CREATION OF DIGITAL FABRICS

Costume illustrations can be customized by adding images of the actual fabric that will be used to make the garment. Fabric images, or textures, can be found on the internet, or can be made from actual fabrics. In this guide, we will demonstrate how to create and save digital fabric images. In our next guide, **Working with Digital Fabrics**, we will show how to integrate the digital fabrics into the costume illustration.

This is part of an antique kimono that we scanned to use as a background image on our website.

WHERE TO GET THE FABRIC IMAGE:

Option 1 – Internet:
There are web links that provide pattern images for everyone to use. Try searching under the keywords "fabric textures".

Limitations of internet sources:

1- It is not always possible to find the exact fabric you wish to have despite the amount of images that the internet provides.
2- There is a scarcity of good quality high-resolution pattern images, particularly for free usage. The quality of many currently available fabric images is often inadequate if you are planning on printing your final costume design. Internet images are often at a resolution that will look alright on screen, but will be overly pixilated when printed.

Option 2 - Scan your own fabric:

1- This will give the exact fabric that you wish, and will give total control over image quality.
2- It's often quicker to scan your own fabric than to search through sites.
3- By using your own fabric, you can compile a collection of ready to use virtual fabrics.
→ *Refer to* **How to Scan a Fabric** *guide.*

IMPORT THE FABRIC PATTERN IN PHOTOSHOP:

Step 1 - Once you have scanned a fabric or downloaded a fabric image from the internet, you are ready to begin. Go to the Menu bar: **File** > **Open**

Step 2 - In the **Open** window: Find the pattern file that you wish to use on your computer > Click on the file to select it > click **Open.**
→ *Your file will appear automatically in your main Photoshop workspace.*

Before moving to the next step, let's talk about what **Resolution** means and why it is important when working on Photoshop. Files that are intended for print require a different resolution than files meant for screen viewing only.

If you already know about the resolution of images you can skip to the next step to learn how to check your file's resolution on Photoshop.

What is Resolution?
The resolution is measured in **Dpi** (Dots per Inch). The dots are also called **pixels**. By measuring the resolution of an image you'll be able to know how many Dots (or pixels) can be placed within an inch of that image. Digital images are constructed by accumulating and gathering dots. If you don't have enough dots to "build" your image, you'll have "gaps" within it. This is what we call a pixilated image.
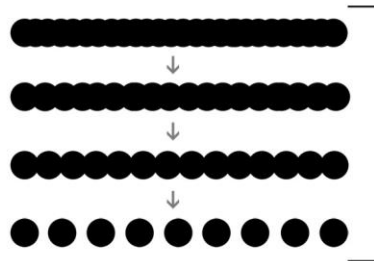
One Dot.
(In reality the digital dots or pixels are square. We only used a circle to have a clearer example.)

A clear black line. The dots that form this line are not visible.

You can see what happens when we take dots away from the line. The more dots we take away, the worse the line looks.

The same thing happens with images. When you can percieve the pixels within an image it means it's missing the necessary number needed for its construction. This is when an image is called pixilated.

You've probably seen the pixilated effect when attempting to magnify an image. Increasing the size of an image means reconstructing it on a bigger space, which in turn means you will need more dots for it. If your image is a low resolution image to begin with, that means it only has the bare minimum number of pixels needed. When attempting to make the image bigger you won't have enough dots to reconstruct it, leading to a pixilated image.

Three important points concerning the resolution:

One: The resolution you need for a particular image depends on where you plan to view it. An image needs <u>less</u> "Dots" to be constructed on a screen than on paper. The general standard numbers are: 72 Dpi for web images and 300Dpi for images meant to be printed.

Two: You can always decrease but NEVER increase your resolution. In other words if you originally have a 72 Dpi file, changing its resolution to 300 Dpi only means you increased your image's dot capacity but not the actual number of dots themselves. Photoshop, or any other program, doesn't create dots for you. If you don't have them from the beginning you won't be able to produce them.

Of course the other way around is possible: if you have a large file of 300 Dpi you can lower its resolution to 72Dpi. This will lead to decreasing the dot capacity as well as the number of dots in your image to the bare minimum. Usually this is done to lower the size of an image for ease of e-mailing or downloading.

Third: The higher the resolution, the heavier your file will be. Having a smaller size is useful for faster online web display or email attachment. If you're sending an image only meant to be viewed on screen, 72 Dpi is sufficient. Lowering the resolution will help you decrease the size of your file by few hundreds and even thousands of Megabytes, which makes it much easier to download.

How to check the resolution of a file:

Step 3 - Go to the Menu bar: **Image** > **Image Size**
→ *A small window will open.*

Step 4 -In the **Image Size** window: make sure that **Pixel/Inch** is selected in the small drop down menu to the right of **Resolution**

Step 5 -The number written next to **Resolution** is the resolution of your image.

When you check your file's resolution, one of the three following cases will most likely be presented to you:

- Case1: your image is 72 Dpi, most common with images found on the internet. If that's the case this image is only useful when viewed on screen. If you're planning on printing your design, a 72 Dpi image is useless to you.

- Case 2: your image is 300Dpi. This is a perfect resolution to work with, because in most design cases you will need to print your design at some point, so it's essential to work with a 300 Dpi file.

- Case 3: Any number between the last two. You might find a 96, 180, ~230 or ~260 resolutions, among others. In most cases any resolution below 180 renders the pattern image unusable, anything higher will depend on your Photoshop skills and the complexity of your pattern.

Very important:
At a later point in the process you will adjust the resolution of your pattern to 300 Dpi, so the closer the initial resolution is to 300, the better and easier your work will be.

CROP YOUR PATTERN:
When you open a new image of a pattern on Photoshop, the first things you need to do:
1- Decide which part you wish to use.
2- Make sure your pattern's image is a square. This isn't essential but a square shaped pattern is the standard shape widely used, and it will help you make your work easier and more efficient in subsequent steps.

Step 1 - In the Toolbar: Select **Crop Tool**
→ *The Crop tool allows you to select a particular area of your image and get rid of whatever remains around it.*

The darker area outside the Crop frame represents the part that will be "cropped out" or removed from your image once done.

Step 2 - On your keyboard: Hold down the Shift Key
> *→ Holding down the Shift key while cropping will allow you to have a perfectly square shaped crop.*

Step 3 – Start cropping your image by creating a frame around the part of your pattern that you wish to keep.

    How: Click and hold down your cursor on the top left side of the part that you wish to keep, then drag it toward the bottom right corner > Unclick then let go of the **Shift** Key of your keyboard.
> *→ After you unclick, the area outside of your crop will become darker to indicate which part will be removed.*
> *→ A Scaling Frame with eight different anchor points will appear around the part you selected. These anchor points will allow you to resize your square.*

Step 4 - If you're satisfied with the selection, Click **enter** on your Keyboard. If not, move to Step 5, before pressing **enter**, to learn how to move your Scaling frame or adjust its size.

Step 5 - To change the placement of your Scaling frame, place your cursor inside the frame, then click and drag it around until you're satisfied with its placement

    -To adjust the size of your frame: Hold down the **Shift** Key on your keyboard again, then click and drag any of the four corner anchor points:
    1- To make it bigger, drag the corner anchor point toward the outside of the frame.
    2- To make it smaller drag it toward the inside.

Step 6 - When satisfied Press **Enter**
> *→ After pressing **Enter**, everything outside of the Scaling Frame will be removed, leaving only what you have selected.*

The Final
Cropped image.

Step 7 - Go to the Menu bar: **Image** > **Image Size**
> *→ A small window will open.*

Step 8 - In the **Image Size** window, adjust the following features in the same order indicated:

    1- **Resolution** should be preferably at 300 Pixel/inch

2- At the bottom of the window: **Constrain proportions** should be checked.

3- At the top of the window, under **Pixel dimension**: set the **Width** and **Length** to 512 pixels

Step 9 -Press **Ok**

Important: It is at that point where you can see if the pixilated effect isn't too damaging to your pattern and if it is easy to fix. It all depends on the complexity of your pattern and your Photoshop cleaning skills. If the change in resolution damaged your pattern too much you may have to find a better quality image.

SEAMLESS OR NOT:

At this point you should have a high resolution, square shaped pattern. The next thing you need to do is make sure your pattern is seamless. When your fabric is seamless, it means that your fabric will appear as though the amount is limitless in all directions.

Step 1 - Go to the Menu bar: **Filter** > **Other** > **Offset**
→ *the Offset window will open.*

Step 2 - In the **Offset** window:

1- Make sure **Wrap around** at the bottom is checked off.
2- On the top of the window: Set the **Horizontal** and **Vertical** to half of your image's actual width and length. In our case both are 512, so write 256 next to each one.

You can see the effect of the **Offset** filter on your image before clicking **Ok**. If the image appears to be divided into four parts (you will see a distinguishable vertical or horizontal line or both), that means your pattern is not seamless. If your image looks perfectly homogeneous, then your pattern is perfectly seamless. If this is the case then skip the next parts and move to the "SAVE YOUR PATTERN" section.

Step 3 -Press **Ok**

Understanding Offset:

When a pattern is called seamless, it means the pattern could be repeated indefinitely (horizontally or vertically) without showing any dividing lines between one "copy" and the next. In other words, its right side should be perfectly continuous with its left side (for horizontal repetition) and its bottom side should be continuous with its top one (for vertical repetition).

One obvious way to know if that's the case is to create several copies of the original pattern and then position them manually next to each other in all directions to see if any division lines will appear.

The **Offset** filter offers a second more practical way to determine if your pattern is seamless. It divides the original pattern image into four parts and repositions these parts in a way that makes their outside borders (top, bottom, left and right) meet within the pattern itself allowing us to compare right away.

The illustration bellow will help you see visually what happens when you "**offset**" a pattern:

Below you can see an example of how a pattern that is **not seamless** looks after applying the Offset filter.

Original Pattern

→

After the Offset filter is applied:
We can see clearly the vertical and horizontal demarcation lines. These lines indicate that the pattern is not seamless.

If your pattern turns out to be non-seamless, it means you will need to "repair" it.

MAKING THE PATTERN SEAMLESS:

The **Clone Stamp Tool** is used to repair the offset joint lines.

What is the Clone Stamp Tool?

The Clone Stamp tool allows you to sample an image, which means to copy a part of that image, and then use that particular sample to paint a patch at any other place in the image. In the particular "pattern repair" situation this tool will allow you to get rid of the demarcation lines by painting over them with samples taken from similar areas surrounding the line.

Most often you will need to work on small and specific areas within your image so it's essential to know how to zoom in and out on Photoshop. Zooming in on area will allow you to have a cleaner and more precise result at the end so before going any further, refer to **Tips for beginners** guide if need to learn more about zooming in and out.

How to use the Clone Stamp Tool:

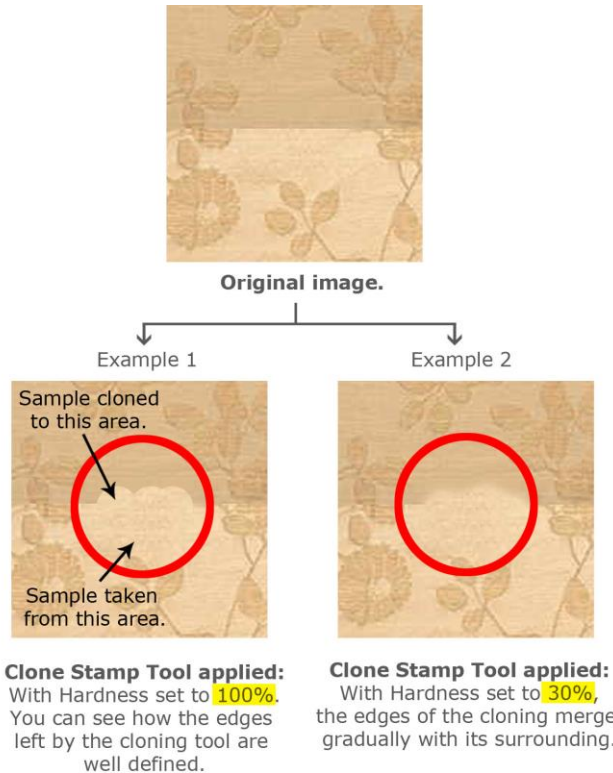**Step 1** -Go to the Toolbar: Select the **Clone Stamp Tool** .

Step 2 -On your keyboard: Press Down the **Alt** Key and then click on the area of the image that you wish to clone (or sample).

Step 3 -Go to the part of your image where you want to apply the cloning (for example the demarcation lines), then paint over it by clicking several times over that part, or by clicking and dragging as with a paint brush.

For more effective use of the Clone Stamp tool, especially when it comes to pattern repairs, you will often need to adjust three main features throughout your process for a better and smoother work. These three features are: **Hardness**, **Master diameter** and **Opacity**

Hardness: The hardness indicates the sharpness of a tool's edge. The higher the hardness of your Clone Stamp Tool, the more defined its edges will be. This feature is particular useful, because

decreasing the Hardness of your Clone Stamp tool will allow its edges to blend into the surrounding area, rather than remaining crisp.

Original image.

Example 1   Example 2

Sample cloned
to this area.

Sample taken
from this area.

Clone Stamp Tool applied:
With Hardness set to 100%.
You can see how the edges
left by the cloning tool are
well defined.

Clone Stamp Tool applied:
With Hardness set to 30%,
the edges of the cloning merge
gradually with its surrounding.

How to change the hardness of a tool:

Step 1 - Go to the Options bar > click on **Preset Picker**

Step 2 - Change **Hardness** to adjust the definition of your tool's edges.
→ Increasing the Hardness will make the edges of your tool more defined.
→ See image below to learn how to adjust the Hardness of your tool.

By moving the cursor or changing the
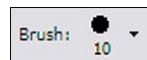percentage you can change the hardness
of your tool.

Master Diameter:

The master diameter of a tool is its size. Throughout your work you will need to adjust the size of your tool depending on the area you wish to clone over. It's better to keep the size of your Clone tool small to assure the least damage possible to your pattern.
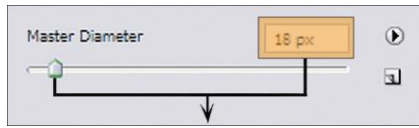
How to adjust the size:

Method One:

- Go to Options bar > click on **Preset Picker**

- Change **Master Diameter** to adjust the size of your tool.
  → See image below to learn more about adjusting the Master Diameter of a tool.

By moving the cursor or changing the pixels you can change the size (the width) of your tool.

Method Two:

-On your keyboard: Hold down the "**]**" key to make the stroke bigger and the "**[**"key to make it smaller.
-When you're satisfied with the size of your tool, take your finger off the key.

Opacity:

The Opacity of your tool defines its transparency. Lowering the Opacity renders your cloning more transparent. Adjusting the opacity of your tool will prove to be extremely helpful, especially when the difference between the area you're sampling from and the area you wish to clone to is significant. In these cases lowering the Hardness alone will not merge the two areas perfectly together; while the **Hardness** decreases the intensity of the edges, the **Opacity** decreases the intensity of the entire clone. This makes the gradation from one area to another more subtle by adjusting the Opacity instead of just adjusting the Hardness alone.

Clone Stamp Tool applied:
With Hardness set to 30%, the cloning is merging with its surrounding but it's still not enough.

→

Clone Stamp Tool applied a second time:
The Hardness is still set to 30% but this time the opacity is set to 50% the first time, then to 30% on the second use.

How to adjust the opacity:

-Go to the Top bar > Adjust the percentage number next to **Opacity**

Very Important:

To achieve the desired effect from the Clone Stamp Tool you may need to adjust the hardness, size and opacity several times throughout your process, depending on the complexity of the pattern you're working on. Multiple passes over the cloning area may be needed to achieve the desired effect.

<u>SAVING THE PATTERN:</u>

After completing the cloning and cleaning, when you're completely satisfied with your pattern, you will need to save it into your Photoshop's library of patterns. This is essential for you to turn the simple image of a pattern to an actual seamless pattern that you can use on your costume design.

<u>How to save a pattern:</u>

Step 1 -Go to the Menu Bar: **Edit** > **Define Pattern**
> → *A window will open*

Step 2 - In the Pattern Name window: define the name of your new pattern > Press **OK**
> → *The pattern is now saved in Photoshop. To know how to use it in your costume design, refer to the* ***Working with digital fabrics*** *guide.*
> → ***Very Important:*** *Make sure you keep your main PSD file of the pattern. Saving it in Photoshop's library only allows you to use the pattern but not to actually save it, which means if you loose your main file you will loose the pattern.*

FINAL THOUGHTS:

Digital textile images have numerous uses, not only in costume illustration, but in all types of visual design. They can be used as textures by video game designers, surface treatments in package design, and for visual interest in desktop publishing. The subtlety and wide variety of fabrics can become an astounding inspiration in any creative process.