CHANGING PROPORTIONS:

This guide shows how to digitally rescale, reshape and change the proportions of your costume design. This will allow you, through Photoshop, to adjust your costume design in a way to fit the exact body shape of your actor. If you are new to the software make sure to refer to the “Tips for Beginners” guide first. You’ll learn the basics and some tips that will help you simplify the costume transformation and reshaping. It’s a good idea to become familiar with the basics before trying to change proportions.

Software: Adobe Photoshop CS and later versions

The original image from 1896 is shown on an idealized figure whose waist measurement would be 19 inches and her height (as illustrated) nearly 6 feet tall. We changed the proportions in the second image to show how the garment would appear on a normally proportioned modern actor.

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Please refer to this scheme when working. It will help you locate the tools and features that you will need.
HOW TO PREPARE YOUR FILE:

You will need:
- A scan of your costume design.
- An actor outline (to create a line drawing of your actor, refer to the "Outline" guide).

**Step 1:**
Open both documents: your costume design document and your actor outline document. Place documents side by side.

**Step 2:**
Select the costume from your design document by outlining the garment with the selection tool.
   → You will need the selection tools for this step. See page 10 for more information about the different selection tools available.

**Step 3:**
Click and drag the selected costume (which is surrounded by the dotted lines) from the design document into the actor outline document.
• **Step 4:**
  Click and drag the costume to position it on top of the actor. Then rotate it to match the actor’s posture.
  → For information on how to rotate an image, see ‘Scaling Frame’ on page 11.

• **Step 5:**
  Make sure the waist lines of both images superimpose perfectly.
  → The waist line serves as a reference point, providing a more accurate idea of the differences between the two images.

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**Tip:** After transferring the costume onto the actor outline document, lower the opacity of the costume layer to 70% in order to be able to see through the costume to the actor outline.
  → At the top of the Layers widow, next to Opacity, adjust the percentage.

• **Step 6:**
  Make a list of all the adjustments.
  → The instructions below will help you divide your list of changes into two main parts:
    The **Scaling** part and the **Shaping** part (each requiring different tools).

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**Part 1: SCALING**

Scaling is done in the main workspace (refer to Page 2 for orientation), and refers to changing the size and position of different sections of the image.

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• There are two main actions needed for this section: **Rescale** and **Reposition**.
  Both actions require the Scaling frame (Ctrl t).
  → Refer to page 11 for more information about the ’Scaling Frame’ and its different functions.

• The selection tools are needed to help make changes on a specific area rather than the whole costume (see page 10).
  → The tips below are suggestions to help you organize your procedure. It is up to you to decide how you wish to carry out the work on your costume.
TIPS:

- **Tip 1:**
  Before you start selecting and rescaling individual parts, start by rescaling and repositioning the entire costume.
  
  → **How:** Rescale the costume using one specific part to begin with (for ex: change the bodice to correspond to the size of the upper body of the actor). Do not worry about the rest of the costume; you will work on the remaining parts individually afterward.

- **Tip 2:**
  Use the waist lines as reference points. Always make sure they are superimposed exactly.

- **Tip 3:**
  Always work on the parts that needs to be rescaled first (needs to be smaller, bigger, larger or longer...) before you start the work on the parts that need to be repositioned (needs to be rotated or flipped).

- **Tip 4:**
  Work first on larger central sections (ex: Bodice and skirt), then change the small parts within (ex: sleeves).

- **Tip 5:**
  Always make sure to separate the different parts that you want to rescale (example: sleeve, bust, bottom...) on different layers. Copying the part on a new layer before scaling it makes your transformation process easier and cleaner.
  
  → See Instructions below to learn how to separate your elements and merge them back together afterwards.

![Scaling Frame](image)

The original skirt’s waist line was too small for the actress. Moving the top right corner of the scaling frame caused the top right corner of the skirt to move at the same time.
**ELEMENT SEPARATION:**

During **PART 1 (SCALING)** make sure to create a new layer for every new change:

**How:**

**Step 1:** Select the part you wish to rescale or transform.
- See page 7 to familiarize yourself with the selection tools available.

**Step 2:** On your keyboard: Press **Ctrl c** > Press **Backspace** > Press **Ctrl v**.
- The selected part of the costume that you wish to change will be automatically copied on a new layer.

When you finish **PART 1 (SCALING)** and before you start **PART 2 (SHAPING)** make sure to merge the parts of your costume so that the costume will react as a whole.

**How:**

**Step 1:** On your keyboard: Hold your finger down on the **Ctrl** Key.

**Step 2:** In the **Layers** window: Click on all the layers that contain the different elements of your costume.
- Make sure to keep your finger on the **Ctrl** Key.

**Step 3:** After you finish selecting all the layers, right-click on one of these layers > Select **Merge Layers** from the pop-up window that appears.
- You will notice that all your different sections will merge to form one complete costume on a single layer.
To find this screen, go to the **Menu bar** and choose **Filter**. From the pull down menu, choose **Liquify**

Please refer to this scheme when working. It will help you locate the tools and features that you will need.
Part 2: SHAPING

This section is done in your Liquify workspace (refer to previous page for orientation).

Important: Make sure to save your work, by pressing Ctrl S on your keyboard, before starting this step.

- **Step 1:** Select the layer that contains your costume design.

- **Step 2:** Go to the Menu Bar: Filter > Liquify.

- **Step 3:** Lower the Opacity of your costume to make it transparent. This will allow you to make your changes more accurately by following the exact lines of your outline’s actor.

  **How:**
  - On the right side of your screen (at the bottom) > click Show Backdrop.
  - Next to Use: Choose the layer of your outline.
  - Next to Mode: Choose Behind
  - Next to Opacity: Lower the opacity until the actor outline can be seen clearly through your costume design.

- **Step 4:** Go around the edges of your costume with the Forward Warp Tool to reshape them and make them correspond to the outline of your actor’s body. Work from outside the shape to diminish areas, and from inside to increase areas.

  → Refer to page 12 for more detailed information on how to use the Forward Warp Tool.

- **Step 5:** Keep using the Forward Warp Tool but now reshape the parts inside your costume (ex: women’s bust line). The Forward Warp tool can be used to make areas larger, such as increasing a bust size. It can also be used to make areas smaller, such as diminishing a waist size. To enlarge, place the tool inside the area and pull toward the outline, as though stretching the image. To diminish areas, place the tool outside the area, as though you were pushing the area inward to make it appear smaller. This is a popular tool for photographers who are retouching images.

  → Refer to page 12 for more detailed information on how to use the Forward Warp Tool.
• **Step 6:** When you are satisfied with the changes, click **OK** to return to your main workspace.

**Tip:** You may wish to protect the surroundings of the area you intend to enlarge or reduce with the **Freeze Mask Tool**. This is particularly useful if you have a pattern on your design. It will protect the area that you are NOT working on from distortion.

→ Refer to page 12 for more detailed information on how to use the **Freeze Mask Tool**.

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**Final step: Cleaning**

Return to your **Main workspace** (refer back to Page 2 for orientation).

• **Step 1:** Select the layer of your costume.

• **Step 2:** You may find sections of your drawing that have separated from the rest of the costume during the repositioning phases, which causes cracks or blank areas. Fill the small empty areas in your costume by using the **Clone Stamp Tool**.

→ Refer to page 11 for more detailed information on how to use the **Clone Stamp Tool**.

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**Step 3:**

Use the **Eraser Tool** to remove any unwanted details. Refer to page 8 for more detailed information on how to use the **Eraser Tool**.

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**THE “HOW TO” SECTION:**

Refer to this section for more information about the different tools and features mentioned previously.

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**SELECTION TOOLS**

Selection tools are used to isolate specific sections of the illustration that need to be handled individually. Different selection tools are used for different purposes. The following section gives tips on which tool suits which purpose, and how to use the tools effectively.

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**THE LASO TOOL:**

- Go to the Toolbar: Click and hold your mouse down over the **Lasso Tool** to see the three different versions that you can use.

  1. **Lasso Tool**
     - Drag with the Lasso tool over your image to make freehand selections. This makes a curved selection around your image.

  2. **Polygonal Lasso Tool**
     - Click; don’t drag, on the corner points of your image. You will notice that straight lines will link the points to each other. Finish your selection by returning to your starting point and clicking. The Polygonal Lasso Tool allows you to outline the area with straight lines at any angle you choose.

  3. **Magnetic Lasso Tool:**
     - This tool has the characteristic of clinging to the edges of contrasting objects. Drag your cursor around the edges of your area. Keep going until you trace the whole contour and return to your starting point. The Magnetic Lasso Tool should give you a selection that corresponds exactly to your image, by clinging to the curves of the image.

**Tip:** After selecting the tool you want, go to the Options bar and adjust the **Feather**. Make sure to do this before you start your selection. The **Feather** determines how crisp the edges of your selection will be. The higher the number, the more faded away these edges will become.

- This will be particularly useful when you rotate or reposition a part of your costume. It will help you make the edges blend into each other, diminishing the collage effect.

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**THE PEN TOOL:**

- Go to the Toolbar: Select the **Pen Tool**.

- Go to the Options bar: Select the **Paths**.
  - The Pen Tool creates vector paths which later can be converted into selections.

- Click on your image with the Pen Tool. Every time you click, a new **Anchor Point** will be created. By default all these anchor points will be connected by straight lines. If at any point you wish to have an adjustable connection line instead, make sure to **click and drag** with your pen tool instead of just clicking. This will automatically “equip” your new anchor point with a Tangent Line that will allow you to adjust the shape of the connection line that will join your new anchor point with the previous one.
**Very Important:** A Tangent line affects the shape of the connection lines that link your current anchor point with the previous anchor point as well as the next one. If you wish to avoid affecting the next connection line, make sure first and before you create the next anchor point, to hold down the **Alt** key and click on your current anchor point. This will restrain your tangent line and prevent it from affecting the shape of the next connection line (you should see half of your tangent line disappear).

- Keep creating anchor points until you reach back the first one you created. When you get back to your starting point click on it to close your path.
  
  → **Very important:** you cannot convert your path into a selection zone unless it is closed.

After you finish drawing your path, you might judge that you still need to make few adjustments to it before converting it into a selection zone. See below to learn more about how to make these adjustments.

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**How to make adjustments to your drawn path:**

1-To reposition an anchor point:
   On your keyboard: Hold down the **Ctrl** Key, then click and drag any of the anchor points.
2- To Adjust the Shape of a connection line:

**Step 1:** On your keyboard: Hold down the **Alt** Key then click and drag on the anchor point:
- The connection lines on both sides of the anchor point will become modifiable.
- A Tangent line with two end points will be formed.
  → The **Tangent Line** will allow you to change the shape of the connection lines on both sides of the anchor point.

![](image1.png)

**Step 2:** Hold Down the **Alt** Key again, then click and drag the end point of the Tangent line to reshape the connection line:
- Click and drag the left end point to modify the connection line on the left side of the point.
- Click and drag the right end point to modify the connection line on the right side.

![](image2.png)

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- Once your image has been outlined by the pen tool, **right click** on your image. A Pop-up menu will appear > **Click on Make selection.**

- A window will open, in which you can decide the **Feather** and then click **OK.**
  → The last 2 steps will turn your path into a selection area.

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**SCALING FRAME (Ctrl t)**

The scaling frame is useful for making changes to the size and proportion of an image.

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- After selecting the area that you want to adjust, press **Ctrl t** on your keyboard.
  → You will see a rectangle appear around your selection, which is the **Scaling Frame** (see page 2).

- Click and Drag any of the anchor points on the scaling frame to make any changes you want:
1- **To adjust the length or width.**
Click and Drag the anchor points on the top, bottom or either side of the frame.

2- **To adjust the size of your area while maintaining proportions:**
Click and drag the anchor point on the corner, while holding down the **Shift** Key on your Keyboard.
3- To change the position of your corner (without affecting the other points):
On your keyboard: hold down the Ctrl key, then click and drag the corner point. This will stretch that section of the image.

![Scaling Frame](image)

By clicking and dragging the corner points of the Scaling Frame you will be able to modify the shape of your area or give it a sense of perspective.

4- To flip your selected area:
Go to the Menu Bar: Edit > Transform > Choose Flip Horizontal (to flip from top to bottom) or Flip Vertical (to flip from right to left).
5- **To rotate a selected area:**
Place your cursor around the Scaling frame. When you see a curved arrow appearing, click and drag in the direction you want to rotate.

![Scaling Frame]

**Useful Tip:** On your Keyboard: Click **Ctrl j**.
This normally will allow you to make a copy of your layer, but if you have a selected area within this layer, then it will only make a copy of this selected area on a new layer. These specific selections will be useful at a later point.

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**Clone Stamp Tool**

- Go to the Toolbar: Select the **Clone Stamp Tool**.
  
  This tool allows you to sample a part of your image and later clone (or copy) it in a different place. This can be very useful when repairing an area that is flawed, because it creates a matching patch by copying the surrounding areas.

- On your keyboard: Press Down the **Alt** Key and then click on the area of the image that you wish to clone.

- Go to the part of your image where you want to apply the cloning, then click and drag over the broken area to apply the surrounding color and texture.

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**Eraser Tool**

- Go to the Toolbar: Select the **Eraser Tool**.

- On your image: Drag over the areas you wish to erase.

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**LIQUIFY Filter**

- The Liquify workspace (refer to page 3 for orientation) will allow you to reshape your image using 3 main tools:
  
  - **Forward Warp Tool**
  
  - **Freeze Mask Tool**
  
  - **Thaw Mask Tool**
• To Reshape your Image:

- Select the **Forward Warp Tool**.

- Click and drag to make the changes you want.  
  → The Warp Tool allows you to move pixels around without too much distortion. Use it to go around the edges of your subject to enlarge or reduce areas.

• To Protect an area:

- Select the **Freeze Mask Tool**.

- Click and drag to paint over the area you want protected from any changes.

  → To erase the mask created by The Freeze Mask Tool, select the **Thaw Mask Tool** and go over the part of your Mask that you want removed.

• To change the Width of your tools:

- Go to the right side of your screen, and under **Tool Options** you will find **Brush size**.

- Click on the arrow next to **Brush size** to adjust the width of your tool.

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**Final Thoughts**

In theater, it is often the case that the actor will only be chosen long after the designs have been made. With our system, the costume illustration can be made in advance, and then proportions can be reworked once the actor has been cast. The process of changing an illustration’s proportions allows the designer and director to review the designs and see what they will look like using the specific proportions of the actual actor. It allows for modifications to be made to the style in order to make the garment flattering for the actual body shape, rather than the imagined ideal. This can be particularly useful when there is a big discrepancy between the original design and the actor’s shape.

Changing proportions digitally allows us to see how any garment will look on an individual person, which means that any changes to the style can be made on the drawing board, rather than in the fitting with a garment that has already been cut and sewn. This saves both time and money, while allowing the wearer to see exactly how the garment will look before one stitch has been made.