THE BUTTERFLY EFFECT: EXPLORING THE BEHAVIOR OF CHANGE THROUGH TRANSFORMABLE CLOTHING

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by

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Introduction

Many will agree that nothing is better than the feeling of getting dressed up in a beautiful gown for a special occasion. However, before the fun can begin, there is the challenge of deciding what to wear. Many occasions bring with them the stress of finding the perfect look without having to wear something already in the closet, or worse, something that the other guests may have already seen. Transformable eveningwear could be one of the answers to this problem. Transformable garments allow the wearer to change her look, often adding a surprise when the change is revealed. This thesis details the design process of a transformable evening wear collection inspired by the behavior of change. Humans go through both physical and emotional changes several times throughout their lives. There is often behavior that can be identified as corresponding with these changes. The collection visually tells the story of a transformation from beginning to end, and is compared to the transformation of a caterpillar to a butterfly. This collection caters to a customer who appreciates detail and versatility in eveningwear. When she gets dressed up for a special event, she knows that all eyes will be on her. She wants to be an inspiration and radiate confidence in herself and what she wears. The eveningwear market is known for producing beautiful gowns with intricate embellishment and complex silhouettes. As a designer, high-end eveningwear is enticing because of the creative freedom it allows. The collection is intended to push boundaries and inspire new ideas of what can be worn for special events. It encourages a sustainable approach to eveningwear and opens the door for further advancement of the concepts. Through the completion of this project, the goal is to gain a better understanding of

eveningwear construction, improve collection development, and reveal the benefits and beauty of transformable clothing.

Literature Review

In order to create a starting point for this collection, research was conducted in the areas of transformable clothing, sustainability, the eveningwear market, and the collection inspiration. The research includes backgrounds and definitions of the types of garments in this collection, as well as highlights other designers who have taken their own approach to transformable garments and sustainability. By including the research done by others in the area of study, the collection is able to push that work forward in a different direction that is innovative and relevant in the industry.

Transformable Clothing

Because an ordinary evening gown is supposed to be worn only for special occasions, strategies of transformability seek to increase the efficiency of the garment and allow customer to do more with a single garment (Fletcher, 2012).



Figure 1: Rose Convertible Shirt. 180 Degrees by Maria Prastakou

If a consumer wants a different look for each special occasion, transformable evening gowns could have the ability to become something different for multiple uses. "A 'transformable garment' has changeable design functions. The candidate elements for changeable design functions are colour/pattern, size/fit, silhouette, garment type, and design details" (Sumin Koo, Dunne, & Bye, 2013, p. 12). Transformable garments can satisfy consumers' various needs and wants in that they provide a personal interaction with the wearer to make her feel more connected to her clothing. Transformable garments provide versatility which encourages the wearer to develop a relationship with her clothing. This relationship is deeper than what can be achieved from typical fashion and causes the wearer to feel connected to the sustainability aspect of design. (Sumin Koo et. al., 2013). Jennifer Johung (2012), who has analyzed transformable fashion from an artistic standpoint to make a statement about the norms of society, says that the transformation is never fully visible. It is designed to always have other possible forms and functions that can be discovered by the wearer depending on her needs. Designers



Figure 2: Hussein Chalayan Table Skirt, Fall 2000 Ready-to-Wear

experiment with transformations and use their shows to showcase the social issues related to transparency and visibility. Irovan, Tutunaru, Balan, & Labutina (2016), made the observation that transformable garments are in the fashion trends and have been seen in the collections of Hussein Chalayan, Yohji Yamamoto, Martin Margiela, Gareth Pugh, and others. Chalayan's "After Words" collection for example, "Featured a room furnished with

four chairs and a coffee table. Intended as a comment on war and the plight of refugees who suddenly have to carry all their belongings with them, four models took off the chair covers and transformed them into dresses, and another made the table into a skirt. Finally, the chairs themselves turned into suitcases" (Lee, 2005, p. 124). Something of that nature would lean more toward making a statement than working as a practical garment. This collection is meant to allow the wearer to develop a strong connection with the garments through the ability to adjust pieces and wear them as she sees fit. Because wearers have emotional relationships with their clothing, designers utilize techniques that stimulate an emotional response in their customers. Unique garments tend to extend this relationship, such as personalized, timeless, or adaptable garments that provide several products in one. (Gwilt, 2014). According to Sumin Koo et. al., (2013), the four types of transformations in clothing include reversible and folded or tied styles, modular pieces, smart clothing, and do-it-yourself pieces. Reversible designs, such as the Indian sari or Hawaiian pareo, can switch between inner and outer surfaces. Folded or tied designs change the look of the garment by folding or tying different sections in different ways. Modular pieces include parts that move independently from the rest of the garment which can be worn alone, detached, or replaced by other parts, which gives the wearer infinite possibilities and combinations. Smart clothing incorporates technologies or smart materials into garments so that colors or patterns, silhouette, size, fit, or design details can be transformed (Black, 2008; Bye, 2010). Do-it-yourself, or DIY pieces "and multi-life designs that can help consumers form stronger emotional attachments to their garments and naturally engage values around sustainability" (Finney,

2006, as cited in Sumin Koo et. al., 2013, p. 11). This thesis focuses on modular design because it gives the wearer the largest number of options in how the evening gown can be styled. The more versatile the look, the more the consumer may be willing to wear it and keep it in her wardrobe, which therefore extends the life of the garment. Modular pieces also give the wearer the idea that she has control over the garment, and can style it specifically how she likes.

Sustainability

Sustainability is a practice that has been encouraged to help eliminate the environmental problems caused by the industry. According to the U.S. EPA, over 16 million tons of textile waste was collected in 2014. Of that 16 million, 2.62 million tons were recycled, 3.14 million tons were combusted to generate energy, and 10.46 tons were sent to the landfill. Americans on average throw away about 80 pounds of used clothing per person per year, and it takes hundreds of years for synthetic materials to decompose. Extending the life cycle of clothing by just three months would reduce five to ten percent of each person's carbon and water footprints and reduce waste generation. If two million tons of clothing per year was recycled, it would be the same as taking one million cars off of U.S. streets. Reducing waste also includes economic benefits, considering it costs cities \$45 per ton, on average nationally, to dispose of clothing. (LeBlanc, 2017). However, it is not just clothing disposal that takes a toll on the environment. Between the acquisition of raw materials and end of life, all parts of the garment life cycle including production and consumption contribute to environmental change and degradation globally. Because our society is one of materialism and consumption, those actions place

stress on the natural environment, deplete natural resources, and strain the earth's capacity to carry everything that is generated. (Hiller Connell, 2015). By utilizing sustainable methods, such as transformable design, more innovative approaches can be created while also expanding the life cycle of the garments and reducing waste. The idea of designing for sustainability is a response to the inefficient use of resources in the fashion industry. Adaptability in clothing is meant to increase the efficiency of each garment by creating more output from the same input. This allows wearers to do more with a single garment, but it also disrupts the larger cycle of purchasing and discarding clothing. This slows consumption overall and challenges business models that rely on producing and selling large volumes of garments to maximize profits. (Fletcher & Grose, 2012). Fashion is more than just clothing; it is the attitude that is associated with certain garments. Sustainable practices can add to the customer experience and make them feel like they are part of a positive global impact. Because consumers in our society become attached to certain objects and easily dispose of others, it is important to lengthen the lifespan of the product. (Niinimaki, Pedersen, Hvass, & Svengren-Holm, 2015). Catering to the emotions of the consumer encourages that attachment, which ultimately causes the consumer to keep the product longer.

Eveningwear Market

Eveningwear is an interesting market because it is a specialized type of design, but it welcomes unique ideas and concepts. Eveningwear designers have included transformable garments in their designs. Hussein Chalayan's Autumn/Winter 2013 collection features dresses that change instantly as the model walks down the runway. The brand Jolier uses buttons to transform the shapes of their dresses. These companies have utilized the freedom of the market to engage their customers with a unique experience.



Figure 3: Hussein Chalayan A/W 2013

Figure 4: Jolier Coco Dress

Fast fashion in the apparel industry has transformed the business in the past 20 years. There are cheaper clothes on the market, as well as more of them. (Sherman, 2015). Consumers are exposed to countless clothing options at different prices, but they also look for quality in what they ultimately decide to purchase. They are willing to pay more than fast fashion for eveningwear, but they do not necessarily want to pay couture prices. The middle market for eveningwear is still emerging, considering only 13.5 percent of evening gowns in the U.S. are priced between \$600 and \$1,200, according to the fashion data firm Edited. 69 percent are priced in the lower range under \$600, and 17.5 percent are priced in the higher range over \$1,200. Mid-priced formalwear can bring in customers who are looking for something more unique than fast fashion, but who are not willing to pay for a high-end gown. (Sherman, 2016). There is a gap in the

market that allows dresses to be moderately priced but still made well. This collection falls into that gap considering the careful design and hand-work involved in the construction, but the fact that it utilizes less-expensive fabrics such as cotton sateen and rayon jersey, combined with limited surface embellishment. Much of what goes into the price of a garment is the time and work involved. The contemporary line Sachin & Babi, launched in 2009, found that retailers were interested in garments that utilized handembroidery and textiles typically found in upscale fashion houses, but current consumers are looking for "accessible-but-not-cheap" eveningwear. Special occasion items tend to have a more emotional experience than fast fashion for everyday wear. (Sherman, 2016). Creating something that can be worn multiple times will also have more value to the customer. One gown can have the ability to become something different for multiple occasions, giving the customer the unique experience she desires when looking for eveningwear.

Collection Inspiration

The collection is inspired by the behavior of change, similar to that of a caterpillar as it transforms into a butterfly. Marina Rose, founder of QDNA observes that the butterfly has become a symbol of change and self-transformation. The process of metamorphosis from earthbound caterpillar to butterfly with the ability to fly carries meaning that relates to our own ability to move through different life cycles of regeneration, renewal, expansion, and rebirth. (2016). The collection tells the story of the butterfly's life cycle, with each look representing a different stage of the process. A

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butterfly undergoes a process called complete metamorphosis during its life cycle. This means that the butterfly changes completely from its early larval stage, when it is a



caterpillar, until the final stage, when it becomes a beautiful and graceful adult butterfly...The caterpillar attaches itself to a twig, a wall or some other support and the exoskeleton splits open to

Figure 5: Butterny metamorphosis. Jimmy Hollman, 2015

reveal the chrysalis. The chrysalis hangs down like a small sack until the transformation to butterfly is complete. The motionless pupa may appear to be in a "resting stage" with nothing going on in the eyes of the outside observer. However, it is within the chrysalis shell that the caterpillar's structure is broken down and rearranged into the wings, body and legs of the adult butterfly. (Department of Horticulture, 2018).

The life cycle of a butterfly can be directly compared to human behavior during a personal change, which is a relevant subject that applies to many. Motivational speaker Martha Beck observes that "humans do it too—not physically but psychologically. All of us experience metamorphosis several times during our lives, exchanging one identity for another" (2003). The collection uses clothing to show the transformation from cocoon to butterfly, highlighting the stages of putting up walls, shedding layers, and emerging as a beautiful butterfly. During times of transition, we may need to go "underground" to give our mind and body space to change. This state is significant in our emotional and personal transition because it may not be visually evident that something is going on, but a big changes are happening on the inside. (Devereaux, 2014). From here, the butterfly

sheds its layers and breaks down the walls that contain it. A new creature is revealed and celebrated. "As it emerges from the depths of its cocoon, no more than you does a butterfly know whether it can fly, but it opens its wings in perfect confidence and simply takes flight" (Rose, 2016). The final looks in the collection highlight the beauty of the butterfly and the confidence of the wearer, which should resonate well with today's customer. While we may shut others out and hide inside ourselves, we will eventually take down the walls and emerge as something new, happy with what we've become.

Methodology

The methods used in the process of creating the collection include research on the concept of the collection, a personal interview study with customers who shop in the current eveningwear market, collection design and development, and the construction and execution of the final collection.

Research

Research on the concept of the collection began by finding books and journals related to transformable garments and eveningwear. Past collections of designers with



Figure 6: Albert Yanuar S/S 2013

similar ideas were analyzed to determine what types of transformations would be best suited to the customer. Designers such as Hussien Chalayan, Jolier, and Albert Yanuar presented transformable collections in the past, each with a different type of transformation. To obtain a deeper understanding of the real-world customer, data was collected from personal interviews with women who shop in the current eveningwear market. After obtaining approval from the Institutional Review Board, applicable candidates were contacted, and those who agreed to participate gave consent. The participants were ten women ages 18-52 who were chosen among family, friends, and co-workers. The sampling includes subjects of various ages, backgrounds, education levels, occupations, clothing sizes, and income levels, all of which contribute to the development of opinions about clothing and shopping habits.

	Personal Interview Questions
1.	What is your age?
2.	What is the most common feature of a garment that convinces you to purchase it?
3.	How often do you find yourself shopping for new clothing?
4.	Approximately how many times will you wear a garment, or how long will you keep it, before you dispose of it?
5.	What is the most common method you use to dispose of unwanted clothing?
6.	How often do you find yourself shopping for eveningwear?
7.	What kinds of events do you attend that require formal attire?
8.	When looking for a dress or gown for a special event, do you prefer to find something you already own, or do you prefer to purchase a new one?
9.	While eveningwear is commonly purchased to be worn only once, would you wear the same garment a second time if it had the capability to look different?
10.	What specific features of a dress would you consider the best features to change?
11.	If you had the option to customize a dress the way you wanted, would you be more willing to purchase it?
12.	Would you be willing to pay more for a dress that gave you more options?
13.	If you purchased a dress that can be changed in several ways, would you be willing to try several different options for wear it only one way? Why?
14.	Do you have any suggestions for the current eveningwear market?

Table 1: Personal Interview Questions

The purpose of the study was to learn the opinions of women that are familiar with the market. Their comments and concerns were taken into consideration during the design process to develop garments that will receive a positive response from customers. The subjects were interviewed and asked a series of 14 open-ended questions addressing their opinions on shopping habits, the garment life cycle, evening wear, and transformable garments. The corresponding answers were analyzed to find similar responses and patterns. The interview began with questions about shopping in general, for example, the most common feature of a garment that convinces the customer to buy it, how often she finds herself shopping for new clothing, and how long she will keep a garment before disposing of it. Answers to these questions were varied, proving that there are several factors to consider when designing a garment. It must catch the customer's attention while she continues to be immersed in the endless options the market has to offer. The most common answer to the question asking what feature of a garment convinces her to purchase it was fit, with material just behind. When asked the way she prefers to dispose of garments, the most common answer was to donate the items, rather than just throw them away. The questions about eveningwear specifically, such as how often she finds herself shopping for eveningwear, the kinds of events she attends that require formal attire, whether she prefers to purchase a new dress or wear something she already owns, all had common answers, proving that the eveningwear market has a more specialized customer. Events that the participants attend that require eveningwear included weddings, parties, galas, social functions, and school events. When asked about transformable garments, such as whether or not she would wear a garment twice if it had

the capability to look different, the best features of the dress to change, and her willingness to pay more for a transformable garment, the answers were common and positive, proving that the customer is open to transformable eveningwear. When asked about her willingness to try several different options of a transformable dress, one participant answered "I would be willing to try multiple options because I like getting as much use out of my wardrobe as possible" (Personal communication, Dec. 2017). The most common answers for questions asking about suggestions for the current eveningwear market were to keep the prices down and to make dresses that were more inclusive of all body types. "Dresses are a hard fit—my body type gives me trouble with sizing. I am a 16-18 but not women's size. That eliminated a lot of options for me. Women's sizes are too short and boxy." (Personal communication, Dec. 2017). Another participant said "It's so hard to find plus size eveningwear that does not look like an old woman or 'mother of the bride.' We like fashion forward clothing" (Personal communication, Dec. 2017). The overall results of the study revealed that the design of eveningwear must keep in mind price when choosing materials, and fit when designing silhouettes and shapes.

Collection Development

For collection development, multiple design techniques were used. Initial research was done on the evening wear market to determine current trends in styles and silhouettes. Transformable garments were analyzed to determine how each piece of the garment worked to make a change happen. Initial ideas were sketched and broken down

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to reflect both the inspiration for the collection and the transformable concept. Inspiration for the silhouettes was drawn from art and natural forms. Sculpture and



Figure 7: Chrysalis. Basia Sokolowska, 2004



Figure 8: Inspiration board

paintings inspired by cocoons provided ideas for the style lines that move across and around the body. Marble sculptures of fluid shapes and loops inspired the soft structural shapes that extend from the body. The original color story consisted of bright colors such as pinks, reds, and corals, which would be appropriate for the spring season and correlate with the butterfly inspiration. The fabrics chosen were silk dupioni, 4-ply crepe, charmeuse, and crepe-back satin. Based on the positive responses from the survey, transformations were mainly incorporated in the skirts of the dresses while keeping ease of use in mind. Consideration was

also given to the participants in the survey who appreciated getting different looks from the same garment. This led to designing pieces that could be worn in completely different places on the body, changing the overall appearance of the look drastically.

Samples were made on a half-scale dress form to show shapes and basic concepts of the garments. Illustrations of a 15-look collection were presented to a review board, of which the seven best looks were chosen to focus on and develop further.



Figure 9: Look 1 transformation options on half-scale dressform



Figure 10: Look 6 transformation options on half-scale dressform

Garment Construction

Each look was draped in muslin on a full-scale size 6 dressform and a corresponding pattern was drafted. The garments were cut and sewn in muslin to present the basic idea of each piece, without edge finishes or closures. A class critique was held to discuss what was working with each look and what needed to be revised.



Figure 11: 1st muslin illustrations



Figure 12: 1st muslin of Look 3



Figure 13: 1st muslin of Look 4

The structural elements of each look as originally planned were not well-received in the first class critique. What was meant to appear rigid and an extension of the body was perceived as being too conservative for the target market. It was thought that the customer would prefer lower necklines and pieces that are more revealing, so the extra structural elements were eliminated to focus more on the transformable elements. It was suggested by the review panel that the colors were not appropriate for the market and design elements. These were replaced with deeper, richer colors that were more elegant when paired with eveningwear.

Using the feedback, second muslins were developed with the critic's revisions. Some looks required complete redesigning in order to be more wearable and cohesive with the rest of the collection. Those were illustrated, draped, and patterns drafted as with the first muslins. Some garments required additional pieces or foundations to enhance their fit, which were draped and added. Others required only to be fit and finished with edge finishes, hems, and closures. A second critique took place with industry critics, who shared their initial thoughts on the collection and went in depth with each look.



Figure 14: Finished 2nd muslins

Minor changes were suggested, mostly in color, volume, and placement of the pieces on the body. Final fabrics were chosen and presented for approval, then purchased in the appropriate quantities. Final garments were constructed to reflect the critique suggestions with complete finishes and appropriate closures.

Results

The Collection

The order of the collection tells the story of a transformation. The first looks feature tight lines that close off the garments, and appear more conservative. The middle looks are more open, revealing layers and showing off different views of how the garments may be worn. The last looks are the big "butterfly" pieces that represent the completed transformation and big reveal of the new being that was created.



Figure 15: Final illustrations

Five of the seven looks feature modular pieces that can be worn in different places on the body to change the overall look of the garment. The pieces have multiple hooks facing the body that attach to different parts of the garment. The garments that the pieces attach to have thread loops spaced evenly and placed discretely within seams to allow multiple places to hang. Two of the looks have tops and bottoms that are able to interchange with each other. The other five looks have skirts and shawls that are able to be put on different looks. The final color story is monochromatic shades of purple. It was suggested by the first review panel that color blocking bright colors was not appropriate for evening wear, and the darker shades are more elegant and flow into one another. The fabrics are a mixture of traditional silk eveningwear fabrics and less common choices that are not usually seen in eveningwear. The final choices are silk dupioni, cotton ponte, cotton sateen, rayon jersey, polyester neoprene, satin-face silk organza, and silk organza. This combination gives the collection an edge because it differs from other collections in the market that are made entirely of silk. The quality of the fabrics and construction is still high, which will be appreciated by the customer. Including knits in the collection allows the garments to stretch and fit the curves of different body types. This addresses the issue of fit identified by the participants of the personal interviews. Their answers stated that they want to wear the same looks that are available for smaller sizes, but they need to be designed with a different body shape in mind. Because there is no standard body shape or size, there is no way to find a garment that fits perfectly in a woven without allowing for some stretch or adjustment.

Look One

This look consists of a ponte knit jumpsuit and a dupioni "cocoon" wrap. This look represents the first stage in the transformation. The wrapping motion and full-body coverage simulates the walls that are built to close the subject off from the outside while the work begins inside. The jumpsuit features several loops hidden in each of the front seams so that one of the ten hooks on the wrap can attach at different points.

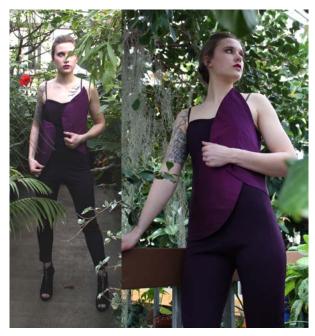


Figure 16: Look 1 final garment options

Long vertical lines on the sides of the suit lengthen the figure. The suit was originally intended to be a woven, but a dark purple ponte knit was chosen to hug the body more closely and provide a better fit, while still keeping a somewhat structured appearance. Adjustable woven straps were added, considering the stretch of the garment, so that it can fit more wearers.

The wrap was designed to loosely envelope the body, while having the ability to change as the wearer sees fit. The wrap can open, close, wrap completely around the body, hang on one hip, or separate from the jumpsuit. The first experiments with the structure of the garment included applying a fabric stiffener spray. While it worked well on half-scale muslins, it wrinkled the fabric horribly in the full-scale muslin that no amount of pressing and steaming would undo. It was suggested during the group critique to try an internal "skeleton" of stiff crinoline and boning, which was successful in holding the shape and keeps the garment feeling light enough to hang off of the jumpsuit. Silk dupioni was chosen as the final fabric because of its crisp drape, light weight, and light-reflective qualities. Its bright color against the dark purple of the jumpsuit provides a strong contrast, giving it the appearance of a shell.

As finishing touches, more fabric loops were applied to the jumpsuit and more hooks were added to the wrap to allow it to hang better on the wearer. The hooks and loops being closer to each other not only gives the wearer more options on placement, but it also allows her to choose the placement that allows the wrap to hug her body the closest.

Look Two



Figure 17: Look 2 final garment

This look consists of a draped tank top and wide-leg pant. This look represents a softer version of the cocoon. While inside the shell, the caterpillar melts into matter that later builds the body of the butterfly. The top of this garment has an asymmetrical shape that pulls the eye around the body. It was originally proposed to have a high neckline and cover one shoulder, but the asymmetry was considered distracting and the style lines were too similar to another look. This top became a tank top to present different neckline and type of strap to compliment the collection. It features curved lines that circle the torso of the wearer in a diagonal pattern, providing a more flattering fit. A jersey was chosen as the final fabric, which allows it to hang and drape more freely and compliment other looks in the collection. Because a knit jersey drapes more softly than a woven, the tight lines were replaced with a sweeping panel over the left side of the garment. Wide pleats at the waist hold the fabric close to the body and add dimension to the rest of the panel as it softly drapes over the hip. A subtle handrolled hem was put in place as to not interrupt the drape of the fabric.

The pant has a high waistline that is the most flattering on different body types and features a wide, straight leg. Pleats on the front in lieu of darts give the piece more interest and compliment the pleats on the tank. The garment features an invisible side zipper to create a sleek appearance, rather than a more casual look that can come from a front fly. The original fabric for the pant was supposed to be a 4-ply silk crepe that was heavy enough to drape nicely as a bottom weight. A shiny cotton sateen was chosen as the final fabric for this garment to provide a greater stretch for comfort, and compliment the matte texture of the top. This fabric is also more cost-effective than 4-ply silk crepe, and has a more structured drape, which again compliments the soft drape of the tank it is paired with.

Look Three

This look features an asymmetrical tank top with a high collar and a two-layer jersey circle skirt. This look has the tightest lines of the collection, similar to the cocoon in its strongest stage. The person is buried deep within him or herself doing the hardest work to change. It is meant to be worn with the appearance of a dress, but the separate pieces allow them to be mixed with the garments from Look Two. This look started as a single garment with asymmetrical curved diagonal lines that wrapped around the body and over the hip, then extended into a short trumpet skirt. The separation was suggested by the review critics to make it more versatile. During the construction of the first muslin, it was found that the collar and seamless cap sleeves were neither flattering nor



Figure 18: Look 3 final garment

possible to drape smoothly. In order to get the shape as intended, a shoulder seam or dart would have been necessary, which would have defeated the purpose of their design. It was suggested during the group critique that a high neckline on a tank top with deep cut-in armholes would be more flattering and appropriate for this customer. The placement of the curving seams was adjusted several times to eliminate the need for darts and hug the wearer's curves more closely. The biggest challenges with this garment come from the curved

seams of the external layer creating a slightly different

shape than the straight seams of the lining. The self fabric is cut on the bias to make the curves lay smoothly, but the lining cut on the straight grain with simpler seams. Because the two are attached on all edges of the garment, the edges needed to line up without pulling one layer incorrectly.

The skirt of this look was designed to have a trumpet shape that fit more closely to the hips and flared outward above the knees. During muslin construction, it was found that a fitted skirt would have been too constricting paired with the fitted top, and the balance and proportion of the body would not have been visually appealing. An A-line skirt that sits on the natural waist was a better choice because it would be hidden just above the hem of the top and would flare out around the curves and points. It was suggested during the external critique to add even more fullness to the skirt, making it a full circle, considering the intended fabric was a silk crepe-back satin that would drape closer to the body than muslin. It was also suggested to lengthen the skirt to create more variation throughout the collection. The final fabric is a thin rayon jersey layered over a thicker rayon jersey. The drape of the jersey falls more closely to the body, but the weight of it adds movement when the wearer walks. It has an elastic waistband that is more comfortable than a waistband and zipper, and it accommodates the stretch of the fabric and fits more wearers.

The light color and soft drape of the skirt provides a strong contrast to the structured lines in the darker top. The movement of the skirt makes it more fun for the wearer and will compliment different body types.

Look Four

Look Four is a short, fitted, strapless cocktail dress with a removable layered overlay skirt. It represents the middle of the transformation which gives a look into the cocoon as layers are pulled away. The butterfly is beginning to form within the shell; the person is beginning to see where they want to be at the end of the process, and confidence is building. This look also began as a single dress with a structured neckline that extended away from the body. The initial idea was to have three layers standing up over the left shoulder, but it did not translate well in a full-scale muslin. The neckline was simplified and sits lower over the shoulders and chest, but it still has structural elements of points and line. The layered skirt was well-received at the group critique, and it only needed to be reshaped to fit better. It was decided to make the layered part of the



Figure 19: Look 4 final garment options

skirt removable with a simple straight skirt underneath. This look overall was incredibly well-received during the external critique. The final fabric for this dress is black neoprene, as opposed to the woven silk dupioni that was originally intended. Because of the structured strapless nature of the bodice, the woven foundation with boning and a zipper in the back were kept in place. The stretch of the fabric

caused the outer layer to be slightly larger than the foundation, causing the bodice to stand away from the body when worn. This problem was resolved by taking it in at the top of the bust seams, which simultaneously brought the neckline closer to the body and improved the fit over the bust. Although not necessary in a knit fabric, darts were included in the skirt of the dress to continue the straight vertical lines beginning in the bodice, and to cause the skirt to hang straight rather than hug the body. While the darts may seem simple compared to the intricate seams of the bodice, they lengthen the body and improve the way the skirt hangs off the hip. When it was decided to make the overlay skirt removable, it was also decided that a lighter fabric would reduce the weight and drape better over the dress. A gazar was suggested because of its bounce, but after using organza for the muslin, the sheer crispness felt more like butterfly wings, and was more appropriate for the inspiration. For the final fabric, a dark purple silk satin-face organza was chosen to lay under a silk organza of a slightly lighter color to give the skirt more dimension. The edges of each layer were finished with a 1/8-inch rolled hem using a rolled hem presser foot that stretched the fabric just enough to create a slight wave that added even more texture to the skirt. The waistband is hidden below the top edge of the skirt to give it a less traditional look. Hooks and thread loops were placed on the side-closure of the waistband that allow it to be adjusted depending on the size of the wearer. It was also discovered that the wearer would be able to wear the overlay skirt over her shoulders as a shawl if she wished.

Look Five

Look Five is a full-length dress with a short removable shawl that can also be worn as a skirt. This look is the opening of the cocoon. The butterfly is ready to emerge, but it has to make the first crack in the walls. The person is ready to venture back out into the world after making positive changes. It began as a full-length dress with a wide neckline and an attached cape hanging off one shoulder. The review critics suggested that the cape be detached for more versatility. During the group critique, it was suggested that the cape could also be worn as an additional skirt around the waist, giving it another transformable option. The cape is asymmetrical and is longer in the back than in the



front to give the wearer more use of her arm. It is fully lined so that there is a clean finish on both the inside and outside, which is more noticeable when it is worn as a skirt. An additional thread loop was added at the closure to adjust the size depending on where on the body it is worn.

The dress in this look originally featured a wide neckline and a cap sleeve.

Figure 20: Look 5 final garment options

It was suggested during the group critique to either drop the neckline or make the back more interesting. An open back with a closure at the base of the neck was added so that it would maintain the wide sweep of the front neckline. Because the cap sleeve was not laying properly, a raglan sleeve was used instead which gave the dress cleaner lines that connected it with the rest of the collection. The point that extends over the thigh opens into a slit so that it lays cleanly and shows a bit of the left leg. The final fabric for this dress is the dark purple ponte knit, which holds its shape but drapes beautifully over the front of the wearer. When creating a knit muslin, the facings were eliminated and the

bodice was self-lined instead for a better fit and fewer seams against the body. The additional seams of the facings kept the lining and outer layer from matching shape, which disrupted the cleanliness of the finished sleeves. The final decision was to



Figure 21: Look 5 Back Before and After

include the same seams in the lining as in the outer layer of the bodice, which provides the best fit. The crisp corners of the diamond-shaped cutout in the back were smoothed and rounded to work better in a knit, and the overlapping closure contains several hooks and eyes to adjust to the wearer's size. The slit over the thigh was raised three inches to open above the knee. The edges of the slit and the hem of both the self and the lining are finished with an invisible hand-rolled hem, which allows the top of the slit to lay smoothly without any uneven stretching which is common with knit fabrics.

Look Six

Look Six features a one-shoulder cocktail dress with a full-length movable skirt. The butterfly is testing its wings, admiring the new creature it has become. The person is easing back into life, but this time with a more positive outlook. This look is one of the



Figure 22: Thread loops within the seam

original three in the collection that features modular pieces, and the idea was well-received by all critics in every stage of the process. Each seam contains several loops that the skirt can hook to,

giving it countless options for positioning. The dress originally featured a higher neckline with structure that held it up over the shoulder. During the group critique, it was seen as too modest for the type of fitted dress, and it was decided that the structural elements of this piece were not as important as the transformable elements. To create a more revealing look, the neckline was lowered while still keeping the curved style lines, and the back neckline was dropped and straps were added along the shoulder blades. The dress was lengthened to avoid a similar length as Look Four. The final fabric chosen for this dress is a neoprene, rather than a woven as originally intended. Because of the stretch of a knit fabric, the pieces needed to be made considerably smaller. This prevented the neckline from becoming too big, and it helps hold the dress more closely to the body. This dress originally included a foundation bodice and zipper, but both were eliminated for the final garment because they were no longer necessary. The neoprene is strong enough to hold its shape and support a skirt, but it also stretches enough to pull over the body without a closure.



Figure 23: Look 6 final garment options

The skirt for this look is a full-length circle skirt that is open at the side seam. Hooks along the waistline allow it to attach to the dress in several different places. It was suggested by the external critics to make this skirt a full circle to add volume and drama to this look. When this skirt was a woven as originally intended, it was fully lined in self fabric. The final fabric is a dark purple jersey,

and a small facing rather than a full lining was included to eliminate extra weight. Because the dress is made of a stretchy fabric, a heavy skirt will pull the dress down. A small 1-inch strip of crinoline was sewn into place with a straight stitch along the waistline to stabilize the top of the skirt and put less stress on the seam. The hooks placed at the top of the skirt that attach to the dress are anchored by the crinoline. The open side and the hem are an invisible hand-rolled hem that does not interrupt the drape of the skirt.

Look Seven



Figure 24: Look 7 final garment options

Look Seven features a full-length, off-the-shoulder ball gown with a removable overlay skirt that represents the final reveal of the butterfly. The confidence is there, and it is time to jump into the wind and fly. The original concept of this dress is that it would appear to be two completely different dresses because of an additional off-the-shoulder bodice to go over a strapless one. Both dresses were well-received during the review critique and the group critique. However, as construction of the first layer of the underbodice began, it was already becoming thick and heavy. The practicality of having to wear two bodices to a formal event was also considered, and it made more sense to have one bodice that was permanently attached to the skirt. The strapless bodice was moved to Look Four, and the off-the-shoulder bodice became the permanent bodice for this look. The skirt is a full circle that lays over a separate petticoat made of crinoline and petticoat netting. Two layers of petticoat netting were originally under the skirt, until it was suggested at the external critique to make everything in this look bigger to add to the butterfly look. A full ballgown would be more of a statement piece and would make for a big finish to the story told by the collection. A separate petticoat allows room for more material, which adds volume without adding bulk to the waist seam of the dress. It also makes hanging and storing the gown easier, which is more practical for the consumer. The final fabric for this gown is bright purple silk dupioni, which has excellent structure and drape for a ball gown. The fabric is thick enough that it will fall over the petticoat without showing bumps and bulges, but it is light enough that it does not weigh the dress down. The light-reflecting qualities give it a beautiful color as the wearer moves. The bodice features an off-the-shoulder neckline with an additional flap of fabric laying over the neckline and sleeves, much like a lapel. This design allows the top flap to extend away from the body, which improves the proportion of the dress with such a full skirt. A boned foundation bodice is attached at the neckline with a separate zipper to add the structure necessary to support the gown. A 1/8" hem was sewn with a rolled hem foot for a discrete and clean finish to the skirt.

The detachable overlay skirt consists of four separate layers that slightly overlap one another for an asymmetrical look across the dress. These are the wings of the butterfly that twist and soar over the air. At the tips of each layer, hooks allow the pieces to be picked up and attached to different thread loops in the waistline, similar to a bustle. It can be worn on the front, the back, or the side, depending on where the wearer wants to add volume. This garment was originally intended to be made of gazar to add bounce to the skirt when the pieces are pinned up, but organza was more delicate and similar to butterfly wings. While the look is not intended to have literal wings, the butterfly idea needs to be communicated clearly as the conclusion to the story. Dark purple silk satinface organza is layered under silk organza, giving the skirt eight layers instead of four. The bounciness of the fabric adds volume and makes the look more playful. The edges of each layer are finished with a 1/8-inch rolled hem which adds a slight wave texture for more movement in the skirt.

Conclusions

Through the completion of this project, I have learned that transformable eveningwear is something that can improve the eveningwear market greatly. In a world full of choices, consumers are interested in clothing that gives them options. Eveningwear is such a specialized market, the customer already has a specific dress in mind when she sets out to find one. By creating transformable gowns that meet the vision of the consumer, I can create gowns that meet her needs and give her a reason to love the dress. She wants to feel a connection with her clothing and feel like she had a direct involvement in what she chooses to wear. Transformable designs can contribute to sustainability efforts that ultimately impact the fashion industry. The development and execution of transformable clothing takes careful planning, attention to detail, and several trial and error experiences. However, when a design is successful and accepted by consumers, it can improve the wearer's relationship with the garment and extend its life cycle. There will always be the challenge of how to make new ideas into unique garments of the best quality most efficiently, while also giving the consumer what she desires.

Transformation is a relevant topic in everyday life. We make decisions and go through changes several times during our lives. When we do, we put up our walls, work inside ourselves to find what we are looking for, then emerge when we are finally where we want to be. When the butterfly breaks free of its cocoon it is seen as a beautiful and graceful creature, which we all hope to mimic every day.

This research is just the beginning of what can come of the eveningwear market. There will always be more questions to ask consumers to really understand what they look for in clothing. Different types of transformations can be imagined to give the wearer the best experience in her clothing. This research is simply the solid ground to start on. This project has inspired me to continue this collection, or at least this concept, to expand into more looks with more options. Transformable garments have a place in the fashion industry and there is a growing demand for them as consumers begin to realize exactly what they can do. Now that I have a deeper understanding of the construction techniques that provide the best result for this type of design, I can push those techniques and develop new ones. There are so many possibilities with transformable clothing that still need to be discovered. The next steps can be exploring production methods for these garments so that they may become available to consumers. Now that they have been produced once, they can be produced again more efficiently and adapted to meet the needs of all wearers. I hope to be able to make this type of design available to all customers of all body types. I often face the same struggle as many other women when shopping for new clothing. Finding a perfect fit is difficult, if not impossible. No two women are exactly the same in body proportion and measurements, so it is up to apparel designers to determine the best proportions for each size. My challenge now is to expand the types of bodies that can wear a certain gown while still providing a near-perfect fit.

As a designer, I plan to continue in the high-end eveningwear market. The amazing gowns seen on red carpets are only the beginning, and the creative freedom provides the opportunity to explore and develop concepts that expand the eveningwear market and push the industry forward.

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Appendix

Personal Interview Study

To obtain a deeper understanding of the real-world customer, data was collected from personal interviews with women who shop in the current eveningwear market. After obtaining approval from the Institutional Review Board, applicable candidates were contacted, and those who agreed to participate gave consent. The participants were ten women ages 18-52 who were chosen among family, friends, and co-workers. The sampling includes subjects of various ages, backgrounds, education levels, occupations, clothing sizes, and income levels, all of which contribute to the development of opinions about clothing and shopping habits. The purpose of the study was to learn the opinions of women that are familiar with the market. Their comments and concerns were taken into consideration during the design process to develop garments that will receive a positive response from customers. The subjects were interviewed and asked a series of 14 open-ended questions addressing their opinions on shopping habits, the garment life cycle, evening wear, and transformable garments. The corresponding answers were analyzed to find similar responses and patterns. Some responses were simple enough that they were able to be tallied, while others were diverse and complex. Because the questions were open-ended, many participants listed more than one answer if it was appropriate for the question. Therefore, the responses that were able to be tallied may add up to more than 10, which is the number of participants.

Personal Interview Questions	
1.	What is your age?
2.	What is the most common feature of a garment that convinces you to purchase it?
3.	How often do you find yourself shopping for new clothing?
4.	Approximately how many times will you wear a garment, or how long will you keep it, before you dispose of it?
5.	What is the most common method you use to dispose of unwanted clothing?
6.	How often do you find yourself shopping for eveningwear?
7.	What kinds of events do you attend that require formal attire?
8.	When looking for a dress or gown for a special event, do you prefer to find something you already own, or do you prefer to purchase a new one?
9.	While eveningwear is commonly purchased to be worn only once, would you wear the same garment a second time if it had the capability to look different?
10.	What specific features of a dress would you consider the best features to change?
11.	If you had the option to customize a dress the way you wanted, would you be more willing to purchase it?
12.	Would you be willing to pay more for a dress that gave you more options?
13.	If you purchased a dress that can be changed in several ways, would you be willing to try several different options for wear it only one way? Why?
14.	Do you have any suggestions for the current eveningwear market?

Table A1: Personal Interview Questions

Question 1, asking the participant's age, was used for grouping data and

determining the range in ages of the study.

For question 2, the most common feature of a garment that convinces the

customer to purchase it, the most common answers were fit, with four responses, and

material with three. Other answers included print, price, pockets, design, brand, and

quality.

The most common answers to question 3, asking how often the participant shops

for new clothing, were broken down into weekly with 5 responses and monthly with 4

responses.

The answers to question 4, asking how many times the participant will wear a garment before disposing of it, were varied. The least amount of wears was 10 times and

the least amount of time was one year. The most amount of wears was "until it falls apart," and the most amount of time was "forever." One answer was "it depends on how well it wears and if it is a classic style and will remain current." This response in particular is important because it relates directly to the design process. Although designs must be new, innovative, and in line with current trends to sell well, they also have to have a timeless look that encourages the wearer to keep the garment.

Question 5's answers, the most common method used to dispose of unwanted clothing, were grouped into three options of donation, with the majority of 8 responses, trash with 3, and hand-me-down with 2.

The answers to question 6 asking how often the participant shops to eveningwear were varied as far as specific times, but the overall pattern of these was that it is a rare occurrence. This must be taken into consideration when designing eveningwear because a gown has to be worth it for the customer. If she is only buying one, she will buy the one that best fits her needs, so the challenge is to design the gown that will appeal to the most customers.

The answers to question 7, asking what kinds of events the participants attend that require formal attire, include weddings with 5 responses, parties with 5 responses, and several others including galas, anniversary parties, social functions, and school events.

When asked if the participant prefers to buy a new gown or use something she already owns for a special event in question 8, the majority of responses was in favor of a new garment with 8, and 3 preferred to use one they already owned. Question 9 asked the participant if she would wear the same garment a second time if it had the capability to look different, and the answers were a unanimous yes. This question solidifies the fact that transformable garments are in demand and appeal to customers.

When asked in question 10 which specific features of a dress would be the best feature to change, the most common answer was straps with 5 responses, sleeves with 3, skirt and bodice with 2, and length with 1.

Question 11 asked if the participant would be more willing to purchase a garment if she were able to customize it how she wished. The majority said yes with 8 responses, and 2 said no, because they wanted the design to be decided for them. This also supports the idea that there is a demand for transformable garments.

Question 12 asked if the participant would be willing to pay more for a dress that had more options, and the majority said yes with 8 responses, 2 said maybe, and 1 said no.

Question 13 was a complex question that asked the participant if she would try several different options of a dress or wear it only one way and why, if in fact it had the ability to be changed. Although these responses were varied, the common themes were that she would prefer the option that was the most flattering on her, and that she would use different options so that she could get the most use out of the garment as possible. The answers to this question are important to consider when designing transformable garments because all options need to be successful in order for the garment as a whole to be successful. If the customer is only going to wear a dress one way, she will purchase a dress that is already designed that way and does not require her to style it herself.

Question 14 was also a complex question asking the participants if they had any suggestions for the current eveningwear market. The two main themes that came from a majority of the participants were that they wanted eveningwear to be more reasonably priced, and that they wanted dresses that were made to fit more body types. These responses are important for designing any collection, not just eveningwear. The consumer expects quality work, but the price plays a big part in whether or not she will purchase a gown. This challenges the designer to find the most efficient and cost-effective way to make a quality garment. When it comes to different body types, there is no set size or proportion because everyone is shaped differently. If a dress is meant to be form-fitting, it needs to provide some kind of stretch or adjustment to fit as many body types as possible. Even though three different women may wear a size 6, it is likely that their measurements vary. Therefore, the designer has to find a way to provide the best fit for all women within that size. Including knits in the collection for example, is a way to include more wearers and provide a better fit.