparent and shows up the button color. When the moisture evaporated, it becomes nature color. The color of irreversible ink: Red, Yellow, Blue, Green, Black. As long as the ink encounters water, all the patterns or characters will become dimmed. When the moisture evaporated, all the patterns or characters cannot reverse.

F48 : Shape Memory Alloys Components



F49 : Thermally activated 3D textile with shape memory

- **Shape memory materials**

A shape-memory alloy (SMA, smart metal, memory metal, memory alloy, muscle wire, smart alloy) is an alloy that "remembers" its original shape and that when deformed returns to its pre-deformed shape when appropriately stimulated.

The two-way shape-memory is that the material remembers two different shapes: one at low temperatures, and one at the high-temperature shape. A material that shows a shape-memory effect during both heating and cooling is said to have two-way shape memory. Under normal circumstances, a shape-memory alloy "remembers" its low-temperature shape, but upon heating to recover the high-temperature shape, immediately "forgets" the low-temperature shape.

Shape Memory Alloys materials are capable of remembering a previously memorized shape and exert a useful force or support very high deformations, up to 10%, thanks to their Superelasticity properties.

Component makers can use Smartflex wires and springs to simplify products, add new functions, upgrade performance, improve reliability and cut down component costs, while significantly reducing mechanical complexity and size.

Shape-memory materials can be used in textile as clothing, yarn and fabric. The application possibilities are only limited by our imagination and creativity, so shape-memory productions have been able to gain a different aspect to textile.

Shape-memory Textiles These deployable textile structures are heat-treated to give shape-memory capabilities. When opened the structures will automatically re-fold into their packed state. Origami folding creates structure and transferable design templates that can be re-scaled for wide-ranging application.



F50 : Transforming dress use shape memory wire, Hussein Chalayan, 2007





↑ **F52 : Piezoelectric Dress**



↑ **F53 : 3D printed 2-string Piezoelectric Violin by MONAD Studio**

• **Piezoelectric materials**

Materials are able to transform energy from mechanical to electrical and vice-versa. They produce an electric field when deformed while the application of an electric field causes their deformation. They typically are ceramics and their deformation are very small. They are widely used for sensors (e.g. microphones, transducers) and for application in actuation.

Clothing could charge electronic gadgets by means of energy-generating fibers developed by materials scientists at the University of Bolton in the U.K. Inventor Elias Siores has created a flexible fiber that is both piezoelectric as well as photovoltaic , it can produce energy from movement and collect solar energy at the same time. And because it's flexible, it can be woven into garments. Along with the ability to charge electronics, piezoelectric clothing can also light up. Designers in the high-fashion world are taking piezoelectric technology into their creative fashion design.

3.3 Emerging technologies helps in processing process

- **Microencapsulation**

To combine the photochromic material and also the thermochromic material with the fabric, the earliest and most convenient way is printing and dyeing technology. Due to various reasons, these materials are often need to be made into microcapsules before treatment. For example some materials no affinity to the fiber, only after processed into microcapsules can they be fixed on the fiber by adhesive; some material need to prevent the effect of external factors, or only enclosed in microcapsules can maintain the condition of discoloration and leads to change.

The microencapsulation is the thermochromic (photochromic) compound or in combination with other additives (solvents, light stabilizers, etc.) together with natural or synthetic polymers or microbial film, after phase separation, interfacial reaction method, physical method wrapped into a few microns to tens of microns pellets, to avoid the effects of high temperature and other impurities, and to strengthen the contacts with other additives.

Microencapsulation is actually a micro packaging technique that involves the production of microcapsules which act as barrier walls of solids or liquids. It has been largely used in pharmaceutical field One major advantage of using microencapsulation technology is its ability to protect the active ingredients from hazardous environments, i.e. heat, acidity, alkalinity, moisture or evaporation It protects the ingredients from interacting with other compounds in the system, which may result in degradation.

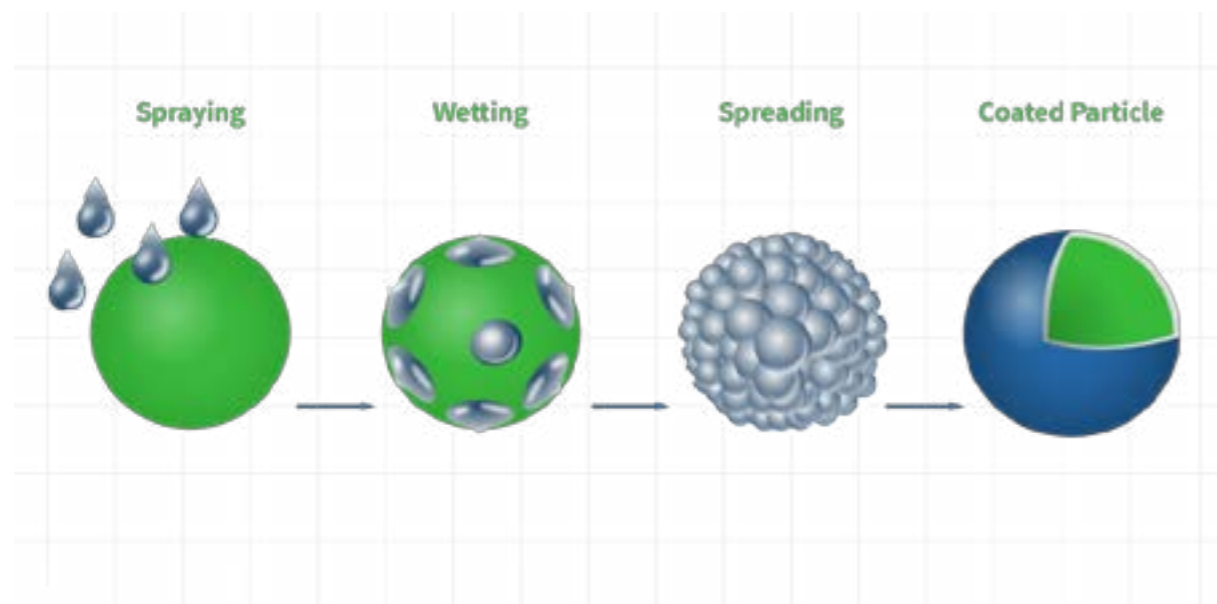
The release mechanisms of the core contents vary depending on the selection of wall materials and more importantly, its specific end uses. The core content may be released by friction, pressure, change of temperature, diffusion through the polymer wall, dissolution of the polymer wall coating, biodegradation etc.

Pigment printing use thermochromic (photochromic) dye powder mixed with a binder such as a resin solution, and then use this paste to print so as to obtain a thermochromic (photochromic) fabric.

Screen printing and rotative printing are commonly used for the printing process, it may also use ink jet and transfer printing, and the basic process is as follows: fabric treatment – printing - drying - baking. Drying temperature is 80 – 90 degree, overheating is bad for the stability of the microcapsules solvents and additives.



F54 : G04XF STONE ISLAND MARINA_HEAT REACTIVE Waistcoat microencapsulated with thermochromatic pigments changes colour according to the temperature, the molecules of the micro coloured pigments encapsulated in the fabric change colour gradually as the temperature rises, changing the shade of the jackets.



F55 : Microencapsulation Technology

- **Laser cutting**

What is laser cutting?

Laser cutting is a technology that uses a laser to cut materials, and is typically used for industrial manufacturing applications, but is also starting to be used by schools, small businesses, and hobbyists. Laser cutting works by directing the output of a high-power laser most commonly through optics. The focused laser beam is directed at the material, which then either melts, burns, vaporizes away, or is blown away by a jet of gas, leaving an edge with a high-quality surface finish. [3] Wikipedia.

The first usage of laser cutting machine took place in 1965 to drill holes in diamonds. Later in 1970, the lasers were adapted to cut non-metals like textiles. Laser cutting is a method of manufacturing that (surprise, surprise) uses a laser to cut materials. All of the advantages — extreme accuracy, clean cuts and sealed fabric edges to prevent fraying — make this method of design very popular in the fashion industry. Another benefit is that one method can be used to cut many different materials, like silk, nylon, leather, neoprene, polyester and cotton. Also, the cuts are made without any pressure on the fabric, meaning no part of the cutting process requires anything other than the laser to touch a garment. There are no unintended marks left on the fabric, which is particularly beneficial for delicate fabrics like silk and lace. Cutting fabric with a laser allows for extremely accurate cuts without ever touching the fabric. Laser cutting offers the kind of precision that you'd get if a design were done by hand, but at a much faster pace, making it more practical and also allowing for lower price points.

Today laser cut fashion is not restricted to clothes alone. It is used with Vinyl, Acrylic, Rubber and Leather as well. Especially true in the case of fine and delicate fabrics like silk, linen, chiffon and cotton. In the case of hand accessories like bags or in the case of footwear, laser cutting achieves remarkable results through cutting and shaping of very radical and new designs. Laser cut fashion has redefined the way clothing or other accessories can be personalized.





F57 : Screen printing

- **Screen printing**

It is like a rectangular and rigid loom, with metallic border in variable dimension, on which gauze, smearing with photosensitive gelatin, is fixed. Through photoengraving, a part of a permeable and micro perforated surface of gauze is occluded, remaining open only those parts, through which products, that will reproduce the chosen drawing on the textile, have to pass. It is necessary different screen for each color, which is in the considered drawing. With the screen printing process, you can't print two colors at the same time on the same surface. So you always need to print different colored areas of the design one after another

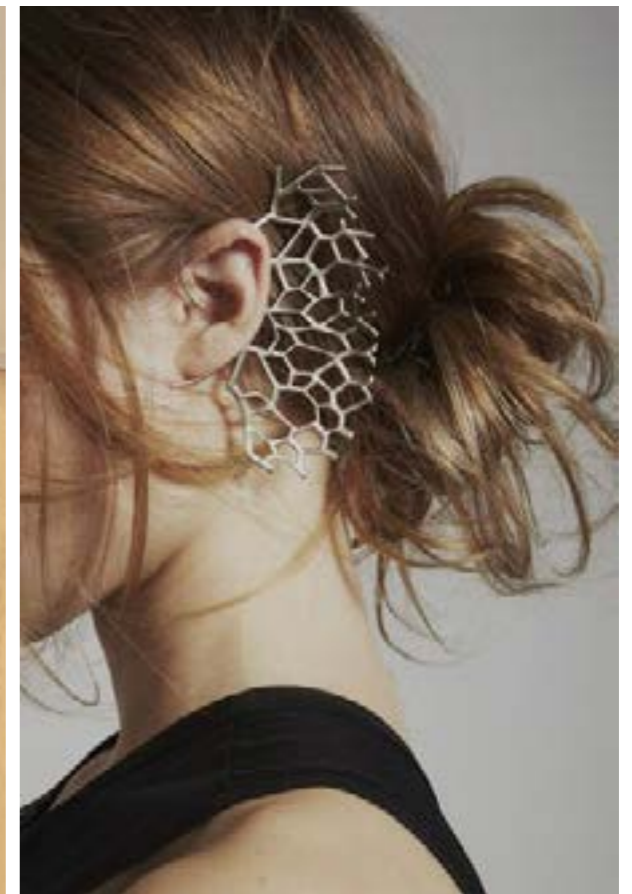
- **Digital textile printing**

Ink jet: Ink-jet printing on the textile uses a system very similar to the digital one that uses the ink-jet of a printer for papers. It can be defined: a method to transfer, in any point of different textiles, the exact quantitative of the liquid inks, synthesized, starting from the suitable coloring agents. In this way, it allows us to get drawings and desired colors on the textile, according to information saved on the file. Designs can be created digitally with almost any graphic design software. The quality of the file is an integral component of the digital fabric printing process. Usually textile designs are created as a seamless pattern that is repeated (tiled or stepped) across the fabric for the traditional layout of continuous yardage. You can also create a textile design that is custom engineered to fit your products' cut and sewn pieces. Digital fabric printing is not a direct science and there will be slight lot-to-lot variations for samples and yardage

- **3D printing**

Fashion often embraces new techniques, and 3D printing is certainly one of them. 3D printing or additive manufacturing is a process of making three dimensional solid objects from a digital file. 3D printing gradually applied to apparel, fashion designers also use 3D printing bikini, shoes and dresses as their fashion design ideas. In 2012 Nike had used the 3D printing technology to design the Vapor Laser for the US players, as well as New Balance used 3D technology for the private custom production of running shoes for athletes.

In the world of high fashion courtiers such as Karl Lagerfeld designing for Chanel , Iris van Herpen and Noa Raviv working with technology from Stratasys , have applied 3d printing in their collections. 3D printing materials have evolved from simple plastics to a wide range of materials like nylons, wood, salt, cement and even printing food. Printing silks, cottons and other natural fibers would become possible soon in 3d printing in the fashion industry. Because of moulds and cutting technologies traditional manufacturing methods produce a limited shape and structure, but 3D printing changes this – the 3D printer's nozzle can build a more complex figures, entirely decided by the designer's creativity.



Chapter

4

Project

4.1 Mood and concept

Because women's clothing design, large pockets do not often appear, even with the pocket, in order to maintain a light and elegant body lines, it will not hold a lot of things in the pocket. So women need to gather their belongings into bags, rather than scattered them throughout the garment. In a sense, bag became the extension of the body. Woman's bag is like a shadow of herself, it is essential. Whether go out for shopping, hiking, or participate in a fashion party, it need an affordable and stylish bag. A suitable bag is like one's personal companion, it unreservedly accept all the sundries, such as magazines, tablet, gum, sunglasses, phone, headphones, small notebook, water, snacks, lotion, makeup, etc. The traditional bag design propose a single solution for a single problem, the bag protect computer called computer bag, the bag reduce the burden on the back called backpacks, the bag used in formal occasions without damaging the style called handbag.

Different from the traditional handbag, the contemporary bag design is no more just about appearance design, Modern handbag design should to take into account the needs of modern life and the emergence of new lifestyles. With an eye on urbanization, population growth and efficiency, tiny spaces were a big theme at this era. According to the United Nation's World Urbanization Prospects 2014 report, Urban housing supplies are already straining worldwide with 54% of the global population of 7.2 billion living in cities. Micro-apartments tricked out with scaled-down, adaptable furniture and decor could make urban living more compatible with the way people increasingly live now. Also does it in Fashion industry, efficient and practical fashion goods such as clothes and handbags which is easy to accept by more young people, Our persona wants to have a functional and good looking bag, without worrying about it taking up to much space at home or at any occasion.

This project want to provide a collection of bag which is transformable, can be changed into several shapes, from flat to the three-dimensional, the inspiration came from origami and classic paper bags designs, using the folding techniques to achieve deformation effect. The "origami" goal is to transform a flat sheet square of paper into a finished sculpture through folding and sculpting techniques. In spite from the geometry to create the structure, at the same time, this project also try to use the embossing techniques to enhance the overall stereoscopic sense, the embossed pattern created from the deformation of the geometric, the embossed process enrich the stereoscopic feeling to the surface, it can be regular and also irregular characteristics of the form.

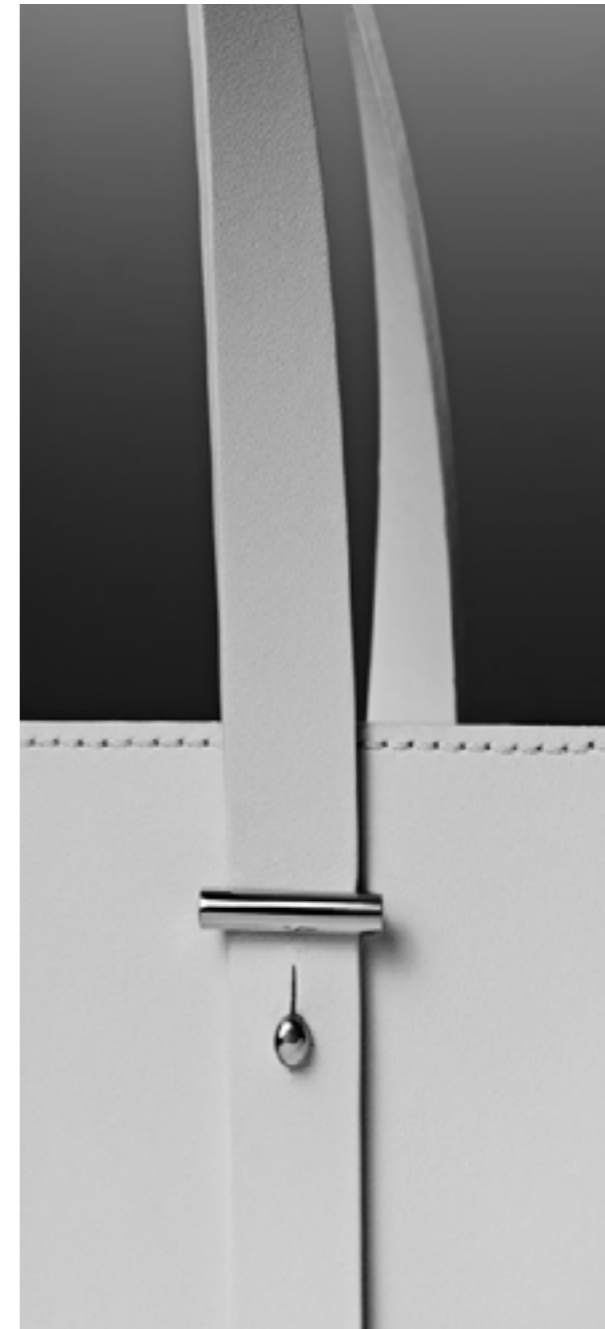
Mood Board



F59 : Moodboard



Concept Board



F60 : Conceptboard

4.2 Effect drawing

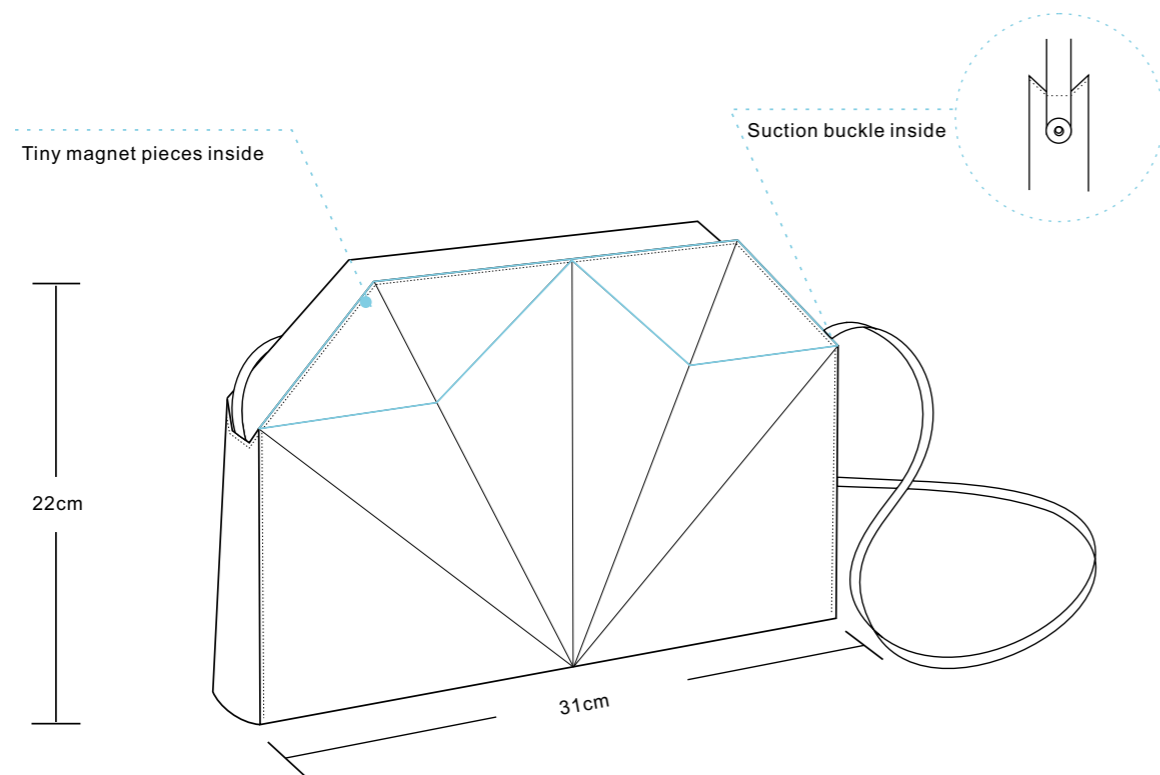


F61 : Effect Drawing

4.3 Technical drawing

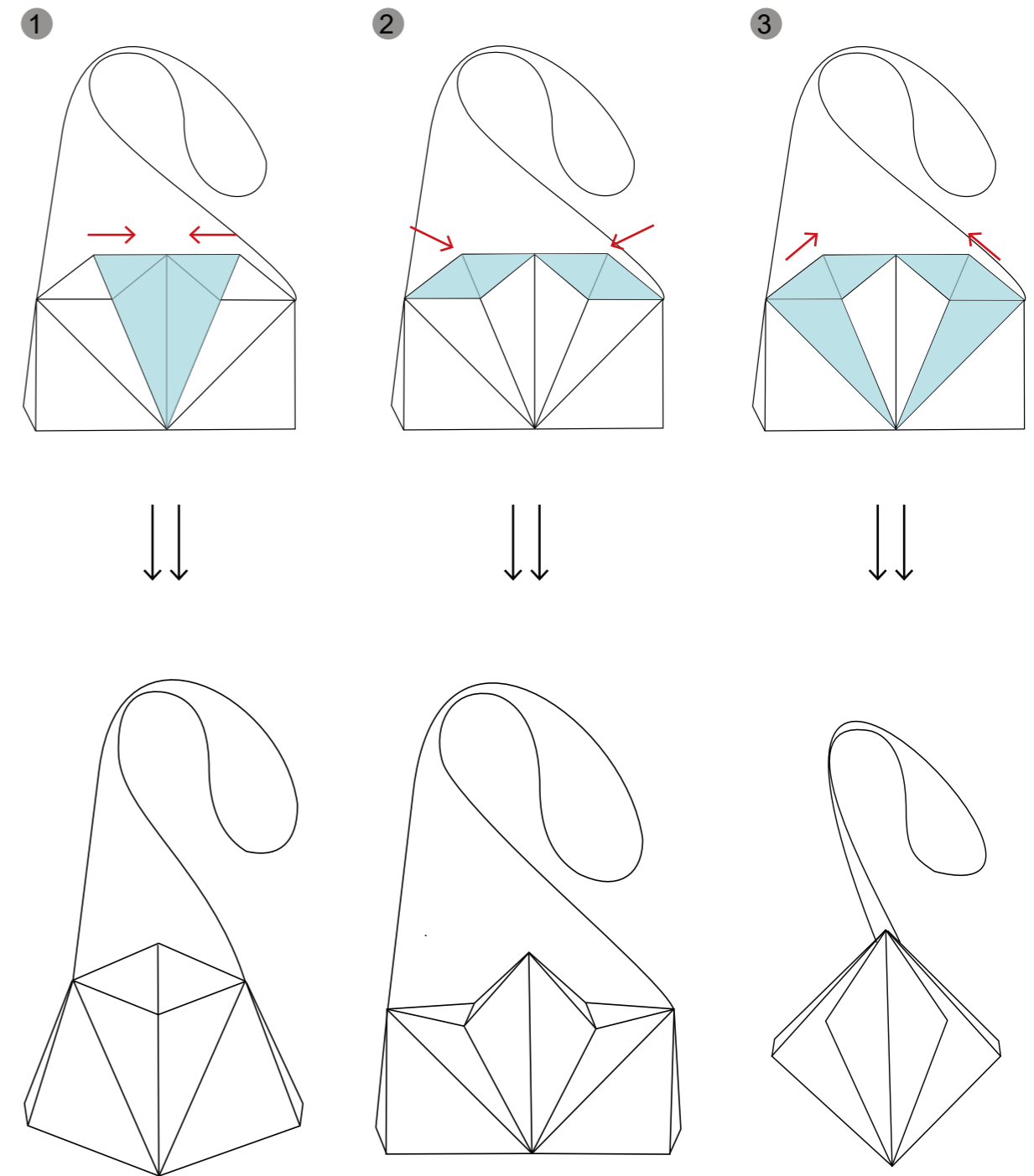
Bag design 1

This is a transformable bag, it can be changed into 3 different shape of bag through the folding technology, some parts get together by suction, there are small magnet pieces inside, open and close are very simple. There is suction buckle in the end of the strape to help close the bag.



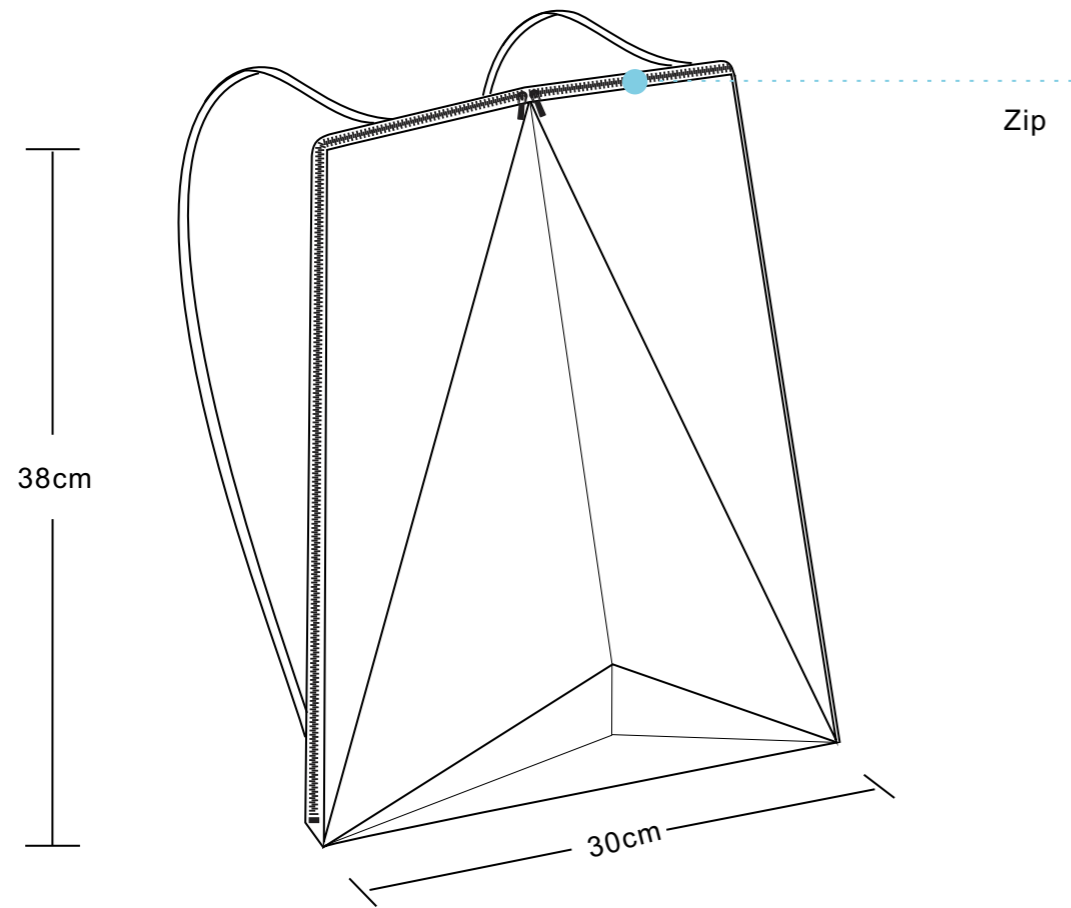
F62 : Technical drawing for bag design 1

Changing process



F63 : Changing process for bag 1

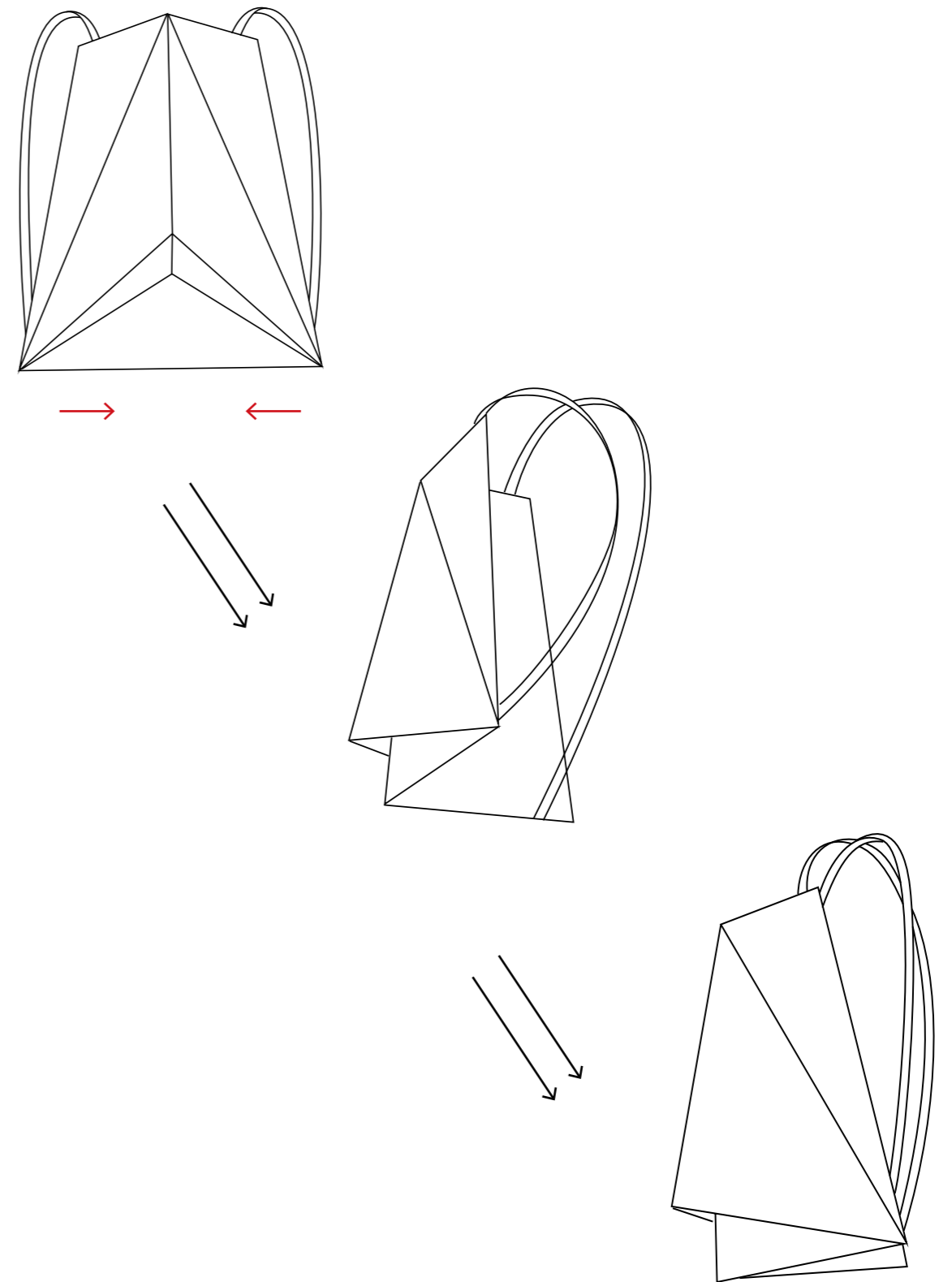
Bag design 2



This is a shoulder bag, it's characterize is that it can be folding into a flat, there is a two-piece structure in the back, when it is opened it's a 3-dimension triangle shape, both sides of the bag has the zipper makes it easier to open the backpack.

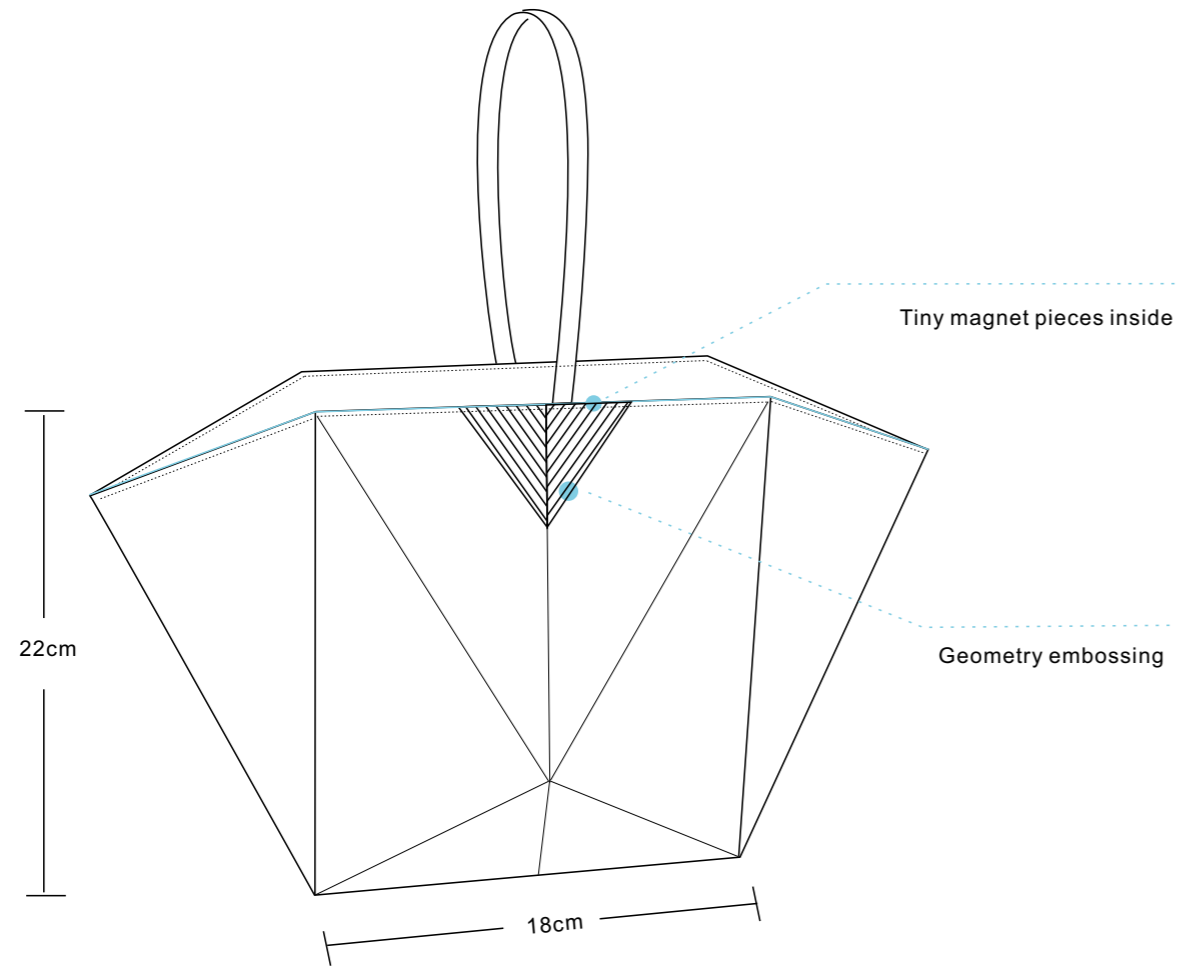
F64 : Technical drawing for bag design 2

Changing process



F65 : Changing process for bag 2

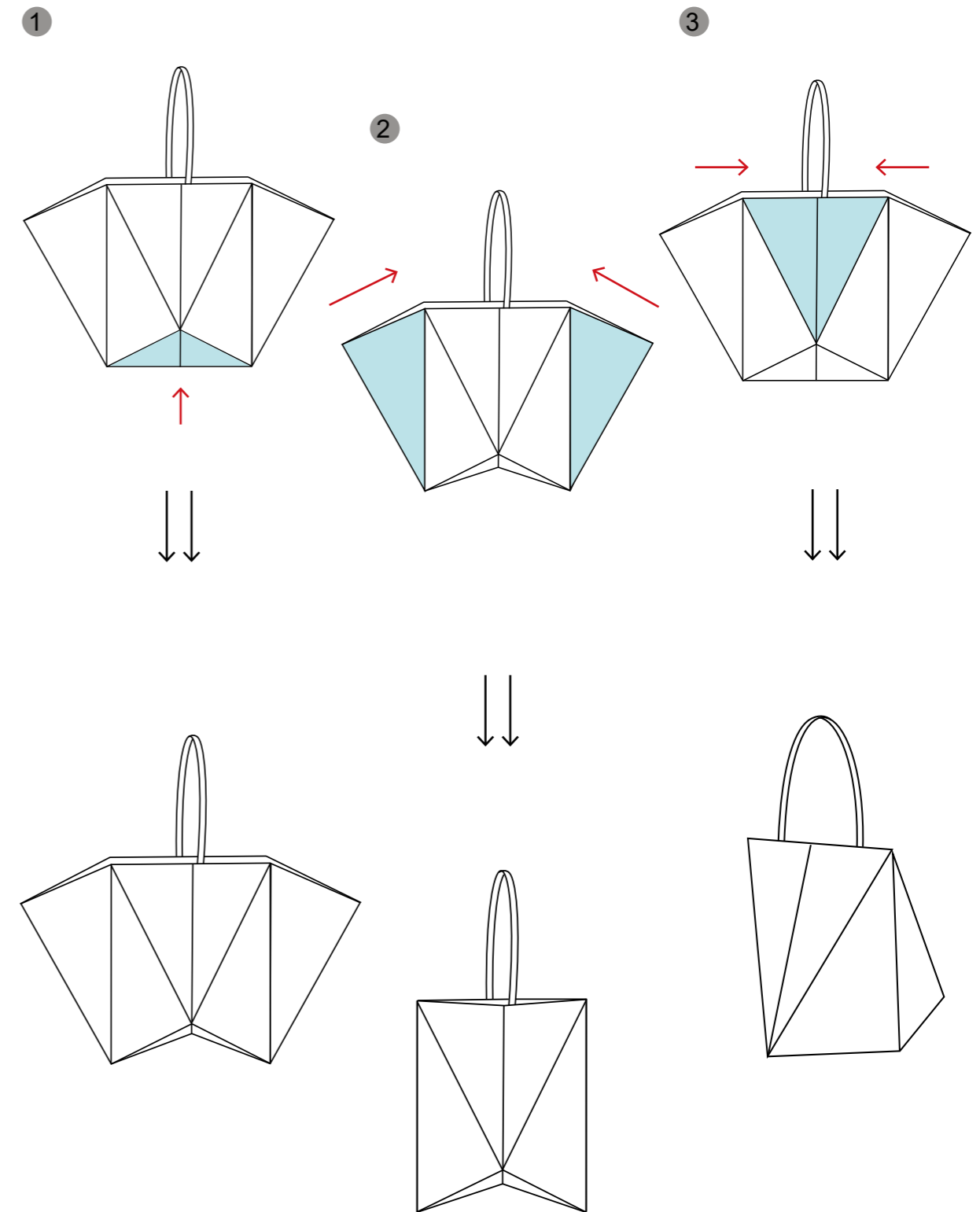
Bag design 3



This is a tote bag, with one single strap, it can be changed into three kinds of shapes, it could also be changed from the flat into a three-dimensional handbag, the opening part containing the magnet pieces inside using for the closure of the bag. There are geometric pattern embossed in the front piece.

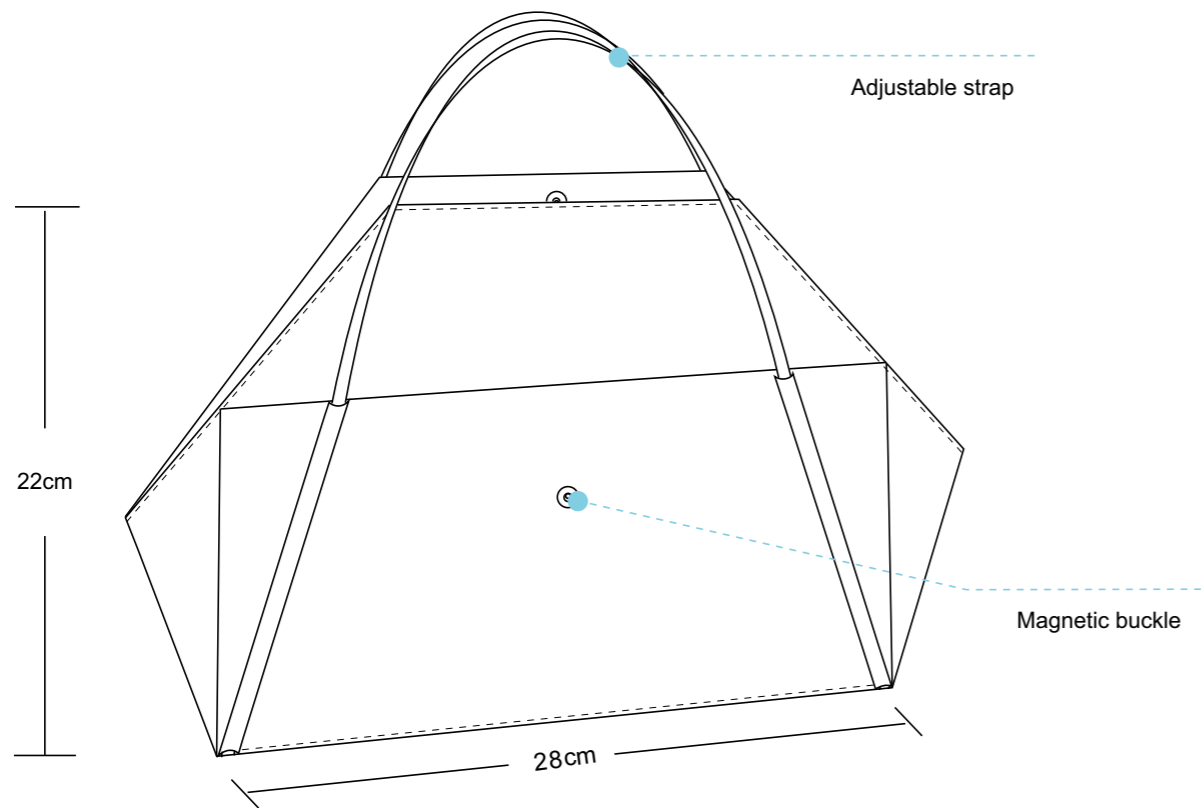
F66 : Technical drawing for bag design 3

Changing process



F67 : Changing process for bag 3

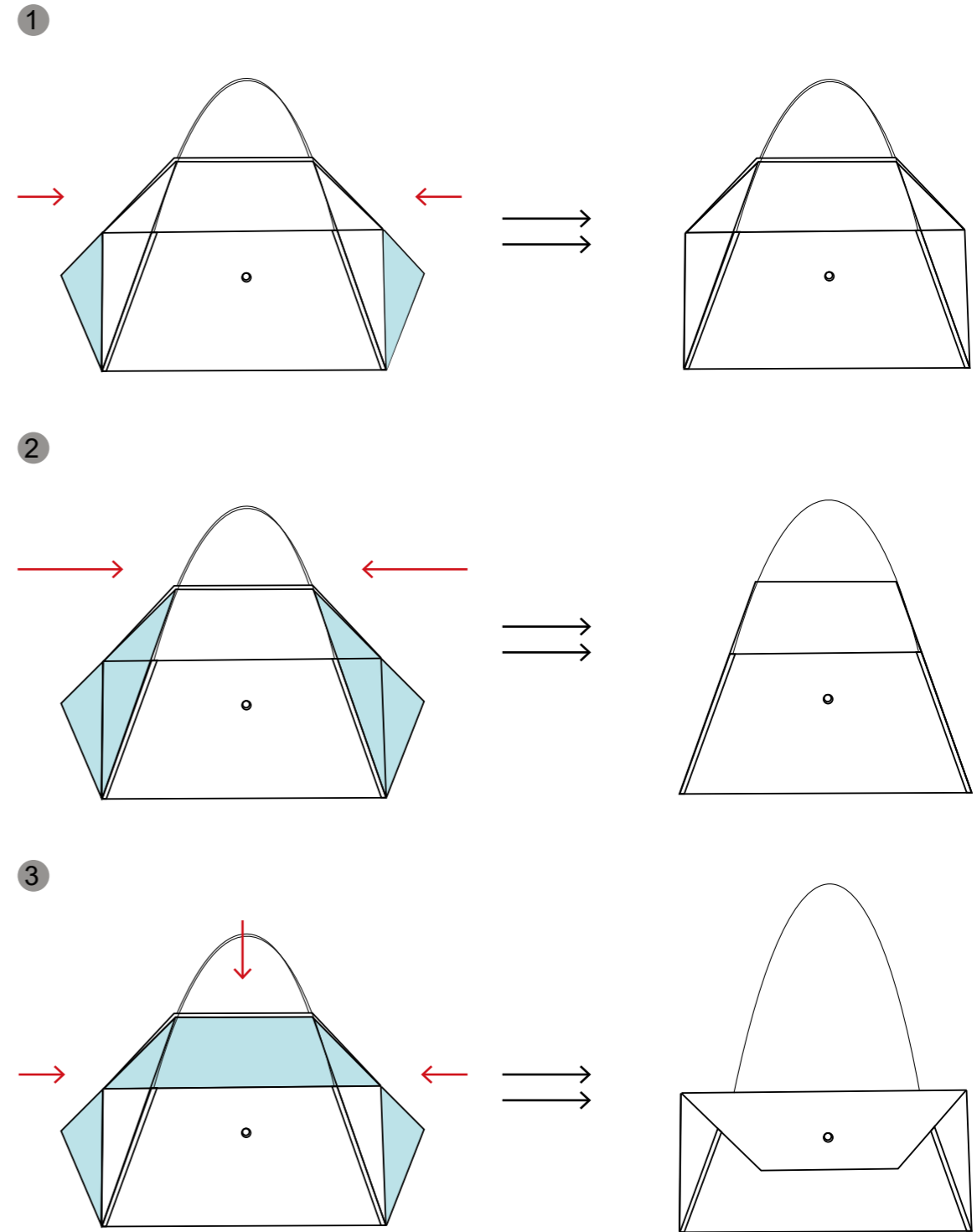
Bag design 4



This is a handbag with a adjustable strape which can be pulled back and forth,it has two ways to hold, one is two short strapes on both sides, the other is a long strape on one side. The bag can be changed into three kinds of shapes, it could also changed into a clutch with just one long strape to hold, the opening part has a magnetic buckle used for the closure of the bag.

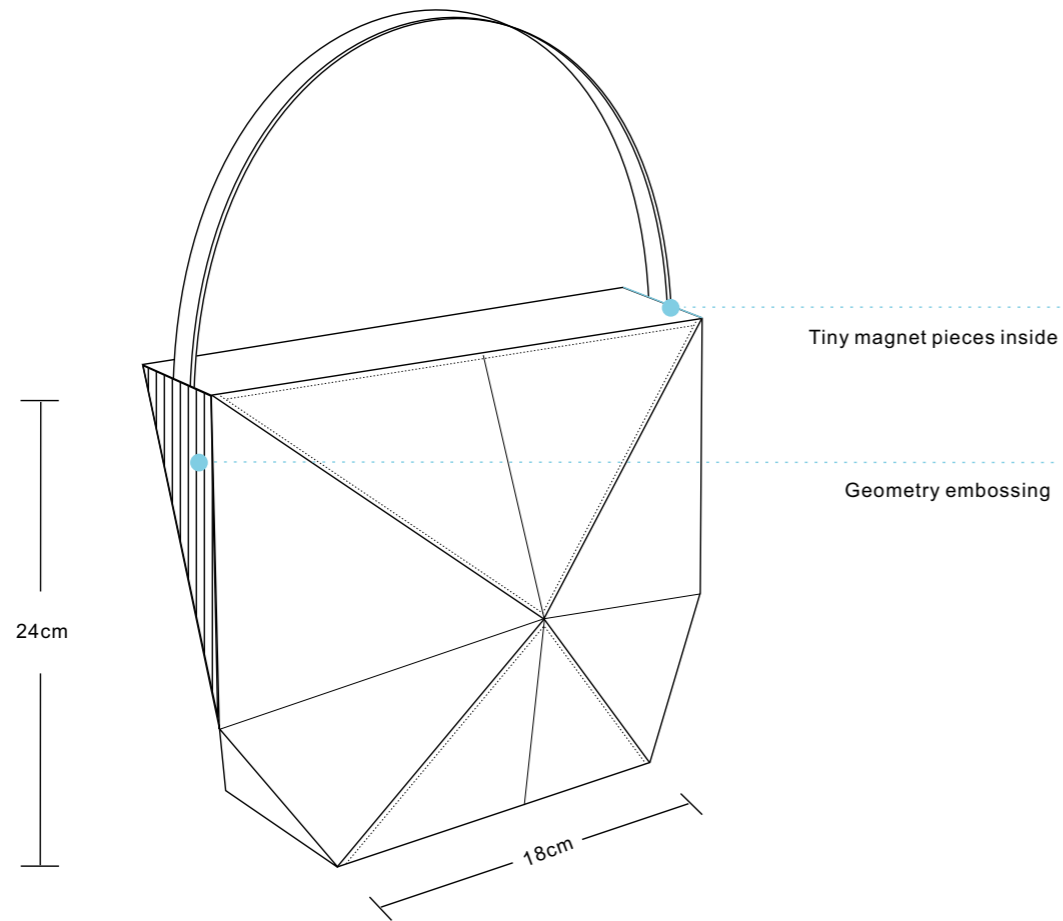
F68 : Technical drawing for bag design 4

Changing process



F69 : Changing process for bag 4

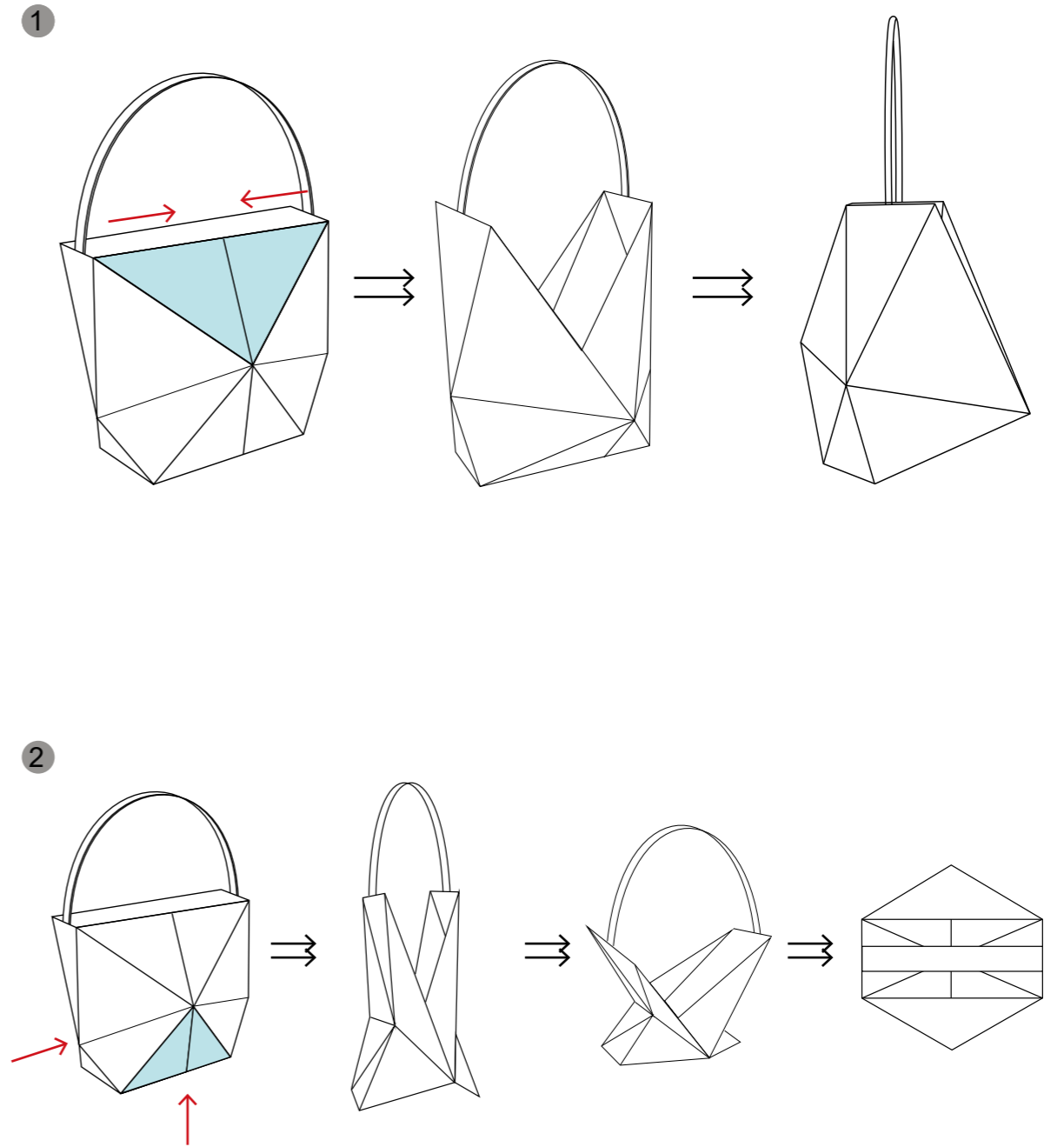
Bag design 5



This is a simple tote bag with two handles, it has a deep, vertical interior and open-top design, it can be changed into two shapes, one of them is a 3-dimensional appearance and the other is a flat. The side part has a embossing pattern, when it changes shape, the side part become in front.

F70 : Technical drawing for bag design 5

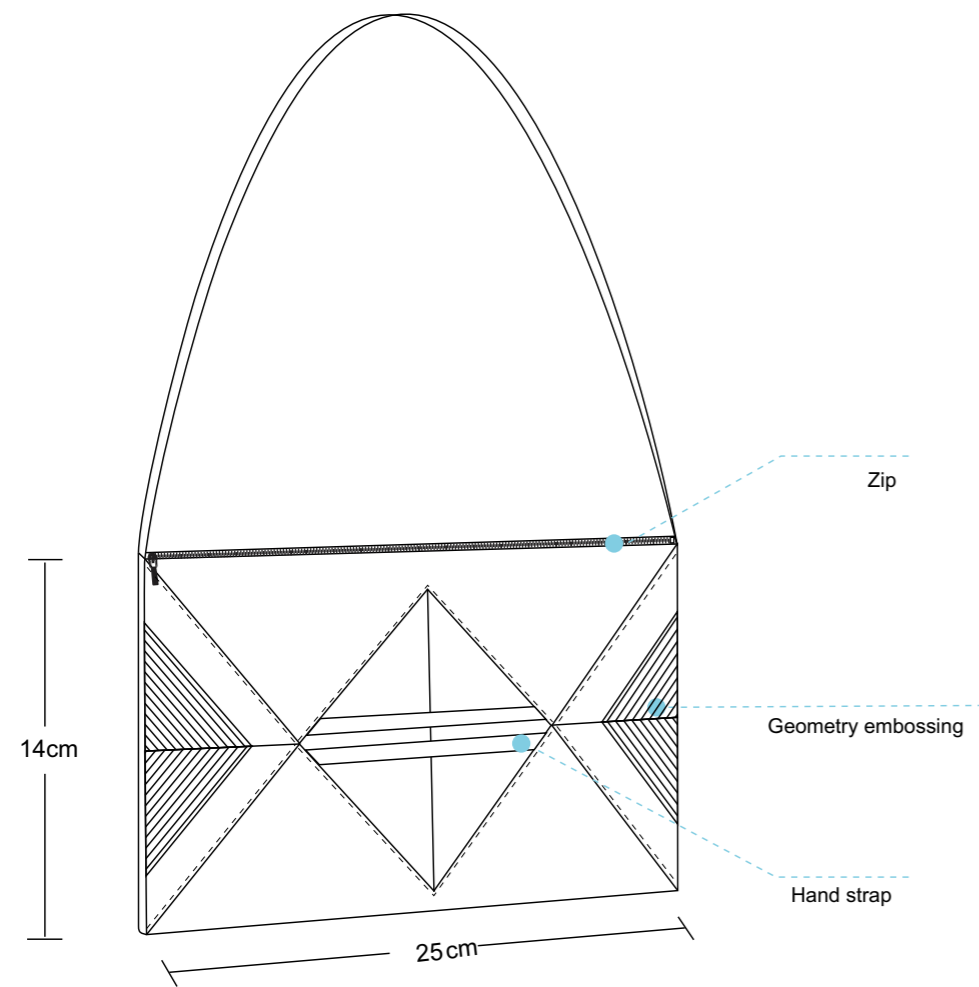
Changing process



F71 : Changing process for bag 5

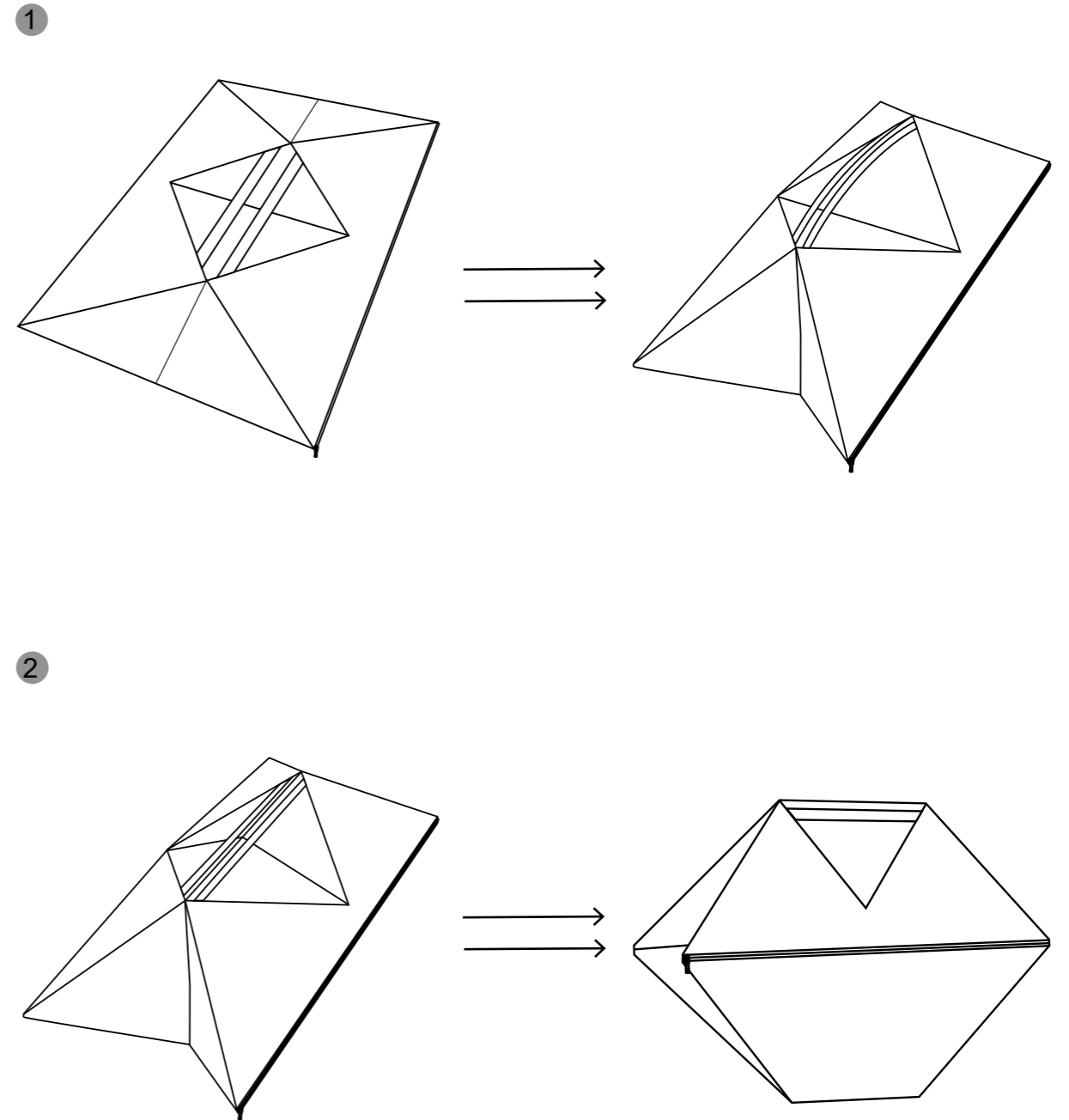
Bag design 6

This is a clutch bag with a long strap, and another short strap in the front, it can be changed into a handbag with changing the method of carrying this bag, and it also can be folded into a flat, becoming another style of handbag. When it changes shape, the long strap can be hidden inside, it is closed by a zip.



F72 : Technical drawing for bag design 6

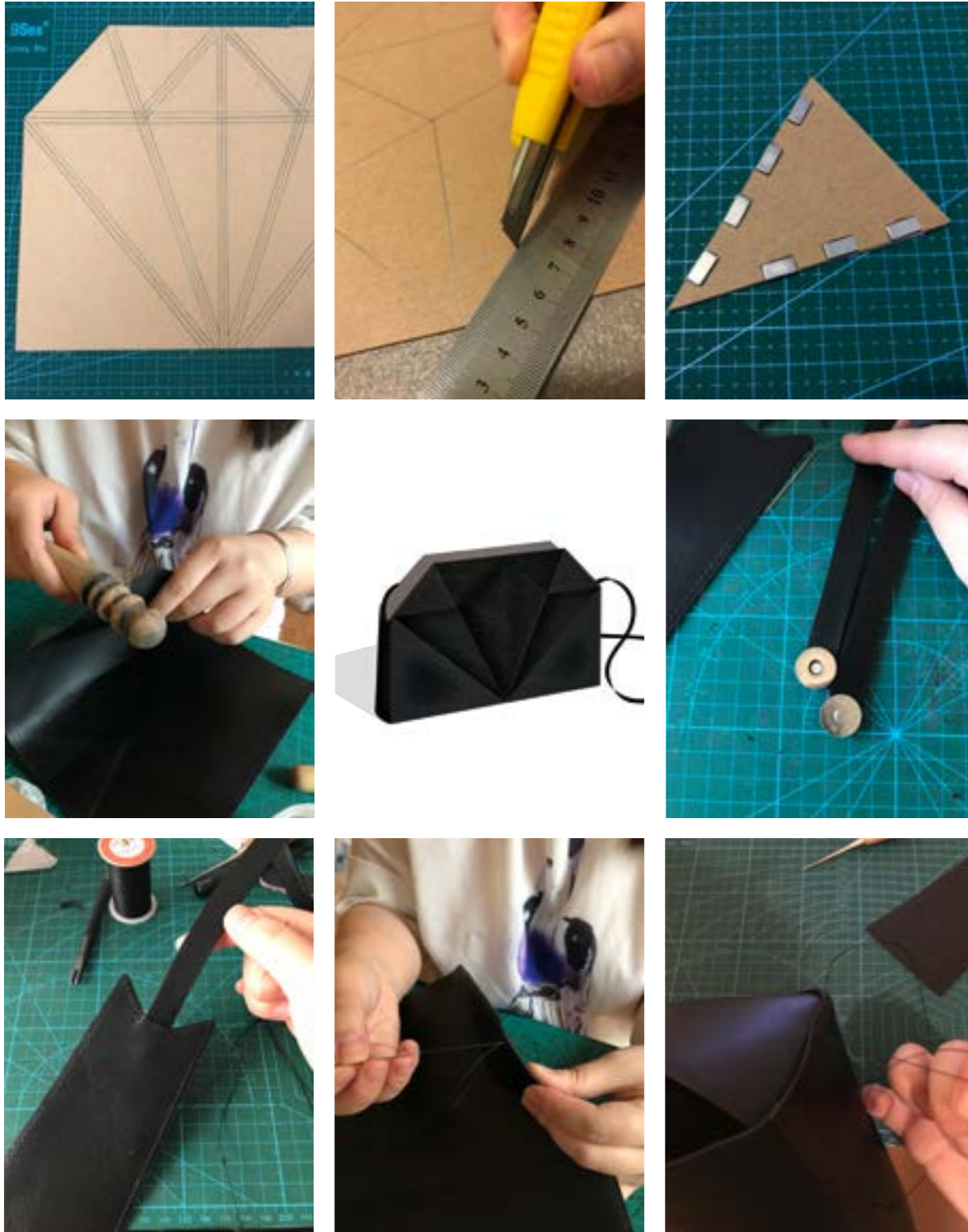
Changing process



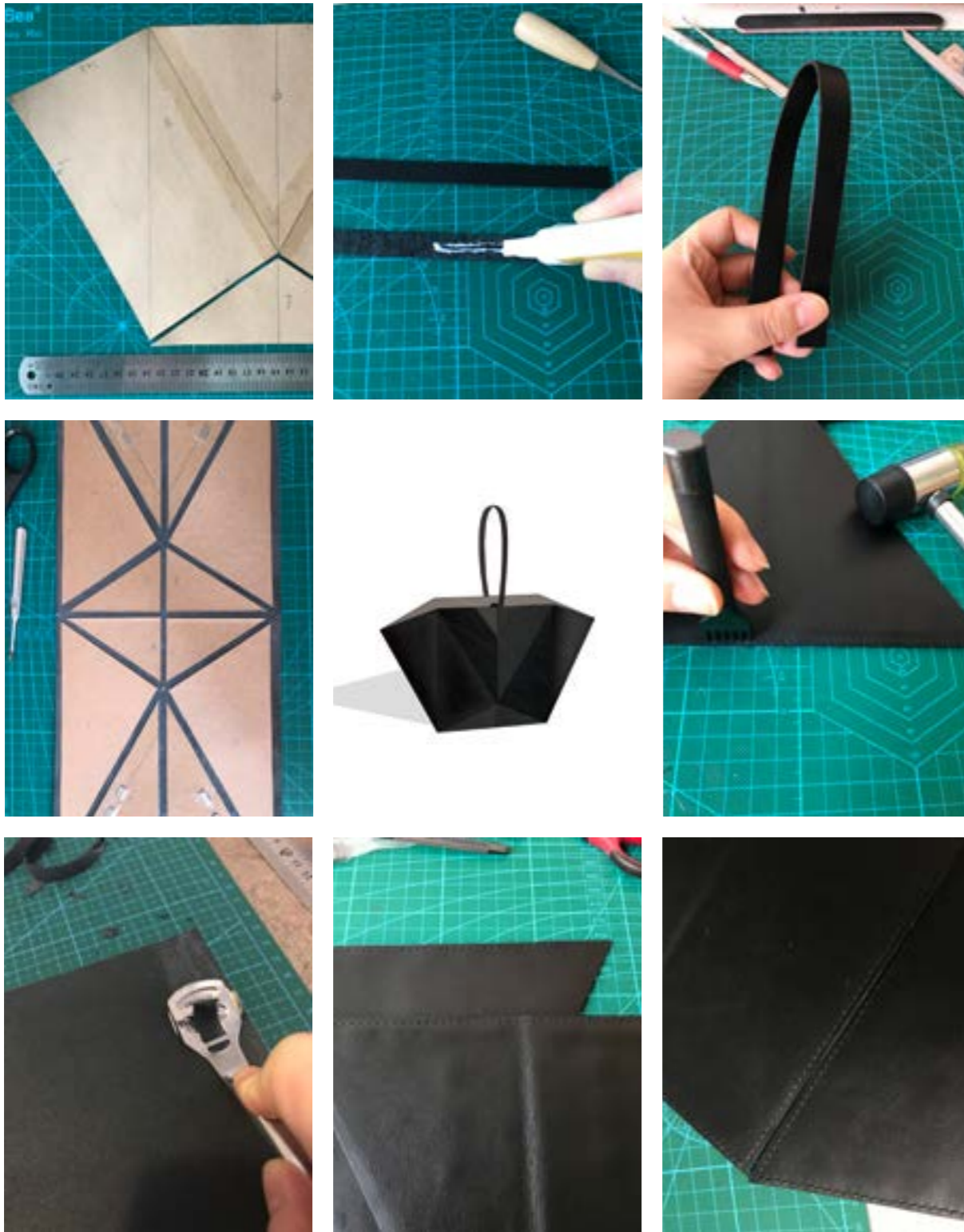
F73 : Changing process for bag 6

4.4 Prototypes and processes

Bag design 1



Bag design 3



F86 - F93 : Making process for bag 3



F94 - F98 : Prototypes of bag design 3

Bag design 6



F99 - F106 : Making process for bag 6



F107 - F111 : Prototypes of bag design 6

4.5 Photography









F112- F121 : Photography of the prototypes

4.6 Marketing Strategies

Logo Design

CONVERIT

Converit comes from the combination of 'convert it', meaning to change it, the series comes from the thinking about the modern lifestyle, pursuit of fashion programs between the fast-paced lifestyle and smaller personal space, the bags are no longer in traditional concept, it advocate a new usage mode, a bag is no longer one bag, but two bags, three bags or even more, it's simple design, simple deformation method, easy to storage, easy to match are the advantages of this series, it's inspired by the geometric element and origami art, while adding embossed patterns, through a different way of folding, embossed pattern visible or invisible can also be choosed, it will be the latest choice for young people.



F122 - F125 : Logo Design

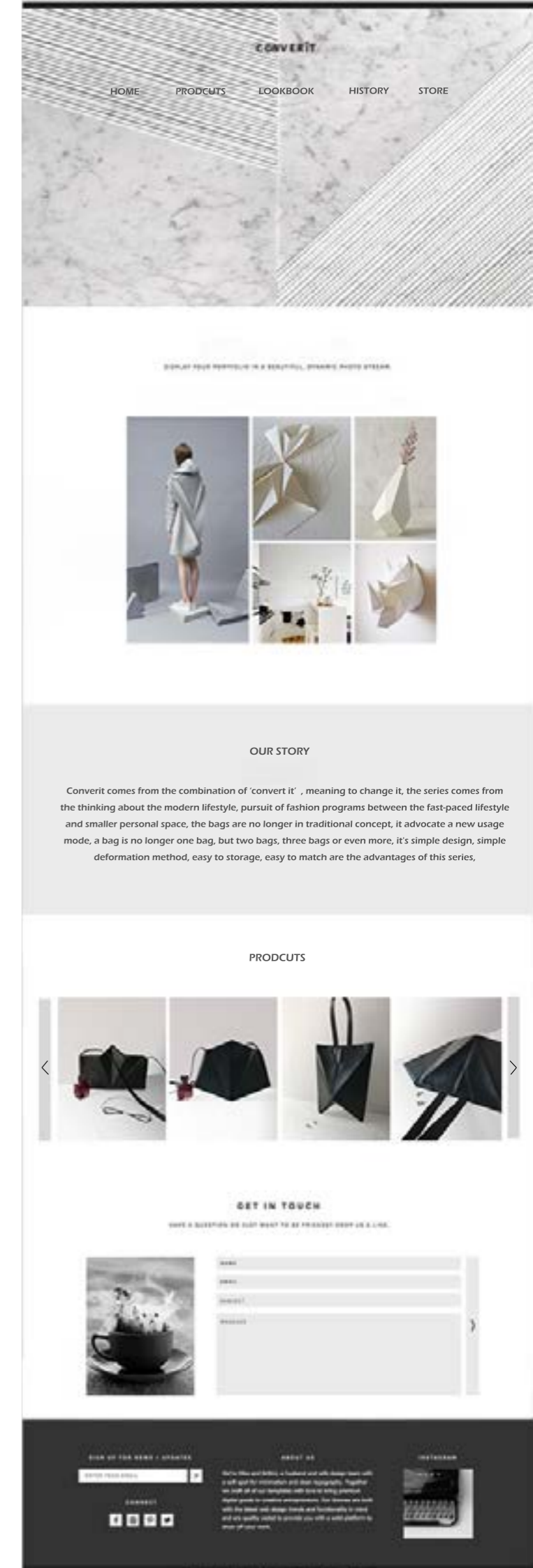
Visual Identity



F126 : Visual identity

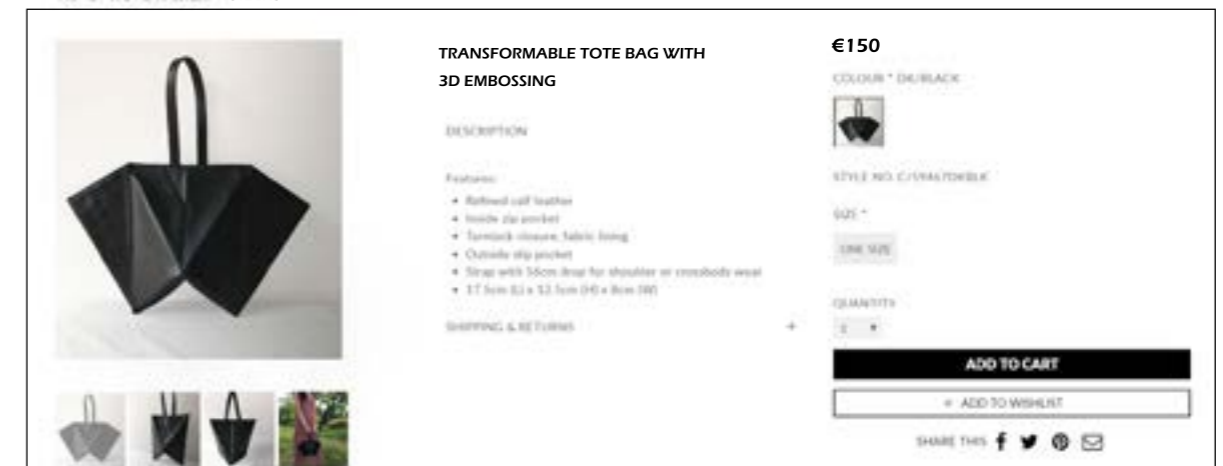
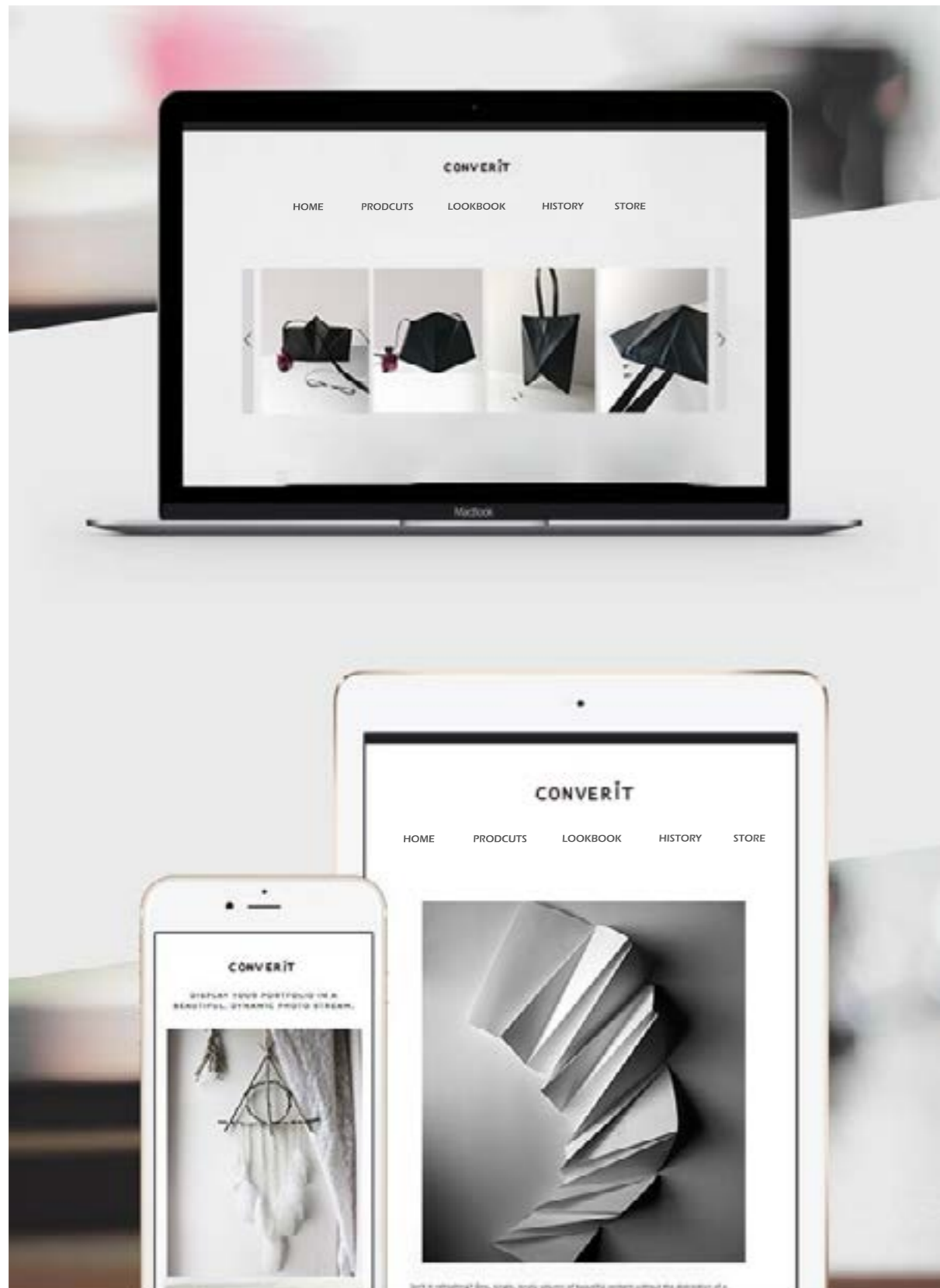
Marketing

20% off line sale in the mode of concept store and 80% online sale with the mode of traditional websites, apps, technical online stores. The concept store offering products to match the desires of those involved in a particular social scene, appeals to a general sense of lifestyle, which attract the consumer to consume in different ways. We have the traditional websites which introduce the brand history, select items, and purchase online, the app running the same way with the website. In technical online stores we have VR application, when the consumer open the store, they can try anybag they like, feel the size and colour, feel the fun of wearing this bag and any shape of it folds, it provide more attractive "virtual trial"



F127 : Commerce website

E - commerce platform



3D Interactive Virtual Fitting



It gives consumer a 3D interactive virtual dressing experience. They can try any bag they like, feel the size and colour, feel the fun of wearing this bag and any shape of it folds, It saves time from standing in a queue waiting for your turn to enter in a dressing room. The technology allows the consumer to do so using their computer from their home. There is also no need to visit in person at the store of a garment merchant as the technology enables do so right from your home or anywhere using your internet enabled laptop or smartphone.

F128 - F130 : E - Commerce platform

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