

Titania

The Technical Process of Bringing a Costume to Life

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Introduction

After receiving encouragement to do an honors project, I had a lot of ideas. The one I kept coming back to was building a costume from my design for *A Midsummer Night's Dream* done in Markas Henry's Costume Design 2 course. It appealed to me because it incorporated all of the key elements of my degree in Costume Design and Technology. The design was already completed so the project would be costume technology-based. This felt appropriate to me because over the course of my education I've come to the realization that I prefer technical work over design work. My design posed draping and crafting challenges that I was interested in tackling. Additionally, the design concept was based around Art Nouveau fashion and art which is my favorite era for these topics. I chose this project because I felt passionate about it. There's some poetry to it as well— I worked as a stitcher at the Colorado Shakespeare Festival the summer of my freshman year. My first big project was to build Titania's costume. So I started my professional career with a Titania build and I am ending my undergraduate career with one.

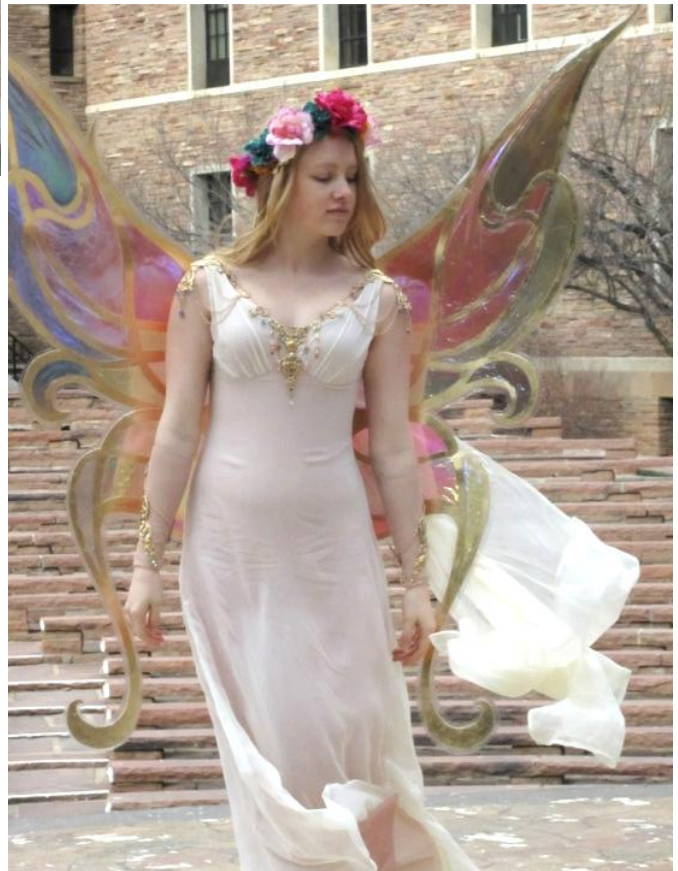
Final Product

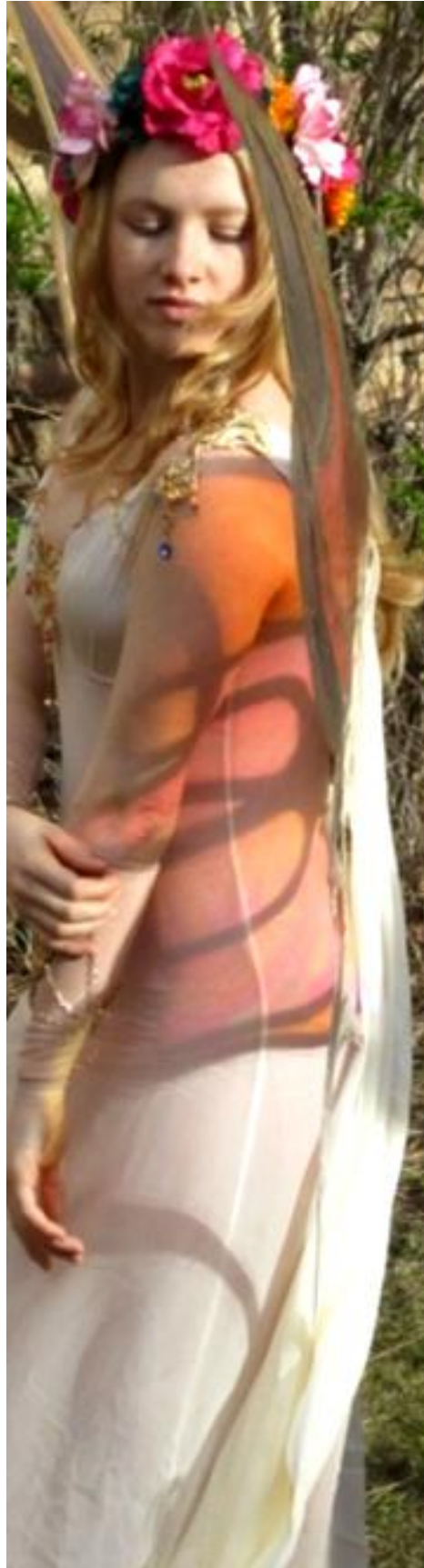


For a video of the costume's movement, follow [this link](#) or view attached CD.

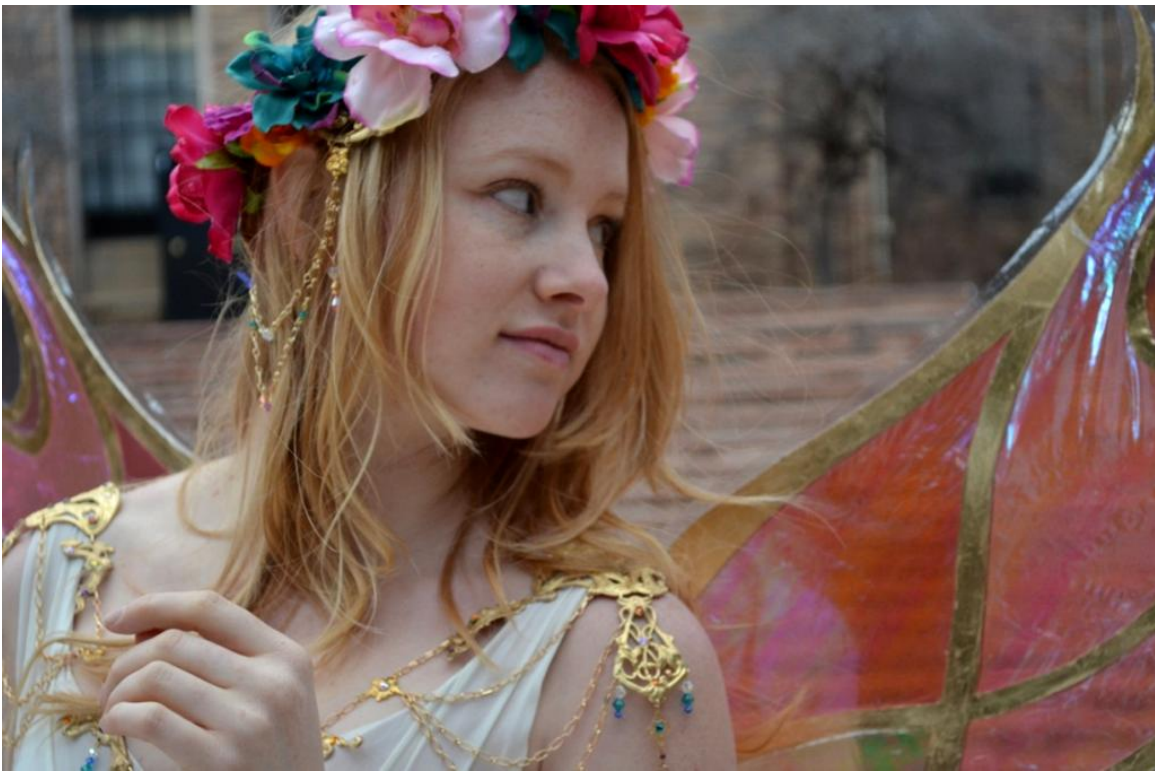














Design

In the fall of 2014 I took Costume Design 2 taught by Markas Henry. The final for this class was a project: to design a theoretical production of *A Midsummer Night's Dream* by William Shakespeare with Rand Harmon (PhD) taking on the role of director. My artist statement for the project was as follows:

I worked with Rand Harmon who acted as the director of the theoretical production. His proposed concept for the production was to create a world with two clashing factions, the Athenians and the Fairies, and find a way to unite the clashing factions at the conclusion of the play. For the project I was required to have one historical time period reference. Art Nouveau and the corresponding fashion of the turn of the century was my period reference. The fairy world is based on the aesthetic of Alphonse Mucha's paintings. The organic, elegant lines, and embrace of the human form was perfect for the fairy world Harmon and I wanted to create. For the Athenians, I focused on rigidity, structure, military looks, and somber colors based on their value of rules and in order to contrast with the natural world of the fairies. The story focuses on various couples being in conflict, and therefore out of balance. The court has the power to overrule love and does so in favor of authority. In entering the forest--the force of nature--the Athenians are changed and become more organic. At the end of the play, Theseus chooses not to enforce the court rules to regulate love. Instead he allows the love that had flourished in nature. Therefore in the final act, the Athenians are in a style that is a combination of the pre-forest Athenian world and the world of the fairies. The goal is to convey to the audience the journey from an out-of-balance world into one whose balance is restored. As Paul Greenhalgh explains "Art Nouveau was the result of...individuals wishing to change the character of European civilization", thus the art style itself paralleled the message Harmon and I wanted to convey with this design. (15).

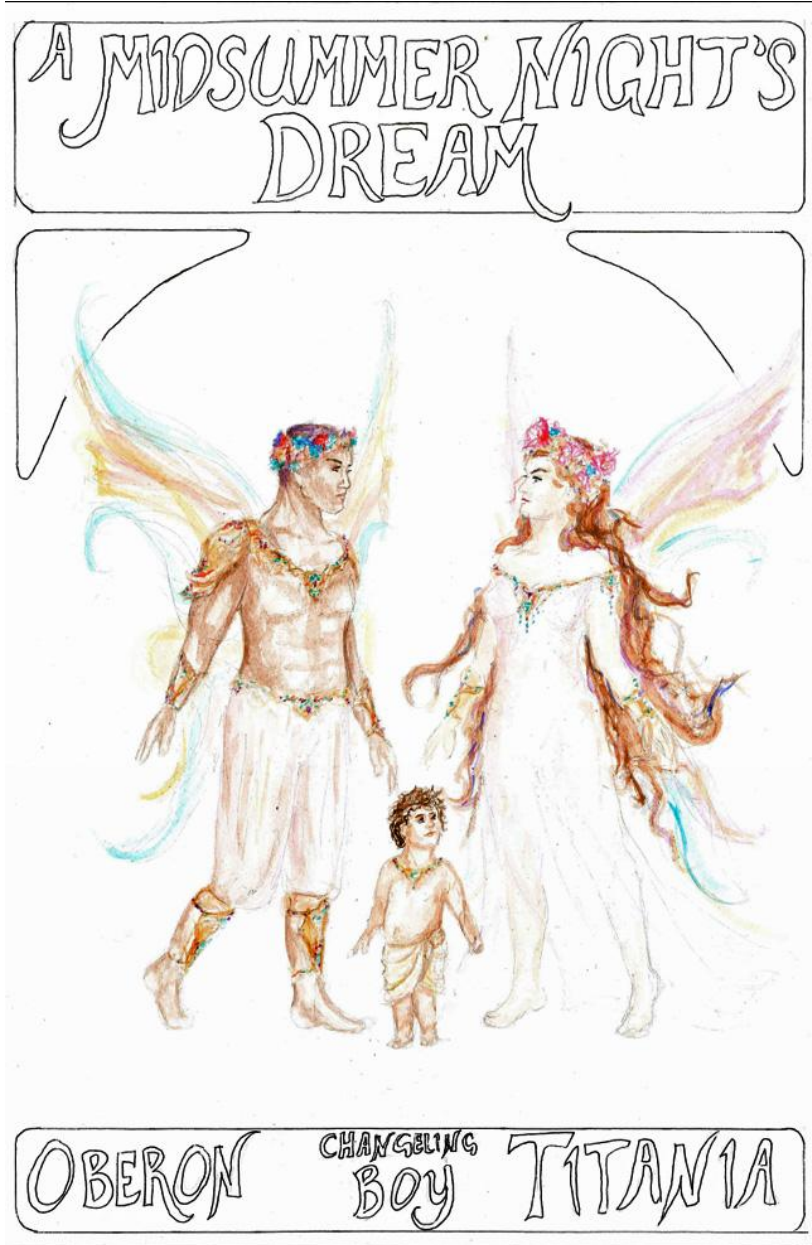
The goal of this design was not historical accuracy. Our theoretical production was set in a fictional world. The Athenians' clothing are based on fashions from 1890-1905. However, I tweaked the silhouette lines to be more rigid and less curvilinear in order to convey their world. The fairies are based on the Art Nouveau that was at a peak during the turn of the century. I was not trying to copy specific artworks though. The designs are heavily inspired by Mucha, particularly, but the fairies needed to be light and airy. Mucha's series of women feature dresses that are really just pieces of cloth wrapped around the model, some examples of which can be seen in photos of his models

The costume designer must convey themes and characters to the audience through clothing. Oberon and Titania are royalty, so they need to stand out from the other fairies. Inspired by pieces by Mucha like "Lily," I decided to clothe them in a light neutral. The other fairies are in colors which makes the royal couple stand out. It vaguely recalls the historical significance of white clothing being a sign of wealth because it conveyed that the owner was rich enough that they never got dirty.

The vast range of color in the costumes comes from vibrant crowns and jeweled ornamentation, representing Titania and Oberon's power. Their ornamentation is based on jewelry in Mucha's artwork, but the specific pieces I designed are meant to recall armor- shoulder pieces like epaulets and gauntlet-type forearm pieces. The lines of the pieces are fluid and only suggest power, rather than rigid lines of their militaristic Athenian counterparts. The pieces would not ever actually serve the purpose of armor. The fairies power lies in their connection to nature which is reflected in their armor.

Research Pages for [A Midsummer Night's Dream](#) and [Titania](#)

Original Design



Titania Swatch Card

Research

Visual

The majority of the visual research had already been done for the design of the dress. Therefore I already had a large number of images that I had gathered. Since the Fairy Court was primarily based on Art Nouveau, specifically Mucha, most of my images were actually artwork from the period. I went back to find key images for Titania specifically. My key research books were *Art Nouveau 1890-1914* edited by Paul Greenhalgh, *Alphonse Maria Mucha* by Jiří Mucha and *Alphonse Mucha* edited by Agnes Hussein-Arco. These are some, but hardly all of my research images for Titania:



(Boldini)



(Mucha, *The Seasons: Summer*)



(Reutlinger)



(*Wedding Dress*)



(Mucha, *The Flowers*)

I knew that I needed a more specific design for the wings so I decided to augment my pre-existing collection of visual research. I looked through my research books focusing on shapes within images that I thought might be appropriate for the wings some of which can be seen in 17b and 17c. To get the characteristic Art Nouveau curves I practiced sketching shapes I liked from my image research (17a). I also looked through my research and looked for additional research regarding any jewelry so as to get a more concrete idea of what the neckline jewelry should be.



(17a)



(17b: Mucha *Document décoratifs*)



(17c: House Vever)

Technical

This design required me to do some things I had never done before. I did research to see how other people had constructed wings and wing harnesses. I went online to investigate how others had made wings and, maybe more importantly, wing harnesses. I found quite a range of approaches. Most, if not all, involved a back plate that the wings attached to. More complicated is the issue of how to incorporate the plate discreetly. One of the most common ideas was one of wings that fit into a pipe (“Wing Harness”, 18a). The benefit of this is that the wings can be slid out so the person in costume can, for instance, take breaks or visit the restroom without getting all the way out of costume. I wanted the wings to be removable, so I began developing a design for a backplate with slots that the wings would slide into with a latch to lock them in place. I asked advice of a crafts artisan about how to mount the wings. She brought up the pipe idea and I explained my trepidation. I was not entirely convinced of the pipe approach since it put the weight of the wings on the key juncture where the wings went into the pipe. She then explained that there is a slit pipe so the wing is actually surrounded by the pipe. Finally understanding the pipe idea, I decided that it actually would be an elegant solution.

I have actually tried making fairy wings before and had used a technique that combines cellophane, vinyl and wire. The wire forms the wing frame and is put on a layer of vinyl between two layers of cellophane. I carefully ironed these layers to melt them together. I had had problems with the cellophane peeling, so I experimented with different combinations of materials. I tried several combinations of cellophane, plastic, vinyl, and organza. Using only fabric in the cells did not offer as much support as my other options did so I decided against it. The cleanest, most effective wings I had seen were from Fancy Fairy who made her frames out of aluminum (18b). Using a flat frame instead of round wires means that the plastic can be fused closer to the frame. I also needed a frame that could be heated and retain its shape so I leaned towards aluminum over plastic for the frame material.



(18a)



(18b)

Piece List

- **Corset:** Keeps the wing plate in place and distributes the weight of the wings
- **Dress**
 - **Leotard:** Masks the corset and wing plate since other two layers are sheer, comprised of nude interlock knit
 - **Mesh Underdress:** Metallic sheen provides shimmer when the actress moves, the pink tone adds some soft color
 - **Chiffon Dress:** Chiffon creates the softness and fluidity present in the design
- **Wing Plate:** Holds the wings in place with slotted pipes, made with plexiglass, PVC pipe and metal fasteners
- **Wings:** Aluminum frames with cellophane and vinyl fitted into PVC pipes that slide into those on the wing plate
- **Jewelry Dress Attachments:** Ornamental brass jewelry pieces that snap onto the dress at the shoulders and the center front
- **Gauntlets:** Spandex nude mesh half-sleeves with brass jewelry stitched on to recreate the floating gauntlets of the design
- **Crown:** Raffia-covered wire braided base with stitched-on fake flowers and brass jewelry pieces

Part I: Draping and Mockups

Dress



(21a)



(21b)

After confirming that my friend Reba Todd could be my fit model, I got her measurements that were on file at CU.

Padding the Form

I padded my dress form to match her measurements. Everyone is shaped differently and padding is used to make a dress form resemble the model as closely as possible. Two people may have the same waist measurement, but their weight will be distributed differently from each other. One of the most important reasons we take so many measurements is because we can use these measurements to determine where someone's weight is located. With the combination of a waist measurement and a front waist side seam to side seam measurement I know much more information than I do with a waist measurement alone. Once I had padded the dress form to the measurements, I used a knit fabric as a "skin" to give myself a cleaner "canvas" to drape on. (21a-21b)

Next I pinned on my style lines. Style lines are pieces of ribbon or something similar that are used to outline the desired seams. I used some 1/8" ribbon. I decided that I did not want the dress to be off the shoulder and instead opted for a strap far onto the shoulder. I felt this was a more structurally sound approach given the potential complications of the wing structure and support. Though I did not want a seam at the waist, I also pinned on a waistline because my padding covered up the form's original waistline.

With my style lines in place I was ready to drape. I pinned my design next to my draping area and opened some of my research books to my most relevant research images. (21c)



(21c)

What is Draping?

Draping is one of the two standard ways of creating a pattern. Drafting is a two dimensional approach where the pattern is first developed flat. Draping is three-dimensional. It is essentially sculpting the fabric over your form. When draping, all of the variables of the fabric and body shape are in play which allows one to address problems earlier on than is possible with drafting.

Draping allows more control over grain and style line placement as well as the fit and aesthetic of the garment. The process of draping starts with drawing your straight of grain, cross grain and bias onto the fabric you will be using to drape. It is common to start from the center front and drape half of the form. Pin at your desired starting point and smooth the fabric as desired. Pay attention to where your grains are and if they're where they need to be. Clip as necessary, like at the armhole where fabric will ultimately be cut away. Drag lines are creases that appear in fabric when there is too much tension somewhere. When you are pleased with the piece, you mark out the edges/where the style lines are. Leave the piece on the form as you drape additional pieces and mark notches to indicate where the pieces meet.

Muslin is typically used to drape because it has a very stable grain, is inexpensive and easy to acquire. However, it is ideal to drape with something as close to the hand of the fashion fabric you will be using for the final product. The "hand" of the fabric is the drape and movement of the fabric. I chose to drape the outer layer with a polyester chiffon. I had a lot of it laying around so I would be able to experiment with it. (22a)



(22a)

Contrary to the typical approach, I actually started draping the outer layer first. Initially, I was trying several approaches to see if I could work out a way to achieve my silhouette without an underbust seam, some of which I drew out (23a). Regardless of what I came up with, the top layer would need to have some sort of control via the under layer. In the midst of my experimentation I actually decided that an underbust seam resulted in a shape closest to the design because it allowed the dress to hug her form more closely than my other options. (23b)

I used a piece of cardboard to represent the approximate size of the center medallion to see the scale. The bust pieces and the front skirt were draped on the bias, which has more give than the other grains, so that fabric could conform to the shape of the body (23c).



(23a)



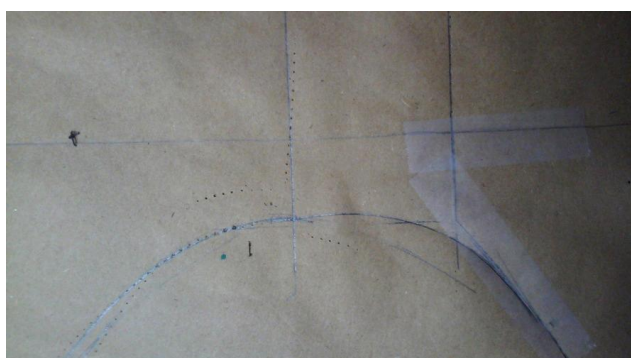
(23b)



(23c)



(24a)



(24b)

Patterning

To pattern, I started by drawing a grain line on a piece of brown paper. Then I aligned the grain of one of my draping pieces to it. Since I draped with chiffon, I needed to be particularly careful that the grains was laid out square when I transferred the pattern. (24a)

Once the pieces were laid out square, I used a pounce wheel to trace the lines that I made while draping. This transfers the lines to the paper. Once all markings had been transferred I took the fabric off and trued the pattern. This means straightening lines, drawing in regular curves with a French curve, as well as ensuring that notches match and that junction points are at 90° where necessary.

I trued the pieces to each other (24b). Now I had a pattern so it was time to make a mockup. A mockup is sort of rough draft. The draping is like a sketch and a mockup is the step after that, like the first rough draft you'd actually show someone.

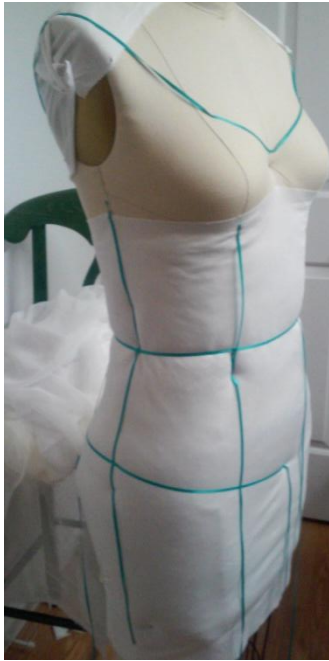
Laying Out and Cutting the Mockup

The basic steps for laying out and cutting are to clip and rip if possible. Match the selvedge to the long side of the cutting table. The selvedge is the edge of the fabric along the straight of grain. Pin the fabric in place. Square the pattern with the straight of grain by using a clear ruler to line up the selvedge parallel to the grain line on the pattern. Pin the piece into the table with push pins. Nest the pieces- make sure to not waste fabric, but make sure each piece is on grain. For this project, since I was using fabric that did not have a nap or a pattern I was able to cut pieces upside down which helped with the nesting. I traced my patterns with thin, accurate lines and marked all notches. After the pieces were traced, I removed the pattern and marked out the seam allowance with my clear ruler. I wrote the seam allowances on each edge of the pattern.

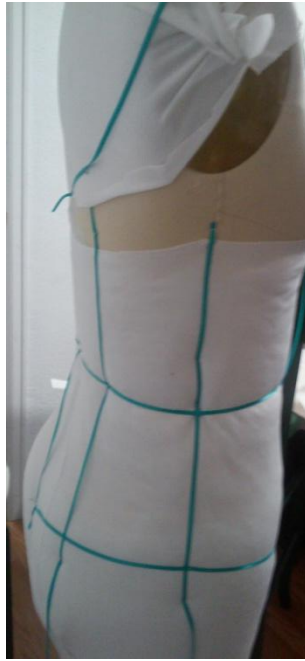
I cut my mockup out of a white cotton I had laying around. I machine thread-traced the neckline and armholes. I stitched the seams on a stitch length of four so that it wouldn't be too hard to undo a seam if necessary in the fitting.

It should be noted that I actually only made a mockup of the underdress for the first fitting because I knew that having the fit correct for that layer would be key to making a successful top layer.

Corset



(25a)



(25b)

Draping the Corset

After I had draped the dress I moved onto draping the corset. It would have made more sense to drape the corset and then drape the dress over it, but I had originally been planning to have a harness that fit under the dress rather than a corset.

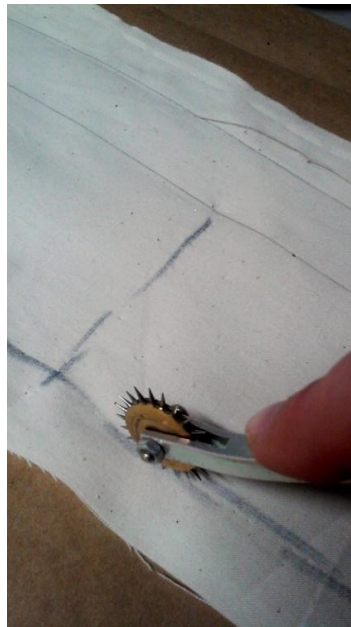
The goal of the corset was to provide support for the wings by distributing the weight around the hips. Corsets are usually used to alter body shapes. However, I did not want to change her body shape so I draped it to *match* her form. I pinned on my style lines matching the seams of the dress form because, just as they do on the dress form, it captures the body shape efficiently (25a-b). I used the same process of draping as I did with the dress, but I used a heavy weight muslin.

Making a Pattern

I patterned the corset the same way I patterned the dress. I used a pounce wheel to transfer the pattern, then trued the pattern. Then I carefully cut out the pattern and notched the notches. (25c-d)



(25c)



(25d)

Making the Corset Mockup

For the mockup I used a heavy denim and muslin as a top layer. I laid out and cut my pieces (26a).

I have some previous experience making historical corsets and I used my knowledge to construct this corset. This corset was not historical because it was made to follow the shape of the actress's body rather than reshape. Nonetheless I was able to use many of the same construction techniques used for historical corsets.

I flatlined the muslin to the denim on the long sides. Flatlining is done to marry multiple layers of fabric. It is done by stitching $\frac{1}{4}$ " (the distance from the needle to the edge of the presser foot) from the stitch line on a long stitch. I stitched on the line on the top and bottom edges of each piece (26b). This shows me where the line is in a fitting so I know if it needs to be changed and it also acts as a guide for the binding step that happens much later in the corset-making process.

I then stitched my seams twice for strength and pressed my seams open. I then topstitched each seam $\frac{1}{8}$ " from the ditch. On the side of the seam towards the back of the corset I stitched $\frac{1}{4}$ " from my previous topstitch line to create a bone casing. This uses the seam allowance to create the casing instead of adding in extra pieces of Prussian tape for the same purpose.

At the center back, I folded back on my fold line and top stitched $\frac{1}{4}$ " from the edge, then an inch from this line and then another $\frac{1}{4}$ ". This created a strip for the grommets with bones on each side to keep the lacing from warping the corset out of shape.

Since I knew that this piece would not ever be more than a mockup I used some low quality metal eyelets I had around as mockup grommets. Grommets finish cleanly on both sides while eyelets only finish nicely on one side. I set this with an eyelet setter, which is essentially a large pair of pliers with eyelet-shaped pieces on the tips. I used some extra ribbon as lacing and was ready to fit it (26c).



(26a)



(26b)



(26c)

Wings

Patterning the Wings

I looked at the design and my dressform to determine the scale of the wings. To make my pattern I needed to figure out where the wings should sit on her back and how far above her head and beyond her shoulders they should extend for the upper wing. For the lower wing I needed to know how far down they should go. Once I had some idea I was able to mark out these boundaries on a large sheet of brown paper (27a). Then I sketched out my design within these boundaries. I then used a French curve to draw in the lines with marker (27b). This made the lines more visible and gave me a better idea of whether they were where I wanted them. Once I had a design I was happy with on the brown paper I used a pounce wheel to transfer the design onto white poster board (27c). With marker I drew $\frac{1}{4}$ " on either side of the pounced line to make the veins. I then cut out the cells (27d).

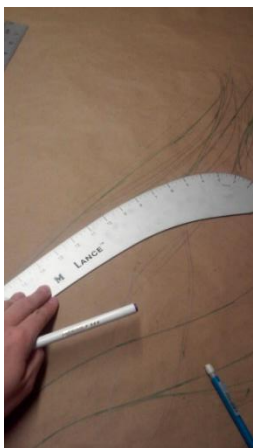
This pattern turned out to be too flimsy so I transferred the pattern to some paperboard (also called chipboard) and cut it out (27e). This was far more sturdy. I felt that this was probably similar enough to my aluminum sheet to get some idea of whether the wings would flop over. The paperboard wing did flop over at the top so I added a strategically-placed piece of 16 gauge wire. This fixed the problem so I felt confident that I could make the wings out of aluminum and add a piece to act as a stabilizer/brace (27f).



(27a)



(27d)



(27b)



(27c)



(27e)



(27f)

Making a Test Wing

I needed to make a test wing out of the aluminum to be sure it would work before I bought and cut all of the materials.

I had access to a scroll saw and I felt like this would be the best way to make the intricate, curving, and interior cuts. I did some online research to learn about cutting metal, particularly on a scroll saw. I'd cut wood on a scroll saw before, but not metal. The key points were:

- Jewelers' blades gave the smoothest cuts, but were very fragile.

- Sandwiching the metal between two pieces of wood keeps the metal from bending and/or binding in the saw. It also keeps metal shards from flying around while sawing

I bought some hardboard which is an engineered wood product also known as high density fiberboard. It was a low-cost option and I wanted to see if it was an acceptable substitute for standard wood on my test wing. I used basic Elmer's white glue to glue the hardboard/aluminum/hardboard sandwich (28a-b). Then I traced my upper wing onto the top hardboard(28c). I put weights on the sandwich and left it to dry (28d).



(28a)



(28b)



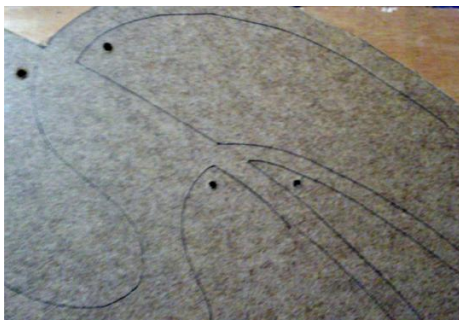
(28c)



(28d)



(29a)



(29b)



(29c)



(29d)

Cutting the Test Frames

Scroll saws are intended for detail work, so I did the large edge cuts using a jigsaw-- it was too hard to fit the giant sheet in the scroll saw and I was able to cut the long straight cuts more smoothly with the jigsaw. I did this by carefully placing my sandwich with a section of the edge of the wing sitting off of the table. Then I clamped the sandwich down and jigsawed the overhanging line (29a).

For the interior cuts, I drilled a 3/16" hole in each cell, near the edge, but making sure not to cut into any of the veins (29b). Then I set the sandwich with the hole at the center of the scroll saw plate. I installed the blade with it going through the drilled hole. Scroll saw blades lock both above and beneath the plate, so that interior cuts can be made (29c). I carefully cut out each cell, making sure to not turn the corners, but to approach corners from each side to get a cleaner corner point.

The wing was actually too long to do all of the cell cuts on the scroll saw. A scroll saw's throat length determines the size of pieces that can be cut at certain angles. I had to cut a few of the cells with the jigsaw which was harder in that it moves faster and makes rougher cuts, but easier in that longer cuts are easier to keep consistent. To use the jigsaw for these I had to drill larger holes as jigsaw blades are much bigger than most scroll saw blades.

Once everything was cut out, I took the hardboard off of the aluminum. I was able to pry it a little bit and it popped off—the reason I used simple white glue. The hardboard had done its job. I needed to sand the edges to keep them from being dangerous (29d).

As my test with the paperboard had suggested, the top edge of the aluminum flopped over slightly, but minimally enough that it could be fixed with a support brace. It was ready for a fitting.

Wing Plate

Surprisingly, I did not look at many examples on how to make a wing plate. I knew I needed something sturdy as the base to support the weight of the wings. I would need two slotted pipes that each wing could slide into and a way to securely attach them. I also needed a way to keep the pipes just above the plate so I could lace between them and the plate.



(30a)



(30b)



(30c)

I gathered my materials: some plexiglass, bolts and nuts, pipe brackets, a few feet of two sizes of PVC pipe—one with a larger circumference to be the outer pipe and a smaller one that fit into the larger to be the base of the individual wings.

I measured the dress form to determine a reasonable size for the plate base. It needed to have enough surface area for the pipes and to actually provide some support, but it needed to be small enough to not dig into the curve of her back. Horizontally, it needed to not be so wide that it did not stay next to her skin. I marked out a the rectangle on my plexiglass and then marked out four small rectangles. These would fit the pipe brackets

I measured the wings where I wanted them to meet the plate. I then measured the larger pipe to match the measurement. I marked where to cut each length and then marked the slit to cut. I used a ruler to mark a straight line on the pipe and made an end mark $\frac{1}{2}$ " above the bottom of the pipe.

I used a jigsaw to cut out the plexiglass and the pipe (30a-b). I used clamps to keep the pieces in place and made sure to use the rubber-ended clamps to keep the pipes in place. If a pipe is not adequately clamped, the saw can make it spin and whip out of place. I used a dremel to cut out the slit. I started by making it $\sim \frac{1}{8}$ " wide (30c).

Assembling the Plate

I started by using the dremel to sand the edges of the plexiglass rectangles, but plain sanding ended up being more effective.

I marked the center of the base plate and measured out from there to mark the pipe spaces locations. The corset would only be able to close to the outer edge of the pipes. I did not want the wings to meet her back too close together, but I needed the corset to not gap too much or I would lose stability. I decided the best compromise was to make the gap 4". I marked out the lines for the pipes to center over. I used the pipe brackets to mark the location for the bolts on the spacers. I drilled out these holes and then lined each up to the pipe locations and marked their corresponding holes. After drilling those I used E6000 glue to connect the spacers to the base plate (31a). They would be bolted together, but glue added a good safety net and more stability.

I needed to bracket the pipes, but I also needed to be able to slide a wing through the entire pipe slit. I used tin snips to carefully cut two pipe brackets in half. I did not want the wings to extend straight back from her, so I made the cut at an angle of approximately 30°. This way the wings would not be perpendicular to her back, not parallel, but slightly angled out from their base. I filed down the edges and bent the long side down so that it would press against the pipe (31b). I cleaned off the marker with some rubbing alcohol and then bolted the pipes and spacers into place.

On the dress form I tried lacing the plate into the corset. While it was slightly annoying to pass the ribbon under both pipes each time I crossed, it had the desired effect (31c).



(31a)



(31b)

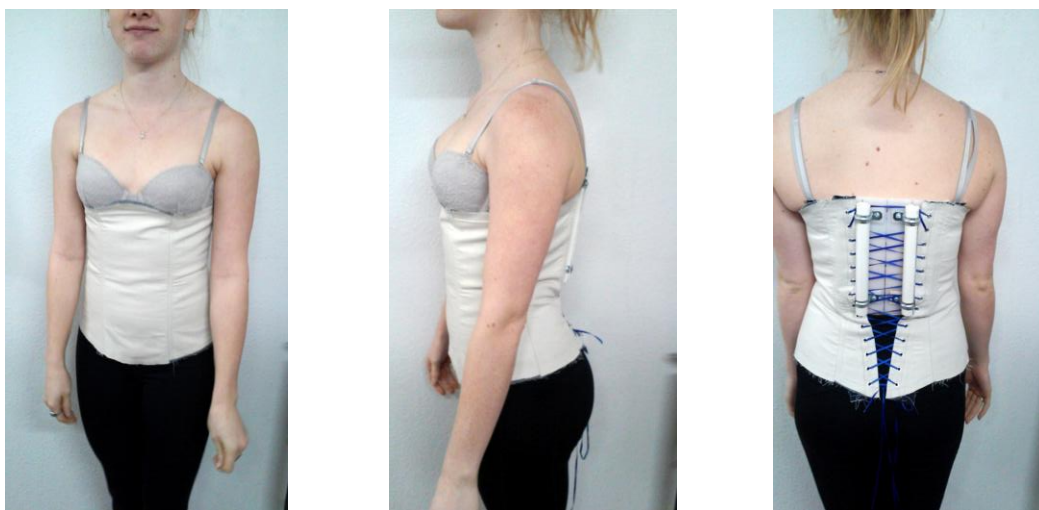


(31c)

First Fitting

A fitting is a meeting with the performer to test out the fit of the mockup garment. Padding a dress form is very useful, but a garment will never quite fit the same way it does an actual person. In a fitting, one looks for problem areas to know how a pattern needs to be revised.

Corset



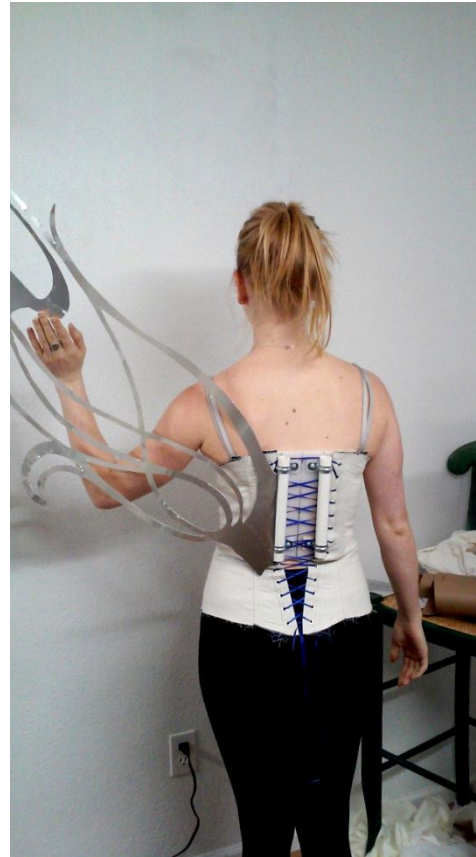
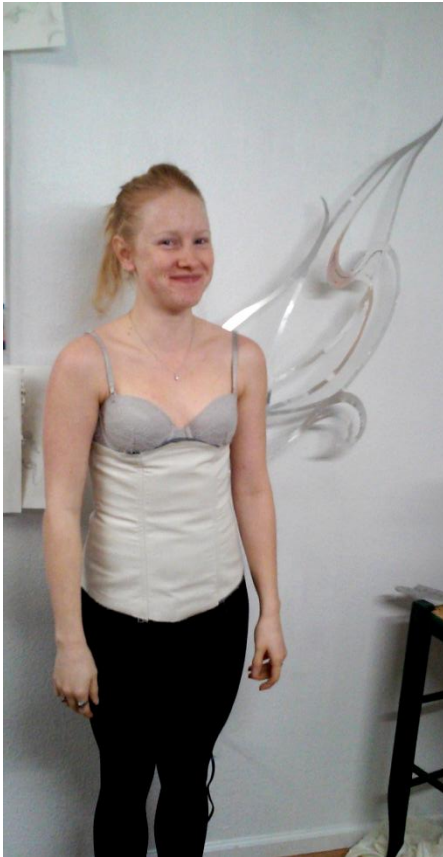
The corset followed her shape pretty well, but there are a lot of drag lines. Part of that is due to the half inch of seam allowance that is hitting her underbust, part is due to needing more bones and part is due to not being able to lace it as far as it wants to be laced. As seen from the back view, the corset laces much tighter below the wing plate. This told me that I needed to make the corset smaller so that the default gap is larger.



The corset fit her body shape quite well without the wing plate laced in. The difference between this gap and 4" told me how much I needed to take out all the way around the corset. The creases here mean that the fabric was collapsing on itself because there was not enough vertical tension. I needed to put in more bones in each panel to get this tension.

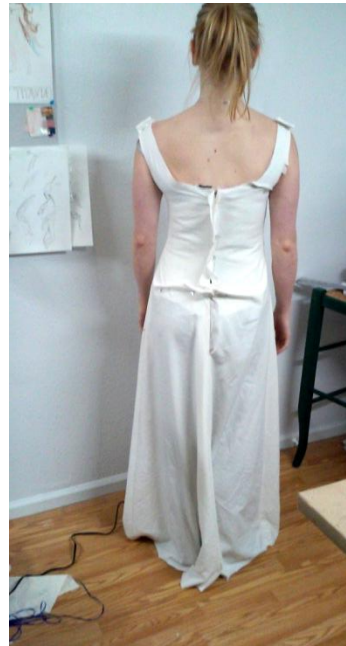
I also decided to take in the center front panel at the bottom just a bit. This is an unusual alteration for a corset because corsets typically flatten the stomach, but I wanted the corset to follow the shape of her body. This meant curving in along with her stomach. I also decided to take in the waist just a touch to emphasize her waist without distorting her form.

Wings



The wing slotted into the pipe as desired, but it was too floppy and she had to hold it up as visible in the right image. She said that she could not feel the weight of the wing and actually did not notice when I took it out. The proportions seemed mostly right, but I wanted to change the angle at the center of the wing so it would curve upward more and make the top of the wing move closer to her head. In addition to being more visually pleasing this change would mean that more of the weight is supported by the framework of the wing. This will be discussed more in Part 3.

Dress

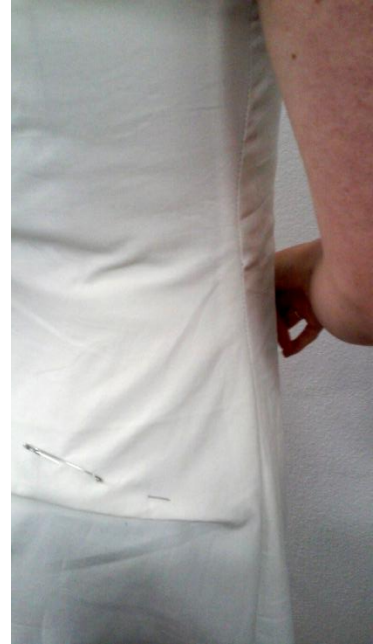


The dress had generally the shape I wanted, but as anticipated it needed plenty of tweaks. The skirt began to flare out too far down. I pinned out some of the length at the back so that the skirt would flare out higher. I took the most out at center back and zeroed out by the side seam.



The strap definitely needed to be reshaped and the area that needed to be pinned out was such a specific shape that I drew on it with marker. I needed to take in the center of the bust a touch so that it sat closer to her sternum. I wanted it to sit closer to her sternum so that it followed her curves and emphasized the natural form. I also needed to take in the strap a bit. Not unexpectedly, the straps had a tendency to slip off her shoulder, being so close to the edge. I had several options on how to fix this: put in lingerie loops (small loops of elastic at the shoulder that snap around a bra strap), put elastic along the neckline, preferably in a casing, so I could snug it to her form, or move the strap in just a bit. I had already decided that there should be a bra for the logistical convenience. I liked the strap at the edge of her shoulder so I put in both lingerie loops and a casing for elastic. I finished the edges with a casing, however it ended up being unnecessary: the lingerie loops did the trick

This fitting also told me that I needed to extend the fabric up the neckline. The seam allowance is not folded under in the photos and even with it, the neckline was a bit more plunging than intended. I also needed lower the bottom edge of the armhole.



It is best to take more photos than you need in fittings because you never know what tiny specific thing you're going to need to see when correcting patterns. These are some closer shots of the back. You can see the fabric pinned out for the cant of the skirt back and smaller details like the excess fabric pinned out just under her shoulder blade.

It is worth noting that I had not yet put the wing slits in the dress. My theory at the time was that I needed to get a good fit for the garment and then work in the slits. Ultimately, I think that this worked pretty well for me, but I do wonder how it would have worked out if I had started with the slits. I think I would have been able to assess the changes that needed to be made to accommodate the wing plate and therefore avoid a round of pattern revisions.

Part 2: Corrections and Second Mockups

Corset



(39a)



(39b)



(39c)



(39d)

Pattern Alterations

After my first fitting, I started with corset pattern corrections. I made a copy of the pattern so as not to lose any information from my original pattern. I gathered my notes and the corset with the markings and pins placed in the fitting. To fix the back gap issue, I decided to take fabric out evenly around the corset so that it would fit more tightly. I did the math for how much fabric needed to be taken out of each seam to achieve the additional gapping desired. I also nipped in the waist about $\frac{1}{2}$ ". A traditional corset would flare out over the hips and be laced more tightly, but I took out a small amount at the bottom of the center front seams to make the corset curve back toward her body (39a-b).

Adding Bones

I also added more bones, most of them in the center of the corset pieces. At the front I put in three bones, the outer two angle up and out from the bottom of the corset. This ensured tension down the front so that the fabric wouldn't collapse on itself. I used $\frac{1}{4}$ " spiral steel bones which curve, making them ideal for curvilinear corsets. I used $\frac{1}{4}$ " straight steel bones at the center back on either side of the grommets. Since this is the part that laces, the straight bones here keep the corset from distorting. Each bone was cut to be $\frac{1}{4}$ " short of the edge on each side.

Mockup 2.0

Corsets are not particularly easy to alter so I did not want to move right to my fashion fabric. I altered my mock-up corset and added the bones so that I could test out the alterations at the next fitting (39c-d).

Dress

Pattern Corrections

The next step was pattern corrections. First, I made a copy of each pattern piece (40a). For the back piece, I transferred the markings I had made with pins in the fitting. I slashed and closed what was essentially a dart that I had pinned out at the hips (40b). I did the same for the much smaller piece that I had pinned out at the base of the strap. For the straps, I transferred my markings and redrew in the curve and then shortened them at the ends. For the center front of the bust I took it in as a straight line because I knew that there would be jewelry to cover up the seam. I liked the shape of the neckline, I just needed it to extend farther up, so I added 5/8" to the edge. I also transferred the new line for the armseye and trued this curve on the front and back (40c).

I also changed the wing slit, a single line, to more of a wing welt—a rectangle (40d). I called it a wing welt because I was planning to construct it the same way I'd make a welt pocket. I changed it to this shape so the pipe would not distort the fabric as much.



(40a)



(40b)



(40c)



(40d)

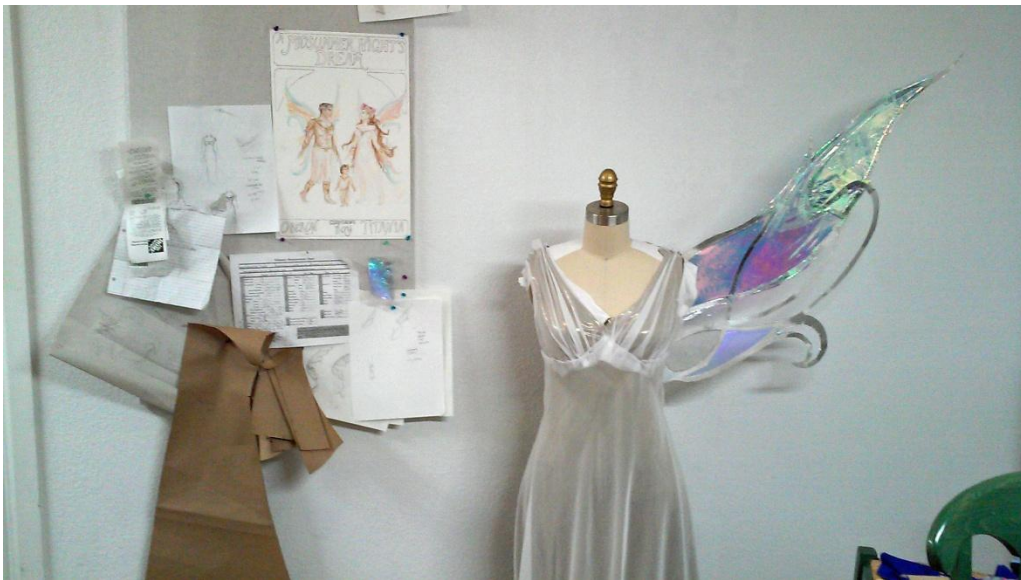


(41a)

Making a New Mockup

For the next fitting I wanted to be able to see how all of the layers of the dress worked together so I made a mockup with my new pattern out of a stretch metallic fabric (41a). I stitched all seams except where the zipper would go at center back for ease of fitting. I cut the chiffon layer out of yet more polyester chiffon that I had. I kept the two layers separate and then basted them together at the end so I would have the freedom to split them up independently during the fitting if necessary (41b).

I cut the wing welt by cutting down the middle of the rectangle and then to the corners about 1/2" from each end.



(41b)

Leotard

Why Include a Leotard?

I decided to take the suggestion of the crafts artisan, December Mathisen, who I had consulted and put anude sheath over the corset to disguise it since my dress layers were somewhat transparent. I decided to make a leotard so it could double as my nude layer under the transparent bust fabrics.



(42a)

Making the Pattern

After my under dress pattern alterations were done, I used them as the top of the leotard pattern (42a). I copied the pattern onto paper and did some research on leotard patterns to see the basic approach. I did a Google image search and dug up some old patterns to get an idea of crotch curves. I drew in my own curves. I left the crotch long on both sides so I could just pin in the correct length at the second fitting.

Making the Mockup

I made a mockup out of some white interlock knit I had (42b).

For the mockup I did not stitch the edges because that would have impeded their ability to stretch so I just used my pattern lines to note the edges.

Once I had the mockup together I basted it to the two dress layers. This had to be done carefully to make sure that the layers were all living together as intended.



(42b)

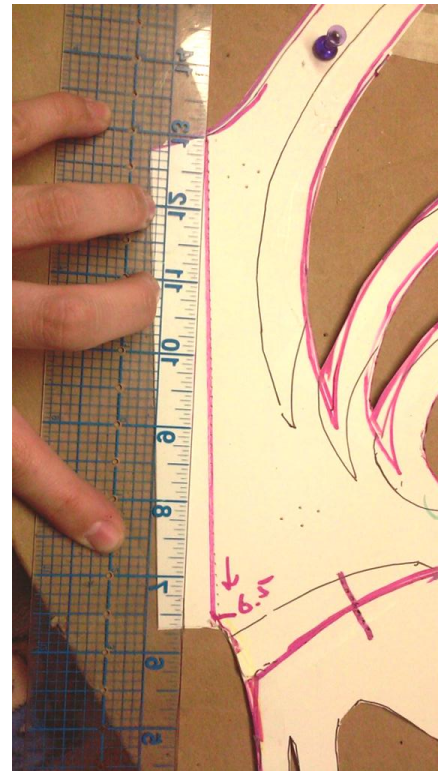
Wings

Altering the Pattern

I was pretty happy with the wings in the fitting, but I wanted the shape of the wings to curve up a bit more. I remedied this by changing the cant at the base of the wings a bit (43a).

More drastically, I altered the pattern the same way I would a solid (as in not veined) pattern. I drew a line in approximately the center and cut along it and kept the bottom edge just barely connected. I then rotated the pieces to overlap until I achieved the desired angle I wanted for the body of the wings. Then I had to redraw the veins at the overlap points so that they were fluid once again.

I also marked out specifically where I wanted the upper and lower wing to overlap. I did so by making a large curve at the base of the bottom wing so that the two halves would overlap significantly without cutting into the cells of either wing.



(43a)

Change of Plans

The original plan for the wings was to have one frame layer with the color for the cells over that on both sides with vinyl fused on top. This plan meant that the frame would be sort of disguised, being made less visible by the cellophane on top of it. I find it useful to bounce ideas off of people and work through problems by talking with others. My older sister Danielle shares my interest in Art Nouveau and I found it quite helpful several times throughout the process to ask her for insight I was having trouble figuring out how to make this work since the edges between cellophane colors would be very challenging to make clean and neat. When explaining my problem, Dani asked why I needed to disguise the frame. I said it was because I wanted the wings to look ethereal. She then pointed out that making the frames, excuse the pun, frame the cellophane would actually be very reminiscent of the borders in Mucha's art. I loved that idea and was surprised I had not realized that on my own. That is why it is useful to talk to professors, colleagues and friends during the your creative process. This new approach would mean the cellophane for each wing would be sandwiched between two frames. It would also have double the support and would eliminate my need to add in a brace piece for the top of the wing.



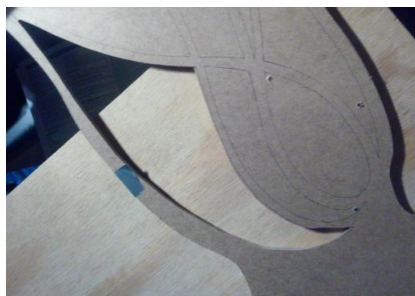
(44a)



(44b)



(44c)



(44d)

Cutting the Wing Frames

Since the test wing had been successful, I used the same process to cut out the actual wing frame pieces. Using the frame outside the cellophane meant I needed to cut (and buy) twice as many pieces. I did a quick test to see if I could cut just as well with two pieces of aluminum in a hardboard sandwich and fortunately I could. I made four sandwiches each with two aluminum pieces with white glue between each layer. I also duct taped the edges for some extra reinforcement.

I followed the same procedure I had for the test wing. I cut the edges out with the jigsaw, then drilled holes in each of my interior cuts. I cut most out with the scroll saw and used the jigsaw for the few spots that could not geometrically fit under the scroll saw (44a-d).



(45a)



(45b)



(45c)



(45d)

Sanding the Wing Frames

Once everything was cut out, I needed to sand down the edges. They needed to be safe to handle even if they were going to be covered in vinyl in the end and, despite my best efforts, there were some spots that needed to be smoothed out as I am a relatively inexperienced scroll saw operator.

I used a diamond-tipped cylindrical dremel attachment for the places that needed some reshaping and a sanding bit for the rest. I also did some sanding with a medium grid sand paper both along the edges and along the surface. The surface needed to be sanded because I was going to spray paint it gold and roughening the surface helps paint adhere (45a).

Bending the Wing Frame Bases

Before I spray painted, I needed to bend the base of the wings. They would be carefully shaped into cylinders that slid into the smaller pipe where I could secure them so that the wings could slide in and out of the harness pipes smoothly. I started by lining up my fold line to the edge of a piece of plywood on my table and clamping the wing down. I then used primarily my hands to bend in a 90° angle (45b). I then cut the based extension down to 1 ½" (45c). I used pliers and a vice grip to curl this edge onto itself until I reached the bend (45d). On the upper wing, the cylinder needed to be as small as possible because the lower wing's base needed to fit over it, and the whole thing needed to fit into the small pipe. I bent them into shape but did not connect any of the pieces because it would be easier to spray paint them when they were not connected.



(46a)



(46b)

Painting the Wings

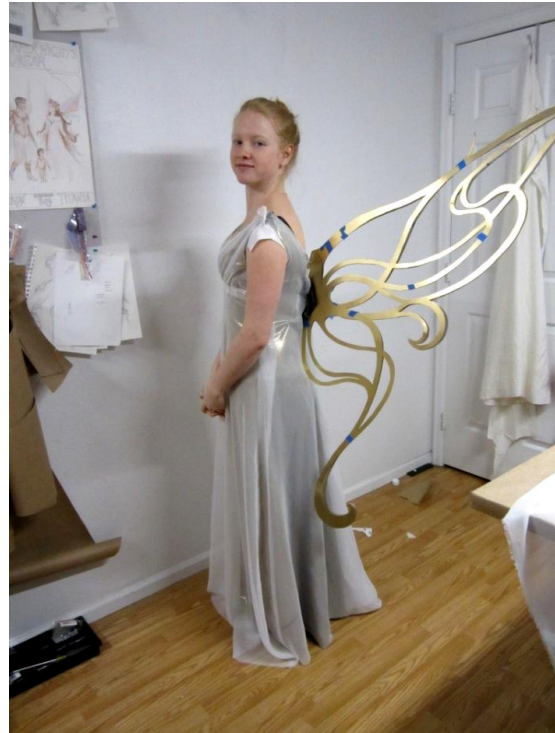
I spray painted in my garage making sure to use a respirator as spray paint is actually quite hazardous to inhale. I used a self-etching primer as a base coat. Once it was dry I sanded this down as well, as recommended on the can (46a). I applied a second coat of primer and repeated the sanding. I got two kinds of metallic gold spray paint since I was not sure which one would give me the brightest finish and which one would most closely match the brass jewelry that would be added to the dress. I tested them out and went with the decidedly superior Rustoleum over Krylon. Making sure the pieces were free of dust, I spray painted them on a plastic drop cloth. I used about three coats in the end, allowing each to dry between application (46b).

Getting The Wings Ready to Fit

I fit the pieces together and used painters tape to temporarily keep them together. I also slid them into their small pipe pieces. The fit was quite tight as intended and they were reasonably secure without gluing. This was perfect for fitting purposes because they were adequately stable, but it was not permanent and could be altered if necessary.

Second Fitting

Dress



Changing the grain on the back pieces had caused the skirt to behave as desired. However, I was not thrilled with how obvious the center bias drape was.

The curve of the underbust appeared to have flattened out with the new fabric. I wanted this seam to curve along the bottom edge of the bust, so I marked out where I wanted it to sit. The strap was still not quite right, but it was getting closer. I needed to make the curve at the back a little less extreme.

Unsurprisingly, the stretch layer was fitting oddly around the wing slits and pipes. I needed to make the slit a little longer to keep it from stretching too much to accommodate the wing pieces.

The back looks rather messy in the photos because I had not yet perfected the wing slit and zipper.

Leotard

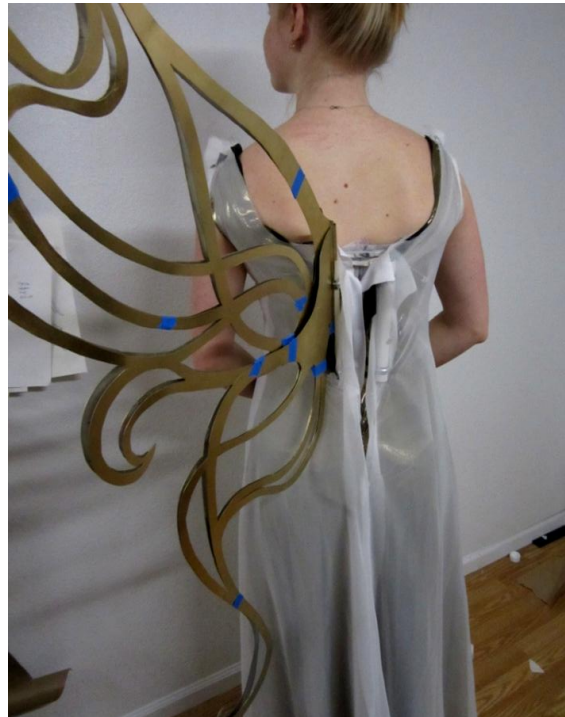
This fitting went reasonably well. The leotard fit quite well, but I did need to take it in along the hips to snug it up to her form. I added a piece over the upper derriere so that it could snug up under the bottom. There also needed to be a little less volume in the bust pieces near the center to make the seam smooth (49a). I pinned the crotch length and took note that I would need to shift the opening closer to the front so that she would be able to undo it while in the corset. The crotch needed to open so that restroom breaks would be possible without getting all the way out of costume.

Wings

I loved the frame-look of the wings. They slotted in as desired and Reba said that they were quite lightweight. The only real problem was that the lower edge of the lower wing rested against her bottom a little (49b). She said it was not annoying, but a) over the course of a show it could get annoying and b) it would rub against the delicate top layer of fabric and probably result in a tear.



(49a)



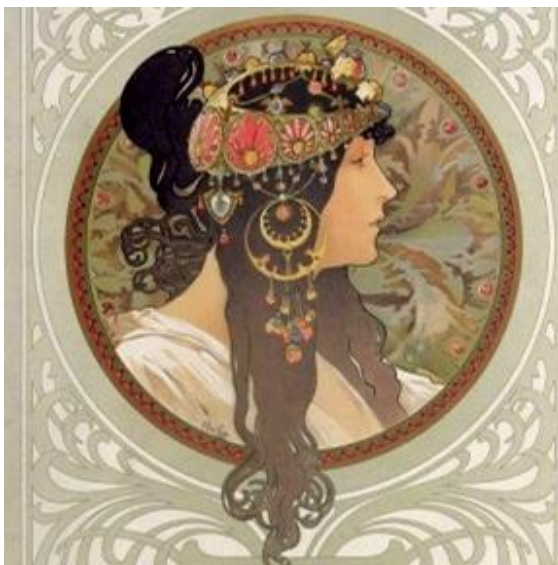
(49b)

Crown



(50a)

I was very pleased with the fit of the crown as well as the scale of the flowers. None of the flowers were permanently attached at this point which is why there are more in some areas than others. I decided that I did want to add flowers to the back down to the lower wire seen from the back (50a). This is to mimic the shape seen in some of the metal crowns seen in Mucha's posters such as *Byzantine Head: Brunette* (50b). I wanted to create a crown that was a combination of Mucha's famous flower crowns, like in *The Seasons: Summer*, but incorporate his metallic elements as well (50c).



(50b)



(50c)

Part 3: Alterations, Fashion Fabric and More Elements

Corset

I was quite confident in the fit of the corset, so I moved into fashion fabric. I was planning to use a twill which is not the ideal fabric for a corset because it has a bit more give than is generally desired. Ted Stark, the manager of the costume shop at CU, very graciously offered some nude-dyed coutil to me. This was precisely the ideal fabric for this corset. I wanted nude to disguise it as much as possible and coutil is the fabric that is specifically manufactured for corset making. It is very stable and sturdy but also quite lightweight when compared to other stable fabrics like canvas or duck cloth. With coutil I could make the corset a single layer which would reduce bulk. He also let me use spiral and straight steel bones. Straight steel bones are most commonly used in earlier historical corset styles that used straighter lines than the later curvy corsets. The curvier styles use spiral steel bones which provide structure in one direction, but curve from side to side. I also got some Prussian tape from the shop to use for bone casing. I considered using manufactured bone casing because it would allow the bones to wiggle a bit more and thus would be able to rest more naturally against her figure. However, after discussing it with Ted Stark, I decided on Prussian tape because it adds considerably less bulk.

Material Preparation



(52a)

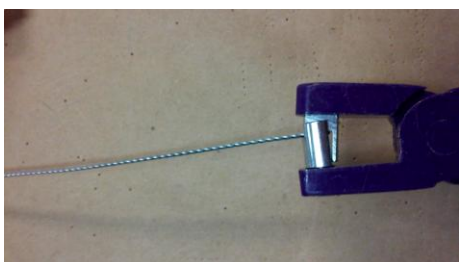
Many of these materials need prepping. The Prussian tape needed to be pre-shrunk. To do this, I hand washed it in hot water and then allowed it to cool while in the water (52a). Once the water was cool, I took the tape out and hung it up to dry. I pressed the tape once it was dry at which point it was ready for use.

I pressed the coutil as is necessary for (almost) any fabric before being used.



(52b)

The bones needed to be cut to the correct size and tipped so that no sharp ends could cut through the fabric, or worse, the actor. I had grabbed several pre-cut pieces of bone that were the correct length, but I need to cut several of them to be $\frac{1}{2}$ " shorter than the length of each bone line. I used cutting pliers to cut the bones. I unconventionally used tin snips to cut the straight steel bone edges into curves and then filed them smooth. Typically one would use a grinder, like is available in the scene shop at CU. I was not in Boulder at the time so I used the tools available to achieve the result I needed. After the edges were smooth, I dipped the ends in clear nail polish to seal them (52b).

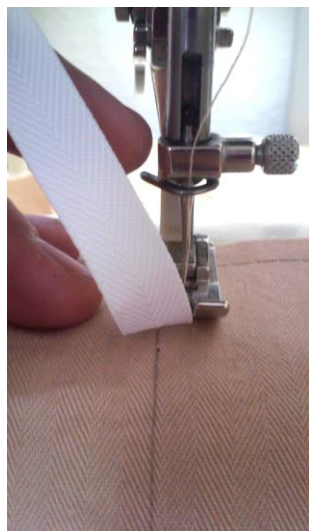


(52c)

I cut the spiral steel bones with cutting pliers and then was graciously allowed to borrow the bone-tipping tool from Cindy Settje to tip them. There are curved tips manufactured for spiral steel bones that slide over the ends and are clamped on with this tool, which compresses the tip piece from all directions so it will not slide off (52c).



(53a)



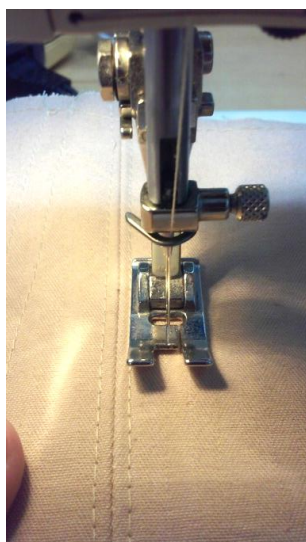
(53b)



(53c)



(53d)



(53e)

Stitching the Corset

Since I was making the corset out of one layer, I did not need to flatline the pieces, but I did still stitch along the stitch line at the top and bottom of each piece. As previously mentioned, this line is used later for the binding step. I serged the long edges of each piece to finish the raw edges and keep them from fraying (53a).

I stitched on the bone casing, lining up the center of the herringbone weave of the Prussian tape to my bone line (53b). The Prussian tape was barely wide enough for the bones (the next size up was too wide) so I stitched right at the edge of the tape. When finished, I pressed each piece to relax the fibers together.

I then pinned my seams, matching darts and then stitch lines, being careful to pin so that the pieces did not skew off from one another (53c). As is relatively standard for corsets, I stitched each seam twice since these seams are undergoing more stress than the average seam. I pressed my seams open (53d).

Just like I did for the mockup, I topstitched 1/8" on each side of each seam. I did an additional topstitch 1/4" towards the back of the corset, lining the foot up to the edge of my previous topstitch line (53e).

I followed the same process at center back as I did for the mockup. I folded the pre-marked fold line and topstitched 1/4" from the edge, then an inch from this line and then another 1/4". This makes a stable grommet strip for the lacing.

I put the bones in (54a). All of the bones were spiral steel except for the four at center back. These four surround the grommets and, as previously mentioned, keep the corset from warping out of shape from the lacing. The spiral steel bones would curve in with the tension of the lacing. The straight steels will keep their shape and are therefore very useful for stabilizing the lacing area of the corset.



(54a)

To bind the corset I used a cream single fold $\frac{1}{2}$ " bias tape. Ideally I would have liked to dye this to match the corset, but since this would be hidden under the leotard, I decided to allocate this time to other elements of the project. I lined up the edge of the tape, folded open upward to the stitch line I put in at the beginning of the process. I did this from the right side of the garment so I could not see my pencil marks. The stitching was a way to transfer the lines without having to mark it. I started with the bias folded over the edge of the corset by about $\frac{3}{8}$ " which makes a cleaner finish in the end. I stitched a skinny $\frac{1}{4}$ " from the edge, in the crease of the first fold along the entire edge of the corset, keeping the edge lined up to my stitched line (54b). Bias is used for this because it is very flexible and can curve either direction and still give a smooth finish.

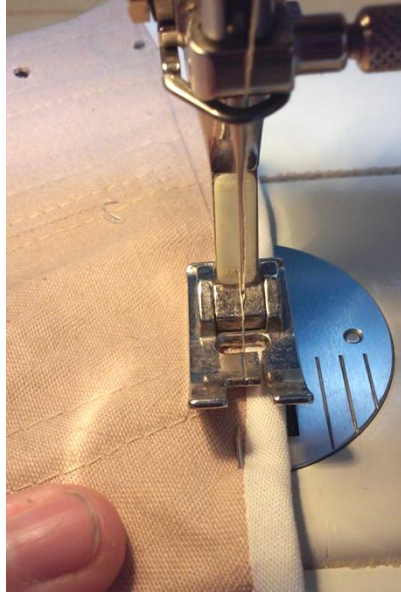


(54b)

Once I had stitched this onto both sides of the corset, I pressed the bias away from the corset, from the right side (54c).



(54c)



(55a)

Then, by hand, I folded the bias over on itself and then over the raw edge of the corset so that this edge sits just below the bias seam on the opposite side. I pressed this fold into place paying careful attention to the end corners, making sure all raw edges were cleanly tucked in. The bias must extend below the seam on the opposite side so that it is caught when I stitch in the ditch, meaning stitching directly in the seam. I stitched in the ditch from the right side (55a-b).



(55b)

Cindy Settje again generously gave me some grommets and let me use her grommet setter. I had punched holes at my placement dots with my leather hole punch. I used my snips to widen the holes just a bit and placed the long side of the grommet into a hole from the right side. I placed the washer side wrong side up onto the lower part of the grommet setter and set the other half (in the corset) on top (55c). I pulled the lever down and I had a beautifully set grommet. I repeated the process for all of them and was then ready for lacing.

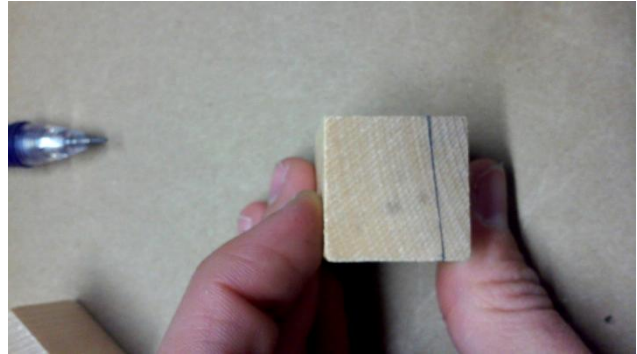


(55c)

I used cream ribbon for lacing. I actually split the lacing into two sections so that the bottom half could remain partially laced. The top half would need to be re-laced every time since I needed to lace the wing plate into the corset each time. Splitting my lacing in two meant that I could tighten the lower half to keep the corset more or less in place while I laced in the plate, then re-tighten the lower half at the end. I opted for simply doing a diagonal cut at each ribbon end and melted the edge to seal it rather than using aglets.

Wing Plate

At some point after the second fitting, the way to fix the cant of the wings became clear. To keep the wings from hitting her derriere, I could add a larger spacer to the bottom of the wing plate. I decided to use wood because I needed to be able to angle it and it would be far more stable if I could screw into it.

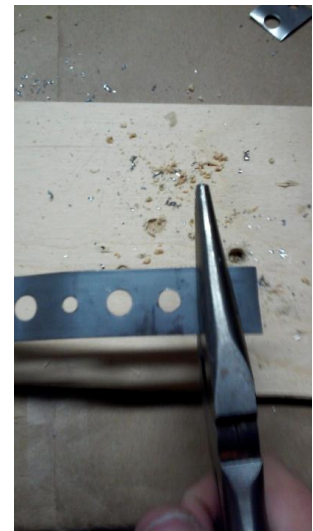


(56a)

First I needed to take apart the lower brackets which was a bit difficult since I had used E6000, but it was doable with some prying. I got some wood cubes and measured the approximate angle I needed for the top edge of the spacer. I marked it out on the cube and used the scroll saw to cut off the top edge (56a). After sliding it in to check the fit I decided that sanding in a divet to give the pipe a place to fit would ensure the pipe wouldn't be able to slide around. I used a dremel and then sandpaper to sand this out.



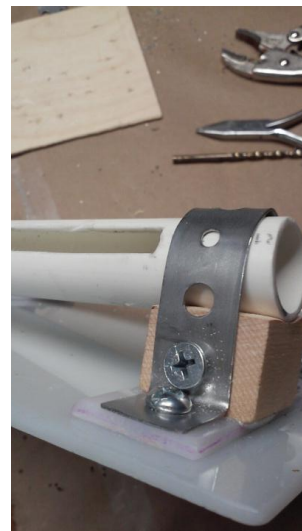
(56b)



(56c)

I got a roll of galvanized pipe bracket strip to make a custom bracket for the bottom edge. I measured out the length I needed. It was trial and error, but I got a firm fit. However, the size of holes on the strip alternated between a large and small size. I needed the large size to make the best sized bracket possible so I used the drill to make some of them bigger (56b). I used needle nose pliers to shape the custom brackets (56c).

I put some glue between each piece and bolted the brackets on. I placed a 1/2" screw through the bracket into the new spacer to lock them together (56d).



(56d)

Leotard

Pattern Corrections

I used the mockup leotard to correct my pattern as I had with all other pattern corrections (57a). I took it apart, made a copy of the original pattern and transferred the marks to the new pattern. I took in the side seams over the hips and extended the area over the derriere. I also shifted the crotch opening towards the front.



(57a)

Laying Out and Cutting

I had bought enough of two different nude fabrics—one interlock knit and one more slippery swimwear type. I would have preferred to use more slippery option because it would reduce clinging between fabrics. However, as suspected, the interlock knit matched Reba's skin tone far better so I pressed the yardage and then lay it out. I cut out the pieces and fused some white tricot over the wing welts, down the center back to just below where the zipper would sit and also at the ends of the crotch straps (57b-c). The tricot provides stability but since it is a knit interfacing it still allows some stretch.



(57b)



(57c)

Stitching

I pinned together the center back to the zipper notch and the side seams. I stitched these with the four-thread overlock to maintain the stretch-ability of the fabric. Reba is an ice skater and has made many skating dresses so I asked her advice on snugging up the bottom edge of the leotard. She said that she used clear elastic at about 90% fullness, locked in with a zig-zag stitch. This was almost precisely what I had done for the stretch edges I had finished for the Titania costume I had made for the Colorado Shakespeare Festival, so I decided it would be a good choice. I measured out the length of each edge, then measured out a length of clear elastic 90% of that measurement. I overlocked the lower edge of the leotard to finish the edges (58a). I pinned in the elastic somewhat loosely, just to make sure it was distributed evenly. I set my machine to do a wide zig-zag stitch. I placed some clear elastic at the end of one of the edges, folded over the overlocked portion and anchored the elastic in place with the zig-zag, then carefully stretched the elastic until the knit lay flat and zig-zagged over the folded over fabric to finish the edge (58b). I basted the crotch edges over so as to double check before actually finishing (58c). I left the top edge unfinished because, after doing several samples I decided it was best to finish the mesh and leotard layers together.



(58a)



(58b)



(58c)

Dyeing

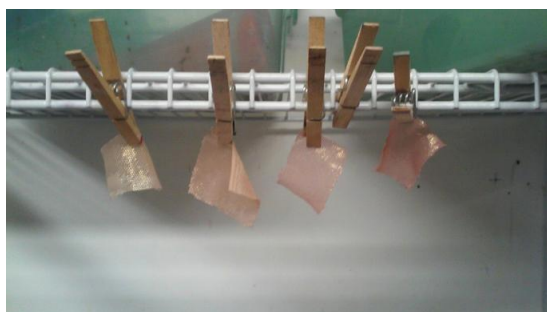
When I did the original design I swatched fabric as is standard procedure. However some of the fabrics had been chosen for color and some for texture. I needed to decide on what the actual fabrics based on what I could get. I had swatched a nude mesh that had metallic pink gold shot through the top of it. The original plan was to have a layer of this under a top layer of silk chiffon. I have a lot of experience digging deep into the internet for obscure items especially regarding costuming materials. This fabric was nowhere. It had been swatched from my costume professor Markas Henry's swatch collection. He has the New York costume shops send him the swatches they are going to throw away, which means that his students get the opportunity to practice swatching with a very wide range of fabrics. It also means that if you want to actually procure one of these fabrics, there's a good chance it was a designer-level fabric from years ago and will no longer be available. Once I had exhaustively searched for a source for this fabric, I moved onto my next best option: buy a nude mesh with gold shot through the top surface and dye it pink. I hoped that this would have the same sort of effect.



(59a)



(59b)



(59c)

I asked a crafts artisan, December Mathisen, for advice on dyeing nylon mesh as she has a lot of dyeing experience. She said that she had dyed nylon with RIT dye with success and recommended using a little salt and going slowly/sneaking up on the color.

I washed my fabric with synthrapol, which removes anything like residue from factories that might discolor when dyed (59a). I cut some swatches to use as test samples (59b). For my tests I boiled about two cups of water and mixed in 1/8 teaspoon of salt. I also started my actual dye bath boiling. I used a large pot and filled it about 1/3 of the way with water and set it to boil, knowing it would take quite awhile. With this time, I did my tests. I wore a dust mask to avoid breathing in chemicals from the dye powder and gloves to avoid absorbing dye and all its chemicals through my skin. For the first test I put in 1/8 teaspoon of petal pink RIT dye and submerged a swatch for 1 minute and one for 3 minutes. I repeated the process after adding an additional 3/8 teaspoon of petal pink (for a total of 1/2 teaspoon). I still was not quite happy with the color so I tried adding 1/8 teaspoon of fuchsia, still using the same times. Once I had rinsed out all of my samples to remove the excess dye I blow-dried them and then compared the colors to choose (59c).

I liked the “kick” of the fuchsia so I chose the ½ teaspoon of petal pink and 1/8 teaspoon of fuchsia. I had to extrapolate these numbers to work for the considerably larger dye bath. The water in the big pot was nearing boiling. I put in a teaspoon of salt and mixed to dissolve it (60a). Once the water was boiling I put in the dye and stirred well (60b).

I re-wet my fabric before putting it in the dye bath which helps the dye distribute evenly (60c). I started my timer and started stirring making sure that to continually submerge the fabric all the way to avoid blotches.

The scale difference between test dyeing and dyeing yardage always exists and the times will never quite be the same, which is why it is so important to keep a close eye on the fabric while dyeing (60d). I had gone on the low side for how much dye I put in as per December’s advice. It took a little longer to dye it, but I ended up with the perfect color. Once I was satisfied that it had been in the bath long enough I removed the (hot) fabric and placed it in a clean bowl and rinsed it out (60e). I then washed it in synthrapol again to remove any excess dye that had not molecularly bonded. This was to ensure that it wouldn’t bleed on any of the fabric in the future. I hung it to dry.



(60a)



(60b)



(60c)



(60d)



(60e)

Dress

I had a realization that it would be very difficult to make the side seams clean with the French seams I had planned since I had patterned the bust to extend back and meet the side seam. I did a few samples to see if I could come up with a good way to make that junction happen nicely. Then I realized that it would make the most sense to change the style line- curve under the bust and meet the armseye instead of the side seam. This way, the skirt layers could stay separate along the side seams and be basted together along the top edge. The bust pieces could be entirely separate pieces. I revised my pattern accordingly and cut out the mesh layer. Since this layer is transparent, I used disappearing marker to trace the pattern. I stitched the seams with a four-thread overlock so that the seams would be able to stretch vertically. I pressed the seams to the back.

I then went to cut out my silk chiffon pieces and had another realization: my fabric was not wide enough to cut the front on the bias. At one point in my process I had actually thought about this problem and made mental note to order fabric wide enough.

I had to make a choice: order wider fabric or put it on the straight of grain at the front. Ordering fabric was risky because fabric stores are not particularly fast at processing orders and shipping them. Having looked earlier in the year, I knew that I was very unlikely to find what I needed locally. I pinned up some of the yardage to see what the skirt would look like on the straight of grain. It actually looked more like my design. Since the fabric at the center front was on the grain it went straight down instead of creating a fold as it had on the bias. Overall it gave a more statuesque look. I had noticed that most of the dresses in Mucha's artwork were on the straight of grain at the front (Husslein-Arco). I had thought that choosing the bias would give me a more organic look, which in some ways it did. However, with the innate drapey-ness of the silk chiffon, it still looked very sinuous. To my surprise, I decided that I liked the statuesque quality and the reduced fullness and so went with the straight of grain. If I were to do this project again, I would probably order the wider fabric and put the front on the straight of grain but increase the fullness in the skirt in the bottom third of the skirt.

Basting the Dress

My plan was to use French seams in the chiffon because it encases the raw edges but looks clean—the reason they're typically used to seam transparent fabric. French seams are essentially unalterable, so I hand-basted the chiffon layer together. As with the mesh layer, I did the side seams and the center back seam. Then I basted underbust and back edge of the leotard, mesh layer and chiffon layer, also by hand (62a). I basted around the wing welt and cut through the center line to $\frac{1}{2}$ " from the end, then made two diagonal cuts to each corner as one would to make a welt pocket. I did not want to do any finishing until I confirmed the fit as it would be very difficult to go back and change any of this type of finishing.

On the dress form, I pinned on the leotard and mesh pieces, then lay the chiffon layer over, matching the notches. I then hand-gathered and hand-basted the three layers together. I thread marked my edges on the skirt/body and on the bust pieces, then matched the notches of the underbust seam and again hand-basted. The dress was ready for the next fitting (62b).



(62a)



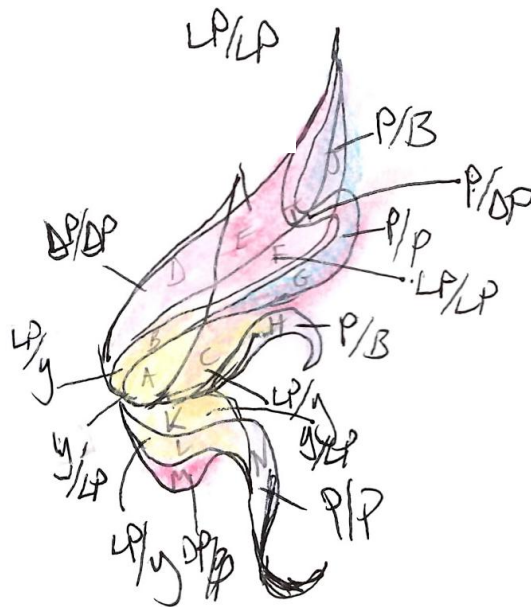
(62b)

Wings



(63a)

I had ordered a set of multiple colors of cellophane (63a). Before I could cut out or glue any cellophane I had to decide what colors should go where. Inspired by Dani's comment that the wing veins would look like Mucha's borders, I wanted to use the cellophane colors to create an ombre-like effect, a technique common in many of Mucha's backgrounds. Dani agreed to help me experiment with different layering cellophane colors to get an ombre effect. It was a little harder than it may sound because iridescent cellophane looks different colors in different lighting. I eventually ended up with something I liked which involved specific color layering and made a key for myself (63b).



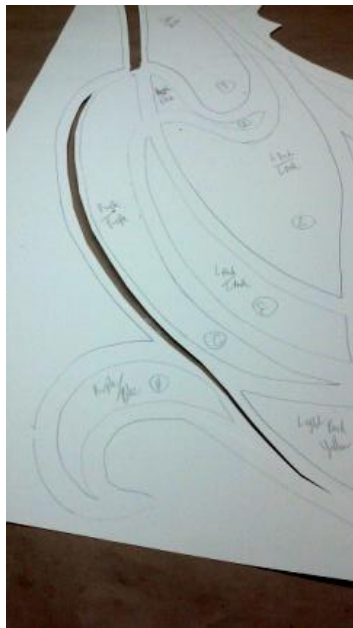
(63b)

Adding the Cellophane

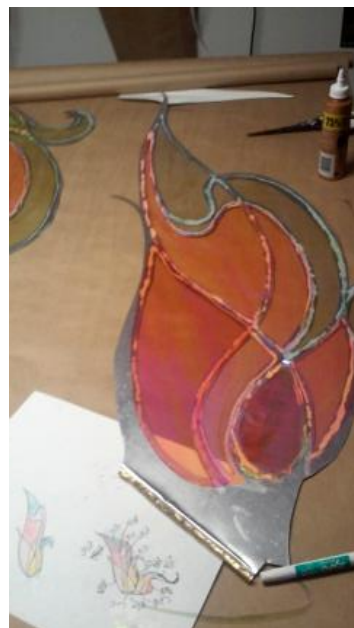
I traced a new pattern for myself from the hardboard cutout leftover from cutting the frames. I wrote in which colors needed to go where, indicating which color needed to be on top, and then cut along the pattern I had traced (64b). This gave me “seam allowance” with which to glue on the pieces. I used a dry erase marker to trace my pattern pieces because it wiped off easily (64a). Interestingly, the cellophane had a visible “grain” to it, so I actually ended up drawing on grain lines so that the lines would extend from the center of the wings outwards. I carefully laid out my pieces, making sure to keep the same cells in the same piles. Making sure I knew which side was the front of the wings, I started gluing on the cellophane with Tacky glue (64c). E6000 would have been more secure, but I wanted it to be easy to clean up. Also, it is important to use gloves with E6000 and I wanted to have as much dexterity as possible for this step. I moved on to gluing the second layer of cellophane onto the first layer, also with Tacky, making sure to use thin lines to keep the glue from squishing between the transparent layers of the cells.



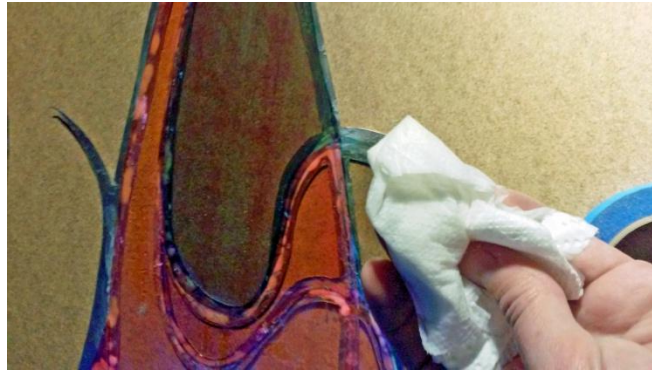
(64a)



(64b)



(64c)



(65a)

After wiping down the excess glue I went outside to glue the second frame onto the first (with the cellophane layers (65a). I did use E6000 for this step and made especially sure to get the outer edges of the wings. I started with the upper wings. I had to carefully slip the curved bases around each other then line up the frames before making contact to avoid sliding the glue around. Once I had the frames where I wanted them I used painter's tape to secure them together. Then I did the same for the lower wings, but left the top edge unglued so I would be able to slide in the upper wing later. I sandwiched the wings between pieces of hardboard which I weighted. I left these to cure.

After they'd cured, I put E6000 on the lower edge of the upper wings and slotted them into place in the lower wings (65b). I repeated the process of taping, sandwiching, weighting and waiting.



(65b)

I realized that I would need to cut a larger slit in the pipes as there were now four layers of aluminum instead of two. I used the dremel to widen them (66a). After the wings were dry/cured, I used the vice grip to compress the base cylinder a bit more, then E6000'd them into the smaller pipes with the open end of the pipe towards the base of the wings.

Once more, after it was cured, I measure out two spots that would go through all four wing layers and drilled through them (66b). I installed pop rivets using the corresponding setting tool. From the right side, I placed the rivet into the hole, place the setter over the rivet post and squeezed the setter until it popped loudly (66c-e). I put these in because I wanted the upper and lower wings to be held together with more than just the glue.



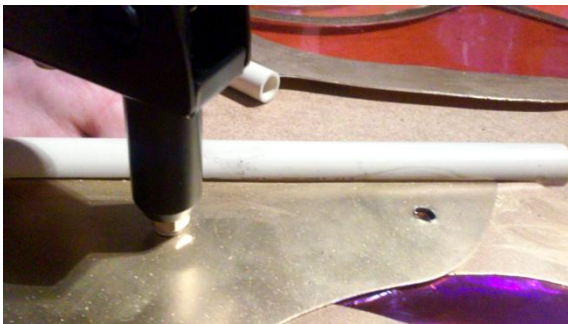
(66a)



(66b)



(66c)



(66d)



(66e)

Jewelry

For the jewelry, I ordered several brass stampings from Etsy. I was rather surprised that this ended up being my source, but after looking at my options I found that they had not only the best selection but generally the best prices.

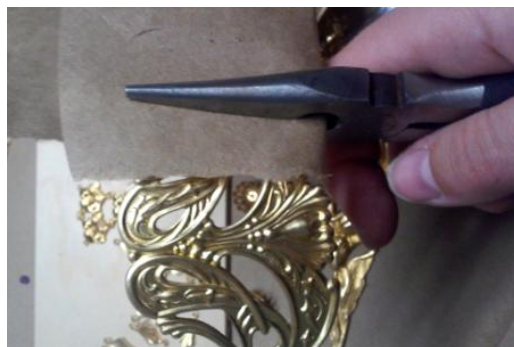
I spent quite a bit of time rearranging the pieces on the form to decide on the configuration. Since I had decided against the off the shoulder sleeve, I wanted to have the ornamentation extend across the shoulder in a similar way as the dress in the original design. I cut several of the stampings into pieces which I did with tin snips and then smoothed the pieces out with a fine metal file (67a). Once I had a configuration I liked I started playing around with adding chains. After stepping back, I realized that I would need a larger scale chain, so I switched to draping with a larger chain that was the wrong color until I could go buy some that matched the stampings (67b). I bent the piece at the apex of the shoulder with needle nose pliers and a thick piece of paper to protect the surface of the stamping (67c). I used a pieces of nylon net and basted the pieces of jewelry onto it. I connected the pieces I could, but many of the junctions would require drilling a hole. I did not want to drill any unnecessary holes, thus the net. I originally thought that I would use the net in the final piece, but that eventually proved to be unnecessary.



(67a)



(67b)

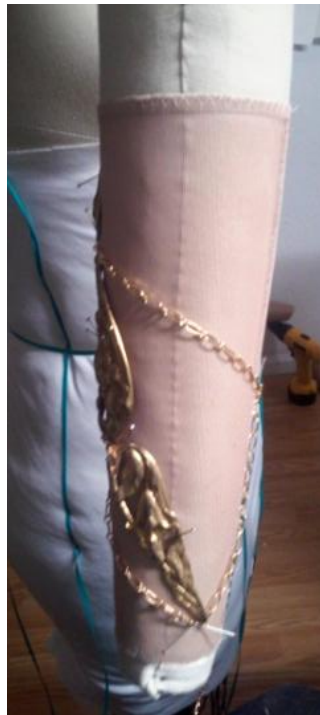


(67c)

The Gauntlets

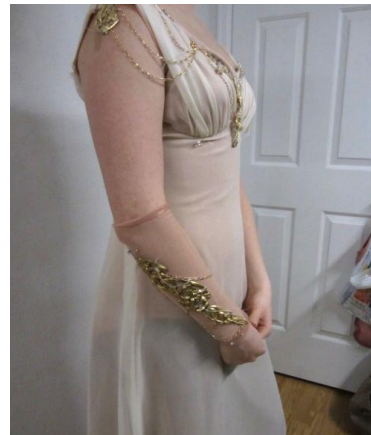
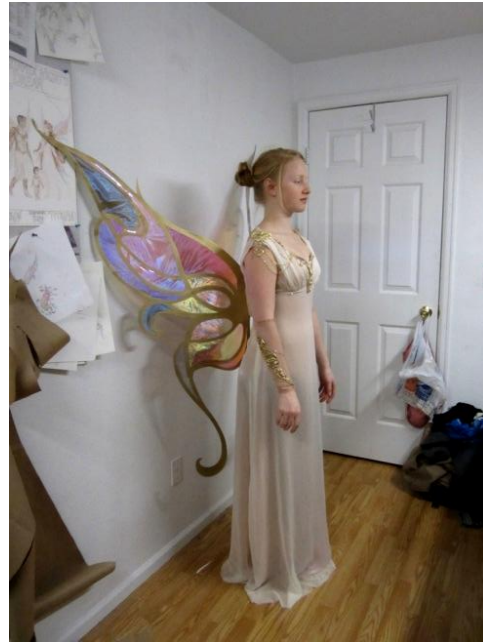
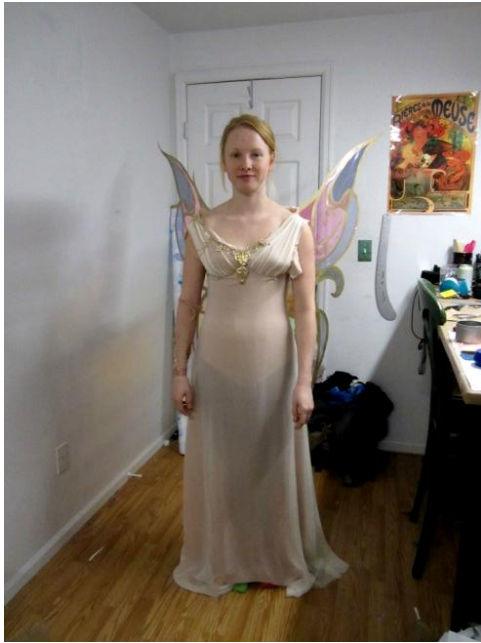
The gauntlet was easily the most challenging piece because I did not want it to look too rigid, but still wanted it to convey the basic idea of a gauntlet. I also wanted it to look like it was magically held on. I ended up with a wrapping effect that I was pretty happy with. I also used the pliers and paper method to carefully bend my pieces so they fit to the arm.

I quickly drafted a half-sleeve to use as a base for the jewelry pieces to be sewn onto for the gauntlet. Conveniently, I was able to use the metallic mesh inside out for this. I stitched the seam and then basted the jewelry pieces to it in the desired orientations for the fitting.



Third Fitting

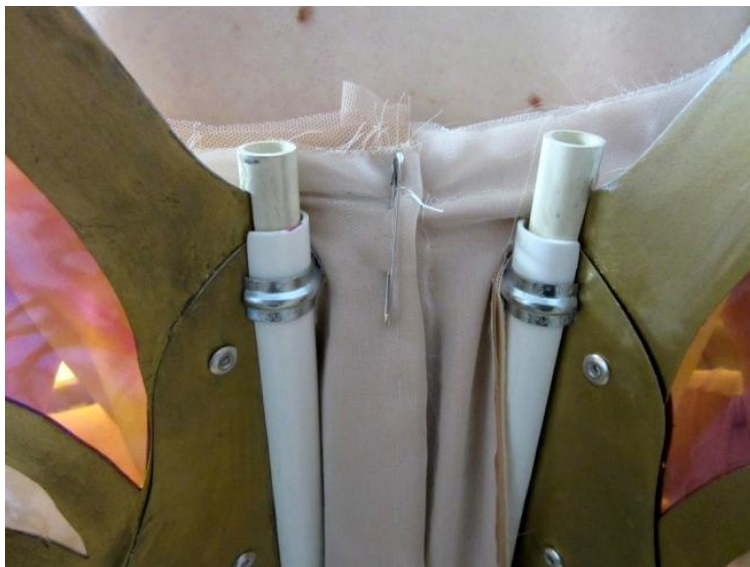
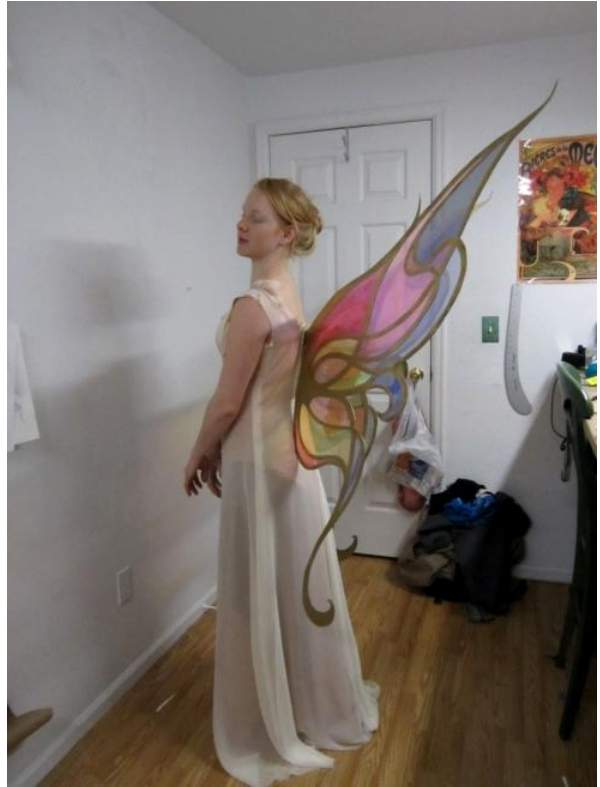
Dress



The fullness of the skirt was concentrated at the side seams and center back seam. I wanted it to be more evenly distributed. I was reminded of the research for a previous project and actual patterns from the turn of the century. The skirt pieces side seams were put on the straight of grain rather than putting the center back on the straight. Since the straight of grain will always seek out gravity more than the cross grain or the bias, this would in theory kick the skirt forward a bit. Changing the grain on the back pieces could fix this problem.

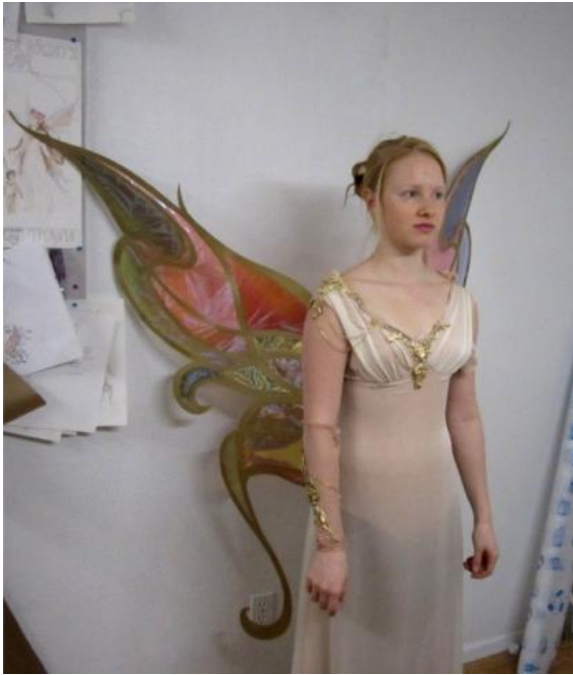
The straps needed to be slightly shorter and lingerie loops would definitely be helpful. I also needed to take out a bubble that was appearing at the edge of the underbust.

Wings



The wings were still very lightweight and they no longer hit the model's bottom. I decided that it would actually be worth it to gold leaf the wing veins so that they would match the jewelry better. It would also look considerably brighter. I had done a small sample on a left-over piece of spray painted aluminum.

Jewelry



The gauntlets needed to be shorter and taken in a little at the top edge. And, I decided to shorten the middle shoulder chain so the three would be more evenly spaced. I also determined in this fitting that it would be adequate to just have snaps at each shoulder and the center front to attach the jewelry pieces to the dress.

Part 4: Construction

Leotard

Since the leotard had fit as intended, I was able to do the finishings for the crotch. I folded over the edges and zig-zagged them in place. I then stitched in hooks and snaps for the opening (74a-b). I did both to make it more secure and so that there was a second line of defense in case of a stage mishap. I had to wait on finishing the top edges, the welt and zipper until all three layers of the dress could go together.



(74a)



(74b)

Dress



(75a)



(75b)

Altering the Mesh Layer

After taking in the center back seam of the mesh layer, it was ready to go since I wanted the strap seam to be all three layers combined.

Finishing the Knit and Mesh Edges

I had done several samples experimenting with how to finish the top edges of the garment and my preferred finish required the leotard and mesh layer to be finished together. Making sure the two layers were laying together nicely, I pinned and then overlocked the edges together (75a). I then folded over this edge, lining the fold up to the outer edge of the feed dogs, then straight stitched a skinny quarter from the edge (75b-d). This created a casing in which I could install elastic to snug up the edges of the dress if necessary.



(75c)



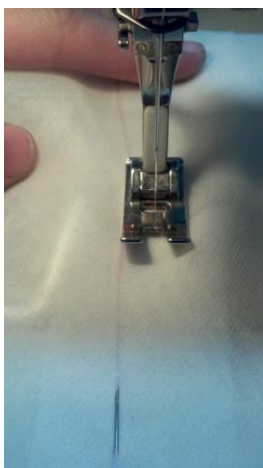
(75d)

Re-cutting the Chiffon Backs

To my chagrin, I decided after some experimentation that the best way to fix the extra fabric at the side seams was to re-cut the backs with the side seam of the skirt directly on the straight of grain. I had enough fabric to do so, but cutting the chiffon is tricky since it is so lightweight.



(76a)



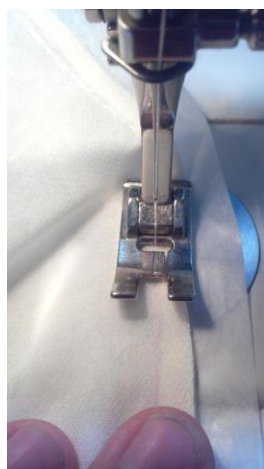
(76b)



(76c)



(76d)



(76e)



(76f)

Seaming the Chiffon

Most seams are made with the right sides of the fabric together. French seams must first be stitched together with the wrong sides together. I cut strips of white tissue paper to use as a stabilizer (76a). This keeps the very lightweight fabric from getting sucked into the feed dogs and helps prevent seizing. Starting with the center back, I pinned my seams, wrong sides together. I pinned to strips of tissue paper, being careful not to stretch the fabric. I then stitched $\frac{1}{4}$ " outside the stitch line using a standard stitch length of 3 (76b).

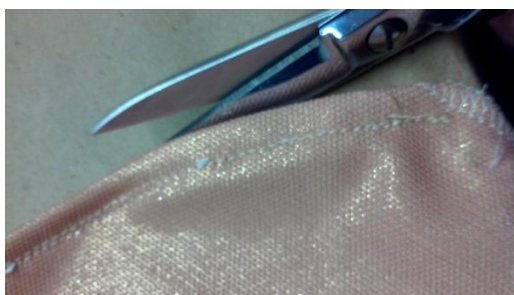
After gently tearing out the tissue paper I carefully cut a fat $\frac{1}{8}$ " from the seam (76c-d). Then I pressed the seam to one side and then the other. I flipped my seam over and pressed the right side of the seam, making sure the fabric had folded nicely. Once again I pinned the seam to tissue paper, but this time the right sides were together and the edge of the seam was the fold I had just pressed (76e). This encased the raw edges and made a neat seam, ideal for transparent fabrics. Again, I tore out the tissue paper carefully and then pressed the seam to the side (76f). I held it up to the form and noticed that it did an odd ripple effect. The fabric was so drapery that stitching it with the grain square caused the seam to act shorter than the fabric immediately surrounding the seam. It looked like the center back seam had been gathered resulting in a rippling effect. To avoid this I ended up pinning the side seams with the fabric hanging on the form so I could see where it wanted to distort. While unconventional, this was effective. I repeated the steps for the French seams and I was able to avoid the ripple effect.



(77a)



(77b)



(77c)



(77d)



(77e)

Finishing the Top Edges

My sampling had led me to the conclusion that stitching the chiffon to the wrong side and then flipping it onto the right side encased the raw edge and made for a clean finish on the inside as well. On the wrong side, I pinned the chiffon stitch line $\frac{1}{2}$ " from the edge so that, when stitched $\frac{1}{4}$ " in and then folded over, the stitch line would line up with the edge of the dress (77a). Despite stitching with the chiffon on top, I found that using tissue paper was pretty helpful and kept the overlocking from catching on the feed dogs (77b). Once I had torn out the tissue paper, I trimmed the chiffon and turned it to the right side and pressed the fold (77c).

Stitching the Dress Together

I finished the top edges before stitching the bust pieces in for future alterability as is a key consideration in theatrical costuming. Some of my seams would be unalterable which is the drawback to French seams so I wanted to make sure there was some sort of alterability to the dress. To stitch the dress together, I first had to baste the underbust seam (77d-e). After overlocking the underbust seam edges, I matched my notches and stitched the bust pieces to the skirt, then carefully pressed the seam (77f).



(77f)



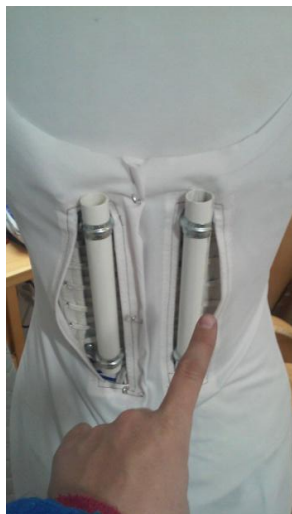
(78a)



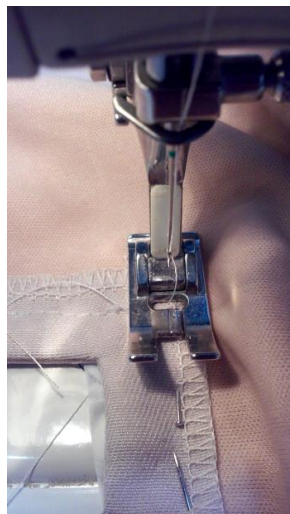
(78b)



(78c)



(78d)



(78e)

Wing Welts

I basted all the layers together at center back, taking into account the theory of concentric circles: the outer layers had more distance to cover to reach the same center back point.

I cut two twill rectangles $\frac{1}{2}$ " larger than the wing gap and overlocked the edges. I chose to use twill over coutil because I actually wanted there to be some flexibility in the welts despite the need to stabilize them. Making sure all the layers were laying together happily, I pinned and then stitched the rectangle with the right sides together (78a). I used a short stitch length so any tears would have a harder time growing.

Carefully I cut down the center of the twill (the other layers had already been cut) to $\frac{1}{2}$ " shy of each end. At the ends I cut precisely to each corner (78b).

I pressed the inside twill piece from the other pieces on each side of the rectangle, then flipped the twill to the inside. I carefully pressed the opening so that the twill pulled to the inside of the garment.

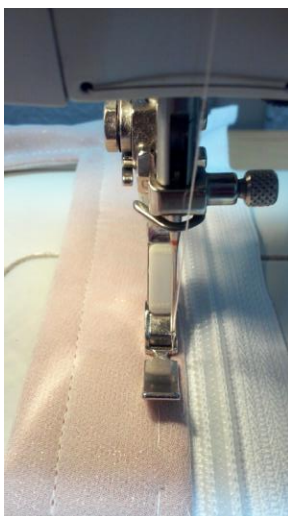
I then stitched $\frac{1}{4}$ " from the long edges of the welts. Into these I inserted straight steel bones that had been prepared as described earlier (78c). The goal of these bones was to keep the fabric from gapping as seen in (78d). Initially I had thought to use snaps or hooks, but I eventually realized that boning would be less of a hassle as well as make for a much smoother tension. I stitched a line $\frac{1}{4}$ " from the top and bottom edge of each welt to seal in the bones (78e).



(79a)



(79b)



(79c)

Zipper

I opted for a standard lapped zipper. Since the welts took most of the tension, I did not actually need a super strong zipper. First, I shortened my zipper from the bottom since it was a non-separating zipper. I used a zipper stop, placed it in the desired location and bent the prongs in with needle nose pliers. I melted the lower edge of the zipper with a lighter to avoid fraying. I did not want this edge to be irritating to Reba, so I stitched a piece of the nude knit onto the end. I stitched across the bottom and just outside each edge (79a). I then flipped this over the end of the zipper and folded the raw edges in and topstitched.

To put in the zipper, I started by basting the center back line on both sides and then basting 1/8" out from this line on the left side and pinned. With the teeth facing down I lined the edge of the teeth to this line. I used a zipper foot to stitch next to the teeth (79b). Then I flipped the zipper to the inside and topstitched next to the teeth (79c). Then I pressed the right side of the dress on the center back line. I lined this fold up to the basted center back line on the stitched side. I pinned it in place and then stitched next to the teeth on the right side.

I ran into an unusual problem as the seam allowance was folded back- the welts were too close to the zipper to keep the full seam allowance. I serged off 3/4" to keep the welt gap clear.

Lingerie Loops

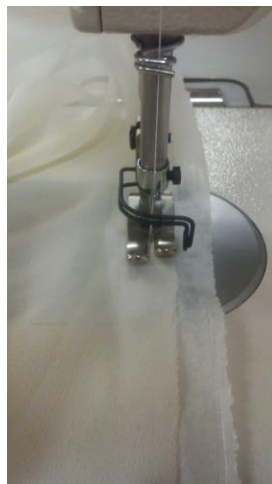
I had stitched a piece of elastic into each strap and tacked it so it would not be able to creep out from under the strap. I stitched tiny snaps onto the ends of the elastic to make loops that could snap around a bra strap.

Dress

At this point, I usually would have been able to put in the hem of the dress, but since I had changed the grain on the back pieces I wanted to do a fourth quick fitting to check the hem marks.

Back Drapes

I decided to use my leftover chiffon to make back drapes to cover the wing pipes. I ended up draping these using the original back pieces. I liked the fullness and the curve already present in the straps. I copied then altered that back pattern and cut out the back drapes. Since these would only be stitched in at the shoulder seam, I needed to finish three out of four edges. To finish the edges, I pinned the raw chiffon edges to tissue paper making sure not to stretch it, but allowing it to fall naturally. I stitched $\frac{1}{4}$ " from the edge and carefully took the tissue paper out (80a). I trimmed down the edge to a fat $\frac{1}{8}$ " (80b). I then carefully used the iron to press a fold just past this stitch line (80c). This stitch line is not strictly necessary but it makes it easier to control the fold. I then folded the edge over again and pressed (80d). With the raw edge encased I pinned to tissue paper again and topstitched the fold. I carefully tore out the tissue paper (80e).



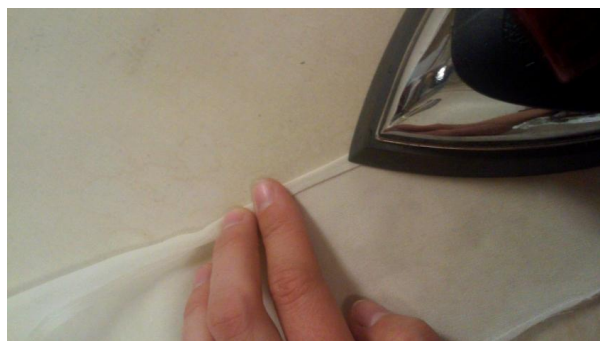
(80a)



(80b)



(80c)



(80d)



(80e)

Wings

It was then time for the daunting task of gold leafing the veins of my wings. First I needed to prepare the surface. I used a very fine grit sand paper to sand the vein surfaces, being cautious not to scar the cellophane (81a). I wiped the veins down and then applied gold leaf adhesive (usually called sizing) with a paintbrush (81b). Once I covered the whole surface I let the glue dry for 20 minutes. I cut about half my gold leaf into strips wider than the wing veins. Wearing gloves, I picked up one piece of leaf at a time and carefully lay it on the veins. I used a clean dry brush to gently smooth down the leaf and then placed another piece just overlapping the previous (81c). I continued until the entire wing was covered. After letting it dry for a few minutes, I used a dry paintbrush to gently brush away the excess leaf that had not adhered (81d).

Despite my best efforts I got some adhesive and gold leaf on the cellophane in a few places. I used a citrus-based cleaner and q-tips to take the excess off the cellophane cells (81e).

Unfortunately, the Tacky glue had come up in a few places and some gold leaf flakes had gotten between the cellophane layers. I used some painters tape to fish it out and then re-glued the weak areas with E6000.



(81a)



(81b)



(81c)



(81d)



(81e)



(82a)



(82b)



(82c)

Vinyl

The last big step for the wings was to give them a vinyl coat. I laid out my vinyl and placed one wing on top of it (82a). I then cut around the wing leaving a generous seam allowance. I laid another piece on top and repeated the process. Using a press cloth, I ironed the wing on the iron's lowest setting. I used a smooth circular motion and made sure to fuse as close to the frame edges as possible (82b). On the outer edges I had to use the iron for a little longer. Once the entire wing was fused I cut the vinyl on the outer edge down to $\frac{1}{4}$ " (82c).

Since the vinyl does not fuse to the metal, I glued the vinyl at the base of the wing. Despite Tacky's previous failure, I used Tacky for this (82d). I had done samples for the cellophane and vinyl with both Tacky and E6000. The vinyl and E6000 reacted very oddly—the E6000 make the vinyl bubble and ripple.



(82d)

Jewelry



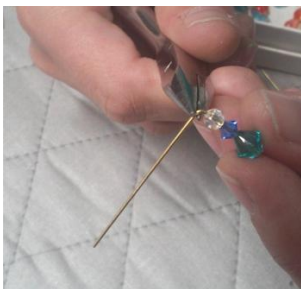
(83a)



(83b)



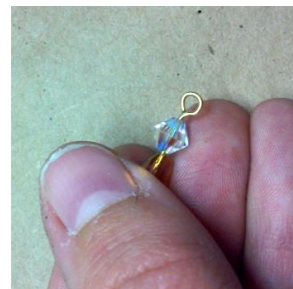
(83c)



(83d)



(83e)



(83f)

I noted the minor alterations I wanted to make to the chain lengths and marked where I needed holes for jump rings. I then had to disconnect my pieces far enough to be able to safely drill the holes. I used a 1/16" bit, using a piece of wood underneath. I filed down the rough edges of the newly drilled holes. I cut off the net which had proven to be unnecessary. Next I had to decide on the crystal placement (83a). After trying many different options, I made some decisions, with the gracious input of my sister Dani. I took pictures of each piece so that if any crystals got away before getting glued down I would retain the information.

I used Scotch tape to hold the pieces and crystals together in a tray (83b). I took the tray outside and used E6000 to carefully glue on the crystals (83c). Once the glue was cured, I reconnected all my pieces. I then decided on where I should attach some dangling crystals. Once decided, I made all of my dangle pieces which involved making rings on the end of headpins. This is done by making a 90° angle above the crystal and then using round-nose pliers to create a ring, snipping off the extra wire (83d-f).

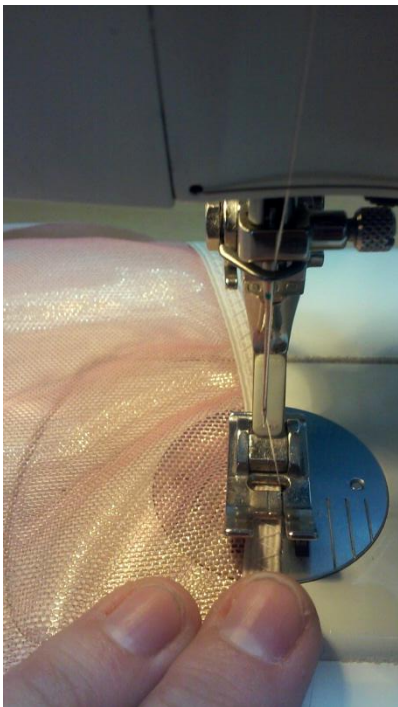


(84a)

Gauntlets

I revised my gauntlet pattern and cut out my pieces. I pinned some nude elastic to the inside edge of each end of the gauntlet so that the elastic was a little tight (84a). I then used a zig-zag stitch over the elastic, finishing each edge of the gauntlet (84b). I seamed the gauntlets with the overlock. I pressed the seam towards the back and then machine tacked the seam back at each edge.

Just as I had for the other jewelry pieces, I drilled holes in the brass pieces. However, not all of the holes were made to connect chain and jump rings. I made a few in the gauntlet pieces to be able to stitch through. After filing the holes I put the gauntlet sleeve on my dress form arm and placed the metal pieces (84c). I connected the jewelry pieces and then carefully tacked the metal pieces on in at least 4 places each.



(84b)



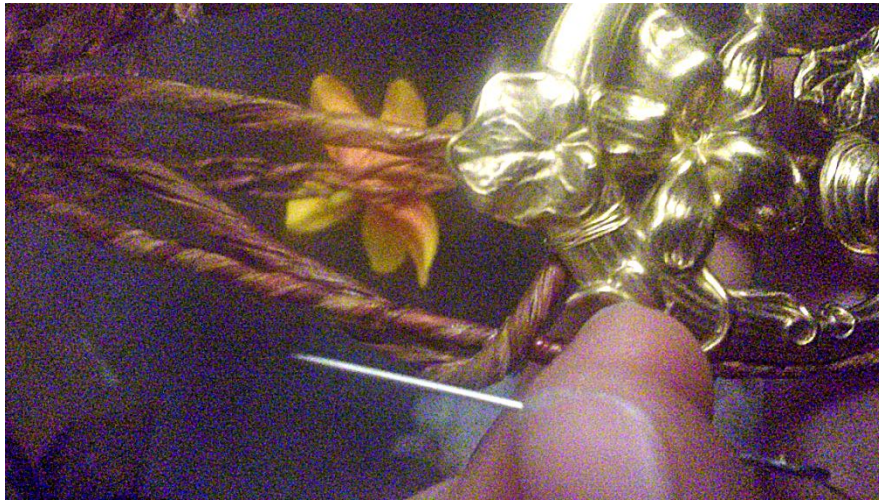
(84c)

Crown

I bent a long brass piece into shape and then stitched it to the back of the crown with wire, being very careful to hide the ends so as not to poke Reba (85a).

I arranged my flowers and stitched them on with plastic-coated steel beading line. I stitched directly through the plastic bases of the flowers to minimize the chances of them getting loose.

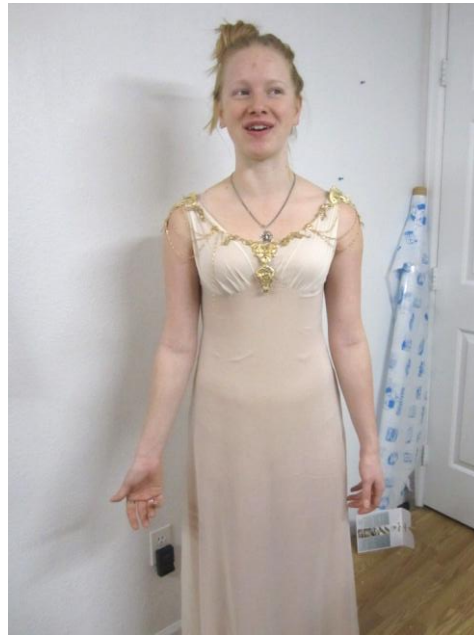
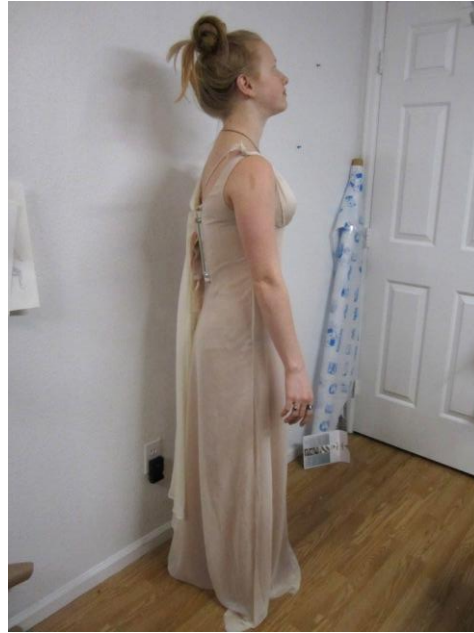
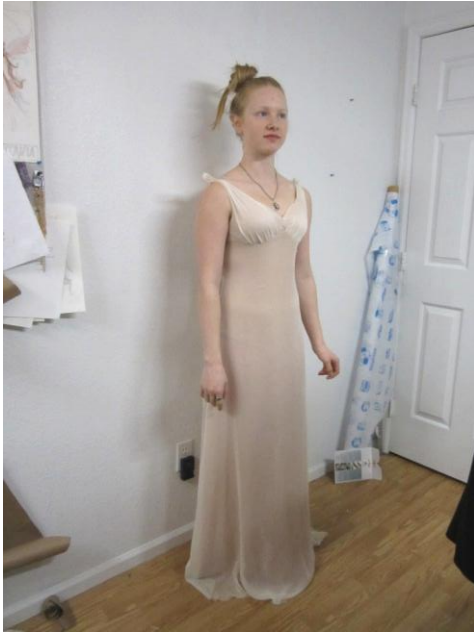
I decided to add a few more brass pieces near the temple. I drilled holes into these so I could connect some chain. Then, I stitched on the brass pieces as I had at the center back of the crown. I added some chain from the temple pieces to the edges of the back piece. I also added some crystals to this chain by bending some eye pins into connectors.



(85a)

Fourth Fitting

Dress



This fitting was really to check the hem since the back grain had been changed. I also checked the back drape. Reba brought her nude bra which she had not before. I noticed that the bust fit differently with some of the gathering disappearing. It turned out that the bra was significantly padded. I funded her to buy a nude bra that was unpadded like the other bra she had worn to the fittings. This is a perfect example of why the correct underwear is so important in fittings.

Finishings



(88a)

I put in the shoulder seams and tacked the seam allowance so it could not peek out.

I finished the outer/chiffon hem the same way I finished the edges of the back drape. I had to be very careful to keep it from letting out. For the mesh hem I carefully drew out my line and then cut it. I left the edge raw because this fabric does not fray and I did not want to add the stiffness a finishing would provide.

Lining up my jewelry pieces to their desired locations I marked where to put the snaps. I used E6000 to glue the “male” snap sides onto the jewelry pieces at center front and each shoulder as well as on the center back piece (88a). I did some stitching with wire on the front piece in addition to the glue. I stitched the “female” snap sides onto the dress at my marked locations.

Before I did this with the back jewelry piece I tacked the back drape into place (88b).



(88b)

Photoshoot

Prep Work

Tattoos

Reba has a tattoo on each ankle that needed to be covered up. I started by using alcohol activating makeup because it does not rub off the way cream does (90a). I disguised the tattoos with a coat of green and some lighter skin-tone colors. Then I mixed a cream color to match her skin tone and placed a light layer of this over the alcohol pigment. I used some transparent powder to set it.

Makeup

I wanted natural makeup. I went for some basic cover up and blush. I did a highlight on her cheekbones with a light gold. For her eyes I did a light gold for the lid with a darker gold in the crease. I used a gold eyeliner and black mascara. I added in some rose accents in the eye makeup. I also used an eyebrow pencil to accentuate her eyebrows.

Hair

I wanted some curl in her hair, but I also wanted to maintain the length of her hair as much as possible. Having seen Reba's hair done in a loose curl style before I asked if she would take point on curling her hair. She already knew what worked and what did not, so I thought it most efficient to do this. She was also faster than I would have been. We used a curling iron, then shook out her hair and hair-sprayed it.

Dressing

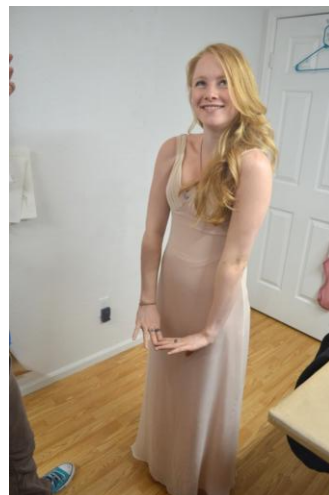
I started with the corset, lacing in the wing plate (90b). The dress and leotard were now one piece so they went on as one (90c). We then moved to our photoshoot location, CU. At CU we put on the crown and the wings.



(90a)



(90b)



(90c)

Conclusion

What I really love about the field of costume design and technology is the puzzle-solving aspect. This project kept presenting puzzles for me to solve and was challenging from start to finish. It challenged me to develop as a technician. The deceptively simple design proved to be an interesting draping challenge. My technical sewing skills were challenged and improved with the finicky fabrics I used. I was able to explore several areas of costume crafts and learn new techniques. I had never previously cut sheet metal, made a leotard, finished a knit, mesh and chiffon as one, gold leafed anything, or made a wing harness. I have come out of this project as a better draper, stitcher, and craftsperson.

I have found that even after already giving an incredible amount of time to this project, I wish I could have given more. As with every project, there are parts I would do differently if I were to do it over. I would have done the gold leaf once the wing frames were sanded and I would have glued all of the wings with E6000 including the cellophane. For the dress, I would have definitely ordered wider chiffon.

Nonetheless, I believe that this was a successful build. I achieved lightweight removable wings that have an air of enchantment. I was able to drape and construct a dress that was light and airy, but concealed a wing harness. I made accessories that were both functional and beautiful. Most importantly I captured the feeling evoked by the design.

There are more plans for this costume. I plan to do another photoshoot once the flowers bloom so the costume can be presented with a more fitting backdrop.



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