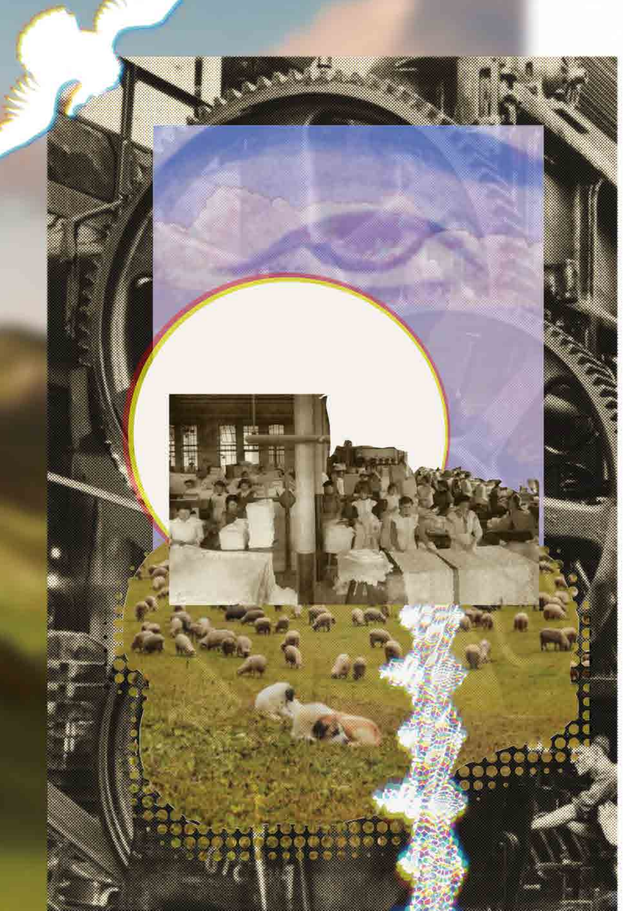
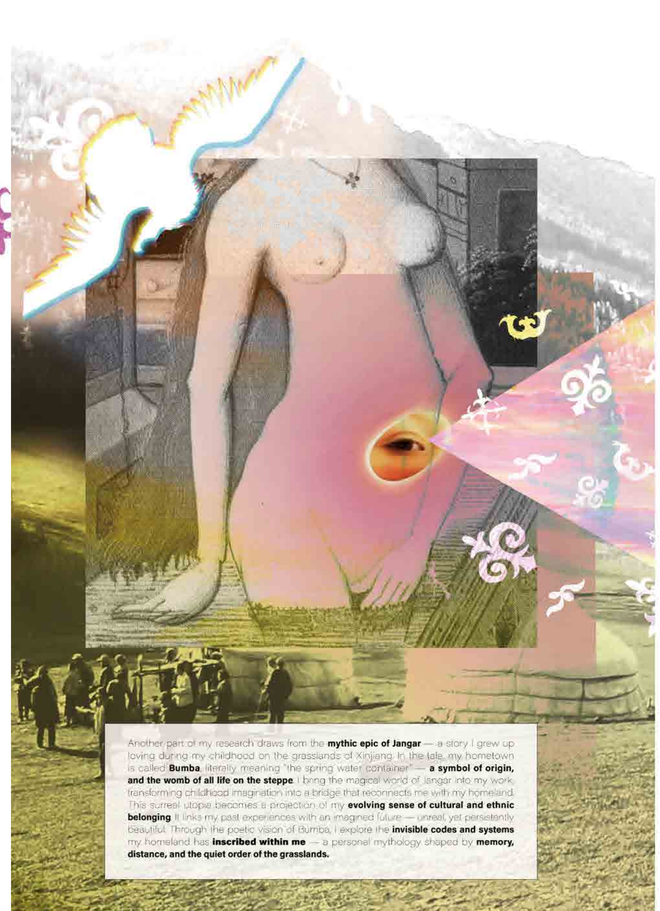


CONCEPT

This project draws its primary inspiration from the industry revolution, focusing particularly on thetransformative effects of technology on the lives of ordinary people during the industrial Revolution.the mechanization of textile production, revealing a world where intricate, underlying systems of orderinfluenced both industrial practices and the lives of workers.

I relate this to my personal background, growing up on the grasslands of Xinjiang, where traditional textiles, such as felt, are crafted through instinctive, nature-driven processes. the traditional women's craft of woolfelt in my hometown of Xinjiang's grasslands. Women in the grasslandsgather to roll, cut, and sew felt into patterns and designs, creatingvibrant and spiritual totemic felt works. These have always been a deep emotional connection to my memories of life in Xinjiang's grasslands.The contrast between these two cultural systemsforms the foundation of my design approach.

Through this lens, I investigate how the convergence of these distinct cultural codes reflects the complexities of migration and the creation of hybrid identities. This interplay is embodied in the **innovative material structure of mechanical interlocking** and **lace-felt composit textiles**, as well as in visual storytelling that bridges the precision of technology and the harmony of nature.



Another part of my research draws from the **mythic epic of Jangar** — a story I grew up loving during my childhood on the grasslands of Xinjiang. In the tale, my hometown is called **Bumba**, literally meaning "the spring water container" — **a symbol of origin, and the womb of all life on the steppe**. I bring the magical word of Jangar into my work, transforming childhood imagination into a bridge that reconnects me with my homeland. This surreal utopia becomes a projection of my **evolving sense of cultural and ethnic belonging**. It links my past experiences with an imagined future — unreal, yet persistently beautiful. Through the poetic vision of Bumba, I explore the **invisible codes and systems** my homeland has **inscribed within me** — a personal mythology shaped by **memory, distance, and the quiet order of the grasslands.**

BUMBA-EPIC OF MY HOMELAND

Jangar's place, Bumba,
was a paradise on earth;
The people there were always young;
Always looking as if they were youths of 25,
They never looked old and never died.

In Bumba,
it is always springtime.
There are no parching droughts,
There are no bone-chilling cold spells;
Fresh breezes softly sing,
Precious mist descends on the hills;
Flowers blossom everywhere,
And the grasses flourish.

Jangar's happy land
Is vast beyond compare;
Fast steeds can run for five months,
Yet still not reach the borders;
Here the five million blessed subjects
Can live rich and fulfilling lives.

Seglar Bougtaeva, trans. Jangar: The Epic of a Kalmyk Hero, chapter 1

The moment of making a yurt. Saryarka. 1876. Source: Kazakh Encyclopedia.

The moment of making a yurt. Saryarka. 1876. Source: Kazakh Encyclopedia.

INSTINCT AND NATURAL HARMONY ON THE GRASSLANDS

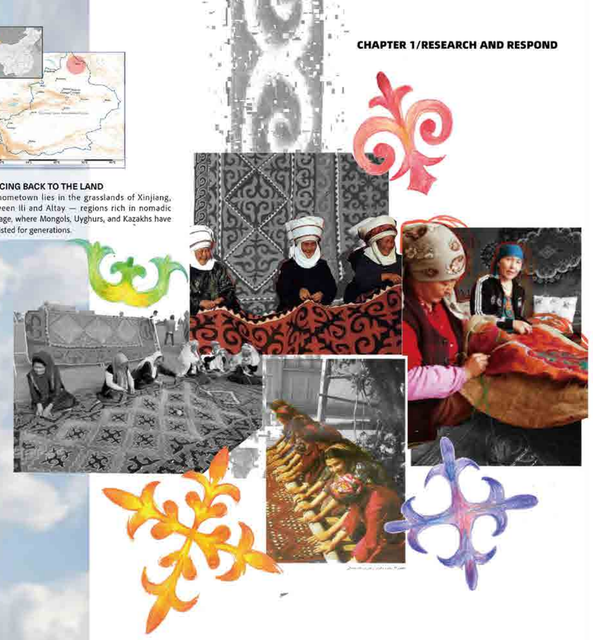
THE CODING OF STEPPE

Having grown up on the grasslands, the **principles of the steppe** seem to have deeply rooted themselves in my very being. The rules of the grasslands and their creations adhere to the principle of aligning with nature — **a harmony between human nature and the environmen**t. By placing ourselves back in nature, we discover how our instincts align seamlessly with the essence of nature. From the **radial structure of a Mongolian yurt** to the **precise spacing of an eagle's feathers**, I seek the underlying patterns that echo this harmony. Nature's rules in their unique encoding are inscribed into our being, shaping our **innate understanding and behavior.**

THE RITUAL OF MAKING FELT

Felt is an essential part of nomadic life. The process begins by spreading freshly sheared wool over fine sand and beating it with willow branches to loosen it into soft fluff. More wool is added during this process, followed by layering a base of felt. Water is sprinkled, the edges are pressed, and additional wool is laid on top. To bind the wool fibers, water is added continuously while pressing by hand. The entire mat is then rolled up tightly, bound, and pulled across the ground by camel or horse. As it rolls, the wool becomes increasingly compact, gradually forming a durable piece of felt — shaped by motion, moisture, and repetition.

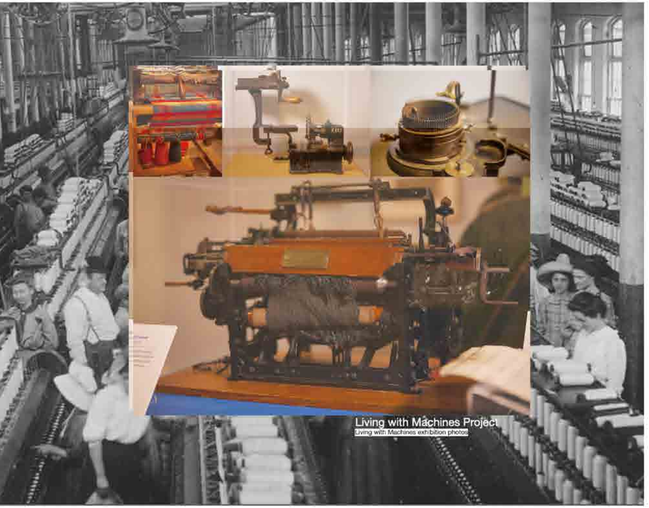
TRACING BACK TO THE LAND
My hometown lies in the grasslands of Xinjiang, between Ili and Altay — regions rich in nomadic heritage, where Mongols, Uyghurs, and Kazakhs have coexisted for generations.



FELTING TRADITIONS WITH MOTIFS: INSTINCTIVE CODING

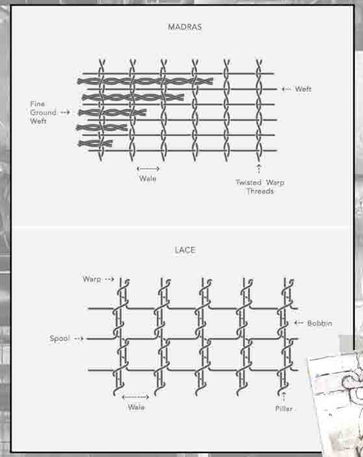
I was born in the **grasslands Xinjiang**, in northwest China. My hometown, as I remember it, is a world beyond the mechanical rules, where people have largely preserved a way of life outside the bounds of mechanized coding. Our traditional textiles, **'WET FELTING'** are crafted in a manner entirely different from mechanized fabric production. During summer, the women of the grasslands gather to felt wool, cut it, and sew it into **various patterns and designs**. The creation of felted textiles does not rely on precise calculations or strict rules and order but instead depends on the makers' **intuition and an intimate dialogue with nature.**

MECHANICAL TEXTILE



MYB TEXTILES

RULES AND ORDER BEHIND MACHINERY



At the start of my graduate project, I contacted **MYB Textiles in Scotland** and was grateful to receive both a factory visit opportunity. During my visit, I was captivated by the precision and complexity of their **lace machinery**. It was during this time that I also encountered the **Living with Machines project** which explores how technology during the Industrial Revolution transformed the lives of ordinary people.This theme captivated me — particularly the way industrial machinery shaped the logic and structure of textile production. The mechanical creation of lace, madras, knitting, and weaving all followed a **distinct system of coding and order**. I began to see how this intricate logic, operating at a micro-scale, has quietly embedded itself into the textiles we wear every day.

This intricate logic, existing on a micro-scale, has seamlessly integrated itself into the fabrics I wear every day. Inspired by this, I magnified this mechanized microstructure and extracted the interlocking logic of knitted textiles. Using **laser-cutting techniques**, I developed my **own interlocking fabric** reinterpreting this mechanical order into a new material language.

Nottingham Lace looms, 2024
Photo captured by the author during a visit to the MYB textiles factory

BEHIND THE MACHINERY

Reflecting on the mechanization of labor during the 19th-century Industrial Revolution, I studied how mechanization impacted the lives of ordinary people. I also find article highlighted the stark contrast between the celebrated advances in mechanization and the often invisible labor behind them. This dichotomy of progress and exploitation forms a critical undercurrent in my design, echoing the complexities of industrialization. Particularly, the intricate structures of Scottish lace textile machines and the stories of female laborers involved in lace production fascinated me. Fine lace has been cherished for centuries, with its popularity rising alongside Britain's Industrial Revolution. From lace schools to mechanized manufacturing, these women represent the irreplaceable backbone of the industry. 'Beauty born of hardship' aptly describes their work, as their resilience and expertise uphold the craft today.

WORKING CONDITIONS UNDER MECHANIZATION

Arts Council of Great Britain. & Arts Council of Great Britain. (1981) The British worker : photographs of working life, 1839-1939. London: Arts Council of Great Britain. – 1 Jan. 1981

Contemporaries were easily mesmerised by the great feats of engineering, mechanical and civil which seemed to symbolise man's progressive conquest of nature. These numerous Victorian photographs with their wondrous 'Well I never!' quality, their evocation of the symmetry of man and machines, their celebration of the harmony of capital and labour, capture a mood among the middle classes; but as a guide to the predominance of workshop production and hand-based technologies, they are quite misleading.

Childhood was short in the nineteenth century. The factory acts and in 1876) gradually extended it, true enough, but for most of the perio early age. In mid-Victorian England 26% of **children between the age** earners. **In the mines and in the mills** juvenile labour abounded. Som some machine-minders. **In the homes of the middle classes** work was downstairs, fetching and carrying, leading stoves, laying fires, whilst madam wants this and madam wants that – [illegible] were on call nig drudgery was endless: there were stones to be cleaned, birds to be so be pulled, so much straightening and tidying. **In the building and ma** there were numerous openings: young boys were to be found pulling shoving, running errands, up and down, back and forwards, forever o youngsters carted as much as 25 tons a day, **in the glassworks** juven the same twenty-four hours.

Female labour was no less arduous. Women workers constituted just Victorian Britain. Until the 1840s there were few restrictions on their exactly over-protected thereafter. Apart from the limitation of hours a trades regulated by the factory acts, women were not legally excluded mining. The Mines & Collieries Act of 1842, though it brought undergr the connection between women and heavy manual labour, in the chim Cornwall, for example, the 'bamaidens' had the laborious task of cleo tons a day for no more than 1s. In the brickfields women hasslers were the Staffordshire yards they were the moulders too. In the Rhondda manufacture of fire-bricks, and in Dowlais the limestone girls broke t 10,000 domestic workshops (i.e. the backyard) that accommodated the Country women nail makers hammered and sweated for a good deal l saltlands of south-east Cheshire women who wore nothing but a shift sheds in which the brine was boiled, or helped their manfolk load the plied the River Weaver. The saltworker, too, was expected to be a dab at break-neck speeds and willing to do so for a pittance. For having s hours a woman might receive 2d. Metropolitan milk-girls, dustwomen better off.

The pit brow lasses, perhaps the most photographed of all groups of industrially unique.

Women whose whole life-style was so obviously an affront to the m were bound to attract a good deal of comment, much of it foolish an female manual labour was never understood. The pit brow lasses, ho underground. Surface work, though, was no picnic: moving waggons, screening and sorting, i.e. the series of processes by which the coal and other impurities. In such work a woman might move a ton of dirt Those women engaged in heavy manual labour were numerically im numbers employed in textiles.

In 1851 just over one half million, 18.5% of the adult female labour f though the proportion subsequently fell, there were still 970,000 fe the First World War. The heaviest concentration was in the Lancashi turn of the century it had become a way of life for the working class before marriage and often beyond. The woollen and worsted industri heavily upon female labour. In 1901 more than one in four of all wa were so occupied.

Women in cotton were employed at every stage of manufacture exce branch of the trade. Wages varied.

Women weavers could expect 25s. a week, while wages in the carding usually took home more.

The Lancashire operatives, who were among the best organised of w paid than their non-unionised sisters in the wool trade, and much be industries, who rarely earned more than 12-13s a week. Work in the pleasant. Cardroom asthma was common in the cotton mills (due to

How does the mechanized rules and logic of textiles change our lives

THE CODING OF WORKWEAR

Workwear, as a uniform shaped by the rules of manufacture, encodes mechanical order onto the human body. Within this, I observe a tension between the uniformity of **standardized rules** and the **inherent heterogeneity** of the human. The **blue workwear** becomes a visual metaphor for the imprint of **mechanized civilization** on the body — a silent code that structures how they move, behave, and are seen.

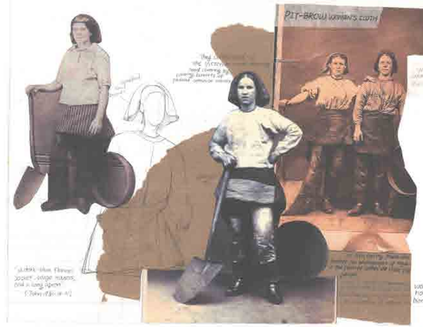
Munitions workers in loose-fitting overalls (United States), 1918. Courtesy of the Engineering and Industrial History Collection, National Museum of American History, Smithsonian Institution

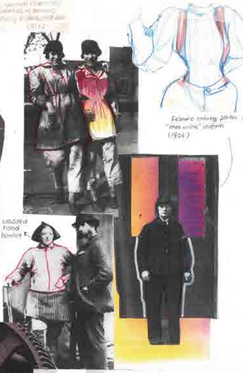
While researching workwear and industrial production history, I was drawn to how women navigated restrictive gender norms through what they wore. From pit brow workers to female railway laborers, their garments were often labeled as "**alternative fashion**" — not by aesthetic intention, but by necessity and resistance.

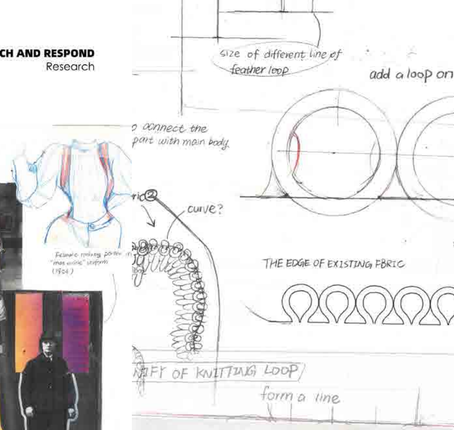
Trousers, for instance, were socially taboo for women. Yet these working women wore them anyway, often paired with rolled-up petticoats to meet the physical demands of labor. These layered garments became quiet acts of defiance — practical, yet politically charged. They embodied a tension between conformity and survival, visibility and silence.

I found this tension deeply embedded in their clothing — a **friction between societal expectation and the lived realities of women's work**. It continues to shape how I think about structure, symbolism, and the politics of dress in my own design practice.

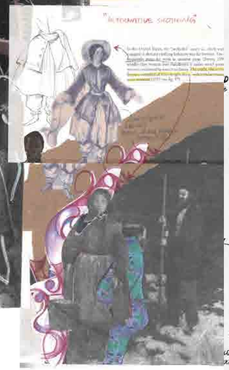
· Hilda Yang · Year 4 collection · CODING OF ORDER



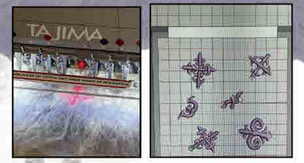




THE "ALTERNATIVE" CLOTHING UNDER MACHINERY



I first used wet felting to secure the lace onto a wool base, then applied needle felting to blend the edges.



To further enrich this surface, I extracted ornamental motifs from traditional Xinjiang felting and embroidered them using CAD embroidery techniques onto the composite fabric.

FELTING BLEND WITH LACE

In this textile experiment, I received lace sponsorship from MAS Textiles, which I integrated into hand-felted wool using the traditional wet felting technique from the grasslands of Xinjiang. The fusion of these two distinct crafts—Xinjiang's instinctive, nature-based wool work and Scotland's mechanically refined lace-making—results in a hybrid textile that bridges regions, histories, and material cultures.

ACCESSORY

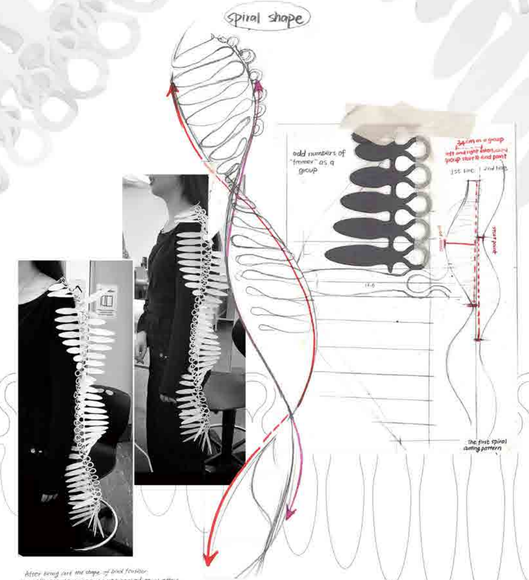
I have been fascinated by the **traditional Khalkha hat** worn by the Mongolian people in my hometown since childhood. Known for its complex structure and ornate decorations, the Khalkha hat features a bowl-shaped crown and long trailing ribbons extending from the back. Born it traditionally serves as a symbol of **status and identity** for the wearer.

Millinery wire was used as the core framework for shaping and structural stability

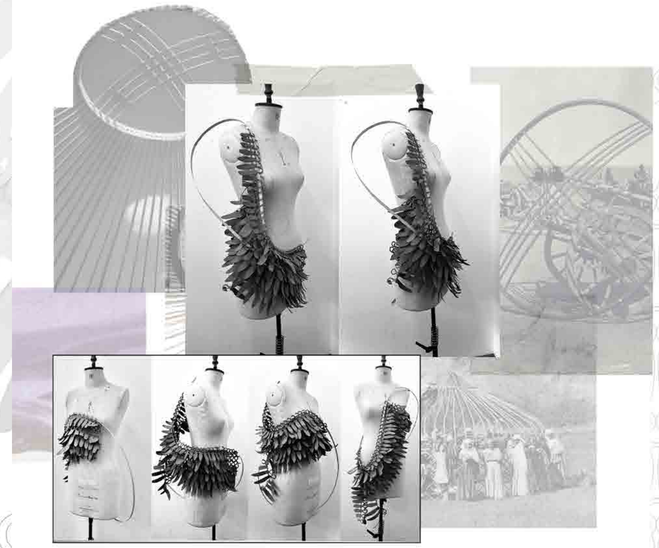
In this project, I **deconstructed the Khalkha hat through geometric abstraction,** and reconstructed it using **bamboo,** a natural material rich in both Eastern aesthetic and structural tension. By reinterpreting its material and form, I transformed this traditional headpiece into a new symbol of identity—one that belongs to a mythical grassland, embodying **freedom, spirituality, and the fluidity of cultural expression**.

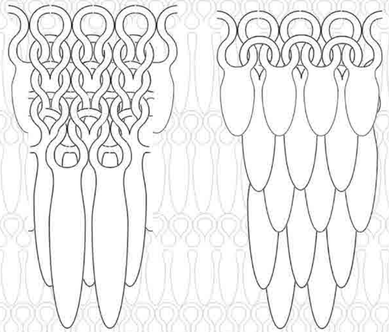
FABRIC DEVELOPMENT

Drawing inspiration from the structural logic of mechanized textile systems and my childhood memories of life on the grasslands, I designed a wing-shaped modular unit embedded within a coded pattern. This became the foundation of what I call the **feather-coded fabric**—a textile system that mimics the rhythm and form of feathers through modular repetition, symbolizing movement, freedom, and fluid identity. It builds a material connection between engineered precision and the lived vitality of grassland culture.

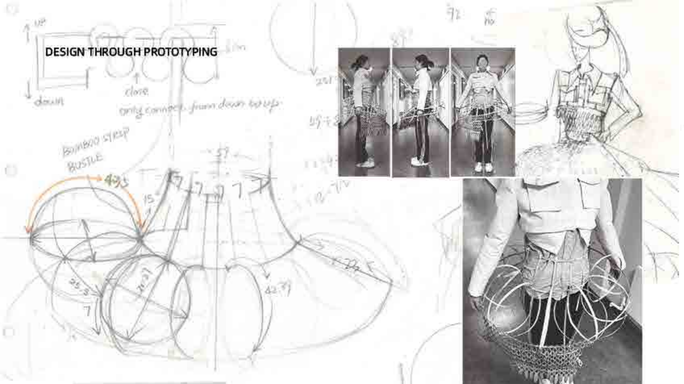


FEATHER-CODED FABRIC CONFIGURATON PRESENTATION





DESIGN THROUGH PROTOTYPING

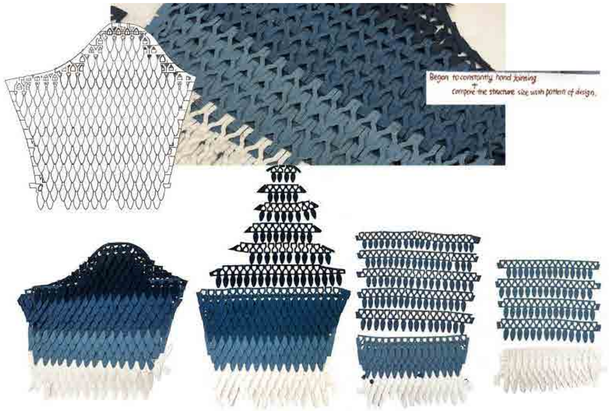


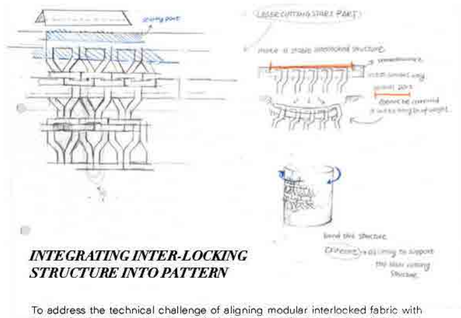
calculation sketches & process

BAMBOO-STRUCTURED BUSTLE WITH FEATHER-CODED FABRIC

This design draws inspiration from the structural logic and radial arrangement of traditional Mongolian yurts. Guided by the philosophy that "our instincts align seamlessly with the essence of nature," which underpins grassland life, I reinterpreted this architectural system into a wearable bamboo bustle frame.

Using the natural toughness and flexibility of 1cm-thick peeled bamboo strips, I developed a calculated method of weaving and bending to create structural support. The result translates architectural logic into garment construction—merging strength, rhythm, and movement. Paired with my feather-coded interlocking fabric, the silhouette captures a dynamic balance between function and ritual in a contemporary form.





INTEGRATING INTER-LOCKING STRUCTURE INTO PATTERN

To address the technical challenge of aligning modular interlocked fabric with conventional garment patterns—particularly at seam allowances where it connects with other fabrics—I developed two different joining methods. The final solution adopts a system where the seam allowance is removed from each row, allowing flatter edge integration and structural cohesion.

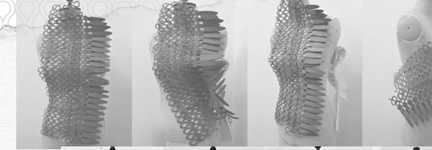
COLOR CHOICE OF DENIM

This look draws from the strict gendered dress codes imposed on female laborers in the 19th century, as well as the institutionalized control exerted through standardized blue workwear during the rise of mechanized production.I deconstructed vintage blue workwear and explored its garment structure through tailoring techniques.

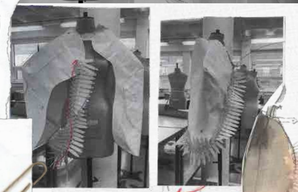
LINE UP 1

SILHOUETTE DEVELOPMENT

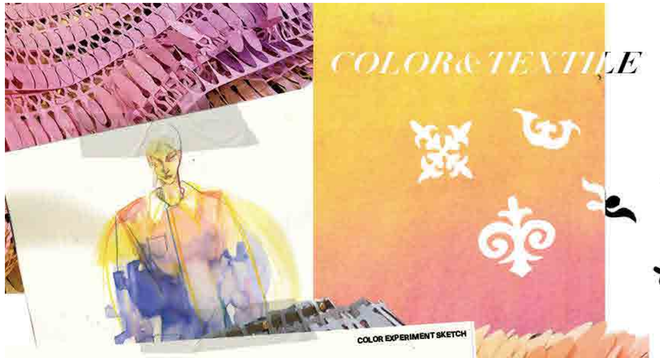
· Hilda Yang · Year 4 collection · CODING OF ORDER



initial mock up



After Laser cutting, I manually assembled the interlocking modules and draped them on the mannequin to explore silhouette variations. These experiments informed the evolution of my feather-coded textile language and revealed the spatial potential of this coded pattern system when applied to different areas of the body.



COLOR& TEXTILE

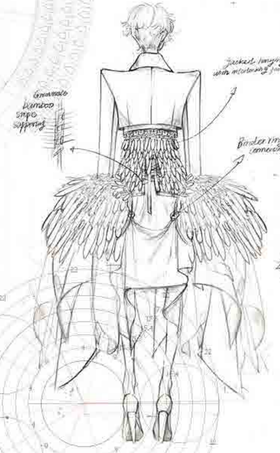
COLOR EXPERIMENT SKETCH

FINAL FABRIC COLLECTION

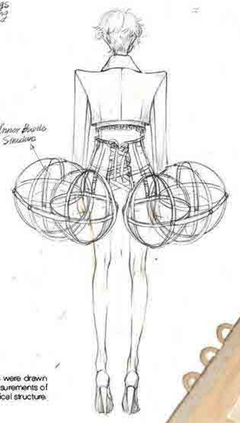
The color palette is inspired by my childhood imagination of the mythical Bumba grasslands from the epic of Jangar, as well as my own hazy memories of the prairie where I grew up. To me, Bumba represents a timeless utopia—a surreal and poetic realm that transcends reality.

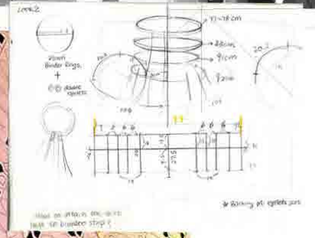
Through soft gradients and dreamlike tones, I sought to recreate the dawn and dusk of Bumba as I envision it in my subconscious. These atmospheric colors are translated into fabric, forming a playful 'dream space' within the design—intended to evoke a sense of illusion and quiet wonder.

To construct the bamboo framework, I manually drilled holes into the strips and secured each joint using a hybrid method: combining screw bolts for strength and split pins for flexibility. This fastening system reinforced structural stress points while streamlining the assembly process.



The skirt hem is attached to the outer bamboo bustle using binder rings and eyelets, while the back features a corset-inspired lacing system with spaced loops fixed around the bamboo and threaded with satin ribbon for fastening.



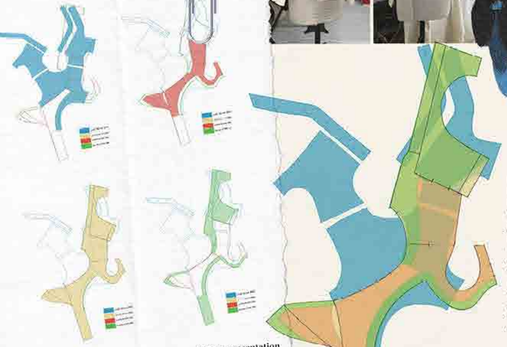


Custom laser-cut patterns were drawn in Illustrator based on measurements of the bamboo bustle's spherical structure.

1st:2R:22.69
2nd:2R:28.4:89.8
3rd:2R:69.217

The color gradient of the feather-coded elements on the bustle was achieved through sublimation printing onto pelmet fabric. I first hand-painted the gradient using soft pastels, then scanned the artwork to create the sublimation print. Afterward, the printed fabric was laser-cut into the interlocking pattern, seamlessly combining color and structure.

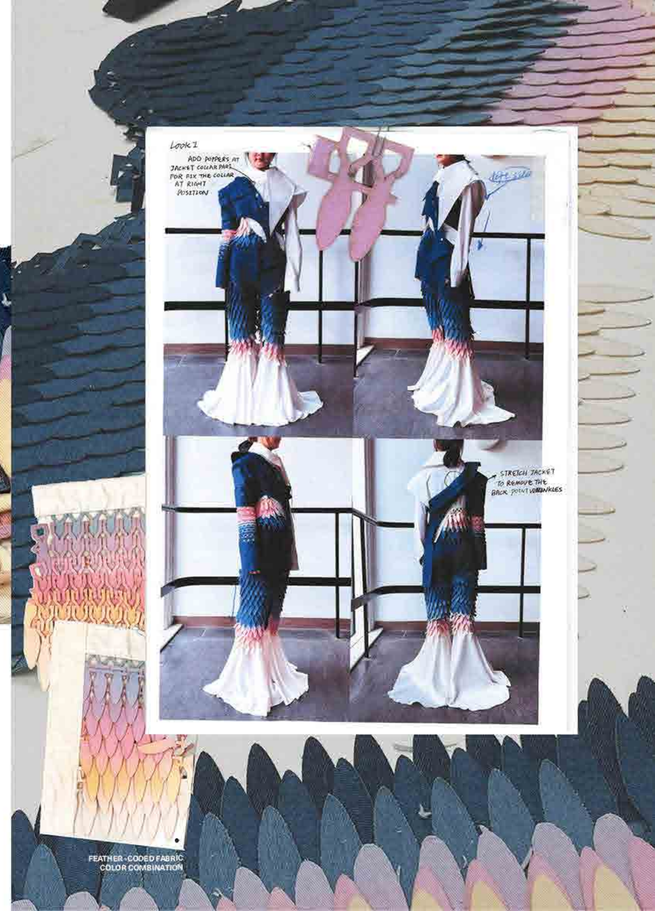
PELMET FABRIC FOR FEATHER-CODED LASERCUT

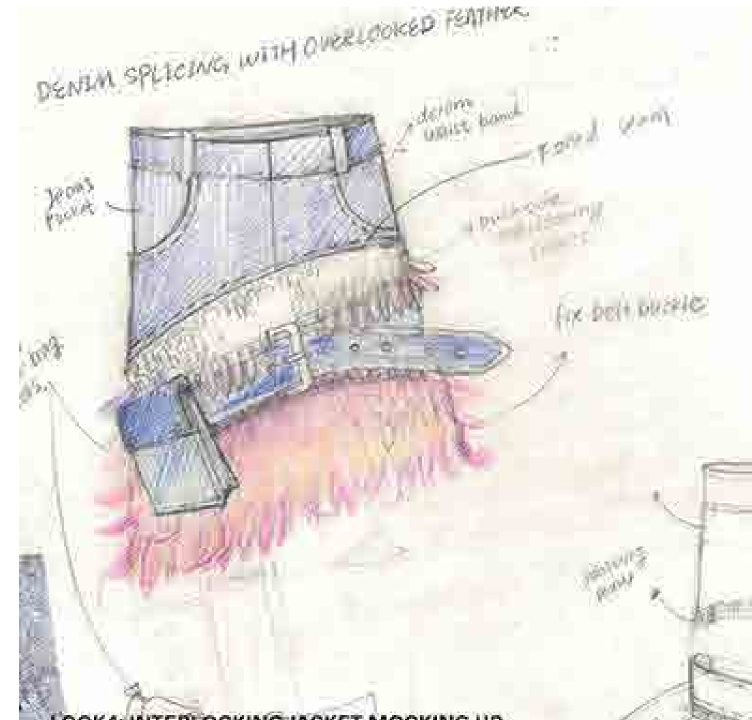


look1 shirt-denim jacket connected structure pattern presentation

I draw the multi-layered pattern breakdown of the deconstructed shirt-jacket silhouette. The pattern presentation explores how overlapping structures were developed and mapped, allowing for spatial depth and sculptural volume within the garment's construction.

One of the key challenges in this design was connecting the shirt-jacket structure to the feather-coded fabric. I resolved this by using a double-bound edge finishing technique to ensure a clean, durable seam that accommodated the irregular texture and shape of the modular fabric.

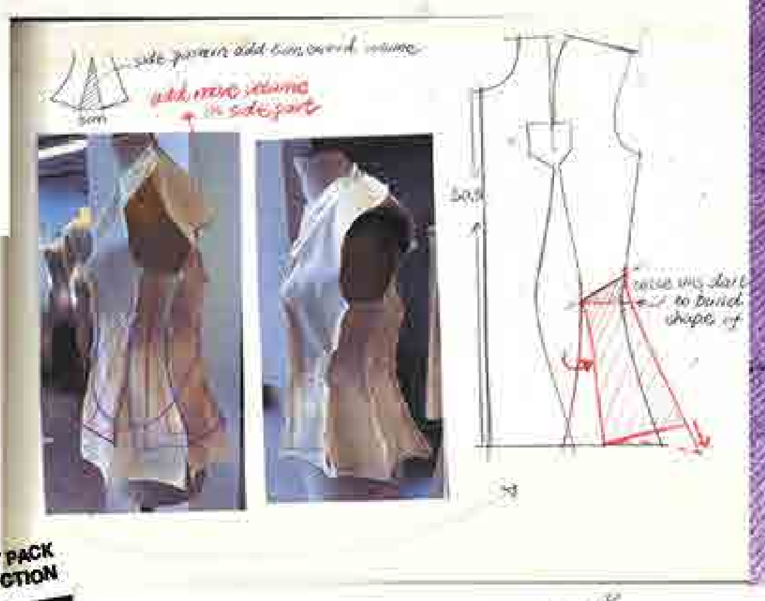




The interlocked panel on the top of Look 4 was developed using the same construction method as in Look 3, continuing the structural logic and fabrication approach.

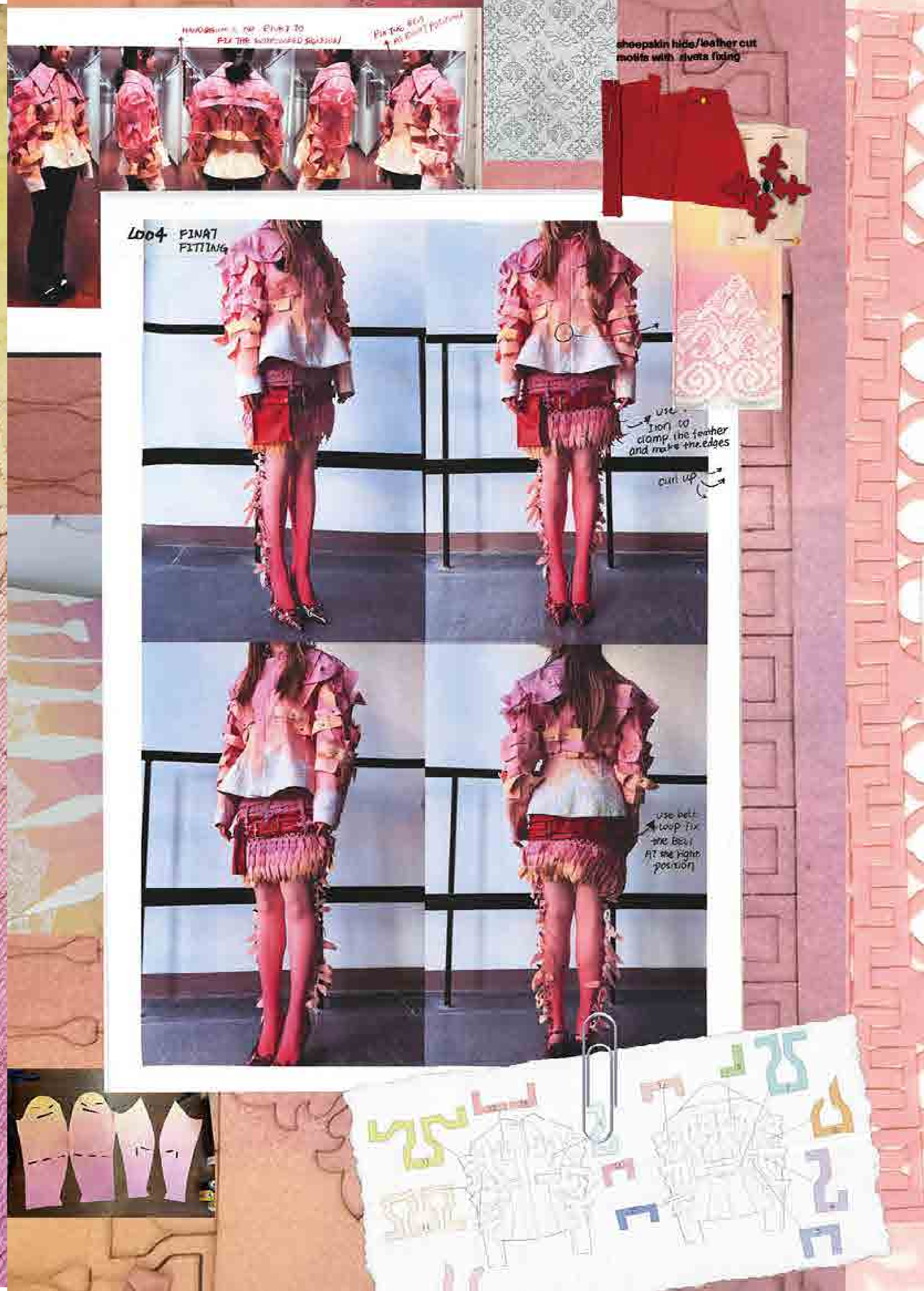
POCKET PART PATTERN

LOOK4: INTERLOCKING JACKET MOCKING UP



WORKER POCKET BELT SKIRT — WAIST PACK STRUCTURE DECONSTRUCTION

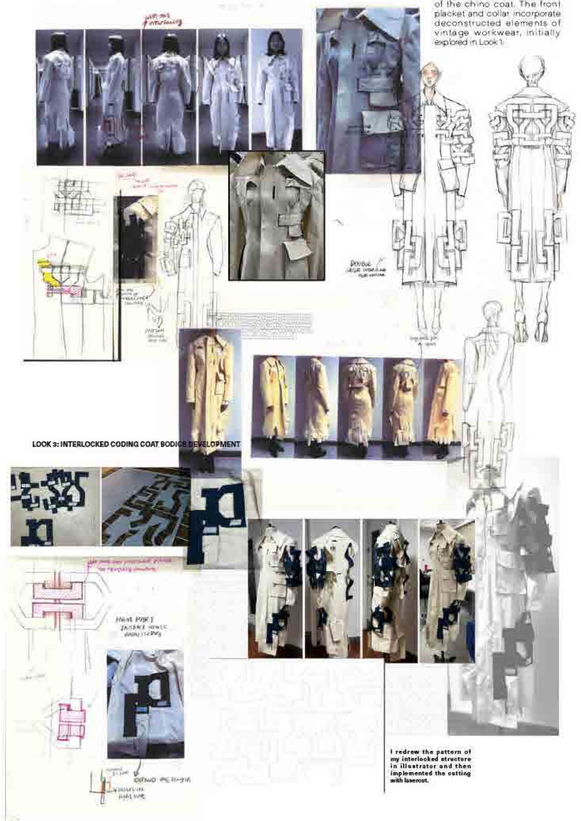
1ST VERSION MOCK UP



The color gradient of the feather-coded elements on the bustle was achieved through sublimation printing onto palmet fabric. I first hand-painted the gradient using soft pastels, then scanned the artwork to create the sublimation print. Afterward, the printed fabric was laser-cut into the interlocking pattern, seamlessly combining color and structure.

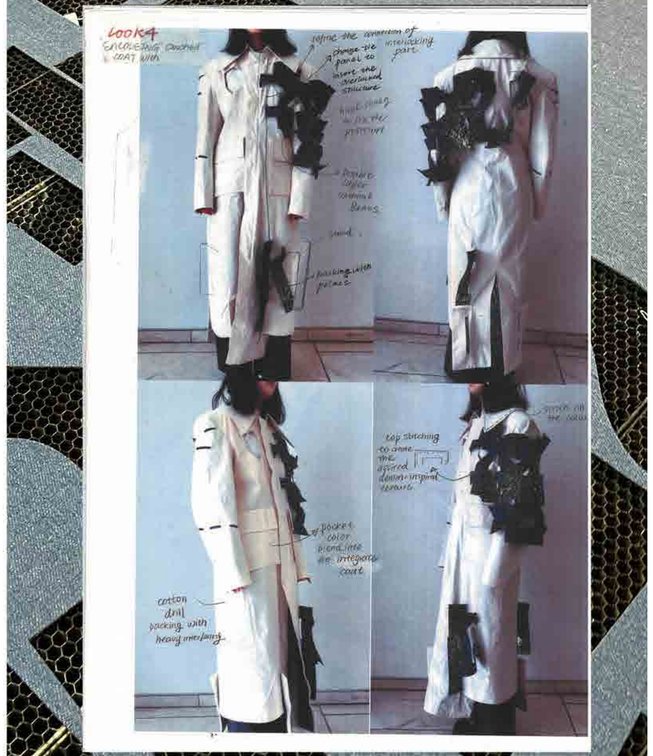
CHAPTER 4/CONCLUDE AND CONSTRUCT
LOOK3 PROTOTYPE

In this look, I enlarged the modular interlocked fabric structure and applied it prominently across the surface of the chino coat. The front placket and collar incorporate deconstructed elements of vintage workwear, initially explored in Look 1.

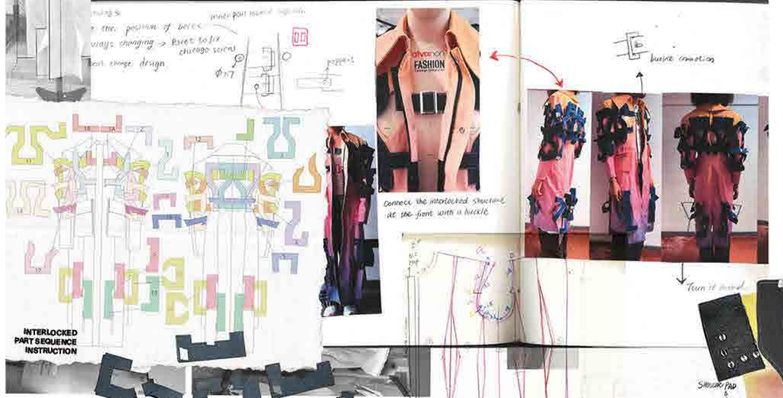


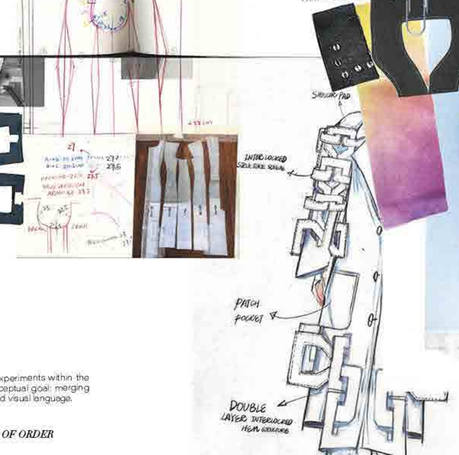
LOOK 2: INTERLOCKED CODING COAT BODICE DEVELOPMENT

I redrew the pattern of my interlocked structure in Illustrator and then implemented the cutting with laser cut.



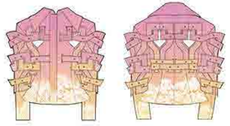
CHAPTER 5/MANUFACTURE
LOOK3





Through iterative material tests and stitching experiments within the interlocked panels, I achieved my original conceptual goal: merging functional construction with an embedded coded visual language.

Group 1 Jacket

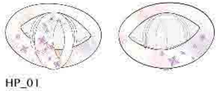


JKT_01

JKT_02

JKT_03

Group 5 Accessory



HP_01

HP_02

Group 2 Trousers

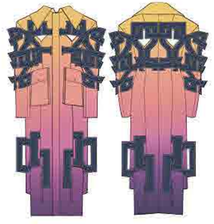
TR_01

Group 3 Skirt

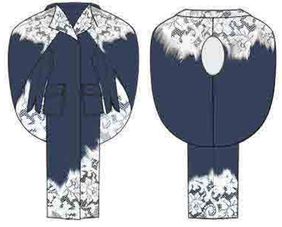
SKT_01

SKT_03

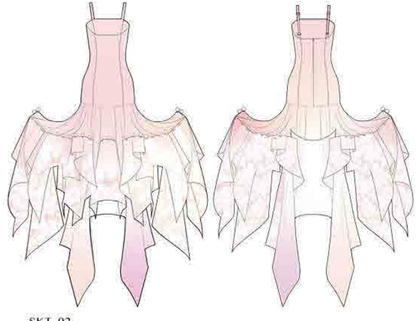
Group 4 Coat



CO_01

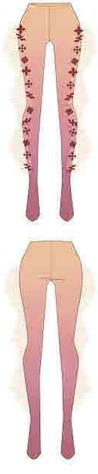


CO_02



SKT_02

BDP_01



TGT_01

RANGE PLAN

FINAL LINE UP

LOOK BOOK









Photographer
Charlotte Cullen

Models
Emily Trotter
Mae Bao
Ishbel Carson

Designer
Hilda Yang

-opposite
Charlotte Cullen. (2025) outfit3. [photography].Edinburgh.

-Right
Charlotte Cullen. (2025) outfit4. [photography].Edinburgh.