

# Geometry in Motion: A Structured System of Gathering

Student Name: Qingcheng Wang  
Student ID : 23013651

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# Introduction

## Gathering as Structural System

This research explores how gathering can function as a structural system within pattern cutting, rather than as a decorative or secondary element. Building on previous investigations into geometric pleating and creative pattern design, the project continues to question how form can be generated through the interaction of geometry, material behaviour, and digital simulation. By embedding gathering into the design and pattern stage, it aims to develop a responsive, geometry-informed approach to volume creation that is both material-driven and structurally analytical.

The research builds on contemporary approaches to experimental pattern cutting established by Rickard Lindqvist, a Swedish designer and researcher known for his *Kinetic Garment Construction* (2015), which redefines the body as a dynamic structure of balance and rotation. His work provides a conceptual foundation for understanding pattern cutting not as a flat template but as an active system of motion and tension—an idea that underpins this study's investigation into gathering as an integrated design logic.



Figure 1. Chiffon drape test in CLO3D showing early gathering distribution and volume formation (Author, 2025).

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## Introduction

Collectively, these practitioners demonstrate how geometry and motion can generate form without reliance on tailoring or decorative devices. Building on their innovations, this research extends the conversation by focusing on gathering as a structural generator—a method that situates fabric manipulation within the compositional logic of geometry to create volume, tension, and spatial depth.

The methodology combines practice-based research, material experimentation, and digital prototyping to establish a cyclical process of design and reflection. This approach aligns with the definition proposed by Estelle Barrett and Barbara Bolt, scholars in creative arts research who argue that practice can act as a method of generating knowledge rather than simply illustrating it (Practice as Research, 2010). Early tests focused on evaluating fabric properties—particularly opacity, sheen, and drape—to understand how subtle material differences influence spatial and structural outcomes. These explorations revealed that even minor shifts in weight or transparency can reshape the perception of depth and form, reinforcing the importance of an iterative and materially responsive design process.

Digital simulations using CLO3D supported this exploration by allowing controlled testing of gathering ratios, pattern geometries, and directional flows before committing to physical fabrication. This digital phase reflects what Caroline Rose describes as the emergence of “digital craftsmanship” in fashion design, where simulation becomes a critical space for experimentation (International Journal of Fashion Design, Technology and Education, 2016). Similarly, Alexandra Macdonald (2019) argues that virtual modelling enhances pattern accuracy and reduces material waste, yet cannot fully replicate tactile behaviour. Recognising these limitations, each digital iteration in this project was followed by physical sampling, establishing a continuous dialogue between virtual prediction and material reality—a hybrid workflow that merges speculative design with empirical validation.



Figure 2. TYPE-O garment produced using Miyake's Steam Stretch technique to create lightweight polygonal three-dimensional pleats (Miyake Design Studio, 2023). Image source: Miyake Design Studio website.

## Introduction

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Traditionally, gathering and pleating have been treated as embellishments, applied after the construction of a garment's basic silhouette to add fullness or texture. Such decorative use reflects a conventional separation between surface treatment and structural design. This study challenges that assumption by positioning gathering as a compositional logic embedded within the geometry of the pattern itself. Drawing on the work of Julian Roberts, a British designer and educator best known for his Subtraction Cutting method (2008), which generates volume through the strategic removal of fabric rather than traditional darts or seams, this research reconsiders how negative and positive space can shape form. In doing so, it proposes that volume can emerge from the structural relationships between pattern shape, gathering direction, and fabric response—allowing the garment to evolve as a dynamic, self-generating system rather than a static surface.

The project is situated within the broader field of experimental and geometric pattern cutting, drawing inspiration from designers and theorists who approach pattern as an active spatial system. Among them, Issey Miyake, a Japanese designer known for his technological innovations such as Pleats Please and A-POC, explores how pleating and compression can transform two-dimensional cloth into expandable three-dimensional forms. Rei Kawakubo, the founder of Comme des Garçons, challenges conventional silhouette through sculptural distortions that redefine how the body occupies space. Meanwhile, Rickard Lindqvist, whose *Kinetic Garment Construction* (2015) formulates a body-centred geometric model, provides theoretical grounding for understanding the relationship between balance, tension, and movement within pattern design.

Overall, this research aims to establish a geometry-informed system of gathering, where material behaviour, structural logic, and digital prototyping operate in synergy to generate spatial volume. By integrating digital experimentation with physical craftsmanship, the project contributes to a broader understanding of how gathering can evolve from decorative treatment into a structural design language. This investigation builds upon the discourse of creative pattern cutting articulated by scholars such as Timo Rissanen and Holly McQuillan, whose research in *Zero Waste Fashion Design* (2016) reconceptualises the pattern as a site of structural reasoning rather than surface manipulation. While their focus lies in sustainability and waste reduction, this project extends their approach toward the generative potential of geometry and gathering as agents of form creation.

The aim of the project will be supported by the following objectives:

- To contextualise the project within contemporary geometric and creative pattern cutting by analysing current practitioners.
- To explore, through sampling, how variations in placement, direction, and shape of gathering influence silhouette, volume, and structure.
- To investigate how gathering interacts with both body placement and material type, analysing their combined influence on proportion and spatial behaviour.
- To evaluate and refine design outcomes through iterative CLO3D simulation and physical prototyping.
- To synthesise these findings into a flexible design system integrating geometry, gathering strategy, and material response.

# Literature and Contextual Review

Building on the research aims introduced in the introduction, this section examines the theoretical and contextual foundations that inform the project. The review begins by analysing how contemporary practitioners and theorists have redefined pattern cutting as a geometric and spatial practice. It then situates gathering within this discourse as a structural rather than decorative method, connecting material behaviour, digital experimentation, and design process to the study's central inquiry.

## 2.1 Experimental and Geometric Pattern Cutting

Recent developments in experimental and geometric pattern cutting challenge the conventional flat logic of garment design by rethinking how pattern geometry relates to the moving body. Rickard Lindqvist, a Swedish designer and researcher, developed *Kinetic Garment Construction* (2015), which redefines the body as a system of balance, rotation, and tension. His model provides an anatomical yet geometric framework that treats the body as an active force shaping the pattern, rather than a static outline.

In contrast, Julian Roberts, a British designer and educator, proposed *Subtraction Cutting* (2008), a method that constructs volume through the deliberate removal of fabric. This approach creates negative space that later becomes the site of expansion and movement, offering a radical inversion of traditional pattern logic. While both methodologies transform how garments are spatially conceived, their outcomes differ significantly: Lindqvist's system prioritises bodily motion and precision, whereas Roberts's technique celebrates unpredictability and the expressive qualities of excess fabric.

These contrasting approaches are groundbreaking because they establish two poles of creative geometry—one grounded in anatomical accuracy, the other in intuitive improvisation. However, both overlook the role of material behaviour in mediating these geometric systems, a gap that this project addresses by introducing gathering as a structural mechanism that connects geometry to material response.



Figure 2.1. Lindqvist's Kinetic Garment Construction model illustrating dynamic body mapping, tension pathways, and the translation of movement into pattern geometry (Lindqvist, 2015).

## Literature and Contextual Review

### 2.2 Gathering as Structural Language

Although gathering has a long presence in dress history, its potential as a spatial and structural design principle remains underexplored. Three contemporary designers—Issey Miyake, Rei Kawakubo, and Iris van Herpen—have each redefined the act of gathering as a mechanism for transformation rather than ornament.

Issey Miyake, a Japanese designer celebrated for his technological innovation, developed the A-POC (A Piece of Cloth) and Pleats Please systems, which integrate pleating and compression during production to enable garments to expand from flat textile to volumetric form. His approach demonstrates how manufacturing logic can become a structural generator of shape. However, Miyake's technique, while materially intelligent, operates within controlled industrial parameters that limit spontaneous fabric behaviour.

Rei Kawakubo, founder of Comme des Garçons, treats distortion and asymmetry as compositional devices that challenge the body's conventional silhouette. Her practice transforms the relationship between garment and wearer, yet its sculptural excess often relies on heavy materials and external supports, restricting natural motion.

Iris van Herpen, working at the intersection of digital technology and couture craftsmanship, extends the idea of gathering into algorithmic and kinetic structures. Through techniques such as laser cutting and 3D printing, she explores tensioned forms that simulate movement within rigid materials. While conceptually ambitious, her digital approach can prioritise spectacle over tactile interaction.

Collectively, these designers demonstrate how gathering can act as a compositional and structural force that manipulates both material and perception. Yet each also exposes limitations—between control and spontaneity, technology and tactility—that this research seeks to reconcile through a geometry-driven system of gathering integrating material behaviour, body interaction, and spatial logic.



Figure 2.2. Issey Miyake's engineered pleating from the A-POC/Pleats Please system, demonstrating how controlled compression and textile programming generate three-dimensional expansion from a flat structure (Miyake Design Studio, 2023).



Figure 2.3. Rei Kawakubo's sculptural distortion from the Lumps and Bumps series, illustrating gathering as a spatial deformation that challenges the conventional body silhouette (Comme des Garçons Archive, 1997).



Figure 2.4. Iris van Herpen's algorithmic tension structure, created through laser cutting and 3D printing to simulate gathered movement within rigid materials (Iris van Herpen Studio, 2016).

## Literature and Contextual Review

### 2.3 Material Behaviour and Fabric Intelligence

In contemporary creative pattern cutting, material behaviour is increasingly recognised as a form of knowledge rather than a passive property of matter. Paul Carter, an Australian theorist in creative research, articulates this concept in his book *Material Thinking* (2005), arguing that materials actively participate in the process of making, shaping both thought and outcome. This notion shifts design from a top-down act of control toward a dialogic process in which form emerges through negotiation with material resistance.

Similarly, Timo Rissanen and Holly McQuillan, leading scholars in sustainable fashion and authors of *Zero Waste Fashion Design* (2016), highlight how textile attributes—such as tension, weight, and elasticity—play a decisive role in forming structure and silhouette. Their work reframes the pattern not as a static blueprint but as a structural reasoning tool, where the fabric's physical behaviour determines the geometric logic of construction.

Within this research, these ideas are tested empirically through comparative analysis of chiffon, organza, and satin, selected for their contrasting levels of transparency, stiffness, and drape. Chiffon's lightness allows continuous flow and layering, revealing internal geometry; organza's rigidity generates sharper volumes and angular folds; satin provides weight and opacity, stabilising the gathered structures beneath sheer layers. These observations illustrate how material intelligence—the fabric's inherent capacity to guide form—becomes both method and outcome in design practice.

However, while Carter's framework emphasises material agency, it does not account for the complexities of digital simulation, where tactile and gravitational realities are translated into algorithmic approximations. Likewise, Rissanen and McQuillan's work, though foundational, focuses primarily on sustainability and waste reduction rather than material dynamics. This study therefore expands upon their theories by exploring how geometric gathering can mediate between physical and digital materialities, producing a hybrid model that integrates geometry, fabric behaviour, and spatial structure.



Figure 2.5. Comparative material samples demonstrating differing behavioural responses under gathering: satin (top) showing opacity and weight; organza (middle) showing rigidity and angular fold formation; and chiffon (bottom) showing high transparency and fluid drape. Image source: Author's own material tests (2025).

## Literature and Contextual Review

### 2.4 Digital Tools and Hybrid Experimentation

Digital technologies have significantly transformed the experimental phase of fashion design, particularly in pattern development and material simulation. Scholars such as Caroline Rose (2016) and Alexandra Macdonald (2019) discuss how software like CLO3D enables iterative prototyping and predictive testing, allowing designers to visualise pattern geometry and fabric behaviour prior to material execution. This process, which Rose terms digital craftsmanship, bridges technical precision with creative intuition by making the invisible logic of construction visible.

However, as both Rose and Macdonald acknowledge, digital simulation cannot fully reproduce the tactile and gravitational realities of fabric. The translation of physical qualities—such as tension, weight, and elasticity—into digital parameters inevitably simplifies their behaviour. This limitation is especially significant when studying gathering, since its structural outcomes depend on how real fabrics compress, stretch, and collapse under force.

To address this, the present research adopts a hybrid workflow that alternates between virtual and physical modes of experimentation. Digital simulation is used to forecast geometric behaviour and optimise gathering ratios, while physical sampling tests the accuracy of those predictions through direct tactile engagement. The continuous feedback between digital and material experimentation allows for critical evaluation: discrepancies between the simulated and physical outcomes reveal where geometry fails to capture material resistance.

Through this hybrid approach, CLO3D becomes not only a tool for visualisation but also a critical instrument for analysing the dialogue between geometry, material, and motion. It transforms digital practice into an investigative process that complements, rather than replaces, embodied making.



Figure 2.6. CLO3D simulation used to test gathering behaviour and predict geometric change. Image source: Author (2025)



Figure 2.7. Physical gathering sample showing material response that diverges from digital simulation. Image source: Author (2025).

## Literature and Contextual Review

### 2.5 Position within Contemporary Discourse

Across recent scholarship in experimental pattern cutting, a clear shift has emerged—from viewing fabric manipulation as surface decoration to understanding it as a form of structural reasoning. This redefinition is grounded in the work of theorists such as Rickard Lindqvist, Julian Roberts, Paul Carter, and Timo Rissanen & Holly McQuillan, each of whom reframes the relationship between geometry, material, and body in distinct ways. Lindqvist and Roberts, both practitioner-researchers, have demonstrated how pattern logic can generate spatial complexity through dynamic cutting systems, while Carter, Rissanen, and McQuillan articulate how material agency and sustainability reshape the designer's decision-making process.

Although these frameworks have collectively advanced the discourse of pattern cutting, they remain largely disciplinary-specific—either theoretical, material, or environmental in focus. None explicitly address how geometry, digital simulation, and fabric behaviour can interact within a single design methodology. Moreover, the conversation has tended to privilege the designer's authorship over the material's response, leaving a conceptual gap between intention and emergence.

This project positions itself within that gap. By embedding gathering into the geometry of pattern cutting, it seeks to establish a hybrid system that unites digital prediction with tactile feedback and material intelligence. In doing so, the research extends current discourse beyond aesthetic or sustainable concerns toward a structural understanding of movement and form. It proposes that the act of gathering—traditionally decorative—can operate as an architectural principle that negotiates between control and spontaneity, precision and fluidity, within contemporary fashion practice.



Figure 2.8. Geometry-driven gathering tests demonstrating how form emerges through directional drape and material behaviour. Image source: Author (2025).

# Methodology

This research adopts a practice-based methodology, positioning creative making as both the method and the outcome of inquiry. Rather than aiming to prove a fixed hypothesis, the study develops knowledge through iterative cycles of making, reflection, and reconfiguration. This aligns with the argument of Estelle Barrett and Barbara Bolt, Australian theorists of creative arts research, who propose that practice generates knowledge through action and material engagement (Practice as Research: Approaches to Creative Arts Enquiry, 2010). Their framework situates creative production not as an illustration of theory but as a site where theory itself is formed.

Similarly, Paul Carter, author of *Material Thinking* (2005), defines practice as a conversation between maker and material, where design decisions emerge through interaction rather than imposition. While Carter emphasises material agency—the capacity of materials to influence thought—Bolt extends this notion toward the reflexive role of the practitioner, highlighting how critical awareness transforms tacit making into explicit knowledge. Together, these scholars establish the conceptual foundation for this study: that understanding arises within the act of creation, through both material dialogue and reflective interpretation.

In this project, each prototype, digital simulation, or textile sample operates as a record of inquiry, producing what Bulley and Şahin (2021) describe as “situated knowledge”—knowledge that is embedded within context and process. The methodology follows an iterative sequence of testing, reflection, and adaptation, forming a continuous loop between digital prediction and material feedback. This cyclical structure enables the designer to oscillate between embodied experience and analytical observation, maintaining a balance between intuitive decision-making and theoretical reasoning.

Reflexivity is central to this methodology. It involves critically examining one's own decisions and assumptions during the design process, recognising how personal judgement, aesthetic preference, and material behaviour co-shape the outcome. Through written notes, sketches, and photographic documentation, reflexive thinking becomes visible, allowing the researcher to articulate why specific choices were made and how they influence the evolving methodology.

## PRACTICE-BASED METHODOLOGY

**MATERIAL INVESTIGATION**



**GEOMETRIC TESTING**



**DIGITAL SIMULATION (CLO3D)**



**PHYSICAL SAMPLING**



**REFLEXIVE EVALUATION**

**HYBRID STRUCTURAL SYSTEM:**

**geometry × gathering × material behaviour**

Figure 3.1. Methodological framework combining material investigation, geometric experimentation, digital simulation, physical sampling, and reflexive evaluation. Image source: Author (2025).

In summary, this methodology positions the designer as both researcher and practitioner, acknowledging the body, fabric, and geometry as interdependent agents in the formation of structure. Through cycles of sampling, simulation, and reflection, the study builds a reflexive, material, and geometric understanding of how gathering can evolve from a decorative technique into a structural design system embedded within pattern cutting.

Following the practice-based methodology outlined above, this project employs a combination of experimental, material, and digital methods to investigate how gathering can operate as a structural system within geometric pattern cutting. Each method was selected for its ability to interrogate different aspects of form generation—including material behaviour, pattern geometry, and iterative design development. The methods include:

1. Material testing
2. Digital simulation (CLO3D)
3. Physical sampling and toile making
4. Visual and object-based analysis
5. Documentation and reflection

These methods were applied iteratively, forming a cyclical process in which insights from one stage informed the next. Material testing guided digital simulations, which were validated through physical sampling, while reflection connected these findings into an evolving system of design reasoning.

## 4.1 Material Testing

The initial phase focused on understanding fabric behaviour through controlled testing. Three primary textiles—chiffon, organza, and satin—were selected for their contrasting stiffness, transparency, and drape. Each material was evaluated through two key dimensions:

**Drape:** the fabric's capacity to fall and respond to gravity;

**Transparency:** how layering and gathering affect visibility and spatial depth. These fabrics were tested under identical gathering ratios (1.5x, 2x, and 3x) to observe how tension and volume interacted. Results revealed that chiffon maintained the most fluid transitions, organza created sharp structural planes, and satin contributed depth through contrast and weight.

Unlike prior technical studies, this assessment employed the designer's tacit knowledge—developed through touch and observation—as an analytical tool. This subjective evaluation recognises that material understanding in fashion design cannot be fully quantified but emerges through sensory interaction.

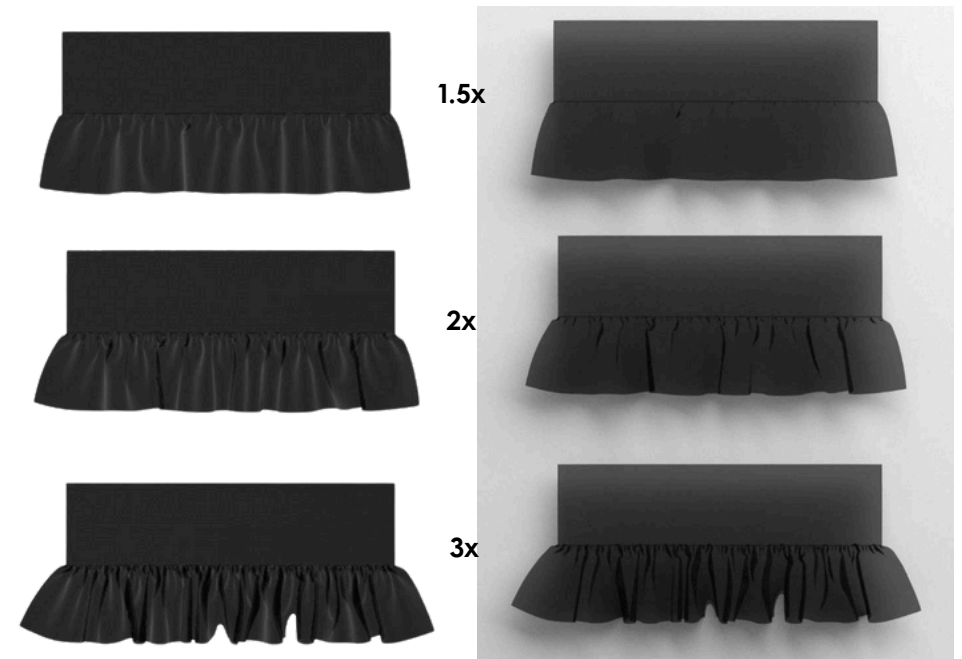


Figure 4.1. Comparative gathering simulations at 1.5x, 2x, and 3x ratios used to evaluate fold density, tension distribution, and volumetric behaviour. Image source: Author (2025).

## Methods

### 4.2 Digital Simulation (CLO3D)

The second phase employed CLO3D to prototype geometric variations and predict gathering behaviour. Digital tests examined:

I gathering ratios (1.5x, 2x, 3x);

I directional variations (horizontal, radial, diagonal);

I layering configurations (e.g., black chiffon over white satin).

These simulations made it possible to visualise volume shifts and pattern logic before physical sampling. As noted by Rose (2016) and Macdonald (2019), digital tools enhance accuracy and reduce material waste but cannot replicate the tactile and gravitational qualities of fabric. This project extends their observations by identifying specific discrepancies: simulated gathers tend to appear uniformly smooth, whereas physical gathers collapse irregularly due to uneven weight distribution. Recognising this divergence informed subsequent pattern adjustments.



Figure 4.2. Comparison between CLO3D gathering simulation (left) and physical chiffon sample (right), illustrating the divergence between smooth digital gathers and irregular material collapse caused by weight distribution. Image source: Author (2025).



Figure 4.3. Side-view physical toile test illustrating gathering distribution and material collapse. Image source: Author (2025).

### 4.3 Physical Sampling and Toile Making

Digital outcomes were translated into physical prototypes at both small and full scale. Three structural systems were tested:

1. Seam-integrated gathering – gathers embedded within darts or seams;
2. Radial and trapezoidal structures – creating directional movement and asymmetry;
3. Layered overlay systems – sheer fabric revealing internal geometry.

Through this process, the research evaluated how geometric positioning and material stiffness influenced silhouette balance. Observations revealed that distributed gathers created more stable volume, while concentrated gathers produced vertical collapse. These empirical findings directly shaped the refinement of pattern geometry.

#### 4.5 Documentation and Reflection

Throughout the project, documentation functioned as a method of inquiry. Each phase—material testing, simulation, and sampling—was recorded through photography, sketches, and written reflection. This reflexive documentation created a continuous dialogue between doing and analysing, allowing emergent insights to shape subsequent design decisions.

Rather than treating documentation as post-process evidence, it was integrated within the design loop itself, supporting what Barrett and Bolt (2010) describe as “thinking through practice.” The act of recording became a form of reflection, transforming tacit experience into articulated knowledge.

#### Summary

Together, these methods construct a hybrid design system grounded in iterative practice, material intelligence, and reflexive analysis. Material testing establishes tactile understanding; digital simulation provides predictive insight; and physical sampling offers experiential validation. The integration of these methods allows gathering to be examined not as an aesthetic feature, but as a structural and conceptual framework for generating volume within geometric pattern cutting.

This methodological foundation informs the next stage of the project—the development of garments and spatial experiments—where these principles are tested through iterative making and analysis.

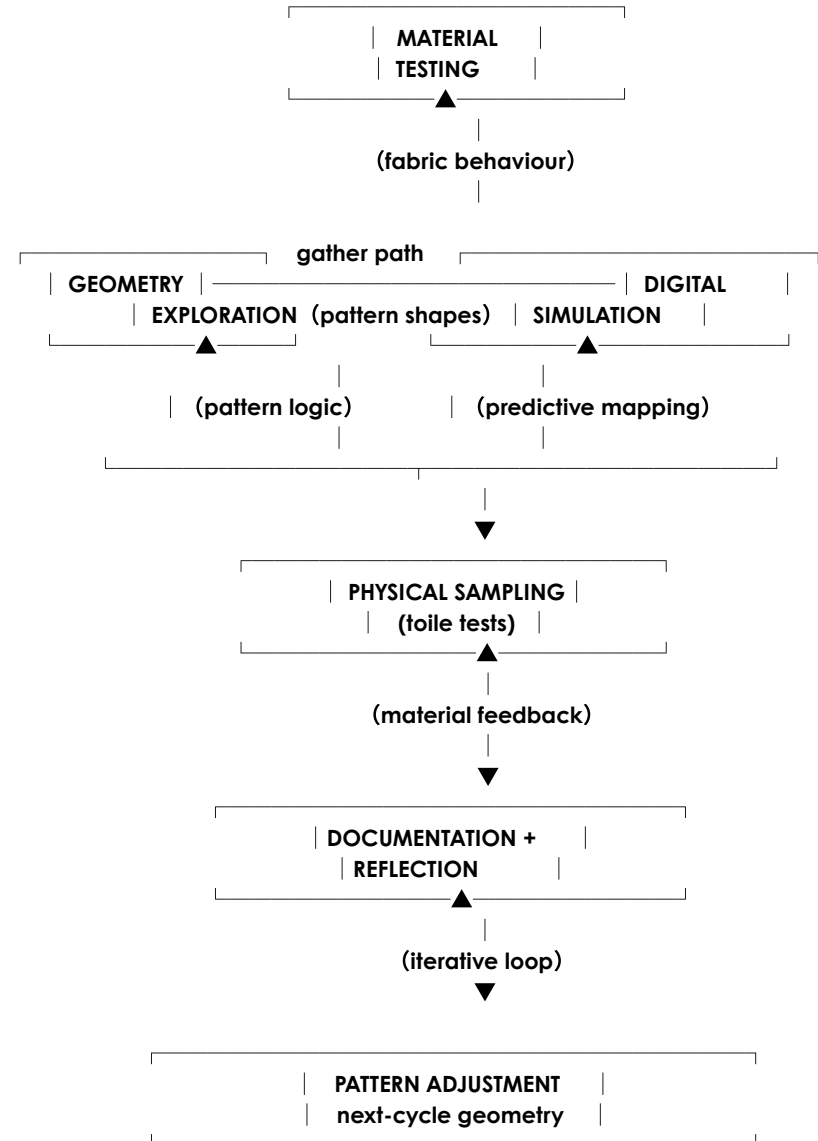


Figure 4.5. Geometric methodological diagram illustrating the iterative relationship between material testing, geometric exploration, digital simulation, physical sampling, and reflective documentation. Image source: Author (2025).

# Project Development



Building upon the methodological framework of practice-based research, this chapter documents the practical development of the project—where the theoretical and methodological principles outlined earlier are translated into material and spatial form. The work evolves through iterative cycles of digital simulation, material experimentation, and garment-scale sampling, forming a continuous dialogue between virtual design prediction and physical realisation.

While the previous chapter established the foundational methods, this stage moves from controlled testing into applied garment development, allowing the emerging geometric-material system of gathering to be tested at full scale. The development process therefore becomes the site where structural principles are verified, refined, and expanded into wearable forms, ensuring that the research evolves beyond isolated experiments into spatial and functional outcomes.

The development process is structured into five main stages:

1. Material exploration and fabric selection;
2. Digital development and geometric testing;
3. Large-scale sampling and toile construction;
4. Reflexive analysis and adjustment;
5. Synthesis into a structured system of gathering.

This progression ensures that each design decision is both empirically grounded and conceptually aligned with the research aims—to establish gathering as a structural logic within geometric pattern cutting, and to integrate this logic into the development of the final garments.



Figure 5.1. Overview of garment development showing key silhouettes from the final collection, illustrating how gathering systems were embedded into full-scale wearable forms. Image source: Author (2025).

## Project Development



### 5.1 Material Exploration and Fabric Selection

The first stage of development refined the selection of materials, building directly upon the comparative fabric testing discussed in Chapter 4. Three primary textiles—chiffon, organza, and satin—remained central to the investigation, chosen for their distinct combinations of transparency, weight, and flexibility. While chiffon offered the most responsive and fluid qualities for gathering, organza provided structural definition, and satin acted as a stable underlayer to support optical contrast and light diffusion through sheer fabrics.

As experimentation progressed, additional materials such as lightweight tulle and crepe were introduced to broaden the visual and structural vocabulary of the project. These comparative trials demonstrated how variations in surface texture and fibre composition altered gathering tension and retention. For instance, tulle created sharper tension lines, while crepe introduced density and resistance, resulting in a slower release of volume. This confirmed that even under identical geometric conditions, material agency decisively influences spatial outcome.

The study therefore reaffirms Carter's notion of Material Thinking (2005)—that materials are not passive tools but co-creative participants in the design process. Yet, unlike Carter's theoretical discussion, this project translates material intelligence into measurable design parameters such as gathering ratio, directional pull, and layering opacity.



Figure 5.2. Comparative material study showing chiffon (top), organza (middle), and tulle (bottom) samples (left), alongside corresponding 3D gathering simulations (right). The comparison demonstrates how varying transparency, stiffness, and fibre density influence gathering retention and volumetric behaviour under identical geometric ratios. Image source: Author (2025).

## Project Development



### 5.2 Digital Development and Geometric Testing

Parallel to material experimentation, digital development using CLO3D enabled the systematic exploration of geometric configurations and their effects on gathering distribution. The focus was placed on angled triangular composite pattern structures, formed through the combination of multiple triangles at varying orientations. These geometries naturally encourage directional flow and internal expansion. They were digitally modelled to observe how gathering ratios (1.5x, 2x, 3x) influenced overall silhouette, balance, and visual tension.

The digital process served two main purposes: first, to visualise the structural potential of each geometry under controlled conditions; and second, to simulate hypothetical material substitutions without physical waste. Through these virtual trials, it became apparent that transparency profoundly affected the reading of depth: high-transparency fabrics such as chiffon revealed internal folds and layered movement, while denser materials like crepe and satin obscured interior geometry, producing a more sculptural, enclosed form.

These simulations highlighted both the potential and the limitation of digital modelling. While CLO3D efficiently predicted geometric distribution, it failed to reproduce the unpredictable friction and collapse seen in physical gathering. Consequently, the digital stage became a reflective testing ground—a way to speculate, analyse, and pre-empt structural behaviour before committing to fabric.

Reflection: Through this stage, the digital workflow proved not only a technical tool but also an analytical medium. The act of simulating and observing pattern behaviour deepened my understanding of how angular variation within triangular compositions governs spatial rhythm, revealing that even subtle shifts in angle or proportion dramatically alter volumetric balance.

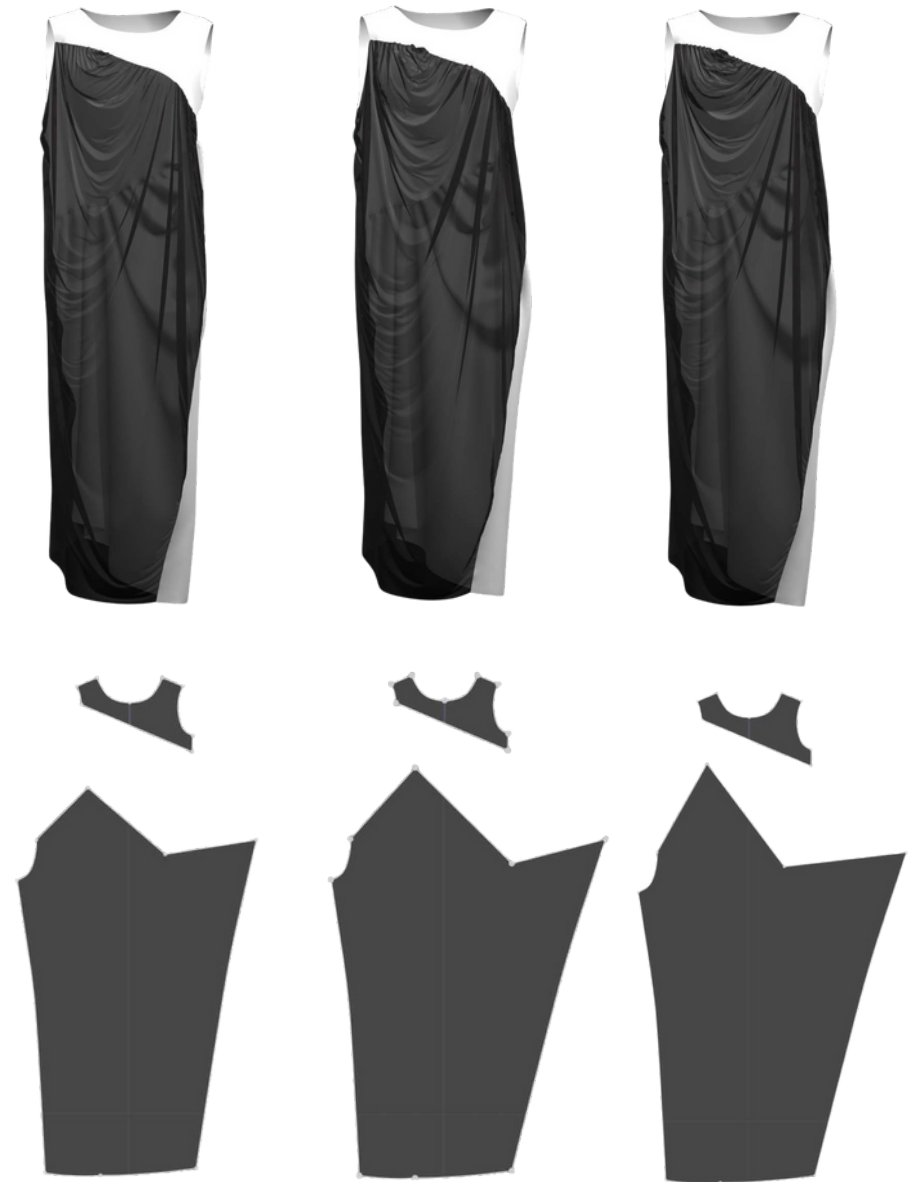
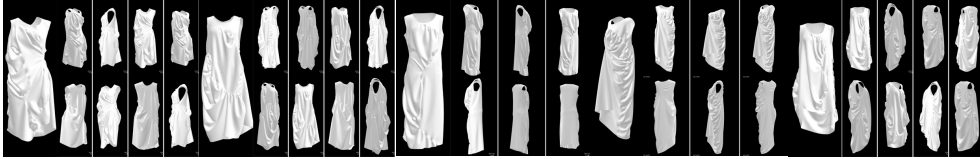


Figure 5.3. Digital experiments testing angled triangular composite pattern structures, demonstrating how variations in geometric angle and orientation influence gathering direction, volume expansion, and silhouette behaviour. Below: corresponding 2D pattern layouts showing how angular shifts alter the tension path and spatial rhythm. Image source: Author (2025).

## Project Development



### 5.3 Large-Scale Sampling and Toile Development

Building upon insights from both material and digital testing, the project progressed into large-scale sampling and toile construction. Unlike traditional toile methods that rely on opaque calico, this study employed sheer materials—primarily chiffon, organza, and tulle—for all full-scale tests. These fabrics were selected because their transparency reveals internal fold behaviour, tension distribution, and volumetric layering, which are central to gathering as a structural system. Calico, by contrast, would obscure the very phenomena the research aims to analyse.

This stage focused on embedding gathering directly into the garment's pattern geometry, rather than applying it as surface treatment. Development centred on two pattern systems:

- Angled triangular composite structures: where gathers follow the directional pull created by shifting angles;
- Side-extended triangular structures: where uneven edges and non-parallel sides generate diagonal tension and asymmetrical volume.

The transition from small-scale tests to full-size sheer toiles provided the opportunity to observe how gravity, fabric weight, and seam orientation interact at real scale. Gathering ratios and directional flows were informed by earlier material tests and adjusted digitally before cutting.



Figure 5.4. Large-scale toile development testing angled triangular composite pattern structures. The images show how geometry, gravity, and fabric weight interact at full scale, revealing diagonal tension paths, volume retention, and layered depth produced through chiffon-over-satin construction. Image source: Author (2025).

# 05

## Project Development



The layering of black chiffon over white satin created particularly strong optical effects—light penetrating through the upper layer exposed the tension lines and internal folds beneath, generating depth and motion within the structure. These visual cues were essential in refining the geometric logic, making transparent toile a crucial methodological choice rather than a stylistic one.

To document these experiments, each toile was photographed and annotated to record tension paths, collapse points, and structural balance. These annotations highlighted how material choice affected volume retention: chiffon maintained elasticity and fluid drape, organza produced sharper directional pulls, while acetate-based fabrics generated stiffer planes that resisted collapse.

The findings from this stage informed refinements in the subsequent reflexive analysis, where pattern geometry and material behaviour were reviewed in relation to structural balance.

Unlike traditional toile development, this project did not employ calico or muslin. Transparent and fluid fabrics such as chiffon and acetate were used intentionally, as they made the internal tension paths, fold behaviour, and directional pull visible during testing. This material-based approach allowed the gathering system to be analysed structurally rather than superficially.



Figure 5.5. Full-scale toile development using real materials rather than calico, demonstrating how angled triangular composite structures translate into wearable silhouettes. The prototypes show variations across tops, dresses, and skirts, revealing how geometry, fabric weight, and layering depth interact at full scale. Transparent chiffon toiles expose tension paths and internal folds, while acetate and opaque fabrics demonstrate contrasting volume retention. Image source: Author (2025).

## Project Development

### 5.4 Reflexive Analysis and Iterative Adjustment

As each stage of making unfolded, reflection became an integral part of the design process. Rather than functioning as a post-analysis step, reflexive evaluation occurred simultaneously with material testing, digital simulation, and full-scale sampling, allowing design decisions to evolve dynamically in response to emergent findings. This approach aligns with practice-based research methods, where knowledge is produced through cycles of doing, observing, and adjusting. A key methodological decision during this stage was the use of transparent, material-accurate toiles rather than calico. Chiffon and acetate were intentionally selected because their fluidity and translucency made internal tension paths, collapse points, and directional pull visible—structural behaviours that opaque cotton toiles would obscure. This made the toile itself a diagnostic tool, enabling the geometry–material relationship to be analysed structurally rather than inferred indirectly.

Each toile was photographed and annotated to record:

- the direction and density of tension lines,
- areas of gravity-induced collapse,
- regions where volume accumulated or dispersed,
- and the interaction between layered materials and underlying geometry.

These observations revealed how small variations in angle, seam placement, and gathering ratio produced significant changes in silhouette stability. For instance, when gathers were distributed too evenly, the form appeared flat and lacked spatial rhythm; when tension was slightly staggered or concentrated at strategic points, the silhouette gained depth and organic movement. Similarly, angular shifts in the triangular composite pattern altered the gather path, redirecting volume diagonally or vertically depending on the orientation.

Reflection during this stage moved beyond aesthetic judgement. It became a form of structural analysis that exposed the negotiation between intention and material agency—how the planned geometry interacted with the unpredictable behaviour of real fabric. This iterative evaluation informed subsequent adjustments to pattern proportion, gathering placement, and material combinations, ensuring that each revision brought the garment closer to a balance between control and spontaneity.

The insights from this reflexive process directly prepared the ground for the structured system of gathering developed in the next section, synthesising geometric logic, material intelligence, and iterative calibration into a coherent design framework.



Figure 5.6. Iterative modifications of a single gathered top, showing how targeted adjustments to seam placement, gathering direction, and triangular composite geometry altered tension distribution, drape behaviour, and silhouette stability. Image source: Author (2025).



Figure 5.7. Iterative toile development of the shirt prototype, demonstrating how gathering was integrated into a conventional shirt through adjustments to back-panel geometry and triangular insertion points. These modifications reveal how directional pull, seam placement, and fabric contrast. Image source: Author (2025).

Figure 5.8. Iterative skirt development exploring how angled triangular composite geometries shape vertical collapse, volume retention, and directional flow. Image source: Author (2025).

### 5.5 Towards a Structured System of Gathering

The culmination of the development process established a structured framework where gathering operates as an integral component of geometric cutting rather than as a post-construction embellishment. This system synthesises the cumulative insights from material testing, digital simulation, and physical sampling into a coherent design logic that can be adapted across different garments.

The framework is built upon three interdependent parameters:

1. Geometric control – defining how directional flow and seam placement generate structural rhythm;
2. Material agency – understanding how transparency, weight, and tension contribute to spatial behaviour;
3. Iterative calibration – refining ratios and distribution through repeated feedback between digital and physical prototypes.

By combining these parameters, the project constructs a hybrid pattern system that negotiates between precision and spontaneity. In practice, this means that each pattern is designed with embedded gathering zones, calibrated according to desired volume and fabric type. The process transforms gathering from an intuitive act of manipulation into a reproducible, geometry-driven principle.

Reflection: This framework marks a conceptual shift from decoration to structure—from adding volume to generating it.

It demonstrates that gathering can articulate the dialogue between body, geometry, and material, producing forms that are simultaneously engineered and expressive.



Figure 5.8. Development of the gathered skirt using angled triangular composite patterns. The pattern, digital simulation, and physical toile collectively demonstrate how geometric calibration and material behaviour shape directional gathering and structural volume. Image source: Author (2025).

### 5.6 Final Garment Development

Building on the structured system of gathering established in Chapter 5, this chapter presents the translation of the research framework into fully realised garments. Each final piece—comprising dresses, tops, a shirt, skirts, and trousers—applies the geometric–material principles developed throughout the project, demonstrating how gathering can function as a structural and spatial logic within wearable form.

Rather than treating the final garments as isolated outcomes, the development process positioned each piece as a test-bed for evaluating the adaptability, scalability, and expressive potential of the geometric–gathering system. Across different silhouettes, materials, and body placements, the framework was applied to examine:

- how directional gathering zones influence movement and silhouette stability;
- how transparency, weight, and layering affect depth and spatial articulation;
- how triangular and angled composite geometries calibrate tension and volumetric expansion;
- how digital prediction aligns with or diverges from physical behaviour during full-scale construction.

Together, the final garments serve as a material synthesis of the project's aims—demonstrating that gathering can operate as an engineered, geometry-driven design principle capable of generating structural volume across multiple garment categories.



Figure 5.9. Fabric calibration during the development of final garments, showing how gathering was mapped, pinned, and tested on chiffon to evaluate tension paths, collapse behaviour, and directional flow before full-scale construction. Image source: Author (2025).

## Project Development



Figure 5.10. Jersey base calibration for Dress 1, showing the foundational silhouette used to stabilise proportion, evaluate gravity-driven collapse, and define the directional flow before layering with chiffon. The jersey layer establishes a structural base for subsequent gathering tests. (Image source: Author, 2025.)



Figure 5.11. Final garment development of Dress 1, featuring black chiffon layered over a white jersey base. (Image source: Author, 2025.)



Figure 5.12. Pattern structure of Dress 1. (Image source: Author, 2025.)



Figure 5.13. CLO3D simulations of Dress 1 (Image source: Author, 2025.)

### 5.6 Final Garment Development – Dress 1

Building on the geometric–material gathering system established in Chapter 5, Dress 1 integrates angled triangular geometries, digital simulation, and physical material behaviour into a fully resolved garment structure.

The design consists of two layers, each fulfilling a specific structural role:

- A white jersey underlayer, establishing the foundational silhouette, supporting tension pathways, and providing stability for calibrated gathering placement.
- A black chiffon overlay, constructed from angled triangular composite pattern pieces that generate directional flow, asymmetric expansion, and layered spatial depth.

The development process followed an iterative workflow: silhouette calibration using the jersey base, digital testing in CLO3D to evaluate geometric adjustments, transparent chiffon mapping to observe real tension and collapse behaviour, and final refinement aligning digital predictions with material response.

Together, these stages demonstrate how gathering functions as a structural generator, while chiffon's translucency reveals the internal logic of the geometry.

## Project Development



Figure 5.14. Jersey base calibration for Dress 2, showing the black underdress used to stabilise the column silhouette, evaluate gravity-driven collapse, and define the directional flow of side gathering before adding the chiffon layer. Image source: Author (2025).



Figure 5.15. Final garment development of Dress 2, featuring a black chiffon overlay gathered asymmetrically over a black jersey base to create a side-weighted column silhouette. Image source: Author (2025).

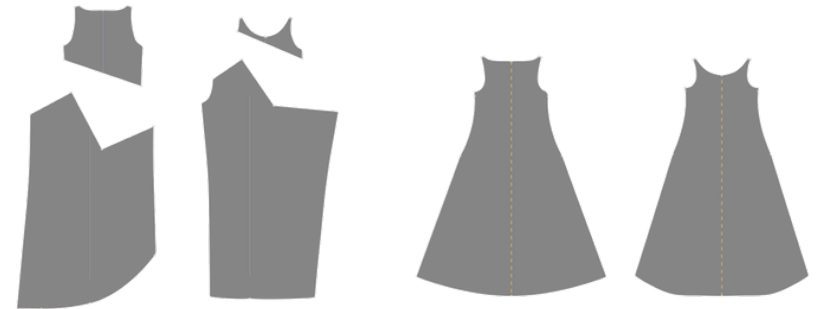


Figure 5.16. Pattern structure of Dress 2, illustrating angled triangular composite panels and side-weighted gathering zones that generate diagonal tension and localised volume. Image source: Author (2025).



Figure 5.17. CLO3D simulations of Dress 2, testing how variations in panel angle and gathering distribution affect side collapse, volumetric density, and overall silhouette balance. Image source: Author (2025).

### 5.6 Final Garment Development – Dress 2

Building on the same geometric–material gathering system, Dress 2 tests how the framework behaves when both layers are rendered in black, compressing structural contrast into a single tonal field. The garment again consists of two integrated layers: a matte black jersey underdress that stabilises the column silhouette and anchors tension pathways; and a semi-sheer black chiffon overlay cut from angled triangular composite panels.

In contrast to Dress 1, where gathering was distributed more evenly across the front, Dress 2 concentrates gathering along one side seam, generating a diagonal pull that wraps around the body. Iterative trials used the jersey base to calibrate proportion and weight, followed by CLO3D simulations to map how shifts in panel angle altered the location of collapse and the density of folds. Final adjustments were made through on-body gathering tests in chiffon, where pins were used to refine the transition between supported and collapsing areas.

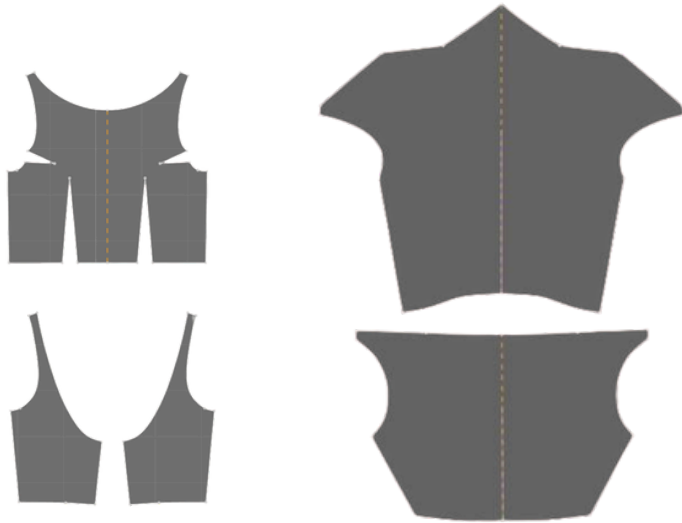


Figure 5.18. Pattern structure of Top 1, Image source: Author (2025).



Figure 5.19. Final garment development of Top 1. Image source: Author (2025).



Figure 5.20. CLO3D simulations of Top 1. Image source: Author (2025).

### 5.6 Final Garment Development – Top 1

Top 1 applies the geometric–material gathering framework at a smaller scale, testing how directional gathering behaves when concentrated around the upper torso. The garment consists of two layers: a fitted jersey base that anchors the silhouette and stabilises tension flow, and a black chiffon overlay constructed from angled triangular composite panels that enable multi-directional volume formation.

Unlike the dresses, where gathering interacts with the full body length, Top 1 focuses on upper-body dynamics—shoulder anchoring, side collapse, and controlled drape across the front and back. Iterative adjustments were made to vary the angle and insertion point of the composite panels, producing different tension pathways around the neckline, side seams, and lower hem.

Digital simulations were first used to explore how shifts in angular proportion influenced front-to-back movement and the density of folds around the neckline. These predictions were then tested physically with chiffon, where transparency made internal pull and collapse behaviour clearly visible. The final configuration balances diagonal expansion across the front with a soft cascade at the back, creating a dynamic gathered silhouette that remains lightweight and structurally coherent.

## Project Development



Figure 5.20. Final garment development of the Shirt. Image source: Author (2025).



Figure 5.21. Pattern structure of the Shirt. Image source: Author (2025).



Figure 5.22. CLO3D simulations of the Shirt. Image source: Author (2025).

### 5.6 Final Garment Development – Shirt

The shirt applies the geometric–material gathering system to a traditionally structured garment, testing how directional gathering can be integrated into a tailored silhouette without disrupting functional stability. The design consists of two layers: a crisp white poplin base that provides structural rigidity and maintains the classical shirt outline, and a black chiffon back panel shaped through angled triangular composite geometry to generate a controlled draped volume.

The development process began with calibrating the poplin base to ensure mobility, armhole stability, and front-body balance. Once the foundational fit was confirmed, CLO3D simulations were used to test variations in panel angle and gathering distribution at the back, observing how shifts in geometry influenced collapse depth, volumetric density, and the transition between supported and unsupported areas.

## Project Development

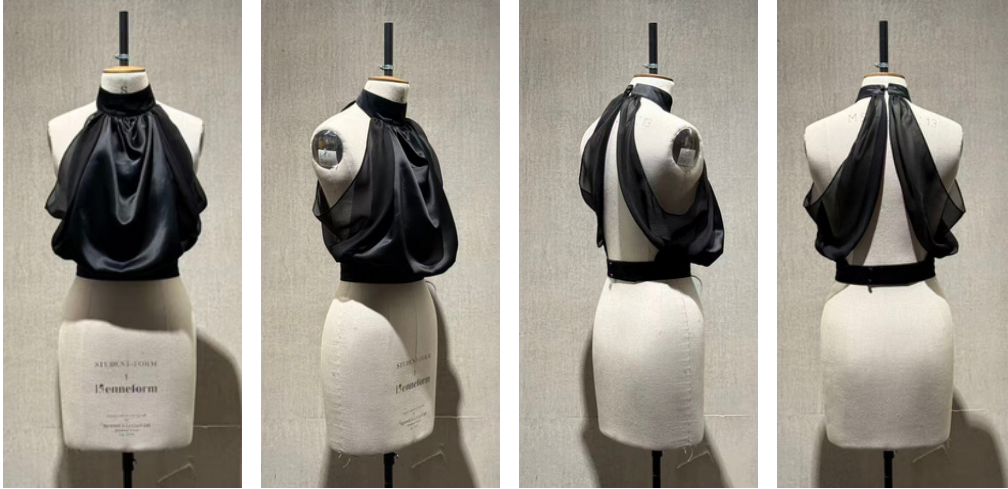


Figure 5.23. Final development of Top 3. Image source: Author (2025).



Figure 5.24. Pattern structure of Top 3. Image source: Author (2025).



Figure 5.25. CLO3D simulations of Top 3 testing how panel angle and gathering density affect radial tension, side collapse, and upper-body volume. Image source: Author (2025).

### 5.6 Final Garment Development – Top3

Top 3 develops the geometric-material gathering system through a radial halter silhouette. Gathering originates from the neckline and disperses outward, creating sculptural volume at the front and soft collapse at the sides.

Triangular acetate panels provide structural direction, while chiffon adds fluidity and reveals the tension paths. Digital simulations were used to test panel curvature and gathering density, followed by physical adjustments on the body to refine where tension should accumulate or release.

## Project Development



Figure 5.26. Final garment development of the gathered trousers. Image source: Author (2025).



Figure 5.27. CLO3D simulations of the gathered trousers testing how panel angle, seam placement, and gathering density influence side expansion, volumetric distribution, and silhouette stability. Image source: Author (2025).



Figure 5.28. Pattern structure of the gathered trousers. Image source: Author (2025).

### 5.6 Final Garment Development — Trousers

The gathered trousers translate the geometric-material framework into a lower-body silhouette, extending the system beyond dresses and tops. The design uses asymmetric triangular and curved panels to direct gathering toward one side seam, producing a diagonal pull and controlled volume on the outer leg.

A matte jersey underlayer stabilises the base shape, while a sheer chiffon overlay provides fluid collapse and reveals internal tension lines. CLO3D simulations were used to test how shifts in panel angle and seam placement affected collapse height and volumetric density before physical prototyping.

On-body adjustments refined where tension should accumulate or release, ensuring that the silhouette remained balanced when worn. The final trousers demonstrate how the geometric-gathering system can generate expressive leg volume that responds dynamically to movement while maintaining structural clarity.

## Project Development



Figure 5.29.Final garment development of Skirt 1 (black acetate). Image source: Author (2025).



Figure 5.30.Final garment development of Skirt 1 (white acetate). Image source: Author (2025).



Figure 5.31.Pattern structure for Skirt 1 & Skirt 2 Image source: Author (2025).



Figure 5.32.CLO3D simulations of Skirt 1 & Skirt 2 Image source: Author (2025).

### 5.6 Final Garment Development — Skirt 1 & Skirt 2

Skirt 1 and Skirt 2 apply the same angled triangular composite pattern system developed earlier, differing only in fabric colour.

The structure consists of a matte acetate underlayer that stabilises the column silhouette while allowing gravity-driven drape. The gathering zones were digitally tested in CLO3D to locate areas of tension accumulation and collapse height, and then refined through on-body mapping in the final material.

The two versions demonstrate how colour and opacity shift the reading of the same geometry: the black skirt emphasises directional shadow and depth, while the white skirt highlights internal folds and tension paths. Together, they verify the adaptability of the geometric-gathering system across different material tones without altering the underlying pattern.

# Critical Evaluation

## 06 Critical Evaluation

This chapter critically evaluates the research outcomes by examining the effectiveness of the design approach, methodology, material–geometric system, and practical outcomes. It also identifies the limitations of the study and outlines opportunities for further development.

### 6.1 Evaluation of the Design Approach

The project successfully repositioned gathering from a decorative feature to a structural system embedded within geometric pattern cutting.

By integrating gathering into the geometry—particularly through angled triangular and radial pattern systems—the project achieved:

- directional tension paths that actively generate volume;
- a balance between controlled geometry and organic collapse;
- silhouettes shaped through internal forces rather than surface styling.

Material tests confirmed that material agency plays a decisive role in volume formation.

- Black chiffon × white satin created layered spatial depth.
- Crepe and tulle introduced sharper tension lines and varied resistance.



Figure 6.1. Fabrics used in the project: chiffon, organza, tulle, jersey, and acetate in black and white. Image source: Author (2025).

## Critical Evaluation

### 6.2 Evaluation of the Methodology and Methods

The practice-based methodology proved highly effective.

Key strengths include:

(1) Digital Simulation (CLO3D)

- Enabled rapid geometric exploration and ratio adjustments.
- Predicted volumetric expansion and directional pull.
- Reduced waste and accelerated iteration.

(2) Physical Sampling & Toile Development

- Revealed real behaviours that digital tools cannot capture, such as:
  - gravity-induced collapse
  - uneven tension
  - friction-based distortion
  - fabric-dependent gathering retention
- Validated Carter's "material thinking"—materials actively generate knowledge.

(3) Iterative Loop

Continuous movement between simulation → sampling → reflection mirrored Bulley & Şahin's idea of an ecology of practice, where understanding emerges through repeated cycles of action.



Figure 6.2. Comparison between physical front view of the gathered trousers (left) and CLO3D front simulation (right), demonstrating how angled gathering zones and material behaviour translate from digital prediction to full-scale wearable form. Image source: Author (2025).

## Critical Evaluation

### 6.3 Challenges and Limitations

Despite successful outcomes, several limitations remain.

#### (1) Time Constraints

Gathering is highly labour-intensive.

Large-scale prototypes limited the number of geometries that could be tested (e.g., multi-point radial, layered trapezoidal variations).

#### (2) Limited Material Palette

Although chiffon, satin, tulle, and crepe were tested, broader materials—technical meshes, coated synthetics, structured weaves—could reveal new behaviour under tension.

#### (3) Systematisation Not Fully Formalised

The geometric-gathering method is promising but not yet codified as a fully transferable design system.

Further diagramming and cross-garment mapping are needed.



Figure 6.3. Uneven gathering distribution at the neckline causing imbalance across the entire top, revealing how small irregularities in gathering placement can disrupt overall silhouette stability. Image source: Author (2025).

## Critical Evaluation

### 6.4 Reflection on Design Development

The shift from small samples to full-scale garments revealed:

- how gravity, body movement, and seam orientation fundamentally change geometry;
- how unexpected collapse or distortion can become generative design inputs;
- how gathering functions as both sculptural logic and wearable logic.

This phase clarified the transition from experimental volume to applied garment design, showing how the system behaves on a real body and how gathering can choreograph motion.

### 6.5 Future Development

Future directions extend the system academically and professionally:

(1) Modular Geometric-Gathering System

Develop a parametric toolkit enabling designers to apply gathering to different garments with adjustable:

- angles
- ratios
- tension directions

(2) Expanded Material Research

Include technical textiles with:

- heat-setting
- semi-rigid meshes
- directional stretch

(3) Digital Integration

Use 3D body scanning and motion capture to:

- map tension zones on the body
- generate responsive gathering layouts.

(4) Refinement of Final Garments

Construct fully finished versions to test:

- long-term drape behaviour
- durability of gathering retention
- scalability for production contexts.

# References

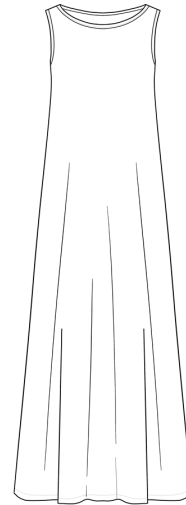
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# TECHNICAL PACK

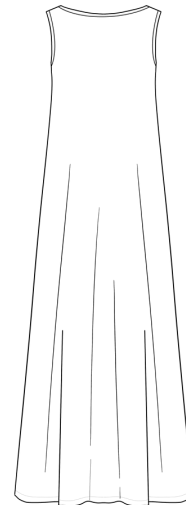
# SPECIFICATION SHEET- Dress 1

Project title	Geometry in Motion – A Structured System of Gathering
Garment no.	1
Garment name	Dress 1
Category	Asymmetric dress with directional gathering (jersey base + chiffon overlay)
Season / Year	2025
Design concept	Geometry-driven gathering; layered chiffon over jersey; diagonal volume
Sample size	S
Fabric – Shell 1	Jersey (white)
Fabric – Shell 2	Chiffon (black)
Lining	None
Interlining	None
Colourway	Black
Grainline	One-way
Trims	None (only thread, optional stay tape)
Fastenings	None
Label placement	Back neckline (jersey)
Care label	Dry clean

Underlayer (Inner slip): White jersey inner layer used for opacity only; no shaping or structural function.



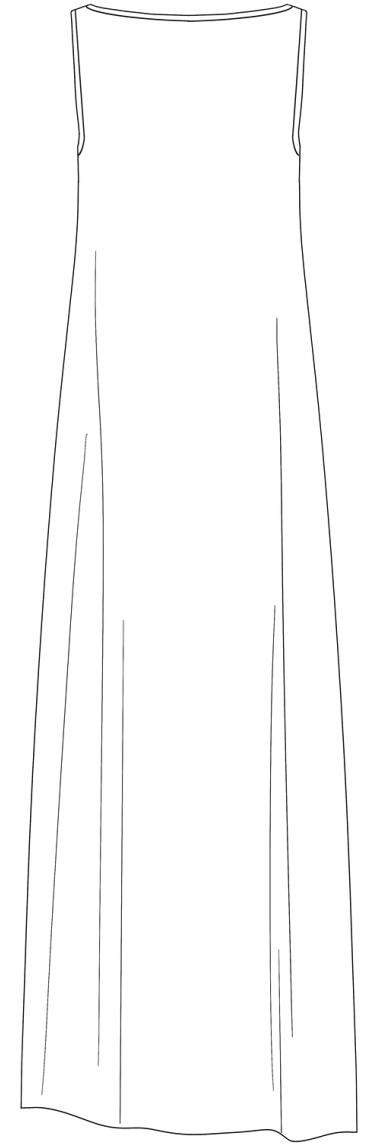
FRONT



BACK



FRONT

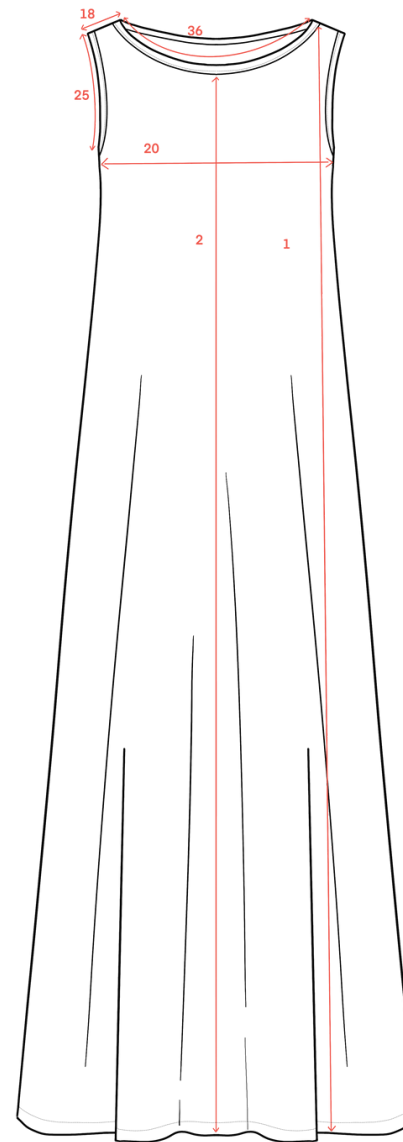


BACK

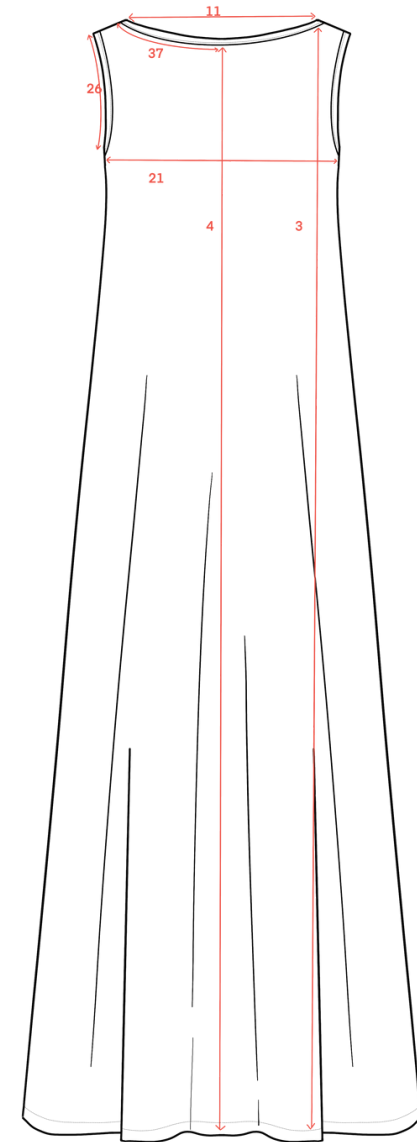
# FIT LOG- Dress1-Underlayer

REF	MEASUREMENT	pattern	Diff	1ST FIT	Diff	SEALED	TOL
1	Front Length - SNP to Hem**	150.88		150.72	0		+/-1.0 cm
2	CF Length -from top edge to hem	138.27		139	0		+/-1.0 cm
3	Back Length - SNP to Hem	140.22		141.1	0		+/-1.0 cm
4a	Length - Centre Back Neck to Hem	138.31		138.43	0		+/-1.0 cm
11	Back Neck Width - Straight	31.77		32.11	0		+/-0.5 cm
18	Shoulder	4.16		4.04	0		+/-0.5 cm
20	X-Front at 15cm cm below SNP	43.84		42.99	0		+/-1.0 cm
25	Front Armhole Curve	29.44		29.08	0		+/-0.5 cm
26	Back Armhole Curve	21.55		21.9	0		+/-0.5 cm
36	Front Neck Curve	34.22		35	0		+/-0.5 cm
37	1/2 Back Neck Curve	14.93		15	0		+/-0.3 cm

# MEASUREMENT GUIDE- Dress1-Underlayer



FRONT



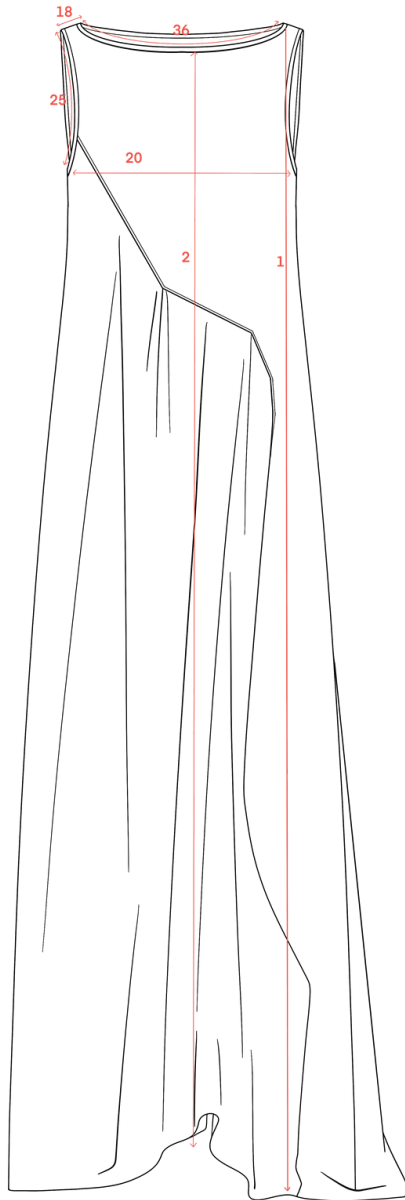
BACK

Project title	Geometry in Motion – A Structured System of Gathering
Garment no.	1
Garment name	Dress 1

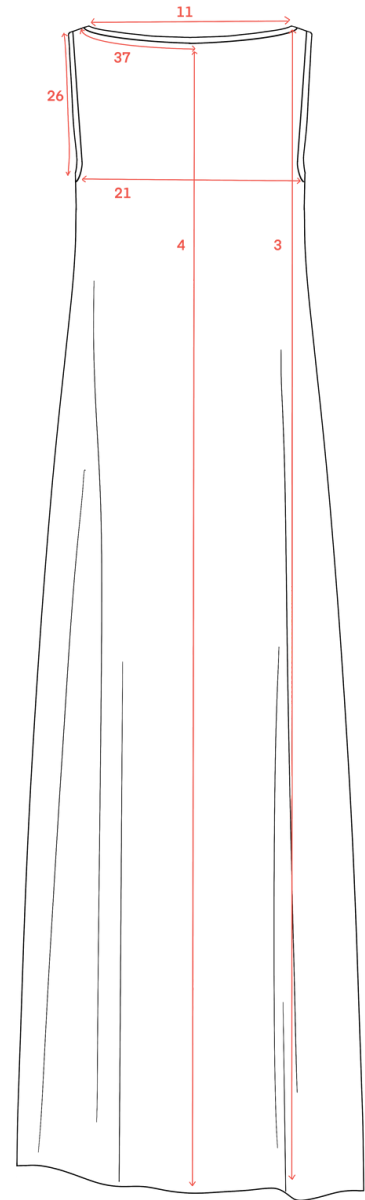
# FIT LOG- Dress1

REF	MEASUREMENT	pattern	Diff	1ST FIT	Diff	2ND FIT	Diff	SEALED	TOL
1	Front Length - SNP to Hem**	139.48		140.2	0		0		+/-1.0 cm
2	CF Length -from top edge to hem	129.98		130.4	0		0		+/-1.0 cm
3	Back Length - SNP to Hem	141.57		141.7	0		0		+/-1.0 cm
4a	Length - Centre Back Neck to Hem	138.31		139.2	0		0		+/-1.0 cm
11	Back Neck Width - Straight	32.34		33	0		0		+/-0.5 cm
18	Shoulder	2.86		3	0		0		+/-0.5 cm
20	X-Front at 15cm cm below SNP	43.69		44.2	0		0		+/-1.0 cm
25	Front Armhole Curve	21.52		21.8	0		0		+/-0.5 cm
26	Back Armhole Curve	22.83		23.2	0		0		+/-0.5 cm
36	Front Neck Curve	37.62		37.8	0		0		+/-0.5 cm
37	1/2 Back Neck Curve	16.74		16.8	0		0		+/-0.3 cm

# MEASUREMENT GUIDE- Dress1



FRONT



BACK

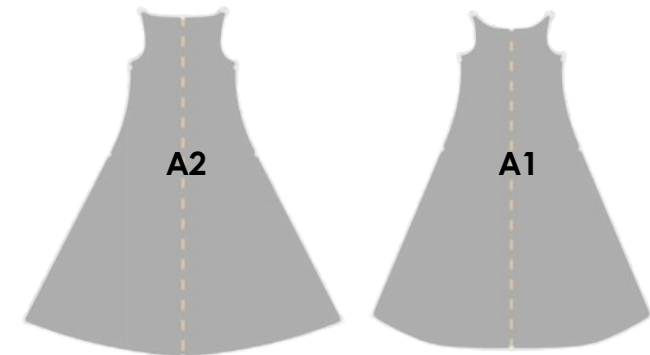
Project title	Geometry in Motion – A Structured System of Gathering
Garment no.	1
Garment name	Dress 1

# FIT COMMENTS SUMMARY- Dress1 and Underlayer

Area	Issue	Adjustment	Pattern reference
Diagonal gathering	Gathers fall too low	Shift ratio upward; trim lower width	Chiffon A2
Neckline	Slight collapse	Add stay tape	Jersey B1
Hem	Uneven outer layer	True hem curve	Chiffon hem

# PATTERN PIECES- Dress1 and Underlayer

Code	Piece name	Cut instruction	Fabric
A1	Jersey front panel	CUT 1 SELF	Jersey
A2	Jersey back panel	CUT 1 SELF	Jersey
B1	Chiffon overlay – large front	CUT 1 SELF	Chiffon
B2	Chiffon overlay – diagonal	CUT 1 SELF	Chiffon
B3	Chiffon back panel	CUT 1 SELF	Chiffon



## MARKER SUMMARY- Dress1 and Underlayer

Fabric	Width	Consumption	Notes
Jersey	150 cm	0.9 m	Stretch base
Chiffon	140 cm	1.8 m	Large diagonal pattern; maintain drape direction

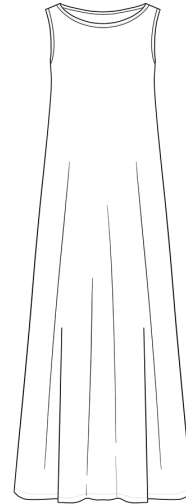
# CONSTRUCTION NOTES- Dress1 and Underlayer

Process	Details
Stitch type	4-thread overlock for jersey; french seam / narrow overlock for chiffon
Hem finish	Baby hem for chiffon; double turn for jersey
Step 1	Assemble jersey base (shoulders, side seams, hem)
Step 2	Prep chiffon panels (hem first)
Step 3	Attach chiffon from right shoulder downward
Step 4	Distribute gathers along diagonal mapping line
Step 5	Anchor chiffon at side seam
Step 6	Finish neckline and armhole
Step 7	Final press (low temp)

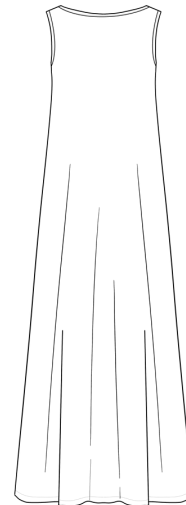
# SPECIFICATION SHEET- Dress2

Project title	Geometry in Motion – A Structured System of Gathering
Garment no.	2
Garment name	Dress 2
Category	Asymmetric dress with directional gathering (jersey base + chiffon overlay)
Season / Year	2025
Design concept	Geometry-driven gathering; layered chiffon over jersey; diagonal volume
Sample size	S
Fabric – Shell 1	Jersey (black)
Fabric – Shell 2	Chiffon (black)
Lining	None
Interlining	None
Colourway	Black
Grainline	One-way
Trims	None (only thread, optional stay tape)
Fastenings	None
Label placement	Back neckline (jersey)
Care label	Dry clean

Underlayer (Inner slip): White jersey inner layer used for opacity only; no shaping or structural function.



FRONT



BACK



FRONT

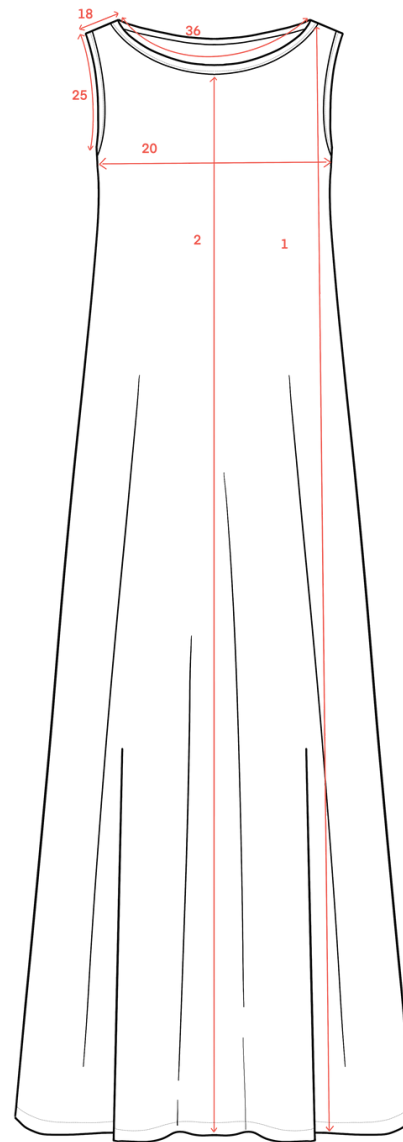


BACK

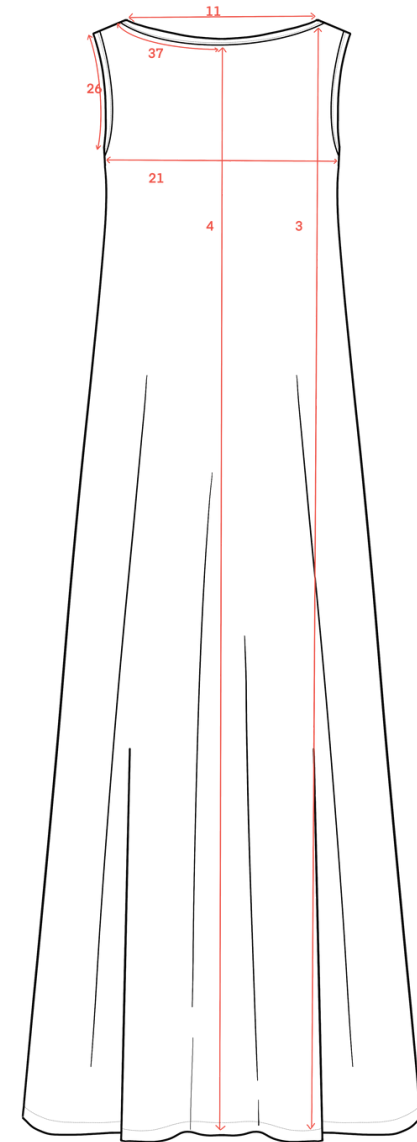
# FIT LOG- Dress2-Underlayer

REF	MEASUREMENT	pattern	Diff	1ST FIT	Diff	SEALED	TOL
1	Front Length - SNP to Hem**	150.88		150.72	0		+/-1.0 cm
2	CF Length -from top edge to hem	138.27		139	0		+/-1.0 cm
3	Back Length - SNP to Hem	140.22		141.1	0		+/-1.0 cm
4a	Length - Centre Back Neck to Hem	138.31		138.43	0		+/-1.0 cm
11	Back Neck Width - Straight	31.77		32.11	0		+/-0.5 cm
18	Shoulder	4.16		4.04	0		+/-0.5 cm
20	X-Front at 15cm cm below SNP	43.84		42.99	0		+/-1.0 cm
25	Front Armhole Curve	29.44		29.08	0		+/-0.5 cm
26	Back Armhole Curve	21.55		21.9	0		+/-0.5 cm
36	Front Neck Curve	34.22		35	0		+/-0.5 cm
37	1/2 Back Neck Curve	14.93		15	0		+/-0.3 cm

# MEASUREMENT GUIDE- Dress2-Underlayer



FRONT



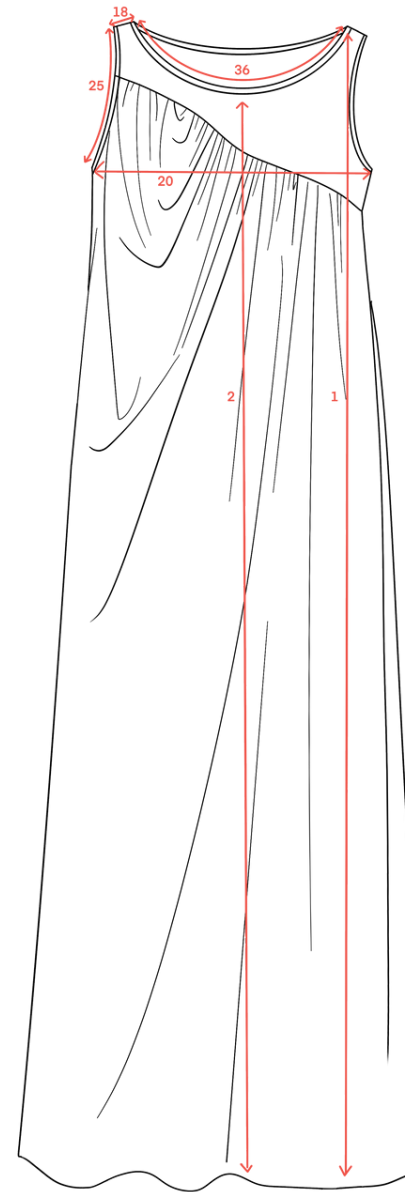
BACK

Project title	Geometry in Motion – A Structured System of Gathering
Garment no.	2
Garment name	Dress 2

# FIT LOG- Dress2

REF	MEASUREMENT	pattern	Diff	1ST FIT	Diff	2ND FIT	Diff	SEALED	TOL
1	Front Length - SNP to Hem**	142.99		143.77	0		0		+/-1.0 cm
2	CF Length -from top edge to hem	130.88		131	0		0		+/-1.0 cm
3	Back Length - SNP to Hem	143.66		143.9	0		0		+/-1.0 cm
4a	Length - Centre Back Neck to Hem	143.77		144.2	0		0		+/-1.0 cm
11	Back Neck Width - Straight	35.67		35.8	0		0		+/-0.5 cm
18	Shoulder	2.98		3	0		0		+/-0.5 cm
20	X-Front at 15cm cm below SNP	45.89		45.9	0		0		+/-1.0 cm
25	Front Armhole Curve	23.98		24.2	0		0		+/-0.5 cm
26	Back Armhole Curve	25.22		25.5	0		0		+/-0.5 cm
36	Front Neck Curve	38		37.8	0		0		+/-0.5 cm
37	1/2 Back Neck Curve	17.8		18	0		0		+/-0.3 cm

# MEASUREMENT GUIDE- Dress2



FRONT



BACK

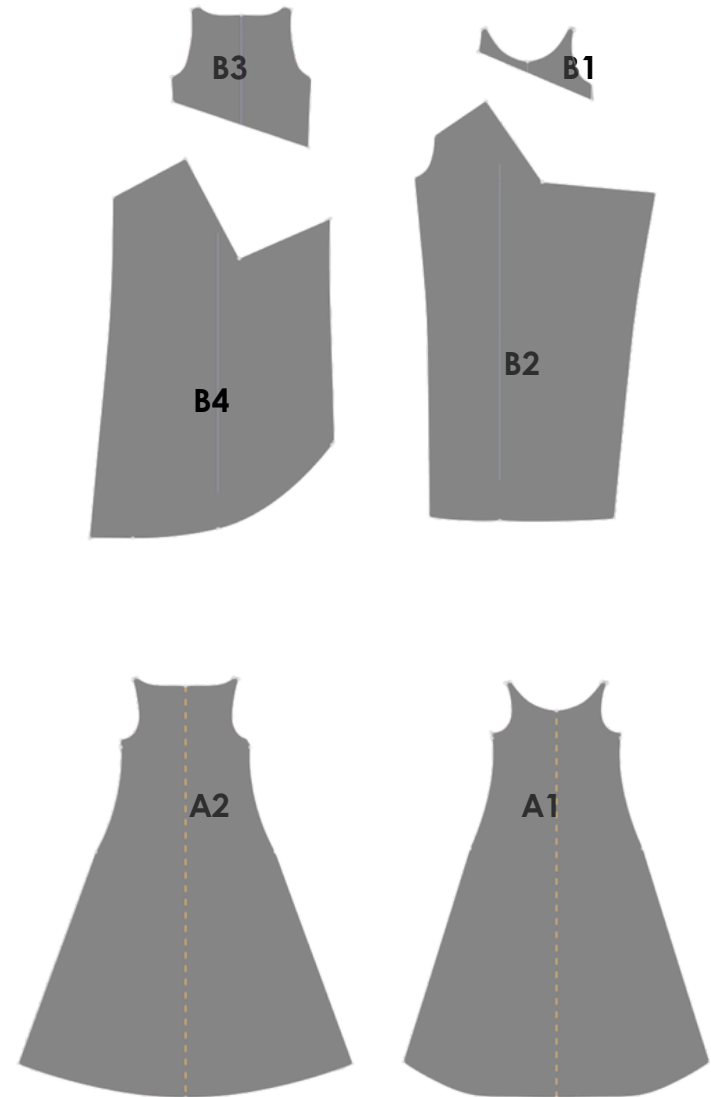
Project title	Geometry in Motion – A Structured System of Gathering
Garment no.	2
Garment name	Dress 2

# FIT COMMENTS SUMMARY- Dress2and Underlayer

Area	Issue	Adjustment	Pattern reference
Diagonal chiffon	Volume collapses at mid-section	Adjust angle; redistribute weight	B2, B4
Neckline (front yoke)	Minor collapse	Add stay tape	B1
Back yoke	Lifted slightly	Correct match points	B3
Side seam	Uneven tension	Re-align chiffon & jersey join	A1, B2
Hem	Asymmetric drop	True hem curve	B4
Overlay pull	Chiffon pulling jersey beneath	Adjust anchor points	Join B2–A1

# PATTERN PIECES- Dress2and Underlayer

Code	Piece name	Cut instruction	Fabric
A1	Jersey front panel	CUT 1 SELF	Jersey
A2	Jersey back panel	CUT 1 SELF	Jersey
B1	Chiffon overlay – front yoke	CUT 1 SELF	Chiffon
B2	Chiffon overlay – diagonal	CUT 1 SELF	Chiffon
B3	Chiffon back yoke panel	CUT 1 SELF	Chiffon
B4	Chiffon large front panel	CUT 1 SELF	Chiffon



## MARKER SUMMARY- Dress2and Underlayer

Fabric	Width	Consumption	Notes
Jersey	150 cm	0.9 m	Stretch base
Chiffon	140 cm	1.8 m	Large diagonal pattern; maintain drape direction

# CONSTRUCTION NOTES- Dress2and Underlayer

Process	Details
Stitch type	4-thread overlock for jersey; french seam / narrow overlock for chiffon
Hem finish	Baby hem for chiffon; double turn hem for jersey
Step 1	Assemble jersey base (shoulders, side seams, hem)
Step 2	Prep chiffon panels (finish hems first)
Step 3	Attach front yoke chiffon (B1) to jersey neckline
Step 4	Attach diagonal chiffon panel (B2) along mapped diagonal edge
Step 5	Attach large front chiffon panel (B4)
Step 6	Attach back yoke chiffon panel (B3)
Step 7	Anchor all chiffon layers at side seam
Step 8	Finish neckline and armhole
Step 9	Final press (low temperature)

# SPECIFICATION SHEET- Top1

Field	Details
Project title	Geometry in Motion – A Structured System of Gathering
Garment no.	Top 1
Garment name	Top 1
Category	Asymmetric gathered top with multi-directional chiffon drape
Season / Year	2025
Design concept	Upper-body directional gathering using acetate base and angled chiffon composite panels
Sample size	S
Fabric – Shell 1	Acetate (inner base)
Fabric – Shell 2	Chiffon (black)
Lining	None
Interlining	None
Colourway	Black over light acetate base
Grainline	One-way
Trims	None (thread only)
Fastenings	None
Label placement	Back neckline (inner layer)
Care label	Dry clean only



FRONT



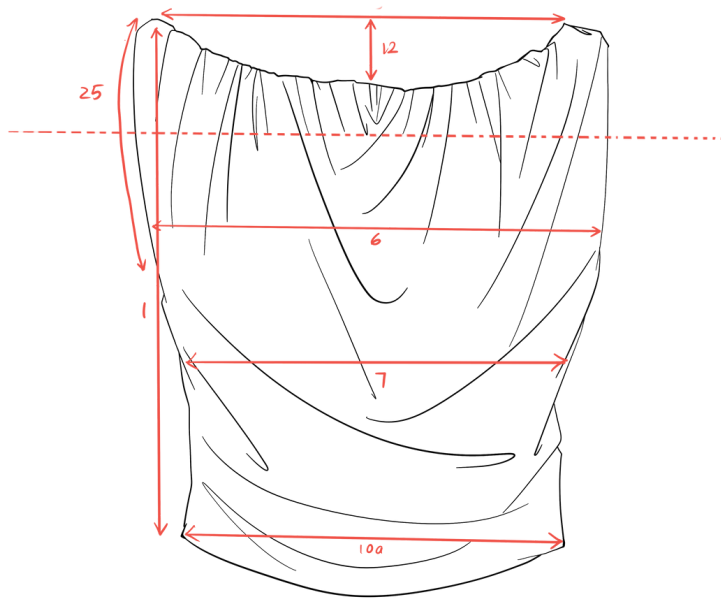
BACK

# FIT LOG- Top-1

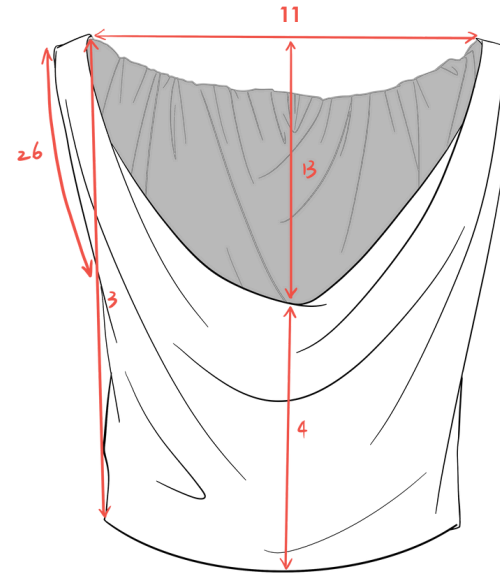
REF	MEASUREMENT	pattern	Diff	1ST FIT	Diff	SEALED	TOL
1	Front Length - SNP to Hem**	41.15		41.9	0		+/-1.0cm
2	CF Length -from top edge to hem	38.4		39	0		+/-1.0cm
3	Back Length - SNP to Hem	40.78		41	0		+/-1.0cm
4a	Length - Centre Back Neck to Hem	14.05		14.4	0		+/-1.0cm
7a	Waist (18cm below U/A)-Relaxed	36.27		36.5	0		+/-0.5cm
10a	Hem- Straight	35.72		36	0		+/-0.5cm
11	Back Neck Width - Straight	34.78		34.9	0		+/-1.0cm
12	Front Neck Drop FIL	7.9		8	0		+/-1.0cm
13	Back Neck Drop FIL	28.01		28	0		+/-0.5cm
25	Front Armhole Curve	21.85		21.96	0		+/-0.5cm
26	Back Armhole Curve	23.95		24	0		+/-0.5cm

# MEASUREMENT GUIDE- Top1

Project title	Geometry in Motion – A Structured System of Gathering
Garment no.	3
Garment name	Top1



FRONT



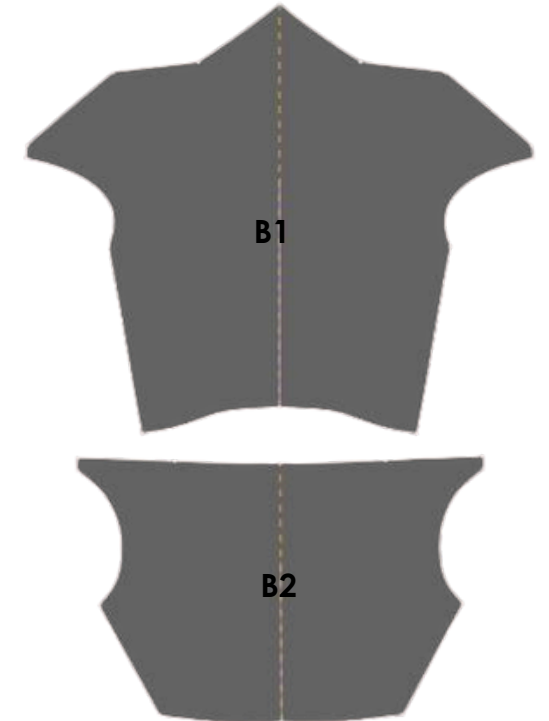
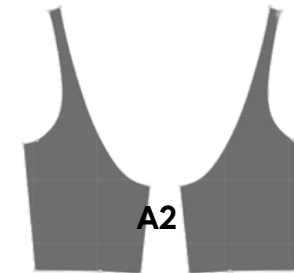
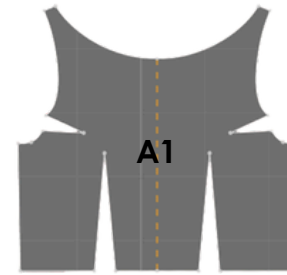
BACK

# FIT COMMENTS SUMMARY- Top1

Area	Issue	Adjustment	Pattern reference
Front drape	Chiffon too flat	Add lift at neckline; adjust tension	B1
Lower drape	Volume collapses	Shift drape entry; reshape curve	B2
Back fit	Slight twisting	Balance acetate tension	A2
Side seam	Chiffon pulling acetate	Re-align join point	A1, B2
Neckline	Collapse at centre	Add stay tape	A1, B1
Hem	Uneven curve	True hem	B2

# PATTERN PIECES- Top 1

Code	Piece name	Cut instruction	Fabric
A1	Acetate front panel	CUT 1 SELF	Acetate
A2	Acetate back panel	CUT 1 SELF	Acetate
B1	Chiffon overlay – upper panel	CUT 1 SELF	Chiffon
B2	Chiffon overlay – lower panel	CUT 1 SELF	Chiffon

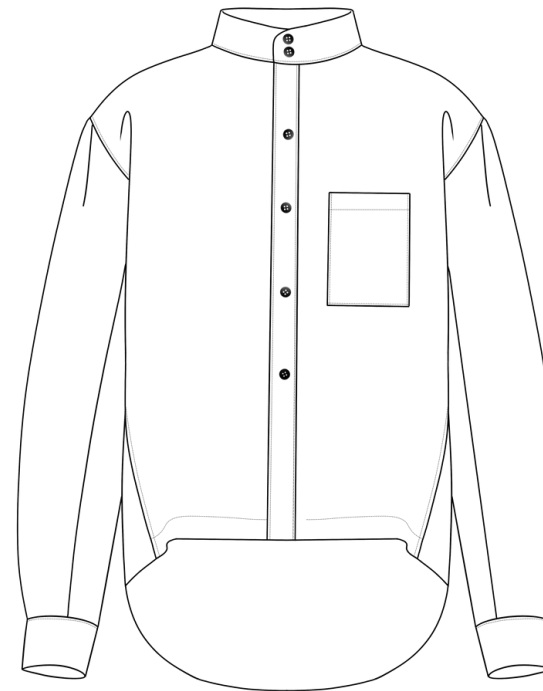


# CONSTRUCTION NOTES- Top1

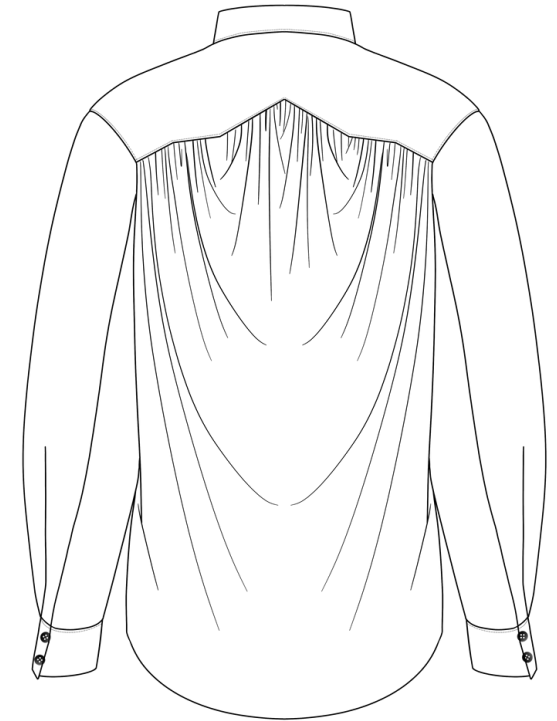
Process	Details
Stitch type	Overlock for acetate; french seam / narrow overlock for chiffon
Hem finish	Baby hem for chiffon; narrow double turn for acetate
Step 1	Assemble acetate base (A1 + A2: shoulders, side seams, hem)
Step 2	Prep chiffon panels (finish hems first)
Step 3	Attach upper chiffon overlay (B1) to neckline and armhole area
Step 4	Attach lower chiffon drape (B2) along angled mapping line
Step 5	Anchor chiffon layers at side seams
Step 6	Finish neckline and armhole
Step 7	Final press (low temperature)

# SPECIFICATION SHEET- Shirt

Field	Details
Project title	Geometry in Motion – A Structured System of Gathering
Garment no.	Shirt 1
Garment name	Shirt
Category	Tailored shirt with directional gathered chiffon back panel
Season / Year	2025
Design concept	Poplin-based tailored structure with geometric chiffon drape integrated into back panel
Sample size	S
Fabric – Shell 1	White poplin (cotton)
Fabric – Shell 2	Black chiffon (back drape)
Lining	None
Interlining	Collar, cuff, placket (fusible)
Colourway	White shirt with black chiffon back panel
Grainline	One-way
Trims	Buttons x 7; fusible for collar/cuffs/placket; thread
Fastenings	Button stand (front)
Label placement	Inside back neckline
Care label	Dry clean only



FRONT



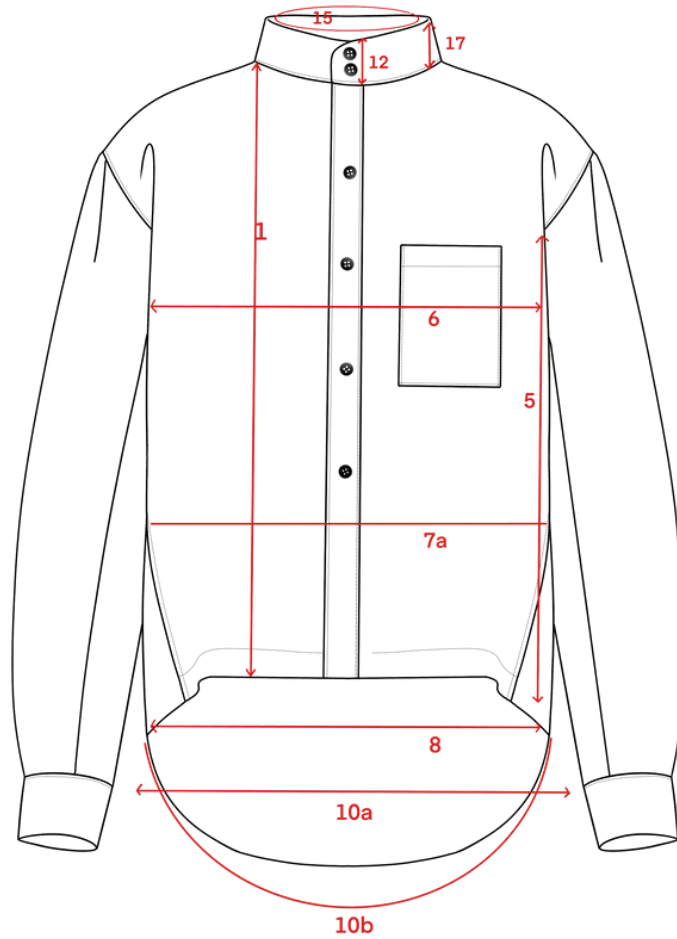
BACK

# FIT LOG- Top-1

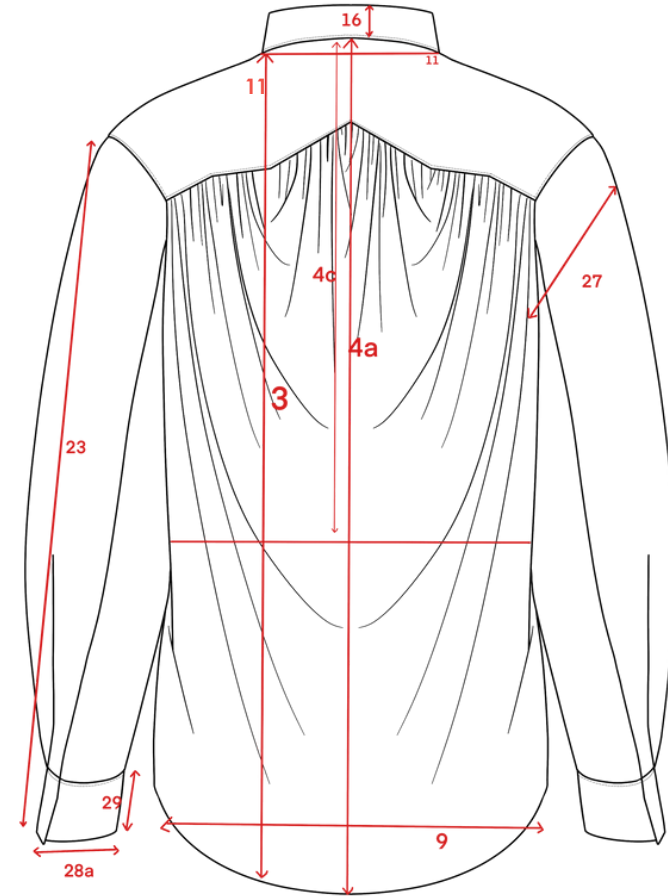
REF	MEASUREMENT	pattern	Diff	1ST FIT	Diff	2ND FIT	Diff	SEALED	TOL
1	Front Length - SNP to Hem**	59.44		60	0		0		+/-1.0cm
3	Back Length - SNP to Hem	84.24		85.3	0		0		+/-1.0cm
4a	Length - Centre Back Neck to Hem	86.11		86.5	0		0		+/-1.0cm
7a	Waist (18cm below U/A)-Relaxed	61.55		61.8	0		0		+/-1.0cm
8	Top Hip 10cm below Waist	58.51		58.6	0		0		+/-0.5cm
9	Low Hip 20cm below Waist	59.73		60	0		0		+/-0.5cm
10a	Hem- Straight	60.14		60.5	0		0		+/-1.0cm
10b	Hem -Curved	68.7		69.2	0		0		+/-1.0cm
11	Back Neck Width - Straight	15.26		15.8	0		0		+/-0.5cm
12	Front Neck Drop FIL	3.62		3.8	0		0		+/-0.5cm
15	Collar Leaf Edge- From Point to Point	35		35.6	0		0		+/-0.5cm
16	Collar Depth @ CB	<b>3.68</b>		<b>3.8</b>	0		0		<b>TOL</b>
23a	Sleeve Length at Overarm (including Cuff)	59.85		60	0		0		+/-1.0cm
27	Bicep at 2.5cm below underarm	33.48		34.1	0		0		+/-1.0cm
28a	Cuff Opening - Long Sleeve	23.1		23.4	0		0		+/-1.0cm
29	Cuff Depth	6.29		6.3	0		0		+/-1.0cm

# MEASUREMENT GUIDE- Top1

Project title	Geometry in Motion – A Structured System of Gathering
Garment no.	4
Garment name	shirt



FRONT



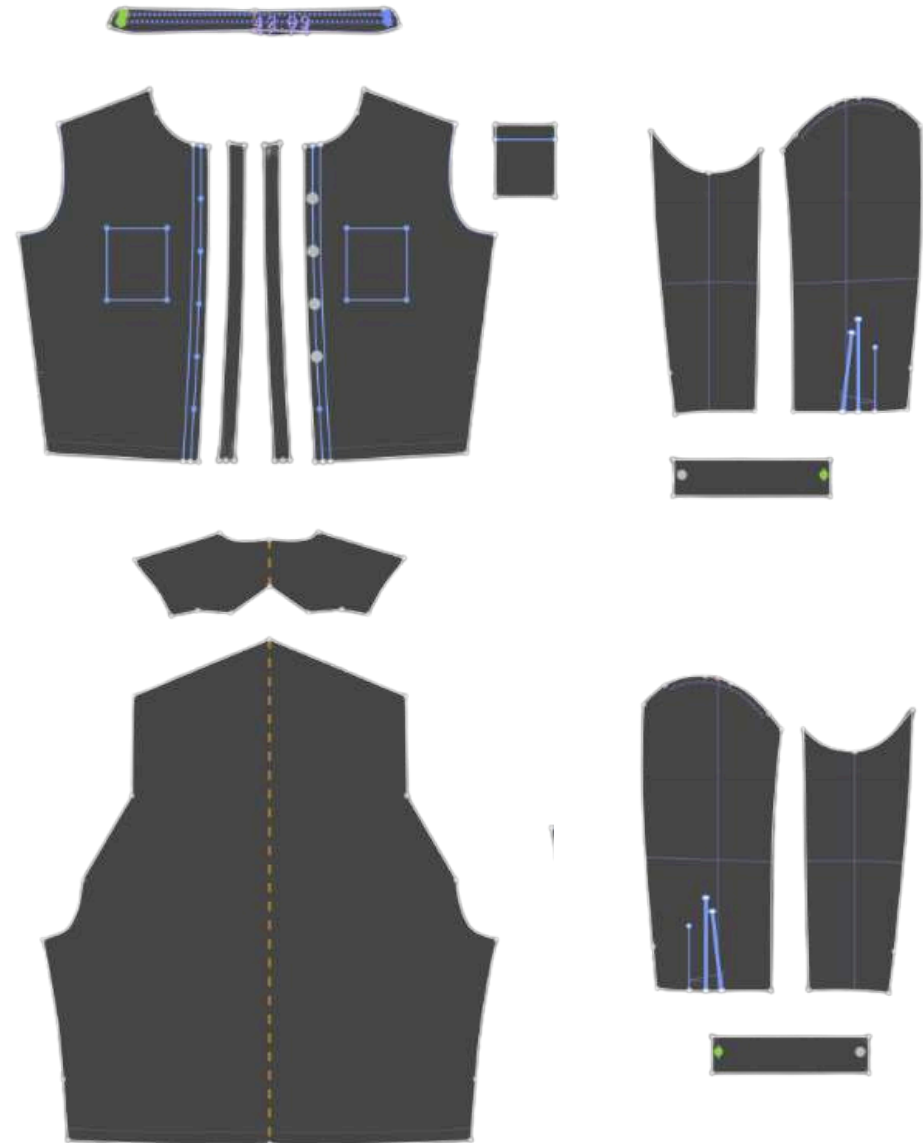
BACK

# FIT COMMENTS SUMMARY- Top1

Area	Issue	Adjustment	Pattern reference
Back drape	Collapse too deep	Reduce width; adjust gather ratio	B1
Armhole	Mild tightness	Increase ease at underarm	A5, A6
Side seams	Poplin pulling at back transition	Shift join point	A1, A2, B1
Neckline	Collar stand slightly high	Lower CB height	A7
Hem	Back hem heavy due to chiffon	Lighten curve; reduce length	B1
Sleeve mobility	Lift restriction	Add bicep ease	A5, A6

# PATTERN PIECES- Top1

Code	Piece name	Cut instruction	Fabric
A1	Front panel – left	CUT 1 SELF	Poplin
A2	Front panel – right	CUT 1 SELF	Poplin
A3	Back panel	CUT 1 SELF	Poplin
A4	Chest pocket	CUT 1 SELF	Poplin
A5	Sleeve – left	CUT 1 SELF	Poplin
A6	Sleeve – right	CUT 1 SELF	Poplin
A7	Collar stand	CUT 1 SELF + CUT 1 FUSE	Poplin
A8	Collar	CUT 1 SELF + CUT 1 FUSE	Poplin
A9	Cuff – left	CUT 1 SELF + CUT 1 FUSE	Poplin
A10	Cuff – right	CUT 1 SELF + CUT 1 FUSE	Poplin
A11	Placket – left	CUT 1 SELF + CUT 1 FUSE	Poplin
A12	Placket – right	CUT 1 SELF + CUT 1 FUSE	Poplin
B1	Chiffon drape back panel	CUT 1 SELF	Chiffon

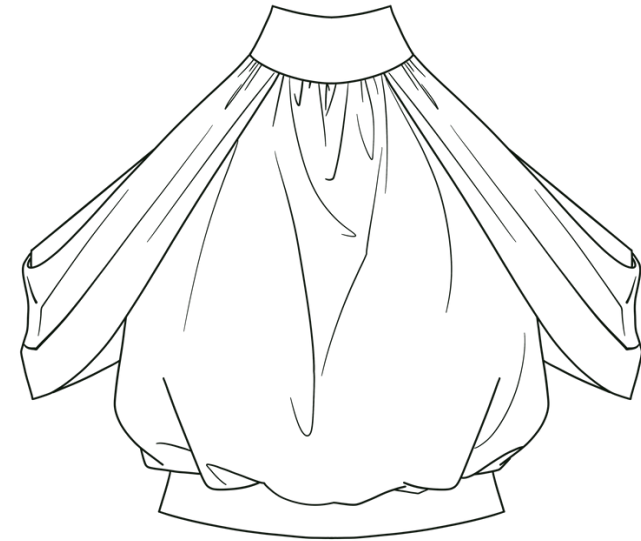


# CONSTRUCTION NOTES- Top1

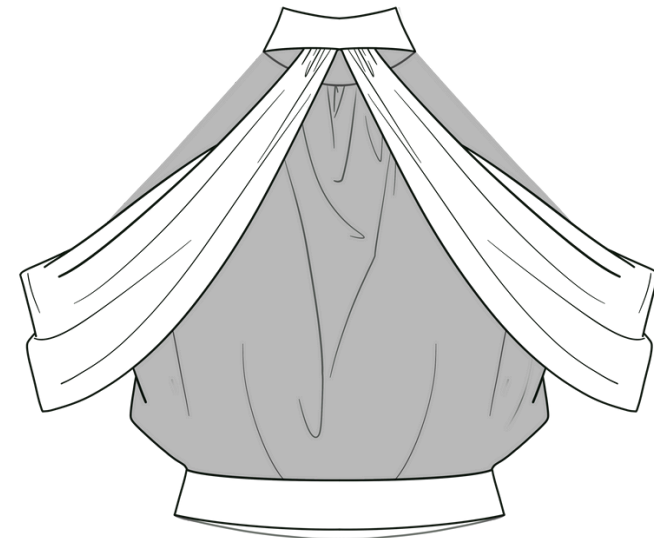
Process	Details
Stitch type	Lockstitch for poplin; overlock for seams; narrow overlock for chiffon
Hem finish	Poplin: double turn hem; chiffon: baby hem
Step 1	Assemble poplin front panels (A1, A2) with plackets (A11, A12)
Step 2	Attach chest pocket (A4)
Step 3	Assemble back poplin panel (A3)
Step 4	Insert chiffon drape panel (B1) into back yoke seam
Step 5	Join front and back at shoulders
Step 6	Assemble sleeves (A5, A6)
Step 7	Set sleeves into armholes
Step 8	Attach cuffs (A9, A10)
Step 9	Stitch side seams
Step 10	Construct collar stand and collar; attach to neckline
Step 11	Finish hem (poplin front; curved back)
Step 12	Final press (low temp for chiffon)

# SPECIFICATION SHEET- Top 3

Field	Details
Project title	Geometry in Motion – A Structured System of Gathering
Garment no.	Top 3
Garment name	Halter Gathered Top
Category	Radial halter top with side chiffon drape
Season / Year	2025
Design concept	Radial gathering from neckline with dispersed sculptural volume; acetate base stabilises tension, chiffon creates soft collapse
Sample size	S
Fabric – Shell 1	Acetate (inner structural base)
Fabric – Shell 2	Chiffon (side drape panels)
Lining	None
Interlining	None
Colourway	Black chiffon over light acetate
Grainline	One-way
Trims	Elastic thread optional, binding tape
Fastenings	Button or hook at back collar (optional)
Label placement	Inside back collar band
Care label	Dry clean only



FRONT



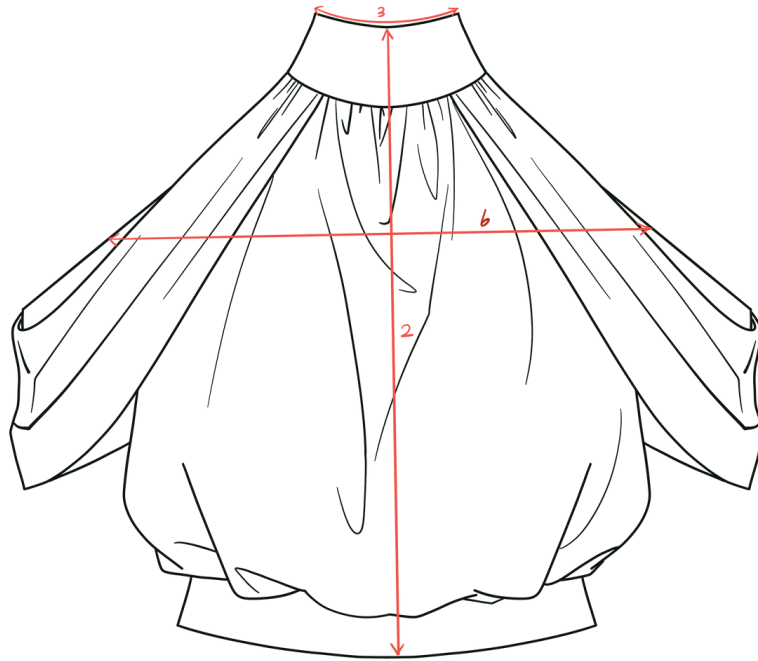
BACK

# FIT LOG- Top-3

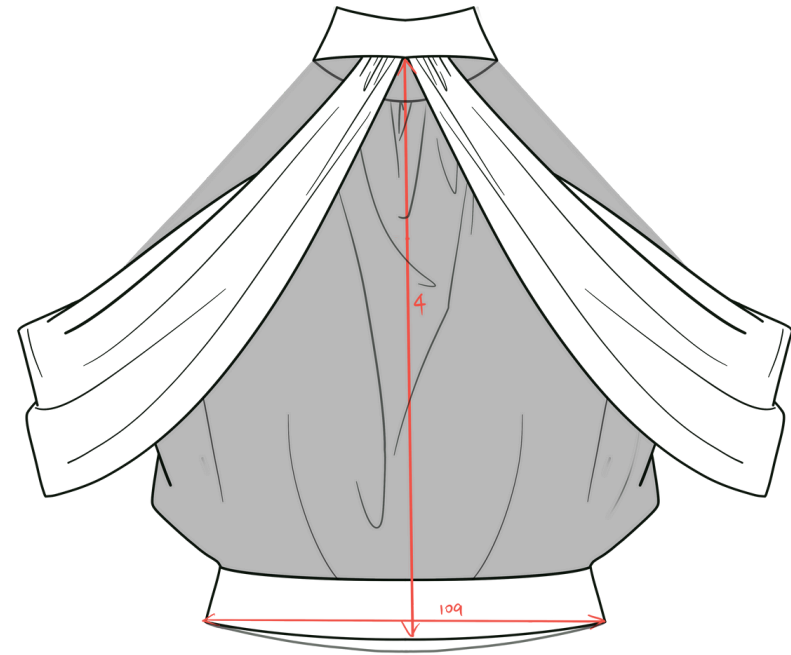
REF	MEASUREMENT	pattern	Diff	1ST FIT	Diff	2ND FIT	Diff	SEALED	TOL
2	Front Length - SNP to Hem**	42.58		43.13	0		0		+/-1.0cm
3	Back Length - SNP to Hem	14.13		14.56	0		0		+/-1.0cm
4a	Length - Centre Back Neck to Hem	38.6		39.1	0		0		+/-1.0cm
10a	Waist (18cm below U/A)-Relaxed	37		37.3	0		0		+/-1.0cm
8	Top Hip 10cm below Waist	68.14		68.9	0		0		+/-0.5cm

# MEASUREMENT GUIDE- Top3

Project title	Geometry in Motion – A Structured System of Gathering
Garment no.	5
Garment name	top3



FRONT



BACK

## FIT COMMENTS SUMMARY- Top3

Area	Issue	Adjustment	Pattern reference
Neck gather	Density uneven	Adjust gather ratio at centre	C1, B1, B2
Side collapse	Collapse too deep	Reduce drape width	B1, B2
Back opening	Too wide or unstable	Tighten collar band	C1
Hem volume	Excess puff	Reduce hem band ease	C2
Side seam join	Chiffon pulling acetate	Shift join point	A1 + B panels
Upper-body tension	Slight twist at base	Re-balance curvature	A1

## PATTERN PIECES- Top3

Code	Piece name	Cut instruction	Fabric
A1	Acetate base panel	CUT 1 SELF	Acetate
B1	Chiffon drape panel – left	CUT 1 SELF	Chiffon
B2	Chiffon drape panel – right	CUT 1 SELF	Chiffon
C1	Neck collar band	CUT 1 SELF	Acetate
C2	Hem band	CUT 1 SELF	Acetate

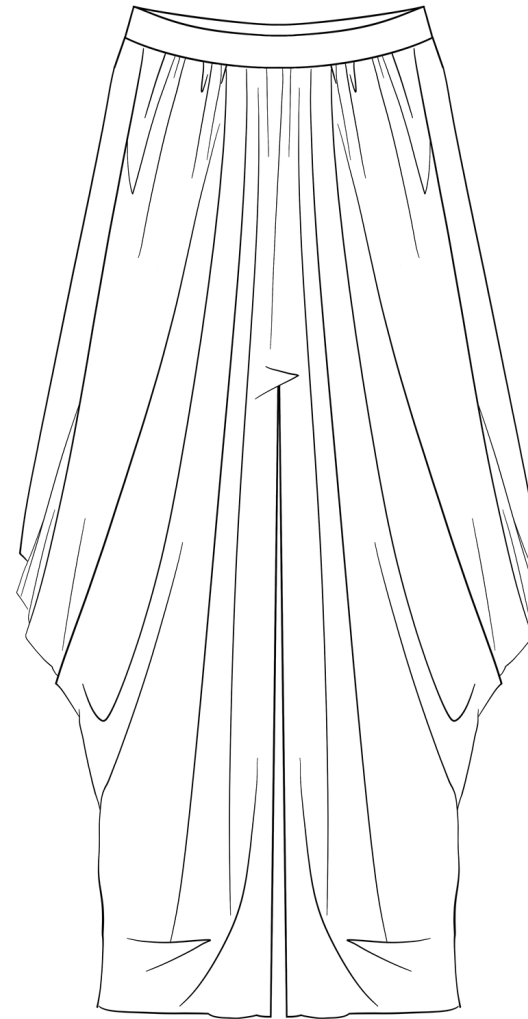


# CONSTRUCTION NOTES- Top3

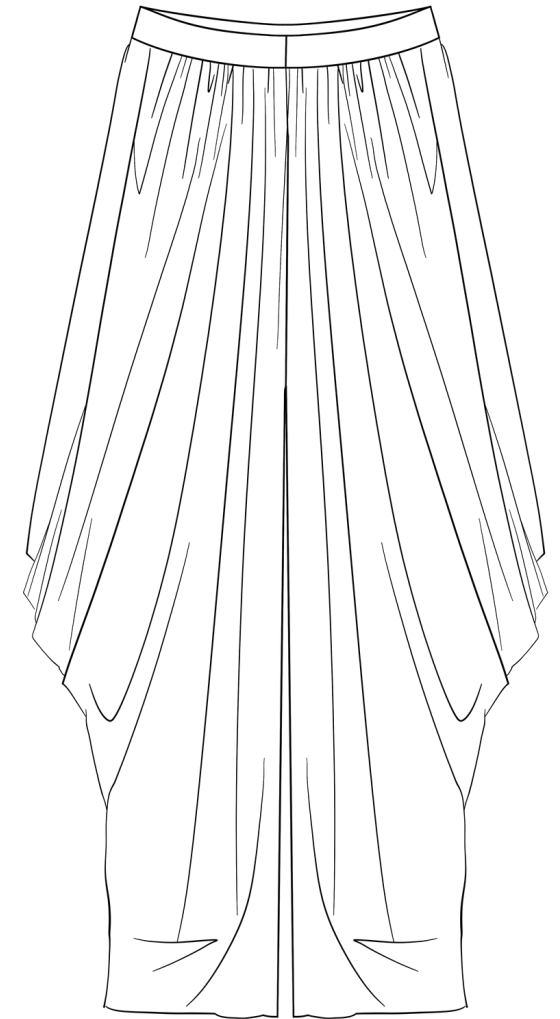
Process	Details
Stitch type	Overlock for acetate; narrow overlock for chiffon; topstitch for collar/hem bands
Hem finish	Chiffon: baby hem; Acetate: narrow double turn
Step 1	Assemble acetate base panel (A1)
Step 2	Prepare chiffon drape panels (hem first)
Step 3	Attach chiffon panels (B1, B2) to collar band (C1) with even gathering
Step 4	Attach acetate base panel (A1) into collar assembly
Step 5	Join sides of acetate and chiffon panels
Step 6	Attach hem band (C2) and distribute base gathers
Step 7	Finish collar closure (button or hook)
Step 8	Final press (low temperature)

# SPECIFICATION SHEET- Trousers

Field	Details
Project title	Geometry in Motion – A Structured System of Gathering
Garment no.	Trousers 1
Garment name	Gathered Trousers
Category	Asymmetric gathered trousers with layered chiffon drape
Season / Year	2025
Design concept	Lower-body geometric gathering using asymmetric curved chiffon panels to direct tension and create
Sample size	S
Fabric – Shell 1	White poplin (inner structural base)
Fabric – Shell 2	Black chiffon (outer drape + chiffon waistband overlay)
Lining	None
Interlining	None
Colourway	White base + black chiffon overlay
Grainline	One-way
Trims	Elastic for waistband (optional)
Fastenings	Elasticated waistband
Label placement	Inside poplin waistband
Care label	Dry clean only



FRONT



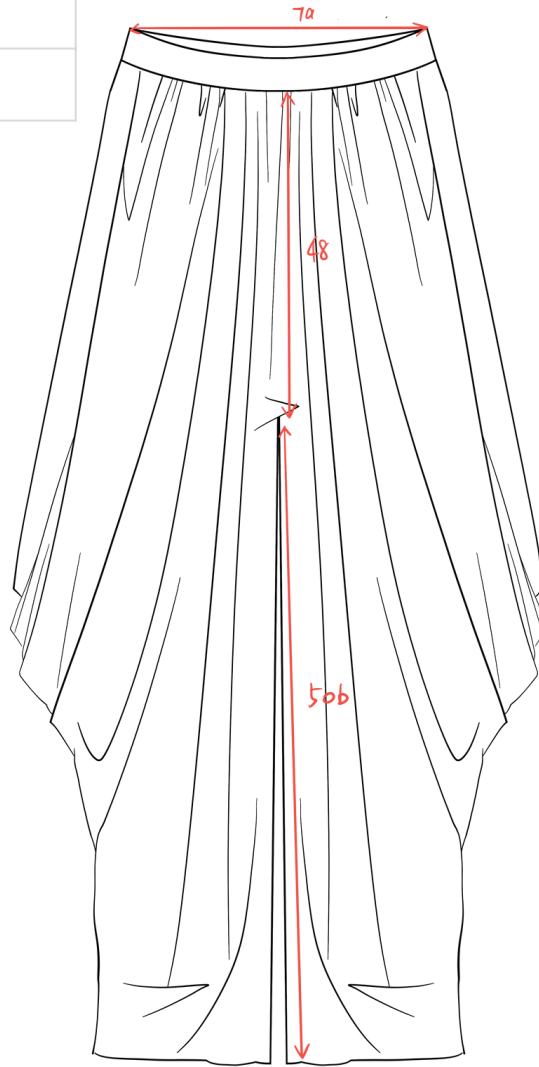
BACK

# FIT LOG- Trousers

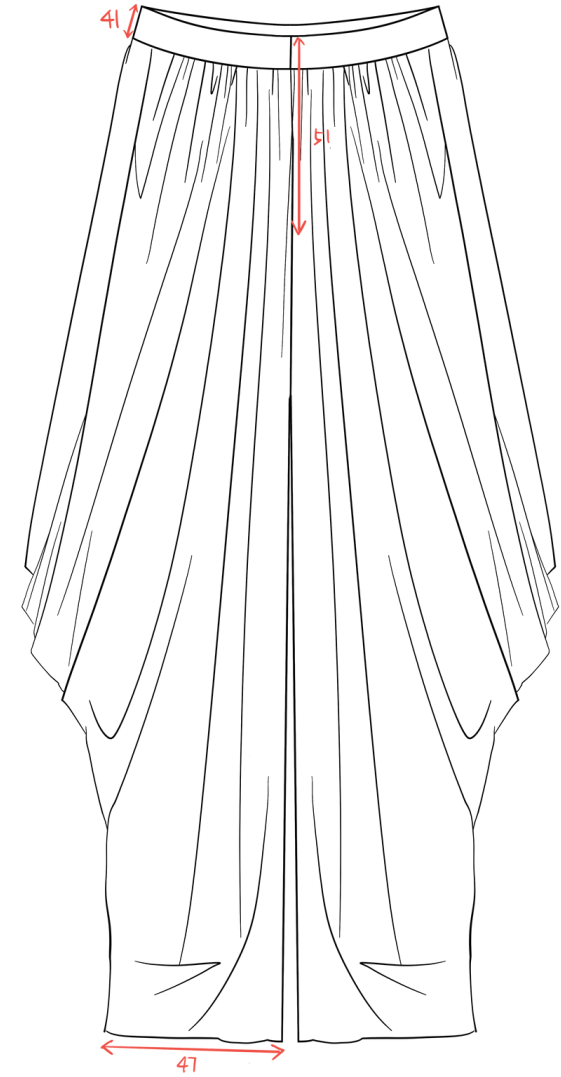
REF	MEASUREMENT	pattern	Diff	1ST FIT	Diff	2ND FIT	Diff	SEALED	TOL
7a	Waist - Relaxed	40.05		41	0		0		+/-1.0cm
41	Waistband Depth	4		4.2	0		0		+/-1.0cm
47	Leg Opening	36.84		36.9	0		0		+/-1.0cm
48	Front Rise - Including Waistband	28.24		29.1	0		0		+/-1.0cm
50b	Inside Leg REGULAR	75.81		75.9	0		0		+/-0.5cm
51	Fly length to Bar Tack	15.43		15.8	0		0		+/-0.5cm

# MEASUREMENT GUIDE- Trousers

Project title	Geometry in Motion – A Structured System of Gathering
Garment no.	6
Garment name	Trousers



FRONT



BACK

## FIT COMMENTS SUMMARY- Trousers

Area	Issue	Adjustment	Pattern reference
Outer drape	Side collapse too deep	Reduce width or lift gather point	B2–B5
Waistband	Poplin and chiffon mismatch	Tighten poplin waistband; reduce chiffon ease	A5, B1
Base fit	Minor pull at outer leg	Shift base join point	A1–A4
Hem	Chiffon hem too long	Shorten outer drape	B4, B5
Side seam	Chiffon dragging the poplin base	Shift side join upward	A panels + B panels
Crotch	Curve strain at back	Redraw back curve	A3
Leg volume	Lower leg too heavy	Reduce curvature in chiffon panel	B4, B5

# PATTERN PIECES- Trousers

Code	Piece name	Cut instruction	Fabric
A1	Poplin front base panel – left	CUT 1 SELF	Poplin
A2	Poplin front base panel – right	CUT 1 SELF	Poplin
A3	Poplin back base panel – left	CUT 1 SELF	Poplin
A4	Poplin back base panel – right	CUT 1 SELF	Poplin
A5	Poplin waistband	CUT 1 SELF	Poplin
B1	Chiffon waistband overlay	CUT 1 SELF	Chiffon
B2	Chiffon drape panel – upper left	CUT 1 SELF	Chiffon
B3	Chiffon drape panel – upper	CUT 1 SELF	Chiffon
B4	Chiffon drape panel – lower left	CUT 1 SELF	Chiffon
B5	Chiffon drape panel – lower right	CUT 1 SELF	Chiffon



# CONSTRUCTION NOTES- Trousers

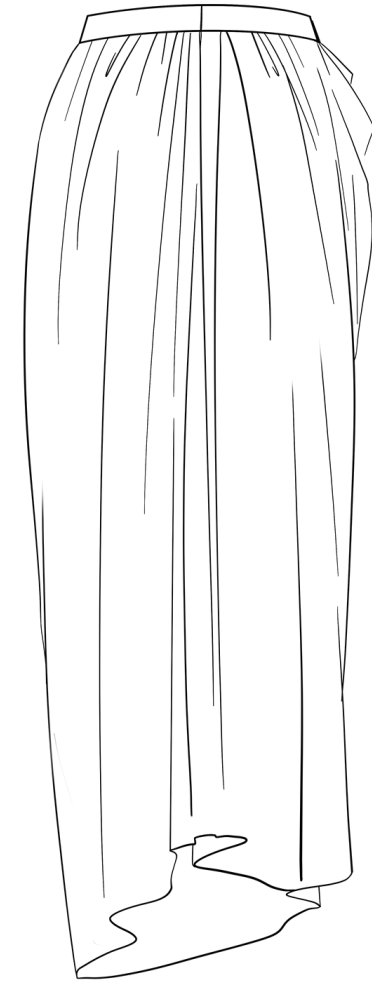
Process	Details
Stitch type	Lockstitch for poplin; narrow overlock for chiffon; topstitch for waistband
Hem finish	Poplin: double turn hem; Chiffon: baby hem
Step 1	Assemble poplin base (A1–A4): join side seams, inseam, and crotch
Step 2	Prepare chiffon waistband overlay (B1) and chiffon drape panels (B2–B5); finish hems first
Step 3	Attach chiffon drape panels (B2–B5) to poplin waistband edge; distribute gathers according to mapping
Step 4	Attach poplin waistband (A5) to poplin base; align CF and CB notches
Step 5	Overlay chiffon waistband (B1) on top of A5; stitch at upper edge, finish cleanly
Step 6	Close waistband side seam; insert elastic if used
Step 7	Join side seams combining chiffon and poplin layers to maintain drape placement
Step 8	Finish hems: poplin inner hem first, chiffon outer hem last
Step 9	Final press on low temperature (for chiffon)

# SPECIFICATION SHEET- Skirt

Field	Details
Project title	Geometry in Motion – A Structured System of Gathering
Garment no.	Skirt 1 & Skirt 2
Garment name	Gathered Skirt
Category	Asymmetric gathered skirt
Season / Year	2025
Design concept	Angled triangular composite panel directing gathering toward one side to create diagonal
Sample size	S
Fabric – Shell	Acetate (black for Skirt 1, white for Skirt 2)
Lining	None
Interlining	None
Colourway	Black / White
Grainline	One-way
Trims	Elastic (waistband)
Fastenings	Elasticated waistband
Label placement	Inside waistband
Care label	Dry clean only



FRONT



BACK

# FIT LOG- Skirt

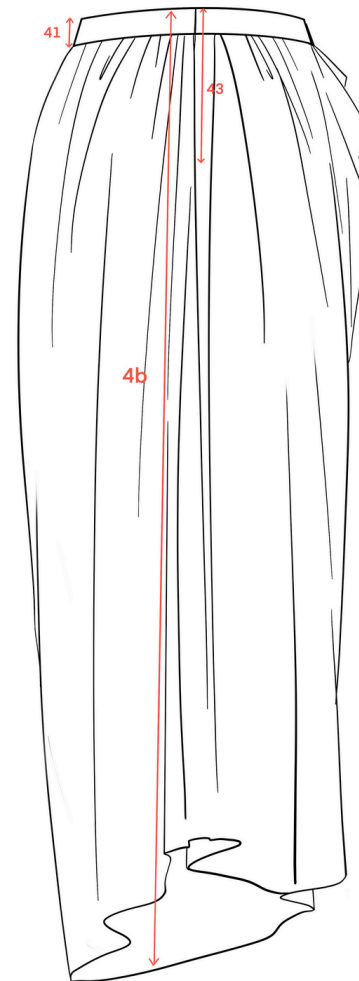
REF	MEASUREMENT	pattern	Diff	1ST FIT	Diff	2ND FIT	Diff	SEALED	TOL
4b	Front Length - SNP to Hem**	102.81		103.1	0		0		+/-1.0cm
7	Back Length - SNP to Hem	32.5		32.7	0		0		+/-1.0cm
9	Length - Centre Back Neck to Hem	42.38		43	0		0		+/-1.0cm
41	Waist (18cm below U/A)-Relaxed	3		3.2	0		0		+/-1.0cm
43	Top Hip 10cm below Waist	15.59		16.2	0		0		+/-0.5cm

# MEASUREMENT GUIDE- Skirt

Project title	Geometry in Motion – A Structured System of Gathering
Garment no.	7
Garment name	skirt



FRONT



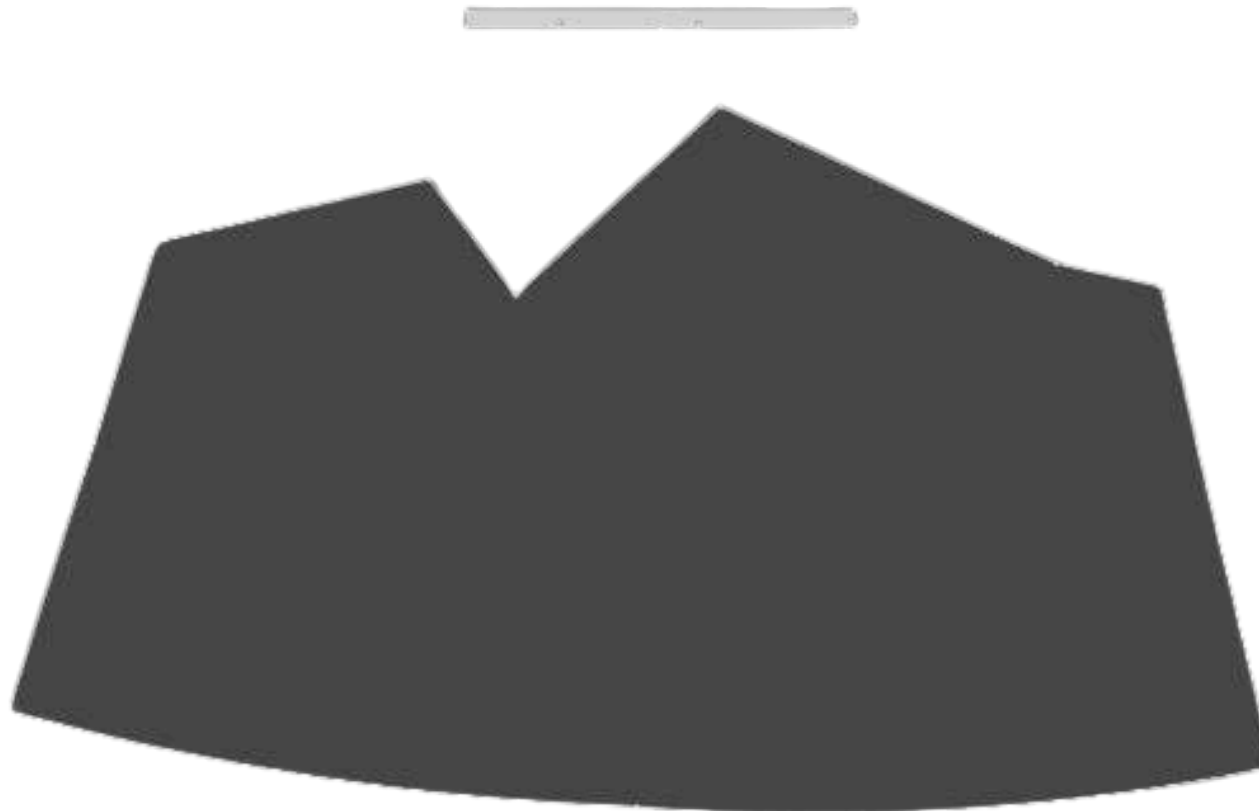
BACK

## FIT COMMENTS SUMMARY- Skirt

Area	Issue	Adjustment	Pattern reference
Side drape	Collapse falls too low	Lift gather point	A1
Front volume	Lack of definition	Add slight gather tension	A1
Waistband	Fit too loose	Reduce waistband length	B1
Hem	Uneven drape	True hem line	A1
Side seam	Over-draping on one side	Reduce curvature	A1

# PATTERN PIECES- Skirt

Code	Piece name	Cut instruction	Fabric
A1	Main skirt panel (triangular composite)	CUT 1 SELF	Acetate
B1	Waistband	CUT 1 SELF	Acetate



# CONSTRUCTION NOTES- Skirt

Process	Details
Stitch type	Overlock for seams; lockstitch for waistband
Hem finish	Double turn hem
Step 1	Prepare main skirt panel (A1): finish hem first
Step 2	Apply gathering along top edge following mapping
Step 3	Join skirt panel to waistband (B1)
Step 4	Close waistband and insert elastic
Step 5	Join side seam
Step 6	Final press (low temperature for acetate)

# APPENDICES

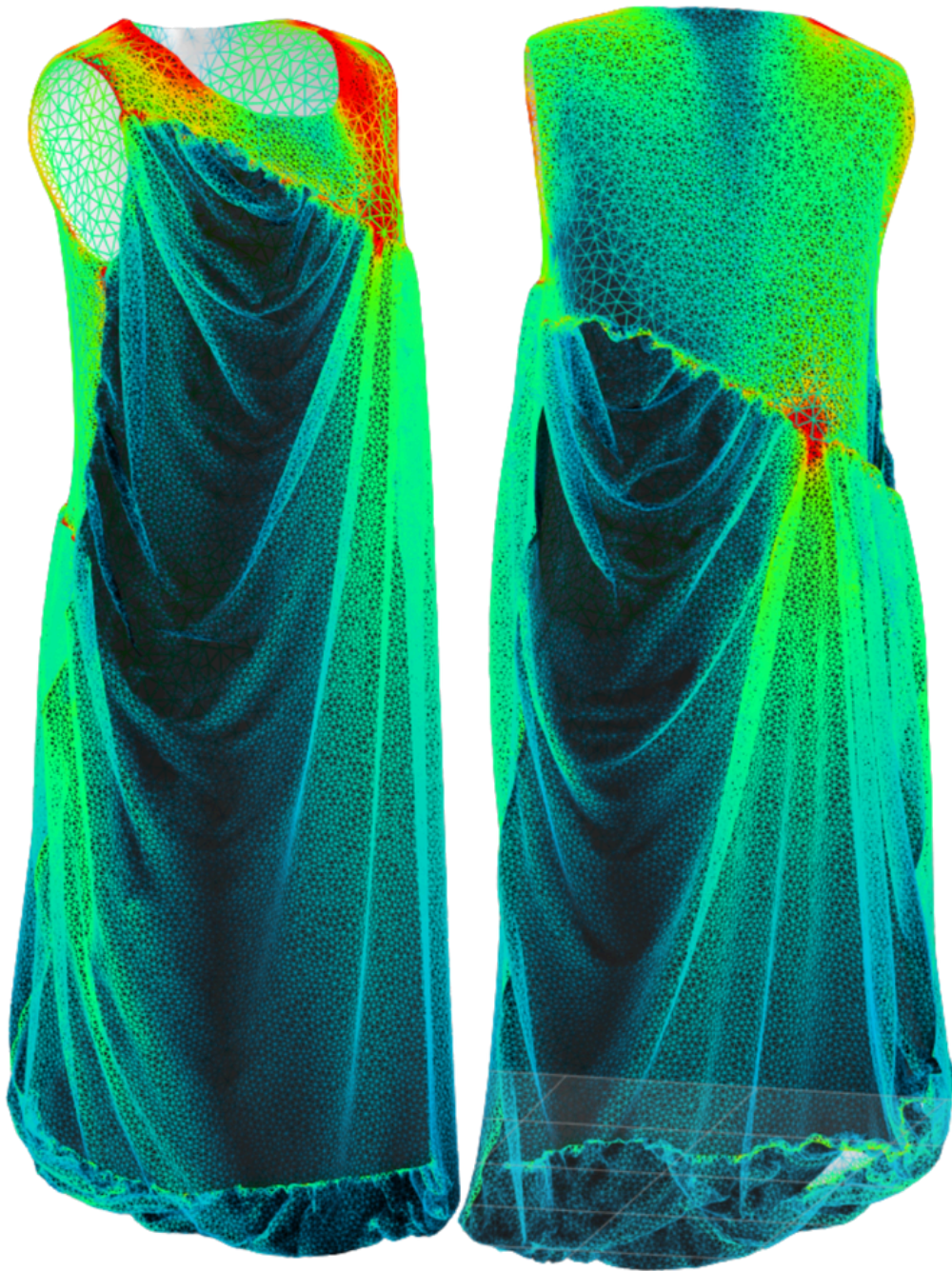


Figure A1. CLO3D simulation of Dress 1 showing tension heatmap and opacity render. Image source: Author (2025).



Figure A2. CLO3D drape variations of Dress 1 exploring directional gathering distribution. Image source: Author (2025).



STYL  
↕



STYL  
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Figure A3. Additional CLO3D drape variations of Dress 1 testing side, front, and back collapse behaviour. Image source: Author (2025).

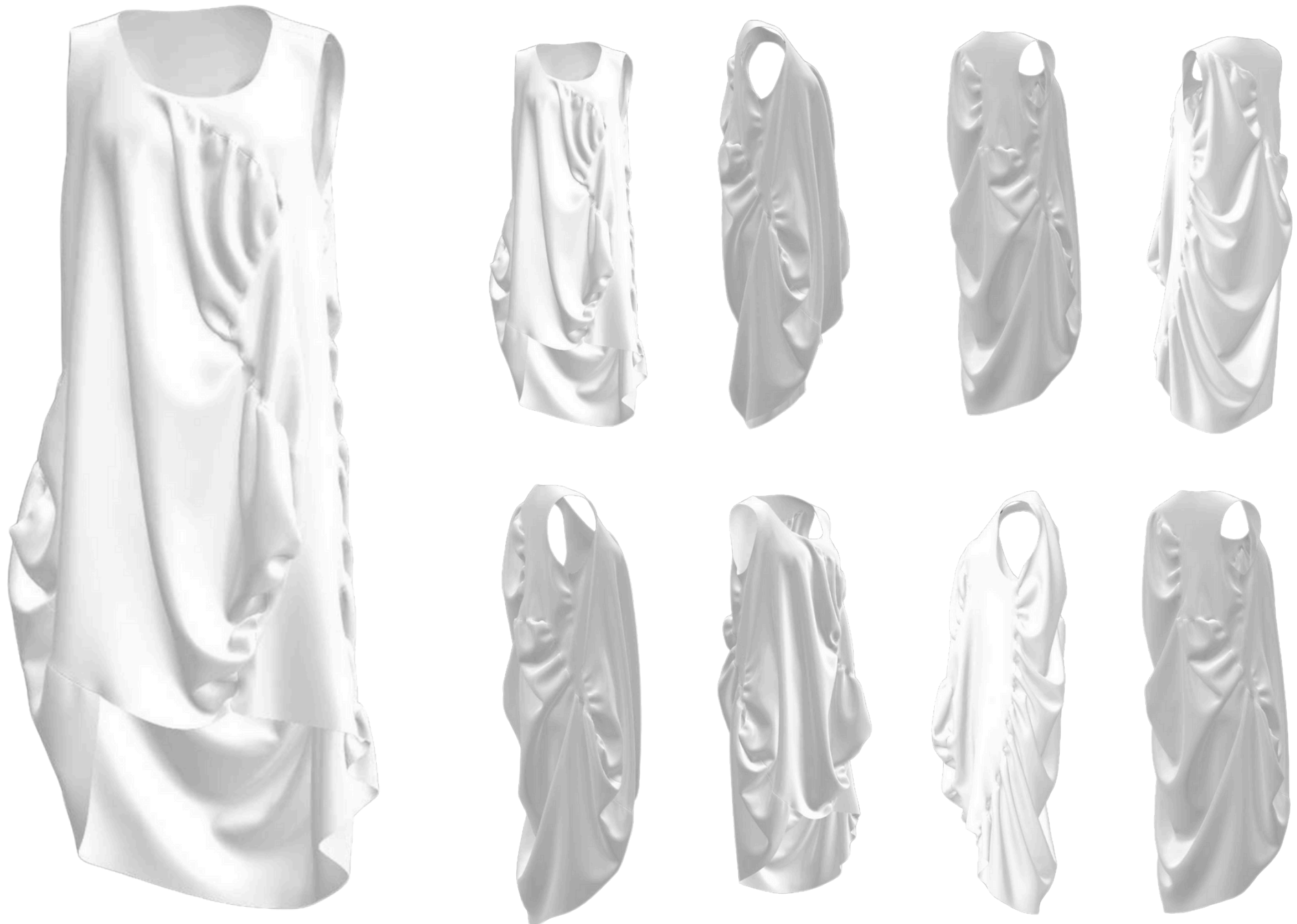


Figure A4. CLO3D simulations of Dress 1 evaluating panel angle and gathering density. Image source: Author (2025).



Figure A5. CLO3D variations of Dress 1 showing multi-directional collapse patterns. Image source: Author (2025).



Figure A6. CLO3D simulations of Dress 1 assessing stability of diagonal folds and volume retention. Image source: Author (2025).



Figure A7. CLO3D drape variations of Dress 1 analysing gravity-driven collapse height. Image source: Author (2025).

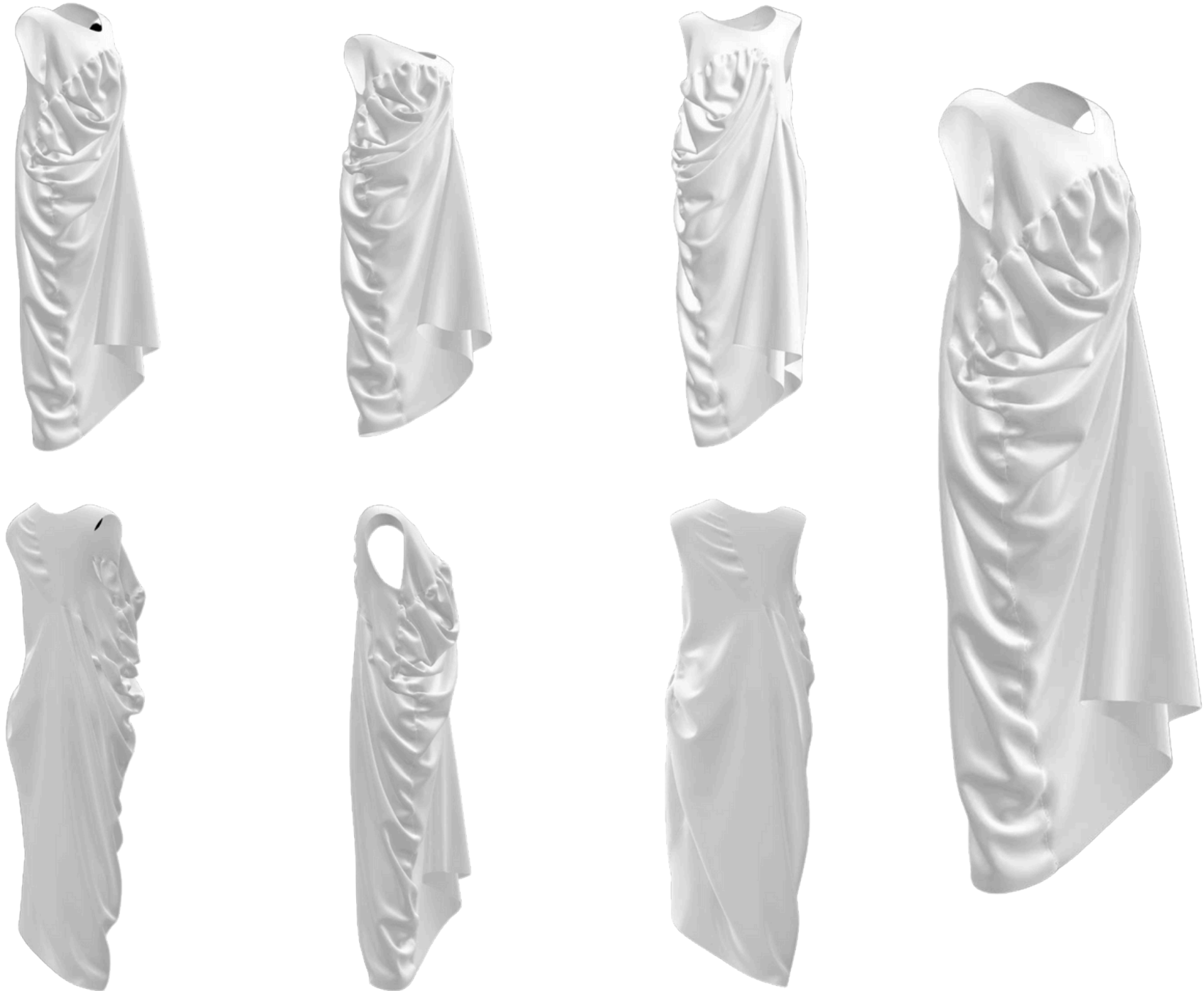


Figure A8. CLO3D simulation of Dress 1 showing alternative side-gather placement. Image source: Author (2025).



Figure A9. CLO3D variation of Dress 1 with reduced gathering to test structural clarity. Image source: Author (2025).



Figure A10. CLO3D simulations of the Shirt analysing back-panel gathering and tension distribution. Image source: Author (2025).



Figure A11. Additional CLO3D simulations of the Shirt showing panel curvature and collapse zones. Image source: Author (2025).



Figure A12. CLO3D simulation of the gathered trousers highlighting asymmetric drape expansion. Image source: Author (2025).



Figure 13. CLO3D simulations . Image source: Author (2025).

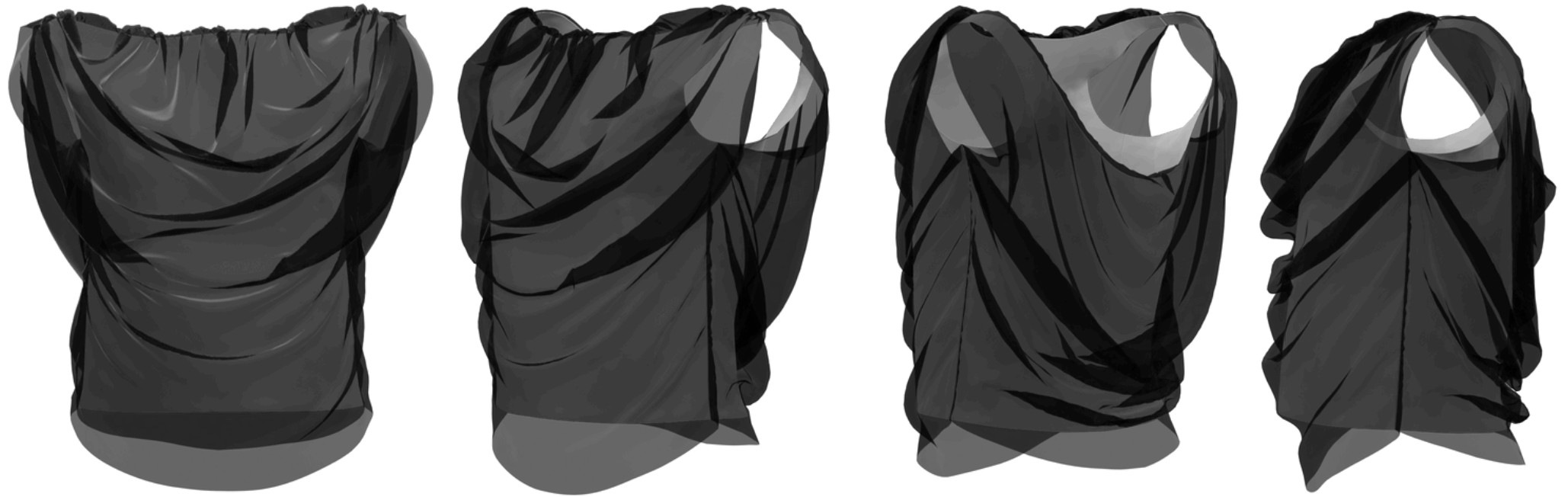


Figure A13. CLO3D simulation of Top 2 showing multi-layered chiffon drape behaviour. Image source: Author (2025).



Figure A14. CLO3D simulation of Top 1 analysing neckline collapse and lower-body anchoring. Image source: Author (2025).



Figure A15. CLO3D simulation of Top 3 showing radial gathering and halter-neck tension pathways. Image source: Author (2025).



Figure A16. CLO3D simulation of Dress 2 illustrating black chiffon overlay over white acetate base. Image source: Author (2025).



Figure A17. CLO3D simulation of the Skirt (white acetate) showing diagonal gathering displacement. Image source: Author (2025).



Figure A18. Physical fitting photographs of the Shirt prototype. Image source: Author (2025).



Figure A19. Physical fitting photographs of Top 1 paired with Skirt 1. Image source: Author (2025).



Figure A20. Physical fitting photographs . Image source: Author (2025).



Figure A21. Physical fitting photographs . Image source: Author (2025).

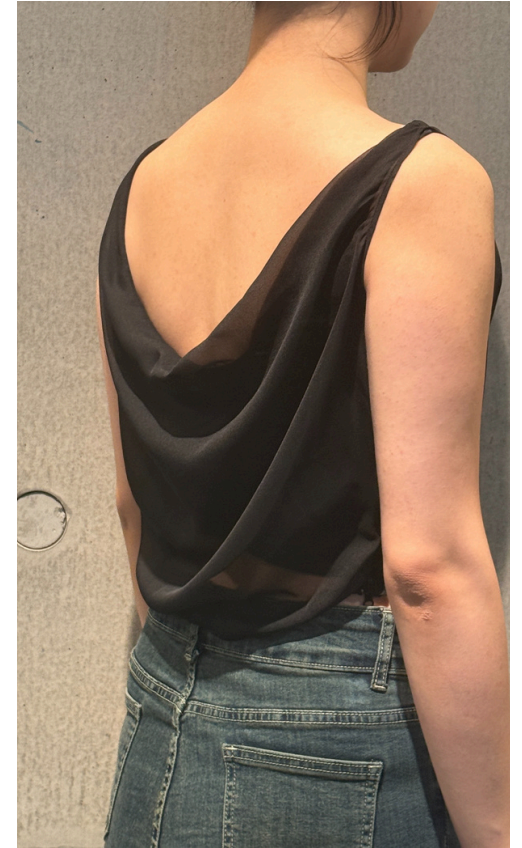


Figure A22. Physical fitting photographs . Image source: Author (2025).



Figure A23. Physical fitting photographs . Image source: Author (2025).