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Photoshop for Comics
MASTER COURSE
Pat Duke
First
Edition

Photoshop for Comics MASTER COURSE

by Pat Duke

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Photoshop for Comics: Master Course
First Edition

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Foreword

There’s a revolution going on out there. Computers have changed the entire face of comic creation. In a few short years, it’s become as important for comic artists to know how to use Photoshop as it is to use a pen or pencil. As creators, we’ve never enjoyed so much control over our own work. As an industry, we’ve had an opportunity to make some of the most visually exciting comics ever produced. The most exciting aspects of these developments are centered around independent creators. Now, for the first time ever, individuals can produce material that rivals the quality of any large company, all from the comfort of their own home. Computers level the playing field allowing anyone with a solid idea to compete in the marketplace. But to participate in this amazing renaissance you have to learn how to tap the amazing power of Photoshop.

Photoshop is a complex program, make no mistake. You can spend years learning to master it. But don’t let that intimidate you; most of what you need to get started can be taught to you in a day. And once you get started, you’ll soon join the ranks of artists who realizing everything they can dream. Viva la revolution!

-Pat

Introduction

This book isn't meant to be a replacement guide to your Photoshop manual. In fact, this book presumes you have a basic working knowledge of the program. It's recommended that you study at least the principle tools and functionality of the software in the Photoshop manual.

What this book does offers you is an advanced look at how to use Photoshop in a very specific way --in the creation of comic imagery.

As the old adage goes, "There's more than one way to skin a cat." This is especially true with software as complex as Photoshop.

Wherever I can, I outline strategies for accomplishing tasks that you, as a comic artist, are likely to encounter. These strategies aren't always written in stone. Your mastery of Photoshop will never be complete without a personal exploration of what the program can do. One, this will lead to new and possibly better techniques. Two, if your method of working is unique to you, your imagery will avoid the typical cookie-cutter look that's so easy to fall into by artists who book-learn their software.

Photoshop is an amazing tool. I don't think there's anything that you can imagine that can't be realized in Photoshop. We're all aware of the astonishing advantages Photoshop offers us. But like any tool in an artist's arsenal, it comes with *limitations* as well as advantages. One of these limitations is that most people don't stray too far from the presets and natural "look" of the software. As more and more professionals turn to Photoshop to help them realize their work, the audience awareness of the tools we use will also increase. The visual lexicon of "typical" Photoshop techniques will become trite if overused.

In other words, your work is in danger of taking on a terribly generic feel if you don't bring a little of yourself to the table.

I see so much work lacking any individuality, using only the basic Photoshop tools and filters, I even have a name for it. I call it "Close to the Box." This means they're using only the most novice functions of the software, producing entirely cliche work. We see this already with lens-flares or excessive dodging and burning of images. These are normally valid tools, but when they're overused they look cheap. Worse, these techniques are easy to identify and everyone knows they're easy to generate. Push-button art has no value.

With this in mind, I encourage you to think of the techniques I've outlined as good suggestions, not rules. Feel free to experiment and try different approaches. I assure you, they're there. This is the richest Photoshop ground that can be mined --and the time you spend here will be invaluable to your growth.

If I had to give only one piece of advice to young Photoshop artists it would be this: "Listen to your artistic instincts." It's easy to laud Photoshop for what it makes possible and it's easy to get caught up in technique. But in the end, it's the artist who directs the tool to produce the art, not the other way around. Photoshop is just a bunch of code. It's the artist's ***vision*** which breathes life into the work and makes it relevant. Adobe's programmers are good, but they'll never make a filter that can replace your instinct.

So have fun experimenting! And if you happen to find something interesting, be sure to pass it along!

So why is this book on CD?

Much of this book is derived from a series of popular articles I wrote in Mangaphile. The individual issues proved difficult for many people to obtain and it became clear that they needed to be collected into one easy-to-get volume. Since the articles were being compiled, it made sense to update the information and add some entirely new chapters. Unfortunately, the page count was getting larger and larger. Add to this the fact that I wanted the entire thing to be in color, I was looking at a ***very*** expensive low-run book. During the rewrite, it occurred to me that people who were interested in using Photoshop were likely to have computers of their own. Coincidently, at about the same time I was mulling over this problem I attended an Adobe seminar designed to introduce publishers to the latest version of Adobe Acrobat. The rest is, as they say, history.

Using a CD made perfect sense. I could make the project as long as it needed to be, it could be in color, it would be cross-platform compatible for both Mac and PC users, I could include additional materials like movies, sample pages, color swatches and other goodies. But most importantly, I could keep the price down. Bulk CD replication has become very affordable recently, while the cost of commercial offset printing has steadily risen. Keeping the price low was crucial to me because the target audience for this book has always been aspiring comic artists. As an artist myself, I saw both the need for this information to be made available and at a price that anyone could afford.

This PDF file is print-enabled, for those of you who prefer hard copies. It is formatted horizontally to better fit your computer screen. It also supports hyperlinking to the internet and text searches, for your convenience.

This book contains no index because it is searchable in Adobe Reader.

Book Notation Conventions

For the purposes of brevity, all references to keyboard commands are PC-specific. Mac users please substitute the "Command" key for "Control" key. So, in this book the shortcut for opening a file appears as **[ctrl]O**. Likewise, Mac users should also substitute the "Option" key for the "Alt" key. Keys listed inside brackets must be pressed simultaneously with the character/s next to it.

For options located in pull-down menus, the following notation is used: **[image>mode>rgb color]**. Simply locate the "Image" pull-down menu at the top of your Photoshop window, scroll down to the "Mode" option and select "RGB Color."

This document supports hyperlinking to the internet. Words highlighted in blue and inside small boxes are actually direct links to the net. Sample:

Google.com (http://www.google.com)

Clicking on them will launch your preferred browser and take you directly to that site.

Book Updates

Unlike normal books, updates and corrections to this book can be uploaded to the net. Additional bonus files may also be made available. You can check for updates on the special **Photoshop For Comics** subsection of my site using this link:

Photoshop For Comics Updates
(http://www.patduke.com/pfcmc/)

Please check for updates on a regular basis. There are a number of topics and additional effects chapters that are planned and will be made available exclusively online.

Bonus Goodies on the CD

In addition to the book, this CD contains some additional material you may find useful.

Located in the folder titled “goodies” there are several folders, each containing bonus files.

In the folder “actions” I’ve included several pre-scripted action files that can automate some of the more tedious or complicated effects and procedures. These can be real time-savers. To use these bonus actions, you can load them off the CD from the actions palette using the “load actions...” command in the pull-down menu. Be sure to save your own custom actions before you do this in case something goes wrong.

Located in the folder titled “artwork” you will find several scanned pieces of art, suitable for practicing your Photoshop skills on. These pieces are copyright © to their respective owners, so don’t go publishing them when you’re finished. However, they are teaching aids and you’re given permission to use them as such.

You will also find the finished tutorial files with layers preserved in case you wish to study them in close detail.

Located in the folder titled “brushes” you will find some custom brushes. I’ve recreated the default brushes from previous versions of Photoshop because they’re used extensively in this book. They’re also very handy. To install them, copy the files into the brushes directory of the Photoshop application folder. Or, you can load them from the brushes palette using the “load brushes...” option in the pull-down menu.

Again, be sure to check the Photoshop for Comics: Master Course update web page for new bonus goodies. ■

1 Hardware

Getting Started

Before you can get serious with Photoshop you have to get serious about hardware. While most modern computers can run Photoshop getting the right equipment will save you time, money and a lot of frustration.

PC or Mac?

A quick word about platforms. The PC vs. Mac question is, for many, a passionate debate. Most people have a definite preference one way or the other; and quite a number of them are very vocal about their opinions. The fact of the matter is that neither platform is categorically better than the other. Both have their advantages and their disadvantages. While PC's tend to dominate the computer market in general, Macs have had a traditionally strong presence in graphics applications. In case you were wondering, I use both platforms. In comics, it has been my experience that the platforms are split roughly even. The good news is Photoshop runs nearly identical on PC's and Macs. The only way to make an

informed choice is to try both platforms personally. You can ask friends to use their machines or even go to the local computer store and test-drive some of the floor models. If you're undecided about which platform to invest in, ask yourself several important questions:

•Which platform do you feel more comfortable using?

This is probably the single most meaningful consideration. Deadlines are a harsh reality in comics, so the less time you spend fighting the operating system, the more time you'll have to concentrate on your work. Will the system you use be reliable when it comes time to crunch on a deadline? Will you, or someone you know, be knowledgeable enough to troubleshoot any problems with the machine?

Having used both PCs and Macs for many years, I can say that Macs are generally easier to learn and maintain. The MacOS is highly intuitive and well-designed. Windows, on the other hand, is more involved and has an annoying tendency to develop problems, seemingly for no reason at all. However, Windows has far more users, so if you're looking for help you're much more likely to find someone who has experience on the PC. With a little bit of experience either works well enough to get the job done.

•Which platform can you afford?

Cost is a big consideration when purchasing a new platform for most. There's the initial sticker price of the system to consider, along with the cost of any additional peripherals and software and eventually maintenance. Since technology advances at such a rapid pace, new hardware is coming out all the time. You should also consider the upgradeability of you machine along with it's potential resell value as well, since it's likely in as little as two years you could be due for an upgrade.

PC's are, hands down, cheaper than Macs. The initial cost of a typical PC is, on average, about half that of your typical Mac. For some, the ease of use and OS considerations are worth the difference in price. However, for many it's not.

Macs tend to be more closed systems, sold as stylish all-in-one units and have limited upgrade options compared to PCs. Generally, Macs come preconfigured with common computer upgrades. Statistics tell us that Mac users only make a single upgrade to their machine during it's life-span —and for the majority of them it's a RAM upgrade. This "whole enchilada" approach contributes to Macs being highly reliable since all the hardware components are tested in conjunction with each other and drivers and software are written directly for those specifications. Bugs are easily found and rooted out because of the tight integration between the hardware and operating system. The downside of this strategy is that it makes Macs more difficult to expand and initially very expensive. Macs have been moving more and more to using industry standard components, so PC hardware such as hard drives, CDROM/CDRW drives and even RAM will function in newer Macs. However, most graphic cards will not. And, while there is a considerable amount that can be interchanged, there is still quite a bit of proprietary Apple hardware which, for one reason or another, can't be.

PC's on the other hand are very modular and component based. This makes them highly customizable in the hardware

department. The range of third-party hardware options is staggering and the fierce competition for sales keeps prices very reasonable. But the lack of operating system and hardware integration can cause huge frustrations with drivers and software. However, upgrades are easy to perform, if you're willing to open your case up and get your hands dirty. When a component fails or becomes obsolete, replacements are cheap and easy to find. Thankfully, most PC hardware is standardized and can be bought as it can be afforded, letting the user upgrade incrementally. The rapid turnover in hardware also lends the PC another advantage: cutting-edge technological innovations generally appear first on the PC platform. If you absolutely must have the latest and greatest, you're more likely to find it available on the PC. Sadly, market forces can prevent certain technologies from taking off, leaving you stuck with an unsupported device or standard. However, PC's have made great strides in taming hardware conflicts in recent years, making them a lot less stressful and confusing.

In terms of resell, used Macs retain their value better, probably due to their higher initial cost and the uniform nature of the hardware. The scatological nature of PC hardware and low cost of better replacements means old components devalue very quickly. Sadly, you can expect your old hardware to be worth less than 1/5th its original price inside of three years if it's a Mac, even less if it's a PC.

•Which platform do the people you deal with use?

This is an often overlooked consideration. If you're a professional colorist, does the company you work for prefer Mac or PC files? If you're sending files to your printer, which platform are they using?

In the modern era of computing, files from most major software packages can be ported to another platform with some reliability. Graphic files formats tend to be the same on both the Mac and the PC; so providing the filenames have the correct extensions on them, most will open up with no problems. But some files require translation, inviting incompatibilities and big problems.

Disk formats also differ by platform, which means that even if your file can be understood by the other operating system the disc it's on might be incompatible. Macs are, in general, much better at reading PC formats than the reverse. The rule of thumb here is, for maximum compatibility ,find out what system the people you are going to be exchanging files with are on and try to be on the same system.

Both platforms feature inexpensive third-party software to translate these formats, but a little advance homework will save you the expense.

Essential Hardware

The dizzying pace of innovation makes it difficult to maintain a list of equipment you're going to need for running Photoshop and putting together comics. As of this writing, versions 6 and 7 are the most current releases of Photoshop so the following list is designed around operating these two versions comfortably.

The specifics will change over time, but each of these categories represents the basic elements you need for a complete graphics studio.

A computer with a modern processor and video support.

A Mac with a G3 or G4 processor running OS9/OSX or a PC with a clock speed of 1 Ghz or faster running under Windows 2000 or XP. It's possible to use older operating systems such as OS7, 8, 9 or Windows 95, but they can have compatibility issues with the latest versions of Photoshop or even troubles addressing large amounts of RAM/ new hardware. Whether you use on-board video or a separate video card, make sure it can display 24-bit color for your monitor. Advanced graphic cards can suck a lot of power, as can RAM, so make sure your powersupply can handle your hardware needs if you're custom building a machine. Lastly, a keyboard and mouse are also required.

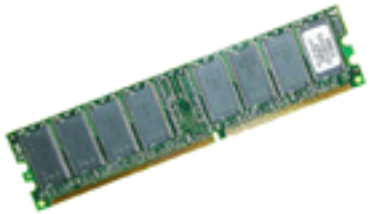
Monitor

A 17" or larger CRT monitor. Monitors with a .25 dot pitch or smaller are sharper. Perfectly flat monitors (as opposed to monitors with curved screens) are more expensive, but will distort your work less. Many pro monitors also feature aperture screen grills, which further sharpen their display. As a general rule of thumb, larger monitors are more convenient because they offer you a lot of room, but the downside is they're often times not as sharp.

LCD monitors are another option, but with some drawbacks. Most LCD displays have a slower refresh rate, though many claim they are superior to CRT's for alleviating eyestrain. More importantly though, LCD monitors are not as color accurate as CRT monitors, despite recent improvements. If you're seeking the most accurate color display you can achieve, standard high-end CRT's are still the best. It's important to add that LCD monitors are also more expensive, but are a lot smaller. Normal CRT monitors are huge and heavy, so if desktop space is at a premium, an LCD could be just what you need.

It's very easy to overlook the importance of a good monitor because novices assume they're all the same. They're not. A cheap monitor can be difficult to calibrate properly and can lead to eyestrain. It may not display accurate color or be bright enough. If you're going to be staring at your monitor all day long, a little more money spent on getting a decent monitor is money well spent.

If you've got the extra resources, you can also attach multiple monitors to a single computer, creating a virtual desktop between the two. This will require an additional video card to accomplish. Many people prefer this so they can put all their Photoshop palettes on one monitor so they view their image completely unobstructed on the other.



RAM
256 megs or more. The rule of thumb for RAM is as much as you can afford. 512 megs to 1 Gigabyte of RAM helps Photoshop to avoid caching larger image files on disk, giving it a real speed boost.

Hard Drive
10 gigabytes or larger. 40 to 80 gigabyte drives are very affordable now and will offer you a lot of additional room to store and work on large files. The speed of the drive is also important so don't sacrifice larger storage room for speed. 7200 rpm drives will keep Photoshop cache operations brief, speeding you up enormously.

CDRW
A recordable CD-ROM drive, 24X speed or faster. 40X drives are reasonable at the moment. This is excellent for making backups of your images as well as sending files to other companies or the printer.

Wacom Tablet
No self-respecting Photoshop artist is without one of these drawing devices. There are other brands, but none with the support and durability of the Wacom. They come in several models and sizes to fit most needs and budgets. The pens are cordless and do not require a battery. The USB version is by far the most responsive so opt for it over the ADB or serial connection versions when possible. Here's a breakdown of the models and features:

Graphire 2
The intro level tablet. It features a small 4x5" drawing area and a tablet pen with 512 levels of pressure sensitivity. The tablet resolution itself is 1015 lines per inch, so it tends to be a little "jittery" at resolutions over 800x600, so is great for smaller monitors and notebooks. The Graphire 2 retails at $99.

Intuos 2: The professional level tablet. The Intuos 2 comes in several sizes

including 4x5" ($199), 6x8" ($350), 9x12" ($469), 12x12" ($519) and 12x18" ($749). Each of the Intuos 2 tablets has a resolution of 2540 lines per inch, making them suitable for all but the largest of computer monitors. Additionally, the pen tool supports 1024 levels of pressure sensitivity and tilt support. It also supports Tool ID, so several tablet pens can be used with individual presets for each pen. The Intuos 2 supports the full range of custom pen tools that Wacom sells, including the Stroke pen, the Inking Pen and the Airbrush. I highly recommend the 6x8" version.

For additional information on Wacom Tablets, accessories, and ordering please visit the **Wacom Website**. (http://www.wacom.com)

Flatbed Scanner
There are many brands of excellent scanners, most of them with similar features. In general, you're paying for the size and the brand name. The larger the scanner, the more expensive (and often times less accurate) it will be. Most modern scanners feature outrageous bit-depths (24-48 bit) which gives them breathtaking color sensitivity. The higher the bit-depth the more accurate your color scans will appear, especially in those traditional "blind spots" for scanners: the extreme dark and light areas. Look for a scanner which features a high native resolution (1200-2400 dpi) and ignore the interpolated resolution claims.

Optional Hardware

Printer
An inexpensive ink-jet or laser printer can be handy for proofing your images or printing contracts and email.

Ethernet
Some type of NIC (Network Interface Card) is important so you can network to other computers locally, as well as use some form of broadband communication to get to the net. Creating a LAN (Local Area Network) is simple with an inexpensive ethernet hub, just be sure to get one with enough ports for all your machines. You're also going to need some CAT5 ethernet cable, available at your local computer supply store.

Broadband Internet Connection
Being able to get to the net is becoming an important aspect of working in comics. The latest news, job offers and tutorials all appear on the web first. Entire communities of artists congregate online, making it the richest place to network with fans, peers and even publishers.

More importantly, most comic companies and professional printers maintain FTP sites so you can upload your large graphic files directly to them, saving you the risk and expense of mailing physical copies. Of course, with the large size of graphic files these days, uploading and downloading these over a standard modem would take far too long. For security reasons, if you have a broadband connection I also recommend a software firewall and even a router so you can also hook up all the machines on your network to the internet. A router has the additional advantage of adding another layer of protection to your network, making it difficult for hackers to tamper with your machine.■

2 Coloring Part 1 - Setting Up Your Files

In comics, one of Photoshop's most important contributions is to the task of coloring. Photoshop has single-handedly revolutionized this job. Compared to traditional coloring methods, Photoshop is far faster and gives the colorist unprecedented control over the final image. Previously, most comics had color which was separated by hand, a process which was time-consuming and expensive. These days, color separations are handled by the computer, allowing the artists to concentrate exclusively on their work. Because of this, a good deal of this book centers around the techniques of coloring.

Preparing Files

Most comic artwork that needs to be colored will be inked, so the first step in coloring will be to scan it in. You'll probably be anxious to breeze past this stage to get the actual coloring, but keep in mind that this is an important stage and the quality of the scan will greatly determine the final outcome of all your work.

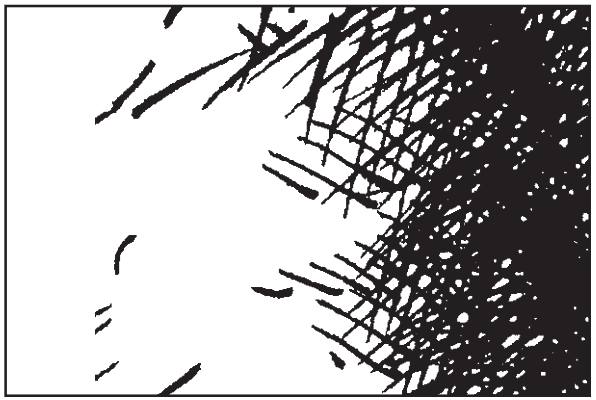
What is DPI? Picking the right resolution.

For those who don't know, the acronym "DPI" stands for "dots per inch". Since all digital images are composed of pixels, DPI simply refers to the number of pixels which define one square inch of canvas. The higher the number of pixels, the more detailed the image can be. Most professional coloring work is done at around 400 DPI. This means that each and every inch of the image is made up of 400 pixels horizontally and 400 pixels vertically. An insufficient number of pixels will make your image appear blocky. You've probably seen the trademark stair-step images common to insufficient resolution. On screen it probably looked OK because monitors can only display about 72 pixels per inch. But printing something out is an entirely different matter. Since most comics are destined for paper, not the screen, 400 DPI is generally considered the minimum resolution for professional colorists. Any lower and you risk the dreaded "jaggies", and if you go higher your file size starts to grow enormously. Remember, DPI is a square measurement: doubling your resolution *quadruples* the number of pixels! You can see how quickly the data starts to pile up quickly, so if your computer is less than state-of-the-art Photoshop is going to start acting pretty sluggish or even give you error warnings. Be sure you pick a resolution you can live with.

For the sharpest details to come through, you're going to want your lineart to be in bitmap mode. Any grayscale information in the line will be halftoned during the printing process, making it fuzzy.

There's no hard and fast rule for scanning in your image, because each scanner is different. Your best bet is to experiment scanning some test lineart to see which modes produce the best results. Typically, the two appropriate options are bitmap mode and grayscale mode. I've always had the best experience scanning in bitmap mode (sometimes referred to as 2-bit color). If you scan in grayscale, make sure to convert your image to bitmap by either converting the entire image to bitmap mode **[image>mode>bitmap]** or thresholding the image **[image>adjustments>threshold...]** Adjust the settings to give you the cleanest line possible. You may have to do some clean-up by hand.

If you've carefully selected your resolution it won't be necessary to do a lot of resizing or rotating to your scan. In fact, I do not recommend altering a 2-bit image at all (outside of clipping or adding additional pixels to the canvas size) since it can degrade the lineart. What we want is a end up with a sharp and clean version of the line work as a pure bitmap that looks something like this if magnified:



Anti-aliasing, the secret menace of coloring!

Notice the blurred lines. This is anti-aliasing. Avoid this.

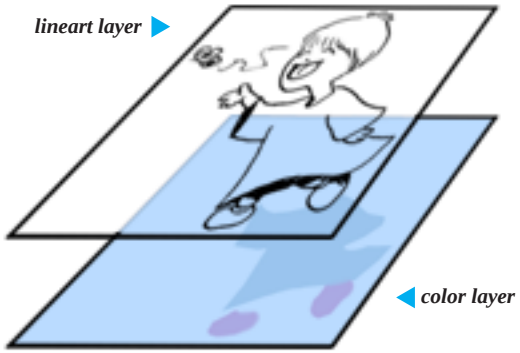
Notice the sharp edge with no gray pixels. This is perfect!

Anti-aliasing refers to the gray pixels adjacent to sharp black lines. These gray pixels smooth rough edges, softening the line. Photoshop has a habit of assuming you want this effect. In low-resolution images it helps reduce the visual effect of "jaggies". However, when you're coloring comics, this is undesirable. The resolutions we use are high enough that stair-stepping isn't visible, so anti-aliasing isn't necessary. Worse, during the printing process, those gray lines will become halftoned (converted to small dots to simulate gray) and eroding the edge of the lines. This "fuzz"can look awful on detail lines or lettering and should be avoided!

Get in close and check out typical problem areas like crosshatching or very fine detail lines. Poor scans often fill these areas in, resulting a loss of detail.

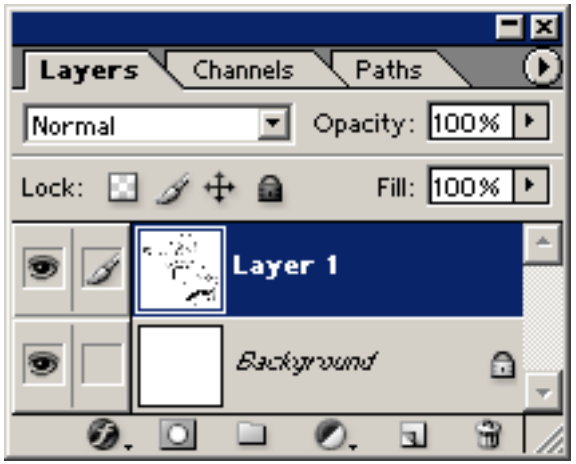
Setting up your image for coloring

Once you've got your clean scan you're ready to set up the image for coloring! If you were to immediately begin coloring, any work you did could easily smudge or overwrite your linework. To keep the linework intact we'll elevate it to its own layer where it can still be seen but where you won't inadvertently mark it up.



All your coloring will actually take place underneath your line work! To do this, convert your entire image to grayscale **[image>mode>grayscale]**. Then immediately convert from grayscale to RGB **[image>mode>RGB].** Due to the way Photoshop handles image modes, you can't just jump from bitmap to RGB modes directly.

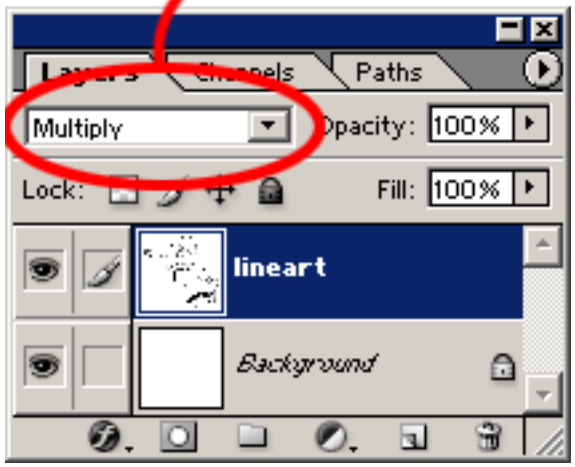
Toggle default colors **[D]**. Next, select your entire image **[ctrl A]** and cut it **[ctrl X]**. Now, paste the lineart back into the document using **[ctrl V]**. Photoshop will automatically put the linework on a brand new layer for you, and your layers palette should look like this:



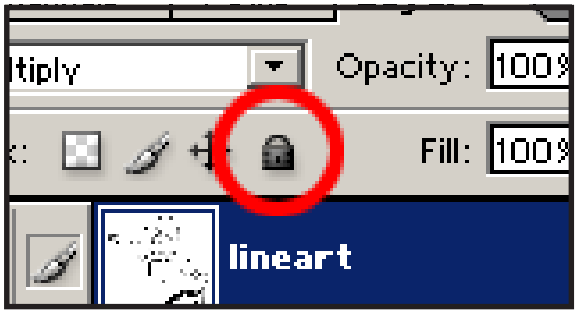
You can double-click the layer title and rename it. I prefer to name mine "lineart".

After renaming the layer, change its mode to multiply. Your layer's palette should now look like this:

The Layer Mode should be set to Multiply



Your linework is now elevated above your canvas where it will be safe! To being coloring, simply highlight the "background" layer in the layers palette and you can begin laying down color! Some people prefer to lock the "lineart" layer so they don't inadvertently move or mark it up. You can accomplish this by highlighting the lineart layer and clicking the "padlock" icon.



Lock your layers with the padlock icon to prevent them from being edited.

That's all there is to it! It's important to learn how to do this but after you've mastered the procedure it can become tedious to set up dozens of pages at a time. So, I've captured the entire task as a Photoshop action which can be used on a single page, or even an entire folder! To use the action, being up the actions palette **[window>actions]** and use its pulldown menu located under the triangle to the right hand side of the window. Use the "load actions" command and find the "actions" folder on this CD and load the "bitmap->RGB" action. Once you've got a file ready to be prepared for color, just select the action and hit the play button! To apply this action to an entire folder you can use the batch command located in [file>automate>batch...]. Before you batch process a folder, it's a great idea to make a backup of all the images in the folder in case something goes awry.

At this point, you've learned the most basic method for setting up your file for coloring! If you're anxious to get to work, skip forward to chapter 3.

Alternate Methods of setting up your files for coloring

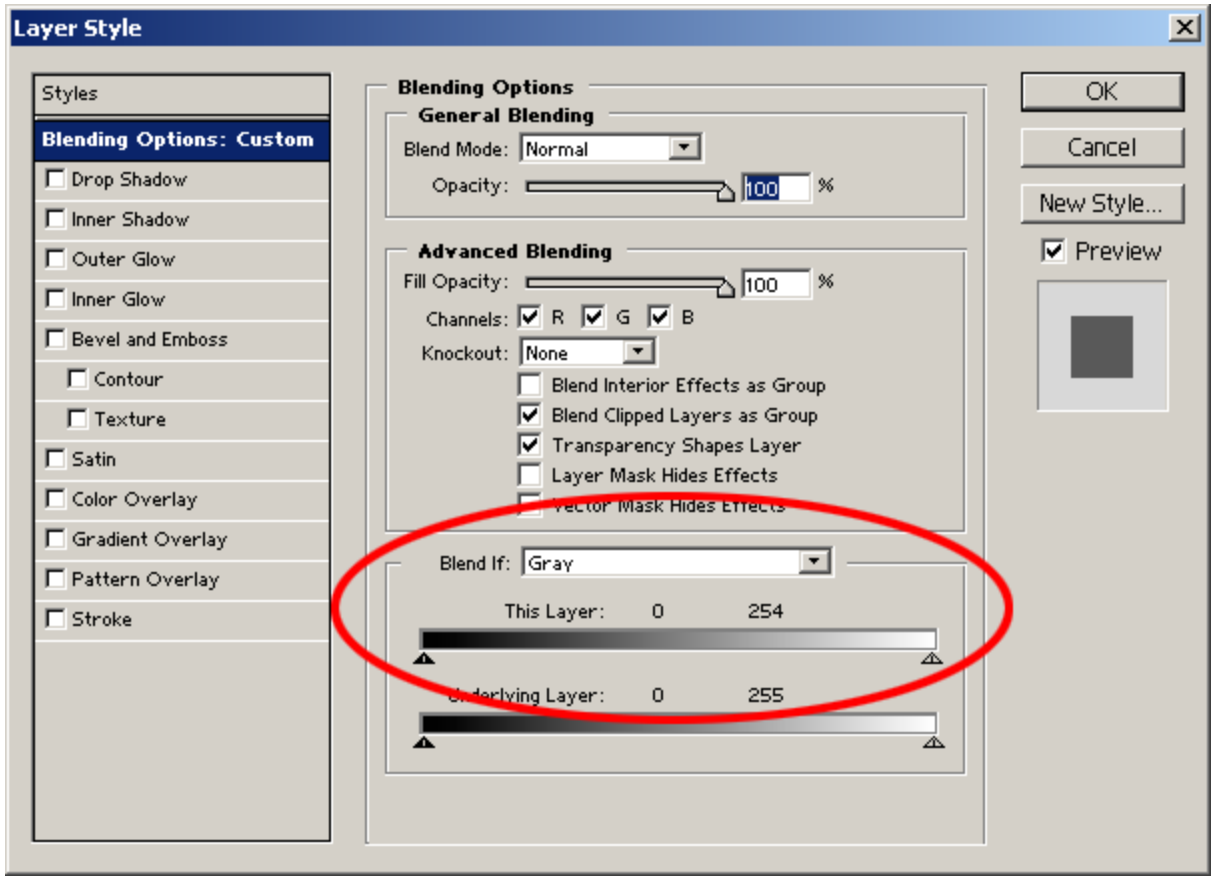
Like just about every task done in Photoshop, setting up your files for coloring can be handled in several different methods. The method outlined here is probably the easiest to understand, as well as the easiest to set up. On rare occasions however, there might be a need to set your file up in a different manner; perhaps a company prefers it handled in a different manner, or an unforeseen technical reason dictates it. Here are two additional methods for setting up you files for color:

The Layer Adjustment Method

This method is similar to the standard layers method you just learned. Your lineart is placed on another layer above your background. But instead of using the layer mode "Multiply" you change the layer's adjustment properties so that you can see underneath the top layer.

To do this, bring up the Layers Styles menu, located in **[layers>layer style>blending options...],** or just double click the preview icon for the layer in the floating layers palette.

To make the white information of the lineart layer transparent, go to the advanced blending options and make sure the "blend if:" setting is set to gray.

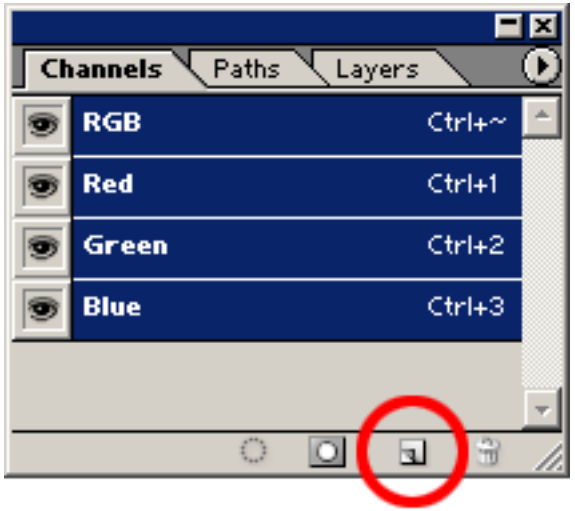


Next, adjust the "This Layer" slider 1 notch left until it reaches to a value of 254. It's the white triangle on the right hand side. You should now be able to color underneath your lineart layer with no problems!

The Channels Method

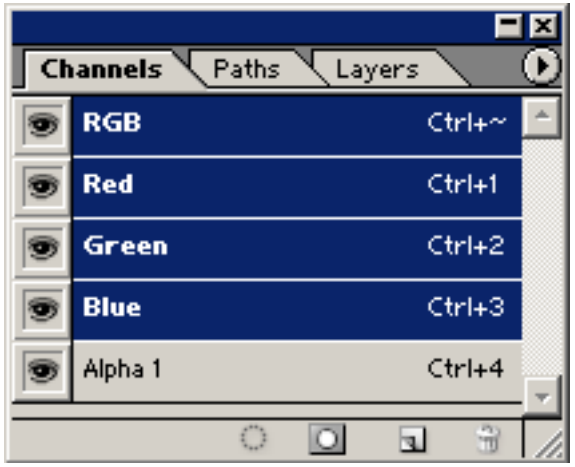
This method is similar to the other methods already discussed, but differs in that instead of putting the lineart on its own layer it goes on a channel.

Follow the identical steps for scanning and converting the image from bitmap to grayscale and then to RGB. The linework can then be cut **[ctrl X]**. But instead of pasting it immedietly, bring up the floating channels palette **[window>channels]** and create a new channel using the "create new channel" button, which looks like a pad of paper.



The new channel will be automatically be highlighted and named Alpha 1. Paste **[ctrl V]** the linework into this new channel. The linework should now be floating over the regular canvas background. To begin coloring, simply highlight the RGB channel **[ctrl ~]** and make sure the eyeball on the 4th channel is visible.

Keep in mind that the highlighted channels are the ones you are currently editing, so make sure your channel's palette has the proper channels selected; it should look exactly like this:



Once you've selected the proper channels you're ready to color!

Lastly, the channels method requires a different method of merging the linework to the color background when you're finished. Make sure to use the proper instructions for merging in the flattening section.

Coloring in RGB or CMYK? The Great Controversy

You might have noticed all of the techniques I've outlined set up the images for being colored in RGB mode. However, for professional offset printing files ***must*** be in CMYK mode. In fact, many colorists prefer to color directly in CMYK mode. Do you convert the image to CMYK before or after coloring? This is a hotly debated topic amongst colorists.

RGB stands for Red, Green and Blue, for the three channels that all the colors are divided into. RGB is the native color mode of computers, allowing them to display 16.7 million colors.

CMYK stands for Cyan, Magenta, Yellow and Key (otherwise knows as black), for the four channels used to define color for printing. Despite using four channels instead of three, CMYK color represents a smaller number of colors --those which can actually be printed. Needless to say, all images destined for print need to end up in CMYK format.

A problem arises because many of the brighter, highly saturated colors of RGB can't be represented in the four color print process used in comics. The colors are called "illegal colors" or "out of gamut" colors. So when an RGB image is converted to CMYK it often becomes duller, or the colors shift slightly, because illegal colors are converted by Photoshop to their closest mathematical legal neighbor.

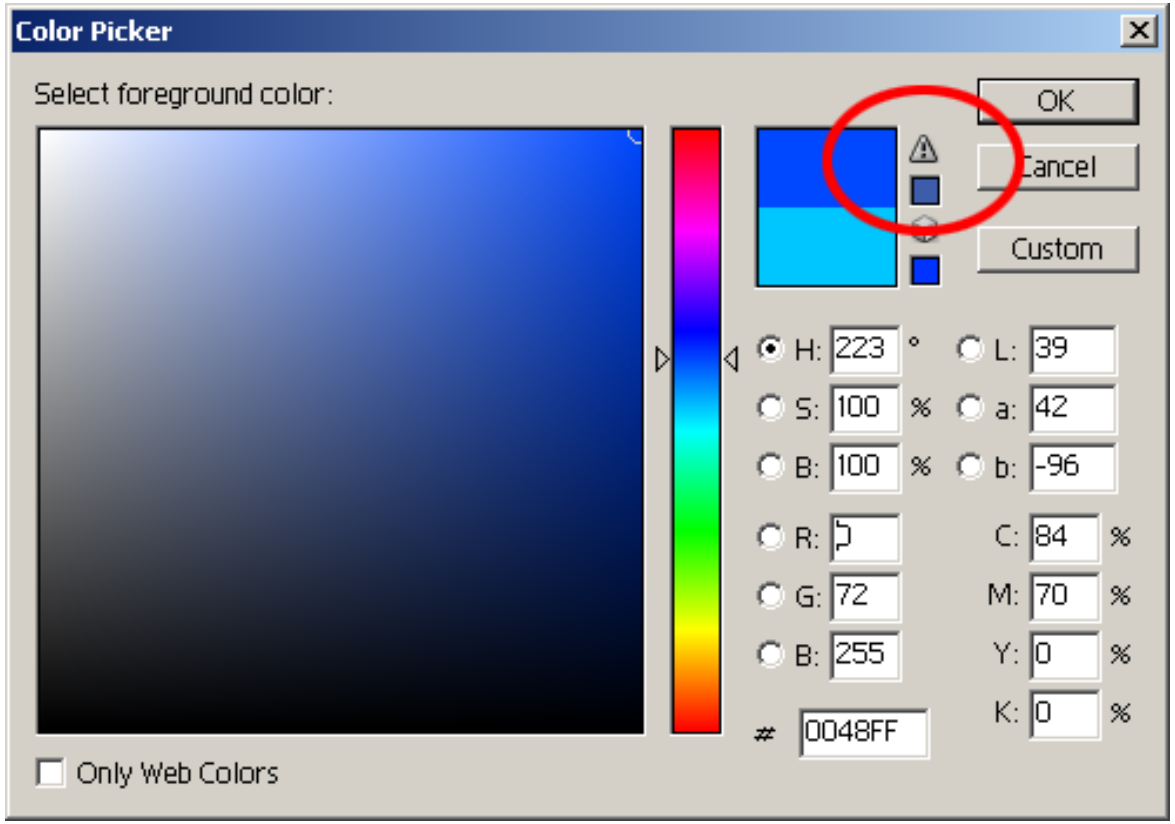
So why not just color in CMYK all the time to avoid any unwanted color surprises? CMYK purists argue that it's the only way to ensure accurate color. RGB enthusiasts contend that since the monitor is an RGB device, viewing a CMYK document isn't an accurate representation either.

Regardless of your position, what we should stay focused on is reproducing accurate color, regardless of the mode. I've found that coloring in CMYK mode is pretty accurate. CMYK mode forces you to see and use only print-legal color. However, CMYK documents are 25% larger, making them a little slower and more difficult to work with. CMYK also limits the number of tools and filters Photoshop can use. Since converting to CMYK is a lossy translation (meaning once you've done it some of the data in your image will be lost or permanently altered. It's generally agreed you shouldn't go back and forth. So, if your image demands the most color accuracy possible and you have the RAM and hard-drive space to deal with it, coloring in CMYK mode may be your best bet. In the interest of being complete, I will outline this more advanced method as well, but in a supplemental chapter. Be

warned, the technique is more complicated and a lot more can go wrong with it.

I recommend coloring in RGB mode for most of your work. It's smaller, has more filter and tools enabled and quicker. Be mindful of the conversion to CMYK though. This means limiting your use of highly saturated colors. Thankfully, RGB mode in Photoshop has a a CMYK preview which will allow you to see your document as if it were actually in CMYK mode, without having to convert it. CMYK preview can be toggled on at **[view>proof colors]** or by using the hotkeys **[ctrl Y]**. You can even leave the preview on as you color, but it will slow down your machine a little as Photoshop calculates the adjusted colors for you on the fly.■

Illegal colors are indicated in the main color picker menu by a small triangle with an exclamation mark in it. If you see this symbol the color you have selected is out of gamut and won't appear exactly as you see it in CMYK mode. If you click on the symbol the color picker will show you the nearest legal alternative!



Quick Reference List Setting Up Files For Color

1. Scan your image to desired size in bitmap mode.

2. Select All **[ctrl A].**

3. Select default colors **[D].**

4. Cut the linework **[ctrl X].**

5. Change mode to grayscale **[image>mode>grayscale]** Choose size ratio of 1.

6. Change mode to RGB **[image>mode>RGB].**

7. Paste **[ctrl V].**

8. Change the blending mode of Layer 1 to "Multiply". Rename and lock the layer if so desired.

9. Highlight the background layer and you're ready to color!

10. Save the file.

3 Coloring Part 2 - Coloring

The Lasso Tool

The actual techniques behind coloring are relatively simple and easy to learn. Mastering them, however, will take practice.

The primary tools used in coloring are the Lasso Tool **[L]**, the Airbrush **[B]** and the Fill command **[shift backspace/delete]**.

The Lasso Tool is a selection device, acting like digital frisket. Areas which are selected can be edited. Areas outside the selection won't be edited. The Lasso Tool works in several different ways. First and foremost is in freehand mode. Freehand mode allows you to simply draw your selection. The next important mode is in anchored mode. Used in combination with freehand mode, you can depress the **[alt]** key to anchor the line. Once anchored, you can lift your drawing pen from the tablet and your selection line will follow your cursor, plotting a straight line to anywhere you resume drawing. This is very quick way to draw straight lines and cover large distances quickly.

Two additional Lasso Tool points: One, when you have an active selection on the canvas, you can add to it by using the **[shift]** key. Any additional selections you make now will be added to the existing selection. This is useful for selecting multiple objects. Second, you can subtract from any active selection by holding down the **[ctrl]** key. This is useful for correcting freehand selections where you got sloppy, or for cutting holes in your selections.

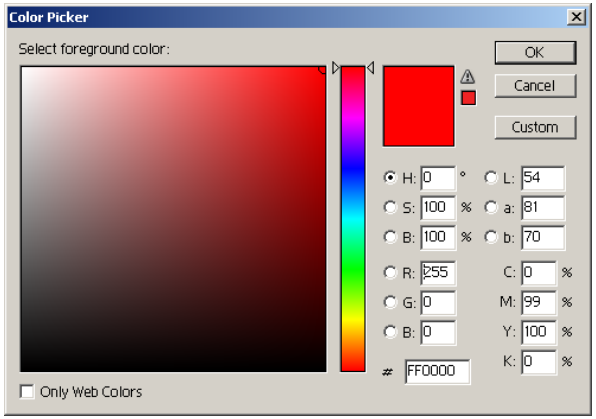
I ***highly*** suggest you master these two techniques as nearly most of your time coloring will be spent making selections.

The Color Picker

The next tool you will be using a lot is the color picker. You can access the color picker by double clicking on the foreground swatch on your toolbox.

This will call up the color picker.

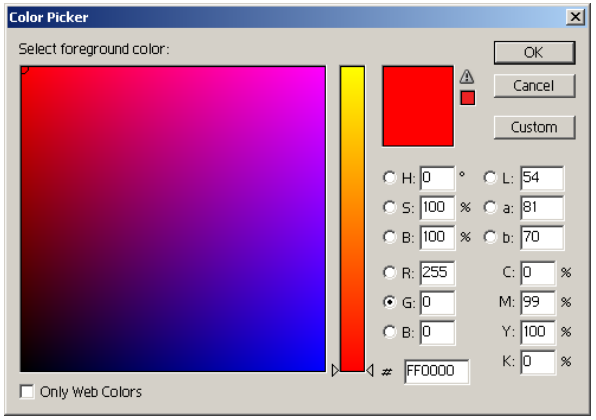
Using the color picker is fairly easy. You can select any of the colors visible by simply clicking inside the window. This will select your foreground color and the new hue will appear in the upper color chip of your toolbox.



To get another hue, drag the rainbow slider in the middle down. Alternately, you may enter numeric or HEX values in the lower right.

Keep in mind that clicking on the buttons in HSB, RGB and LAB will arrange the colors in new ways, presenting you with different options. This is a great way to explore color, but it's also a fantastic way to find the exactly the color you need.

Here's an example of a different arrangement:



Lastly, you should become familiar with the brush tool, especially the airbrush options. To make it easy, I've included some default brushes, including an excellent coloring airbrush tool on the CD. To load them, go to the brushes palette and use the "load brushes" command from the pulldown menu. The custom default brushes are located in the goodies folder, inside the brushes directory.

Used together, these simple yet powerful tools will be almost all you need to color amazing images! ■

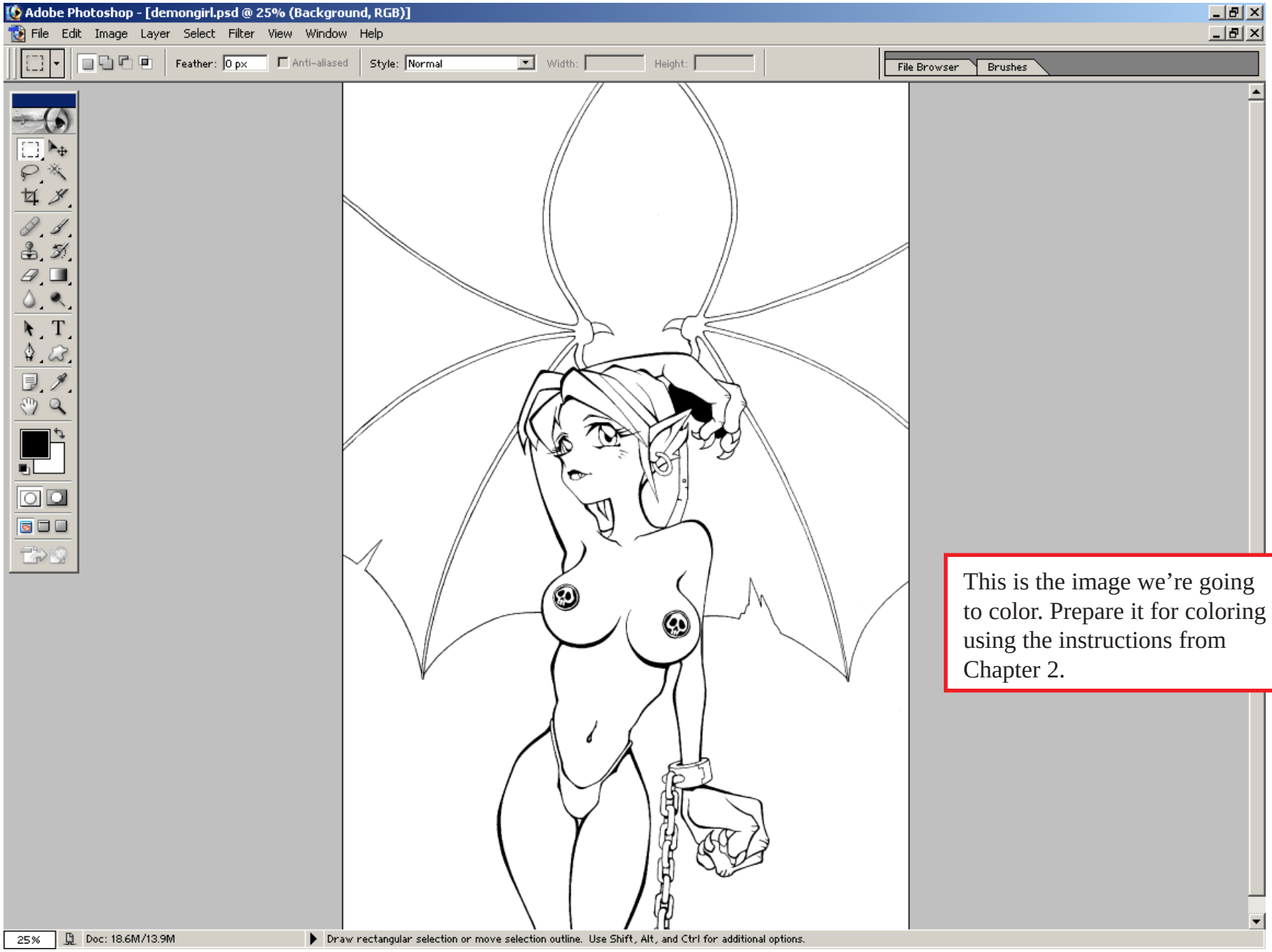
4 Coloring Part 3 - Anime-Style Coloring

A picture is worth a thousand words. That's the idea behind these visual tutorials. You can learn more about coloring so much more effectively by ***watching*** a colorist work rather than by reading a bunch of dry instructions. So, I've captured my entire Photoshop workspace as I worked and annotated it so you can see everything step-by-step.

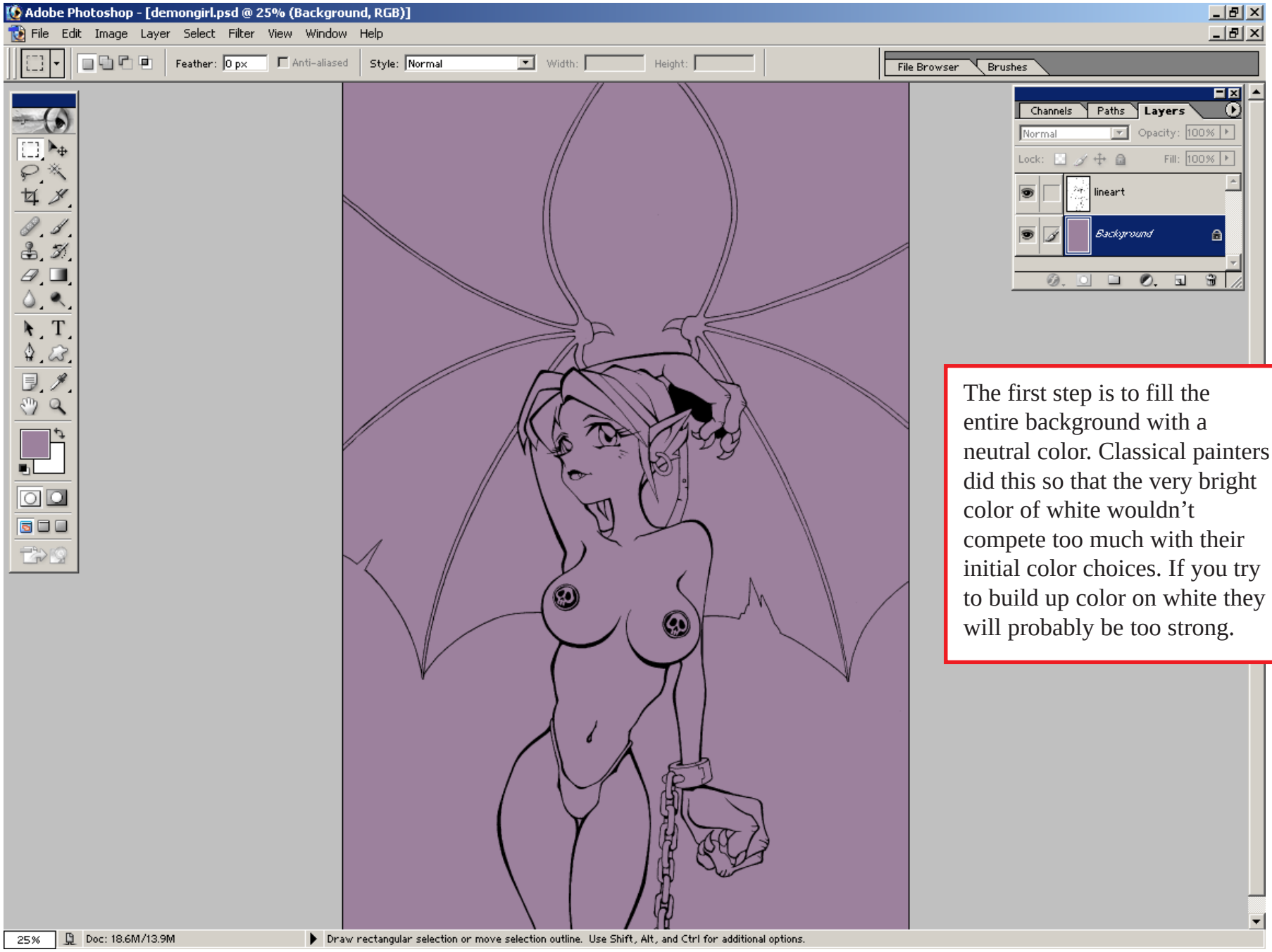
Cel-styled color is an excellent place to being learning about coloring. Composed of flat colors (usually only two or three levels of shading) which, when done right, can be very visually striking. Anime-styled coloring is simple, bold and easy to analyze, making it the perfect introduction to coloring technique.

This visual tutorial will walk you though from the beginning to the end of coloring an entire piece.

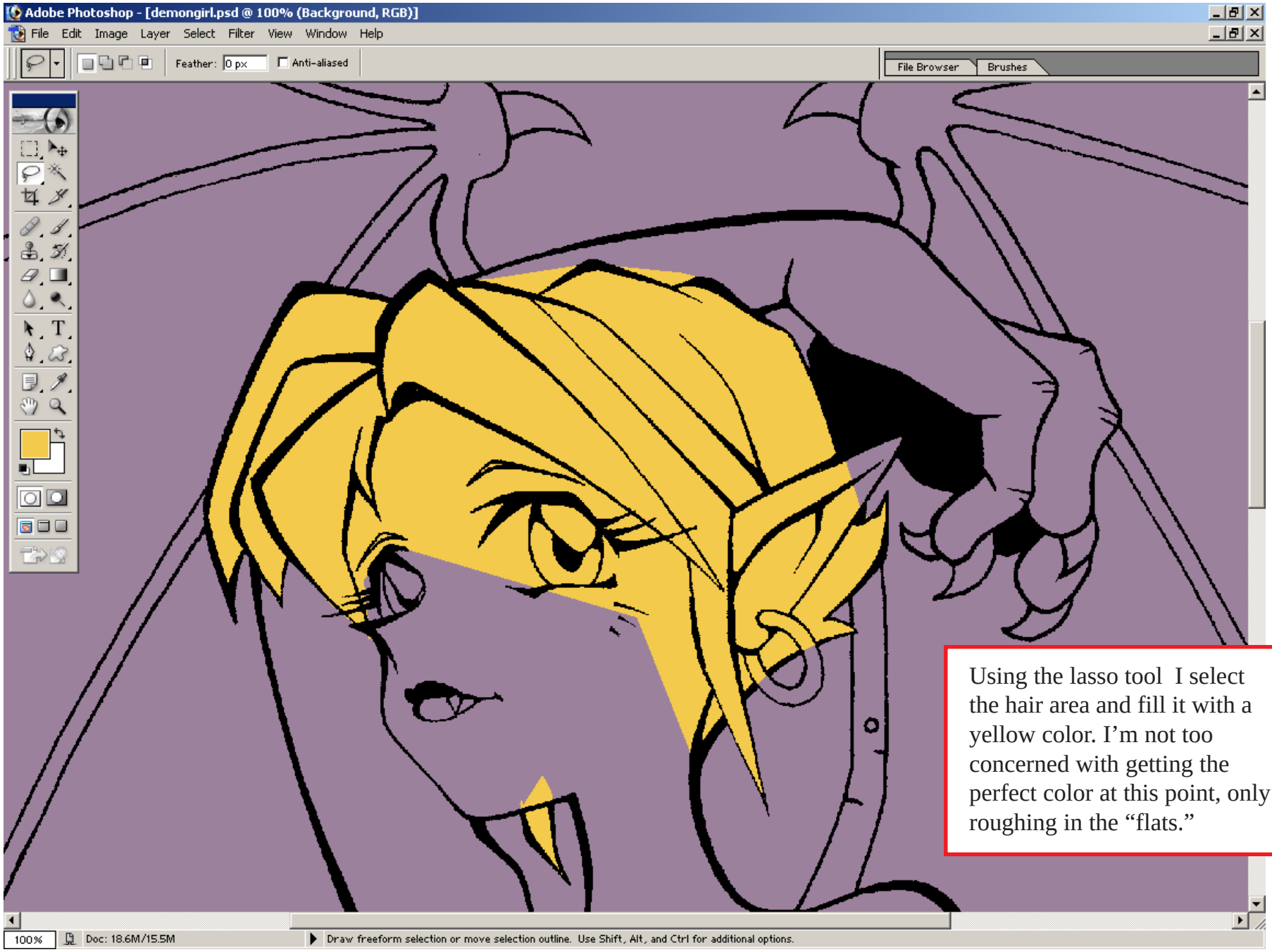
If you'd like to try this for yourself, the image "demongirl.tif" is located in the goodies folder on the CD. If you'd like to examine the completed .PSD file in close detail, it's also included.



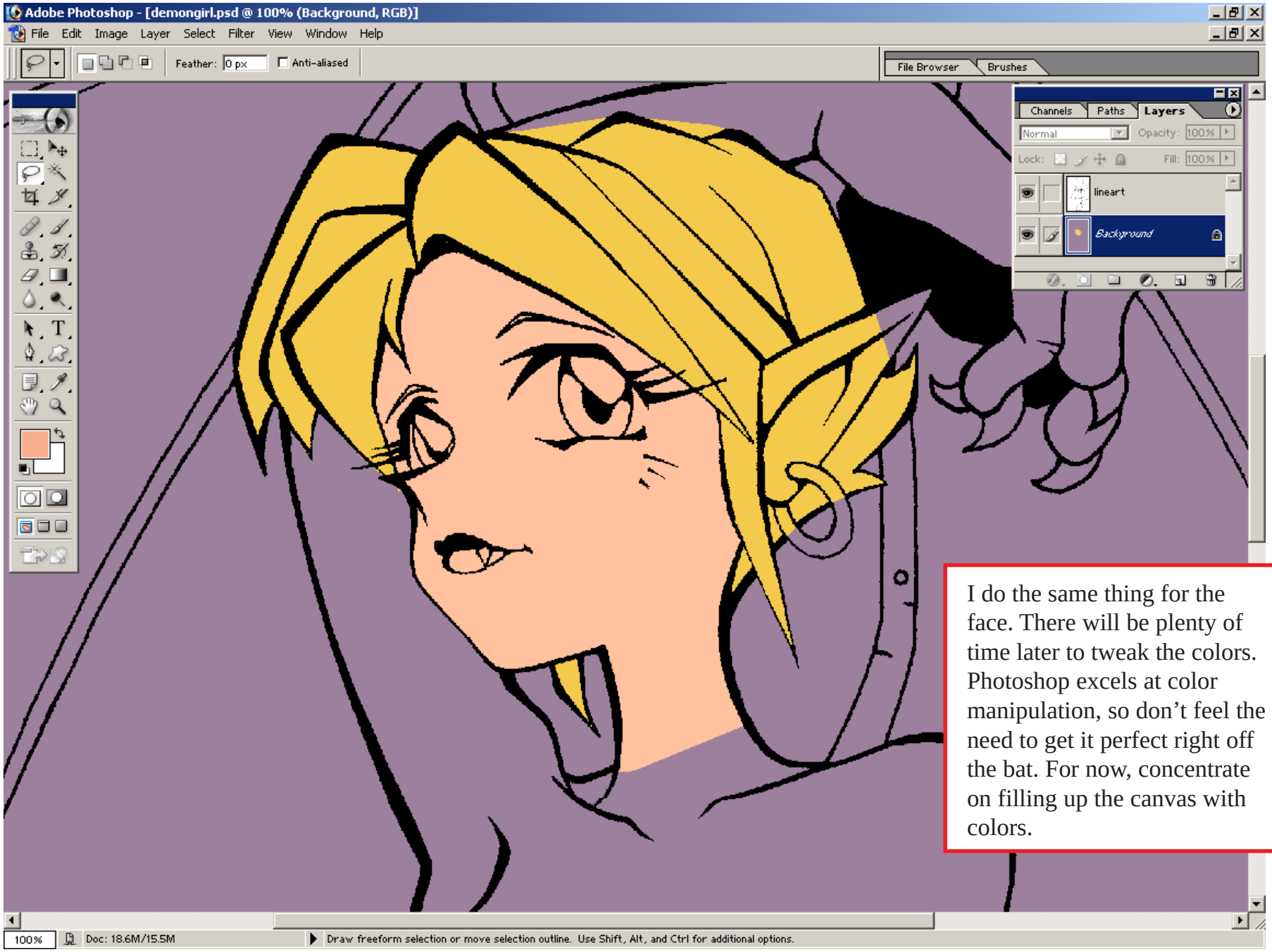
This is the image we're going to color. Prepare it for coloring using the instructions from Chapter 2.



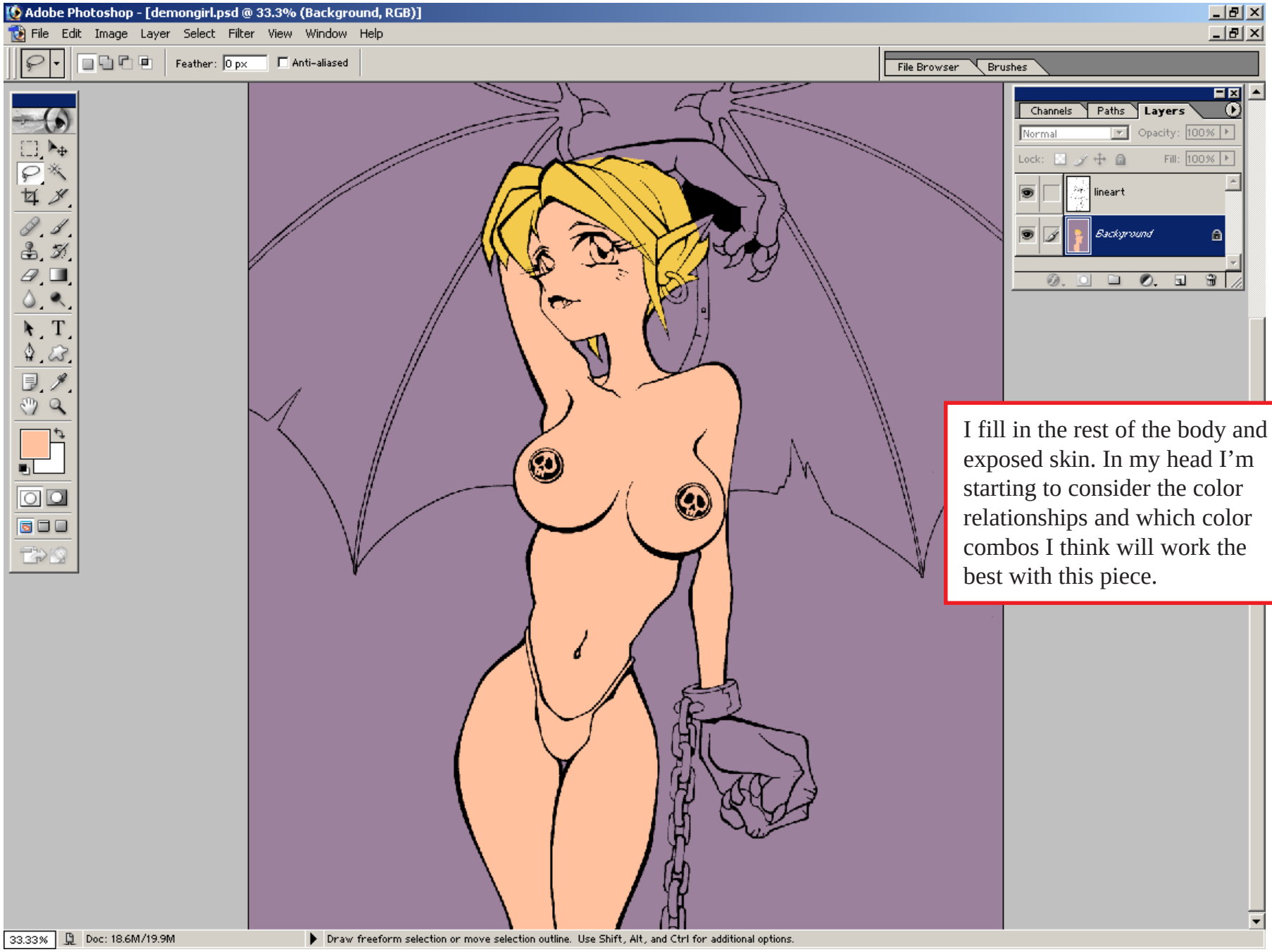
The first step is to fill the entire background with a neutral color. Classical painters did this so that the very bright color of white wouldn't compete too much with their initial color choices. If you try to build up color on white they will probably be too strong.



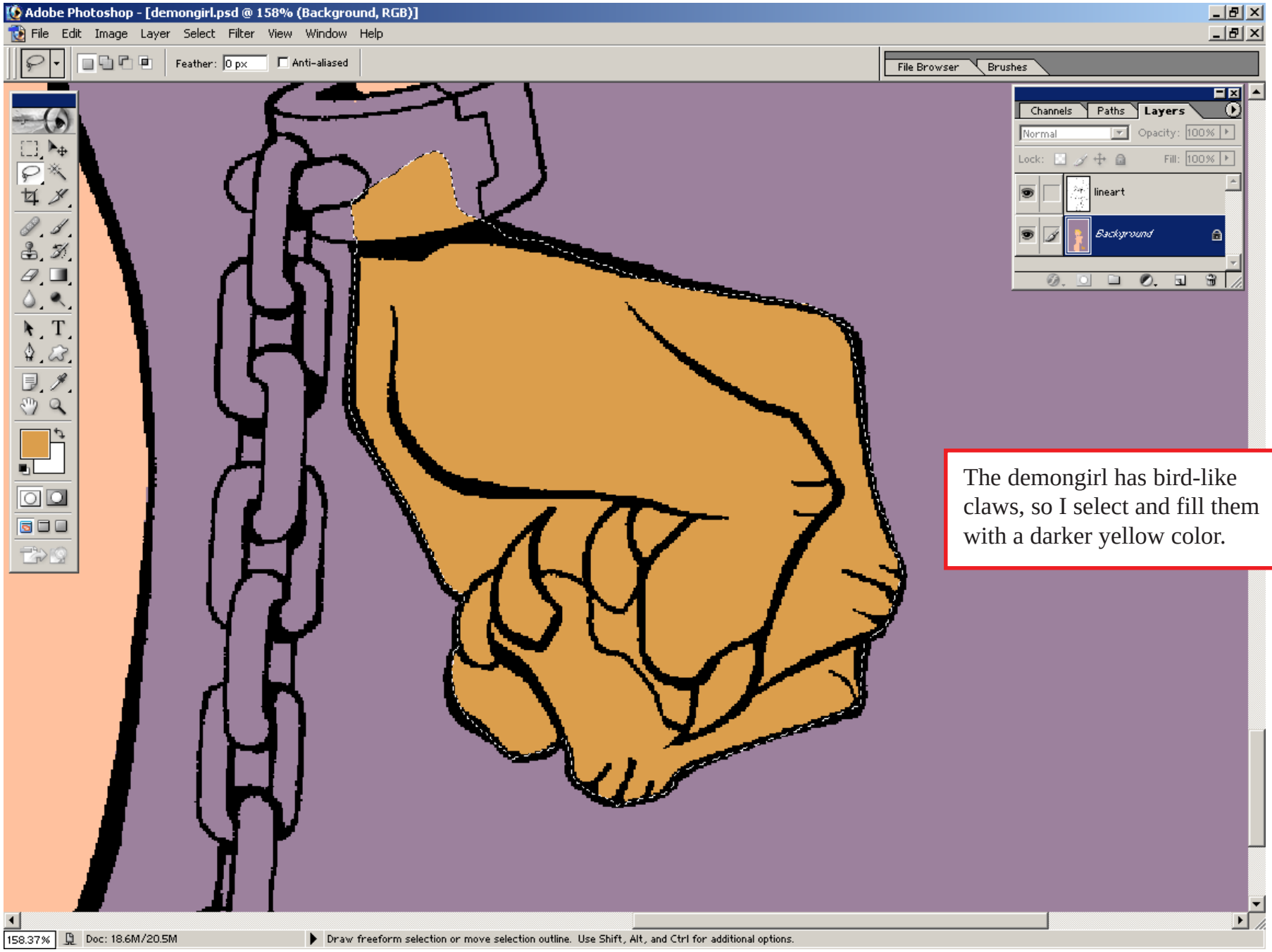
Using the lasso tool I select the hair area and fill it with a yellow color. I'm not too concerned with getting the perfect color at this point, only roughing in the "flats."



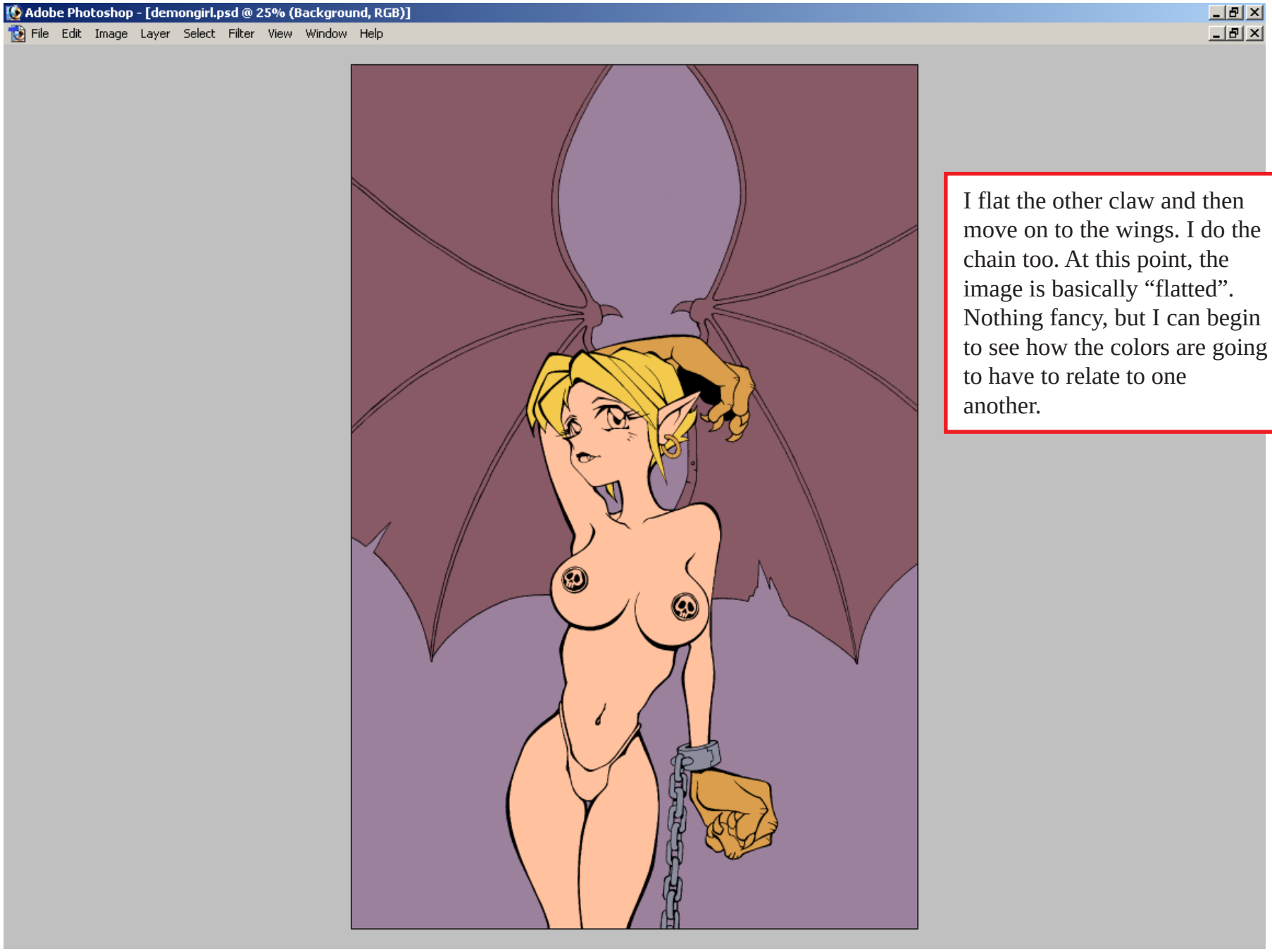
I do the same thing for the face. There will be plenty of time later to tweak the colors. Photoshop excels at color manipulation, so don't feel the need to get it perfect right off the bat. For now, concentrate on filling up the canvas with colors.



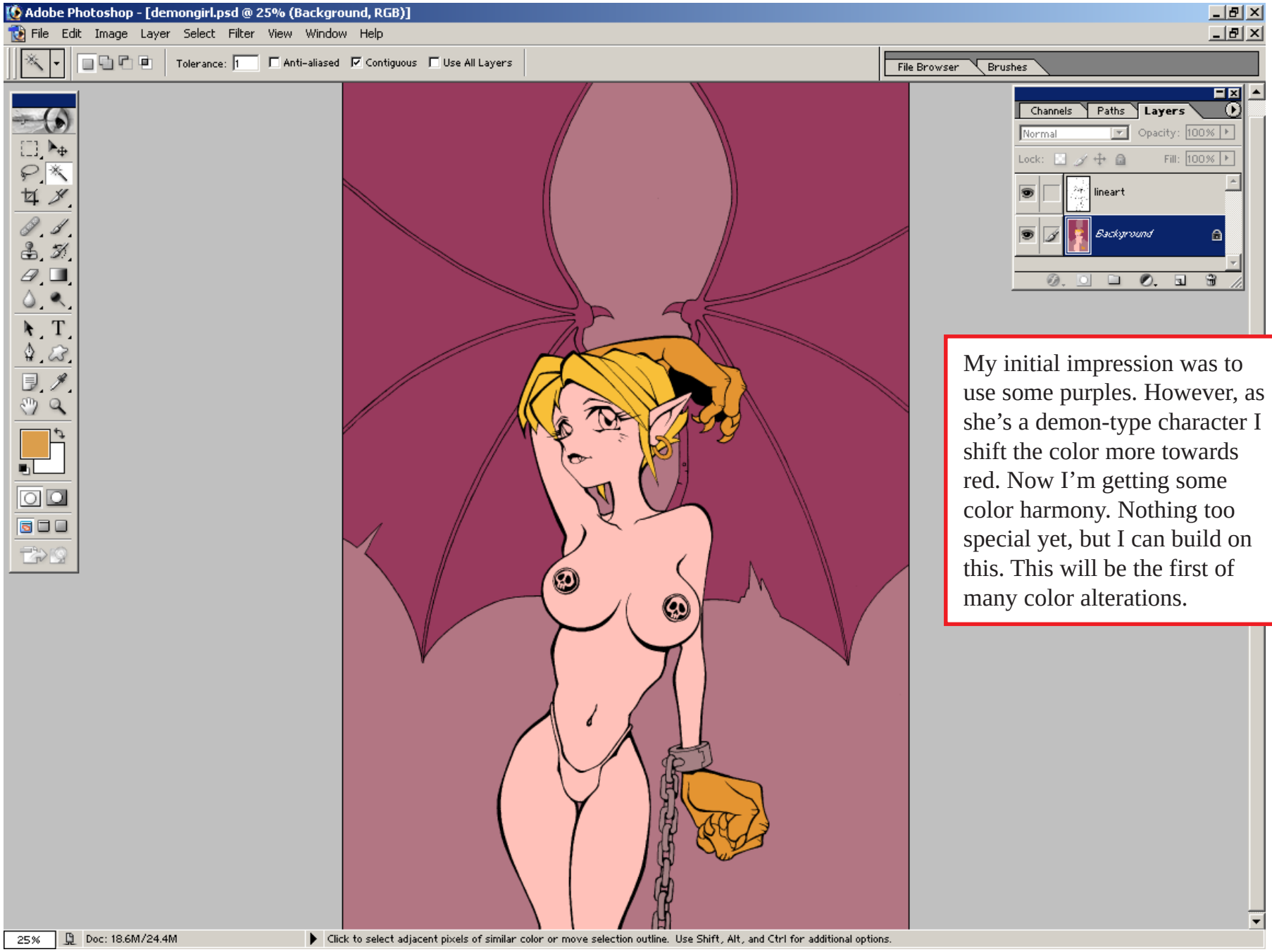
I fill in the rest of the body and exposed skin. In my head I'm starting to consider the color relationships and which color combos I think will work the best with this piece.



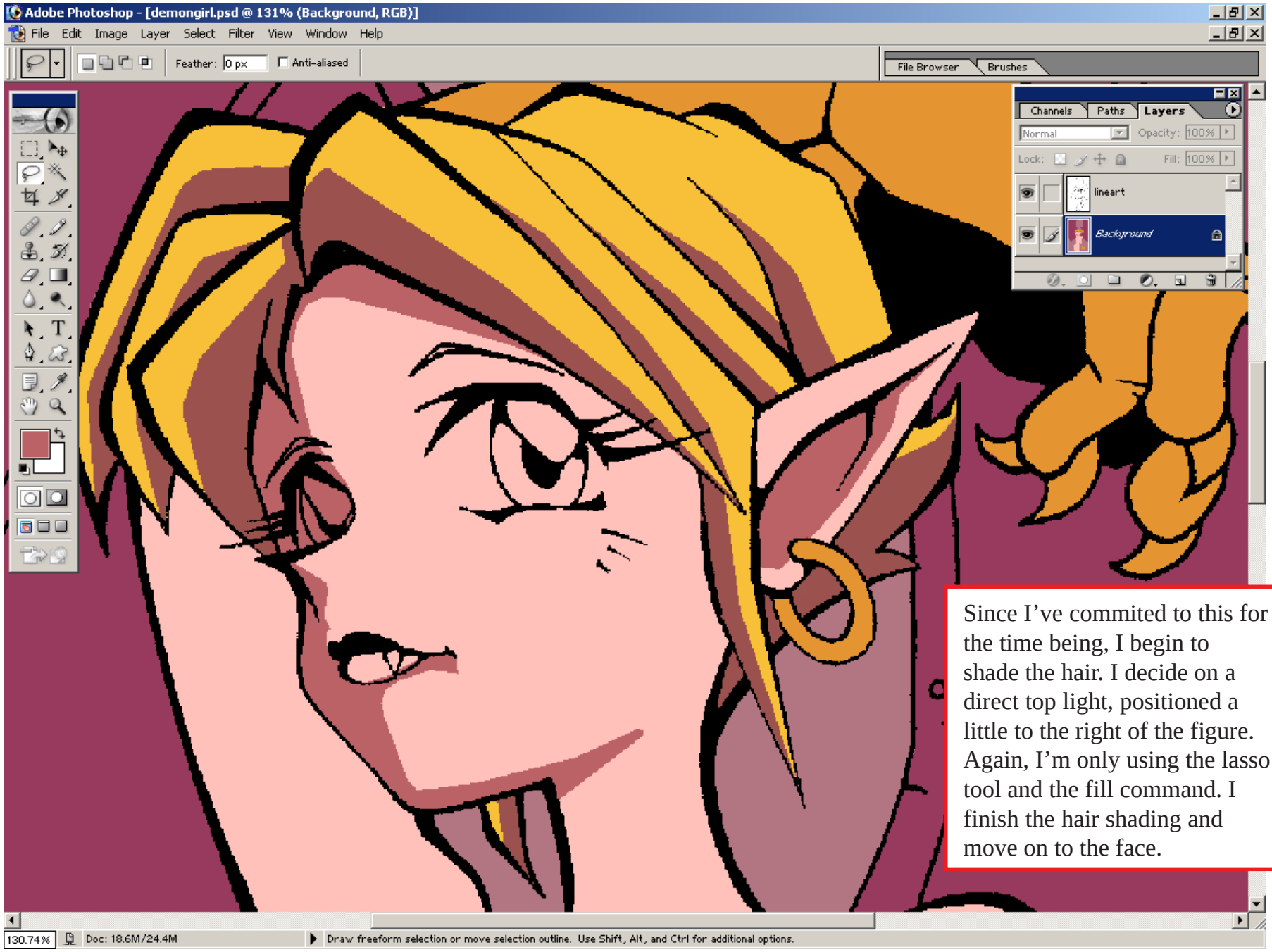
The demongirl has bird-like claws, so I select and fill them with a darker yellow color.



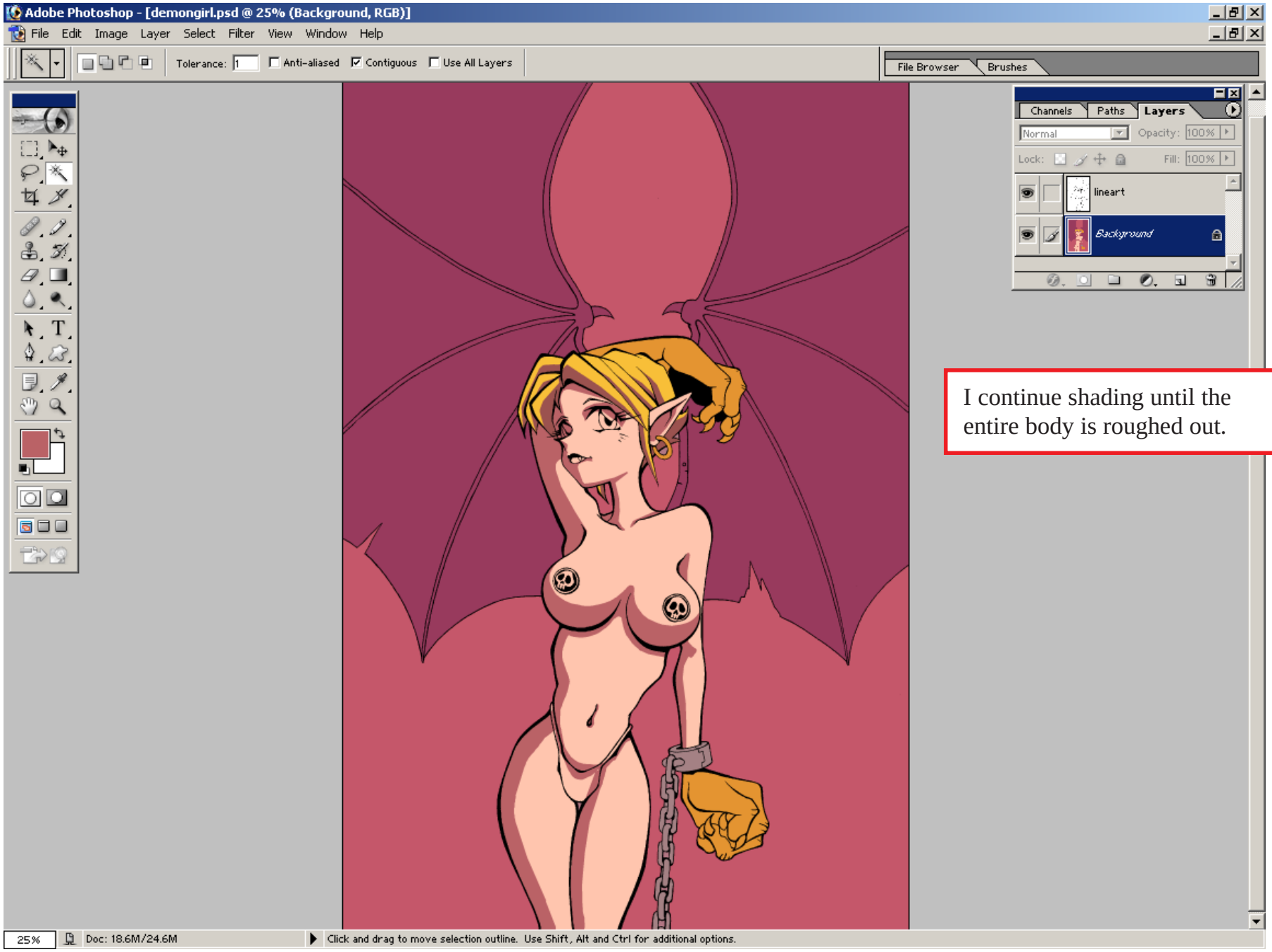
I flat the other claw and then move on to the wings. I do the chain too. At this point, the image is basically “flatted”. Nothing fancy, but I can begin to see how the colors are going to have to relate to one another.



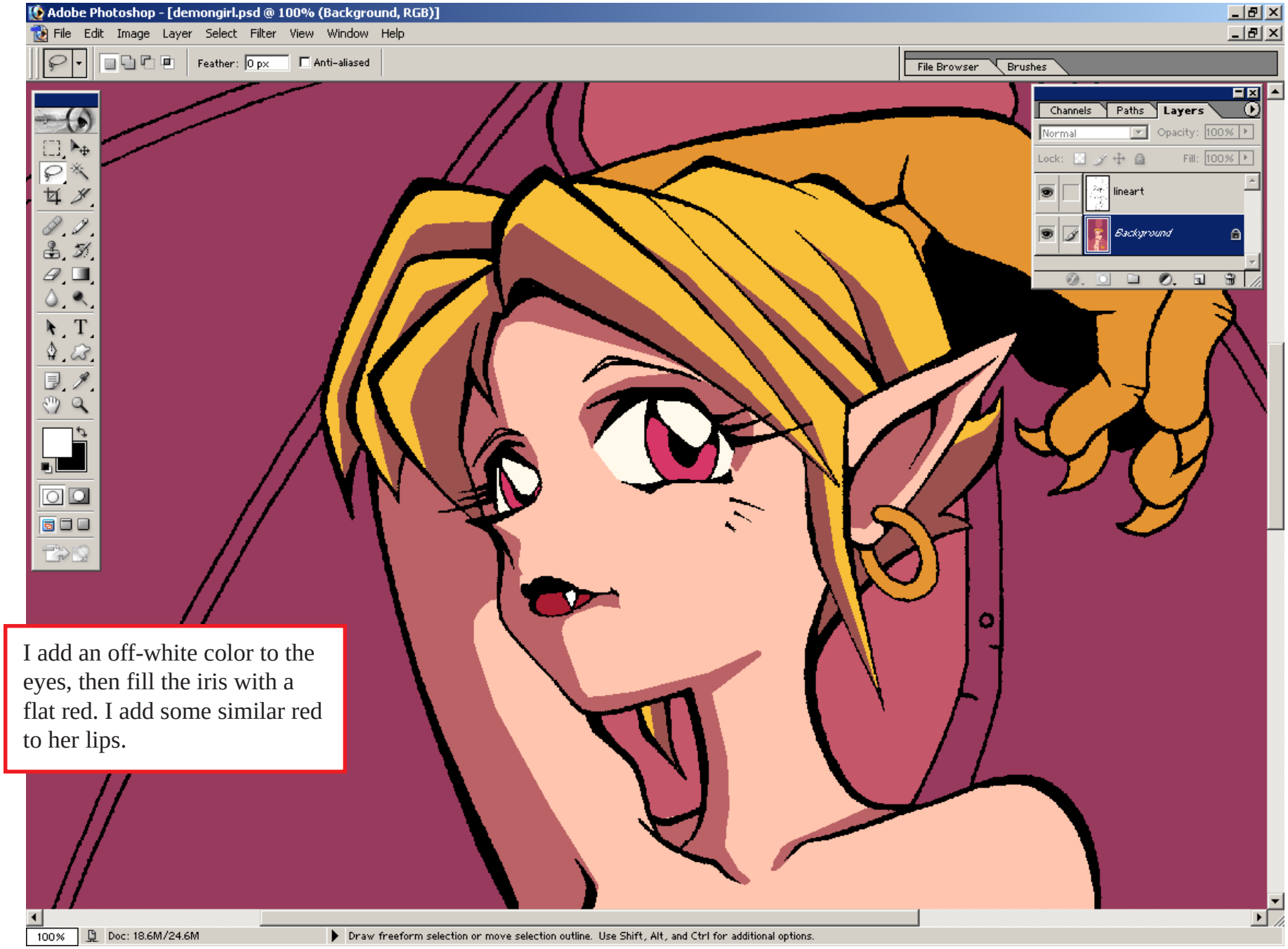
My initial impression was to use some purples. However, as she's a demon-type character I shift the color more towards red. Now I'm getting some color harmony. Nothing too special yet, but I can build on this. This will be the first of many color alterations.



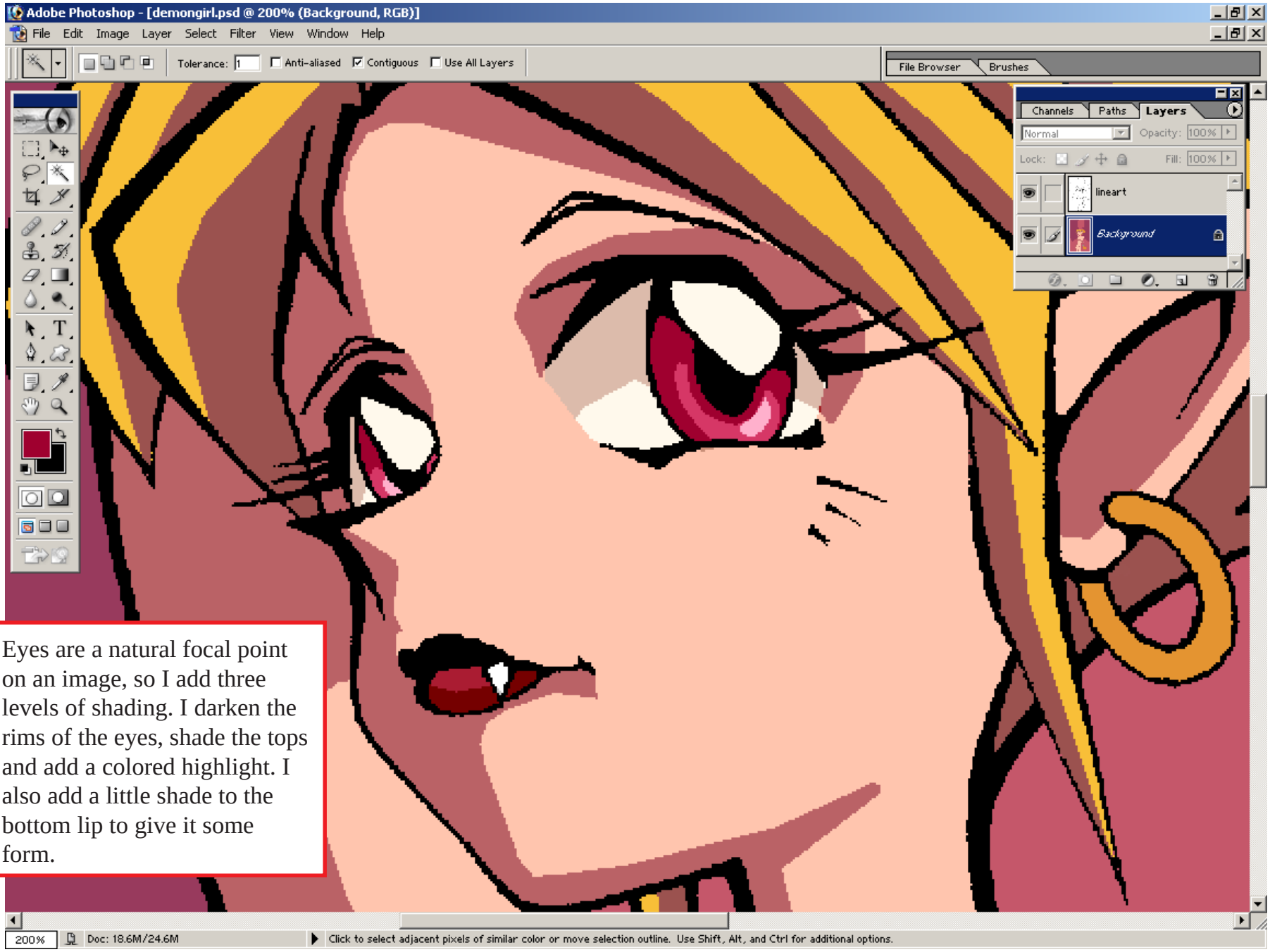
Since I've commited to this for the time being, I begin to shade the hair. I decide on a direct top light, positioned a little to the right of the figure. Again, I'm only using the lasso tool and the fill command. I finish the hair shading and move on to the face.



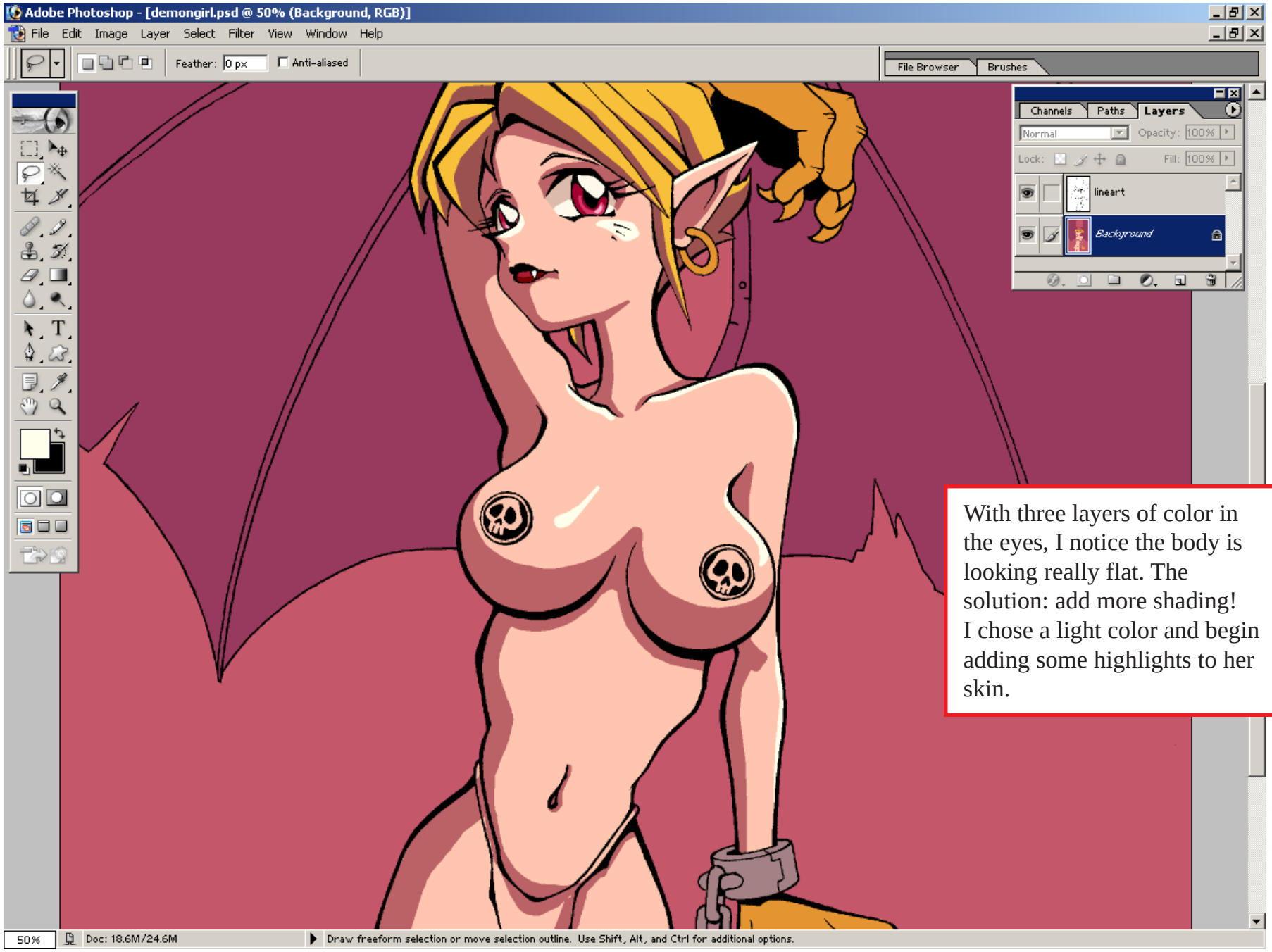
I continue shading until the entire body is roughed out.



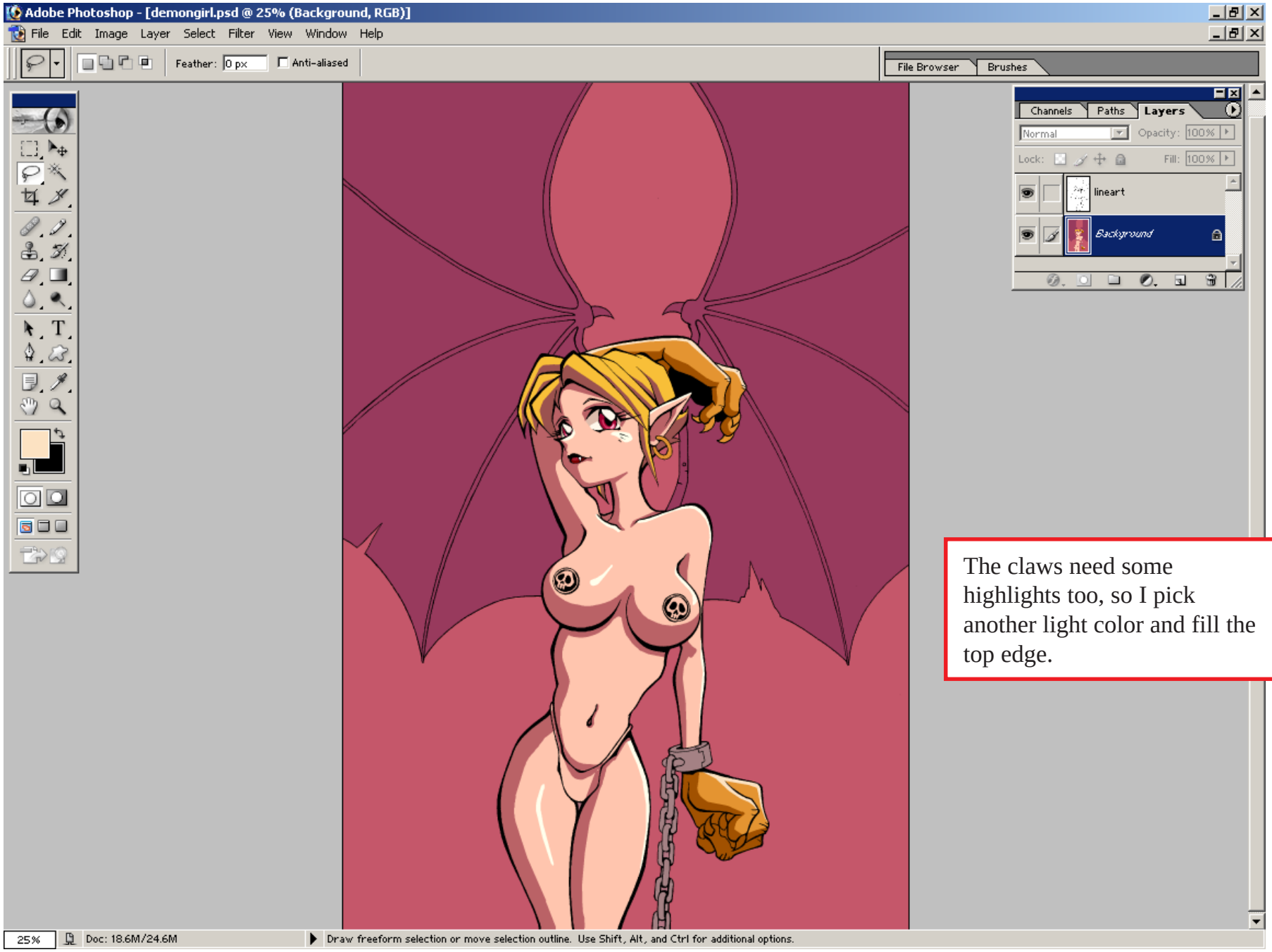
I add an off-white color to the eyes, then fill the iris with a flat red. I add some similar red to her lips.



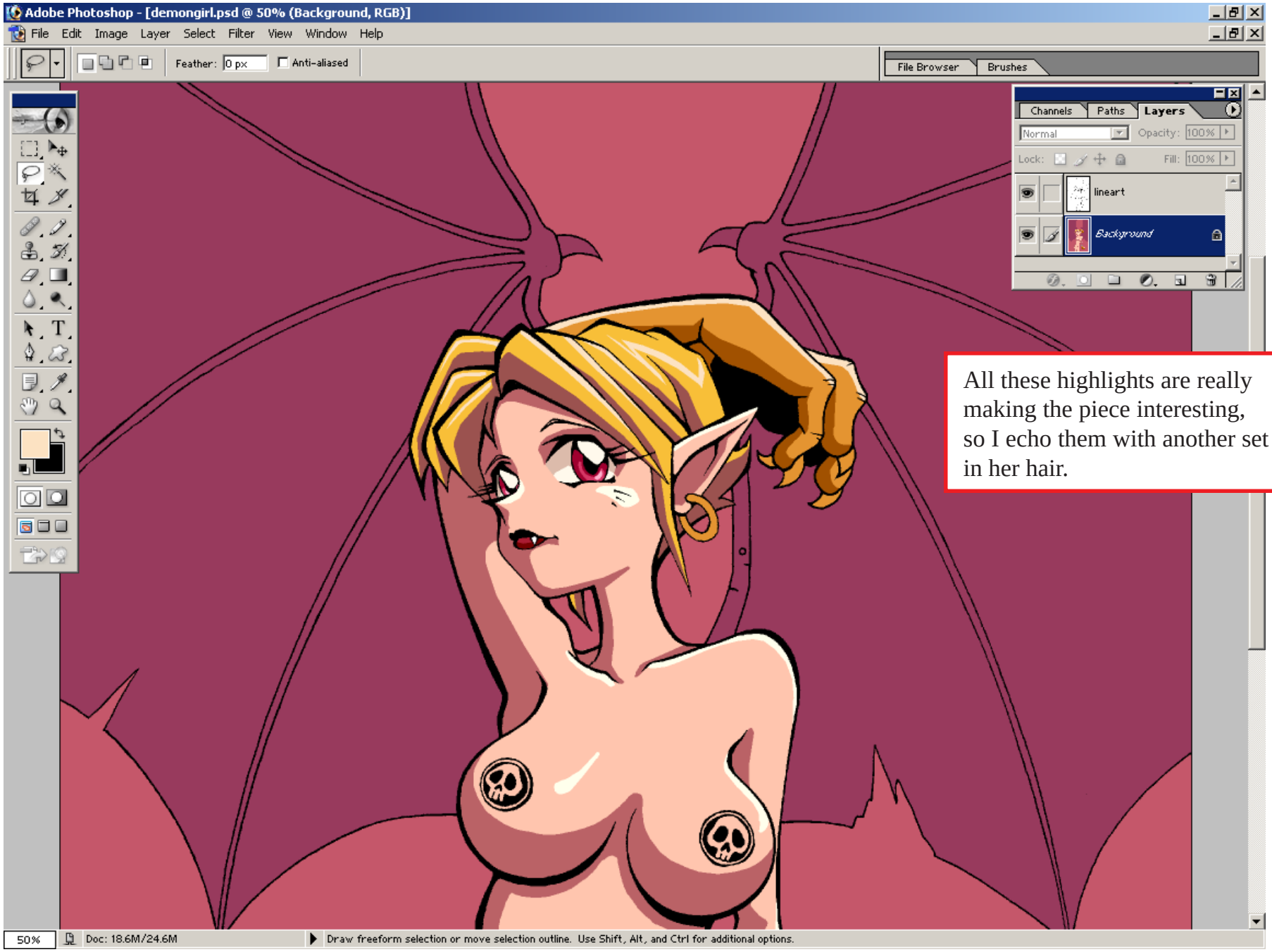
Eyes are a natural focal point on an image, so I add three levels of shading. I darken the rims of the eyes, shade the tops and add a colored highlight. I also add a little shade to the bottom lip to give it some form.

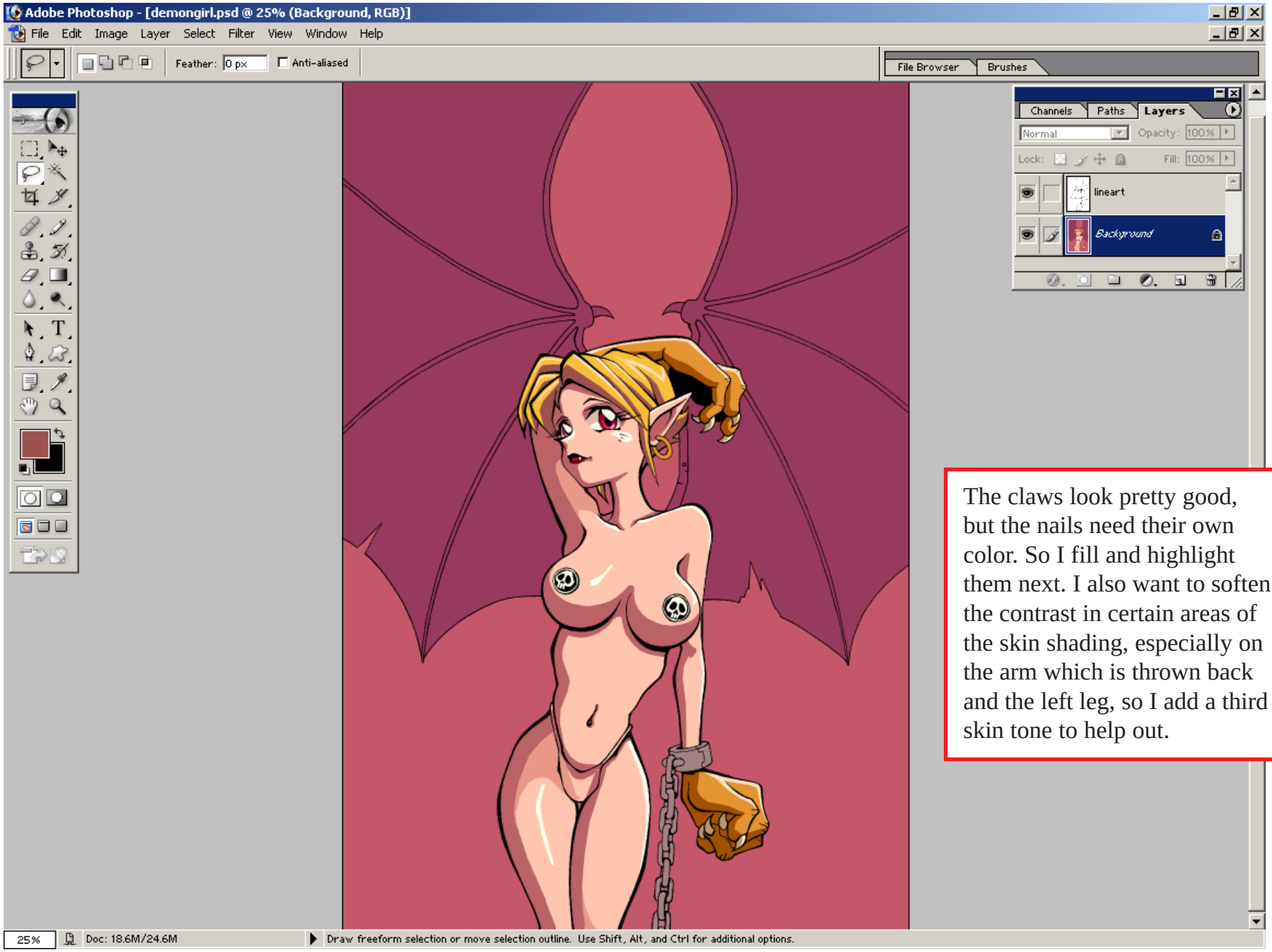


With three layers of color in the eyes, I notice the body is looking really flat. The solution: add more shading! I chose a light color and begin adding some highlights to her skin.

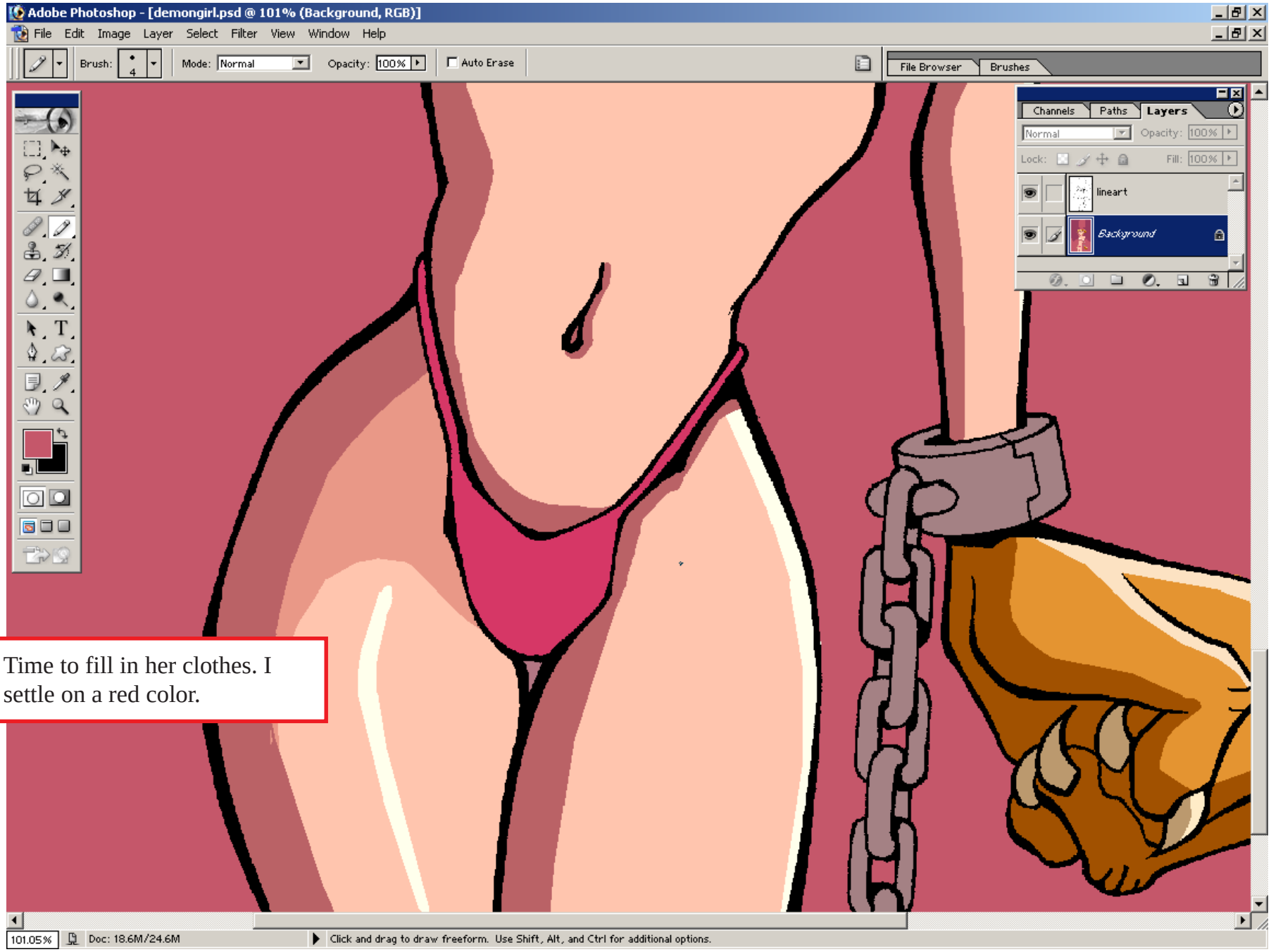


The claws need some highlights too, so I pick another light color and fill the top edge.

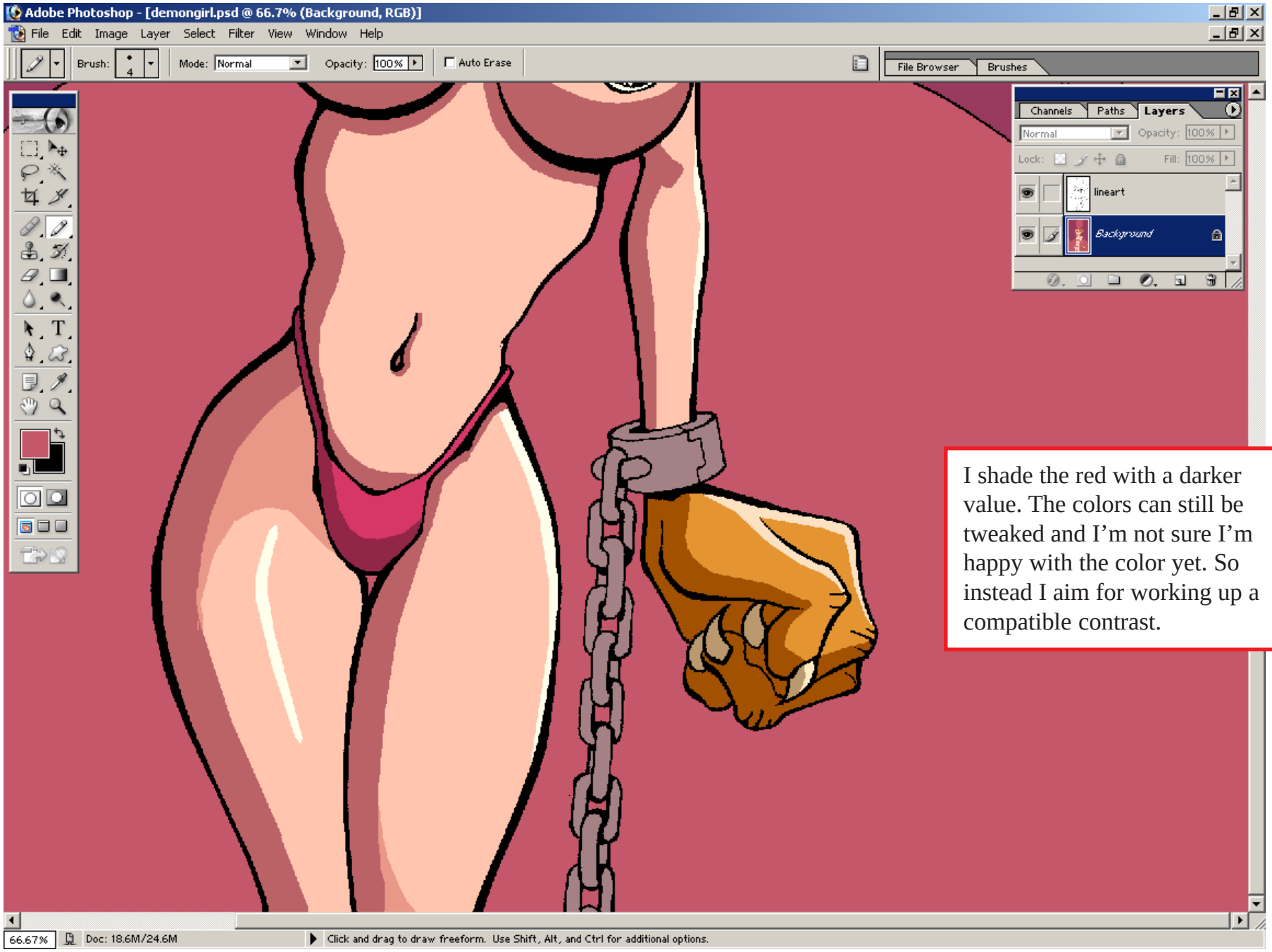

Adobe Photoshop - [demongirl.psd @ 50% (Background, RGB)]
File Edit Image Layer Select Filter View Window Help
Feather: 0 px
Anti-aliased
File Browser
Brushes
Channels
Paths
Layers
Normal
Opacity: 100%
Lock:
Fill: 100%
lineart
Background
All these highlights are really making the piece interesting, so I echo them with another set in her hair.
50%
Doc: 18.6M/24.6M
Draw freeform selection or move selection outline. Use Shift, Alt, and Ctrl for additional options.



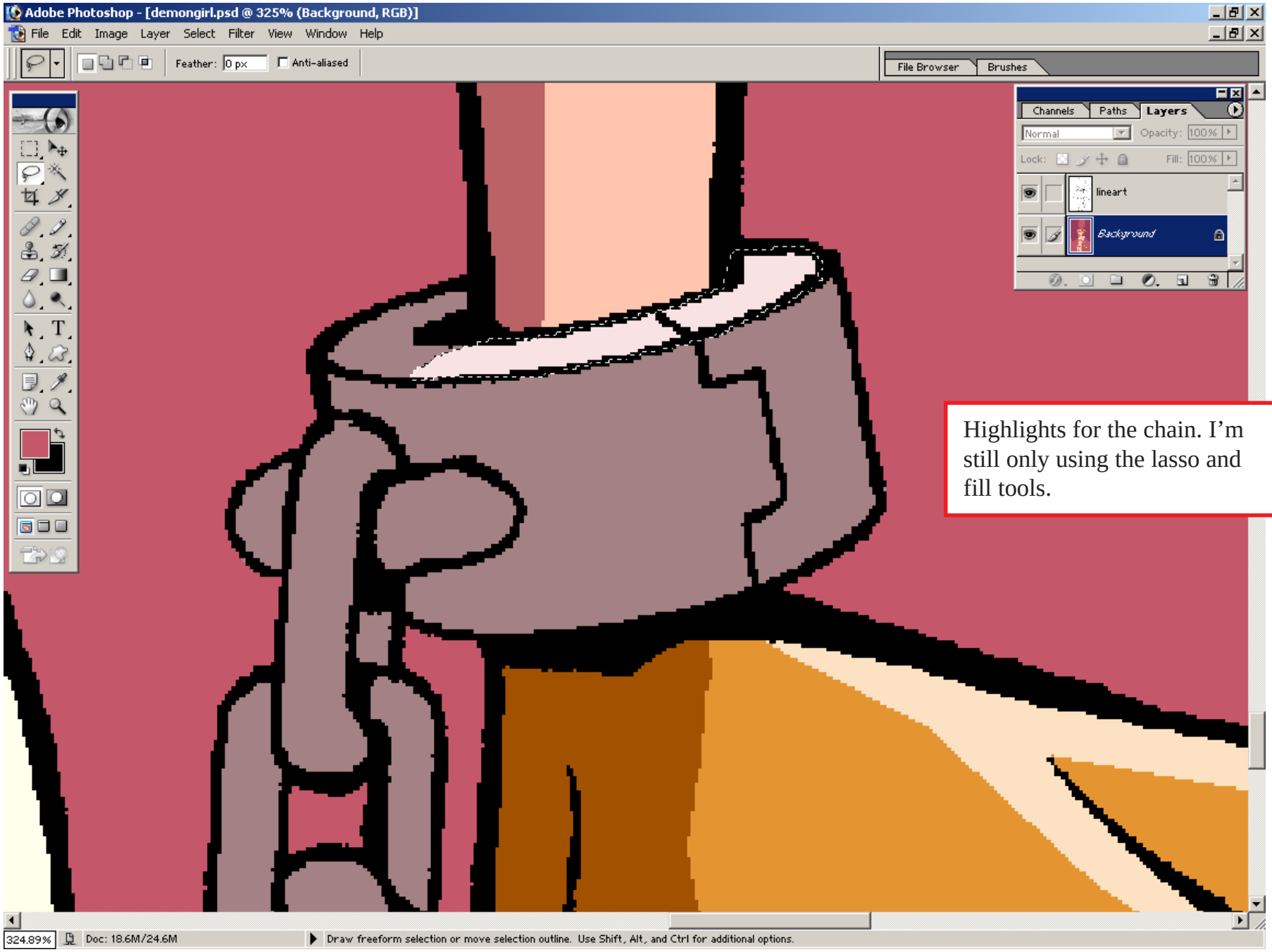
The claws look pretty good, but the nails need their own color. So I fill and highlight them next. I also want to soften the contrast in certain areas of the skin shading, especially on the arm which is thrown back and the left leg, so I add a third skin tone to help out.

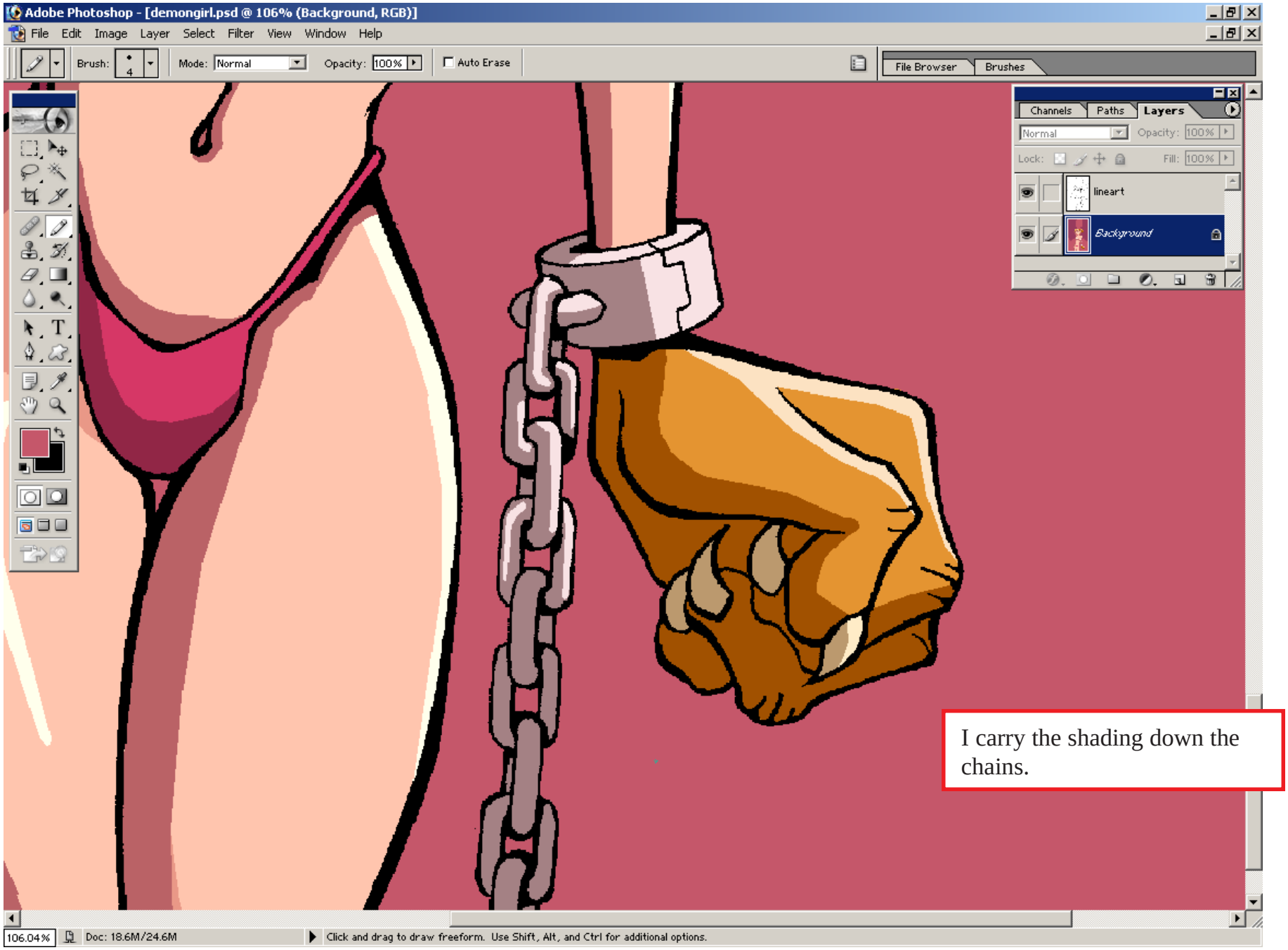


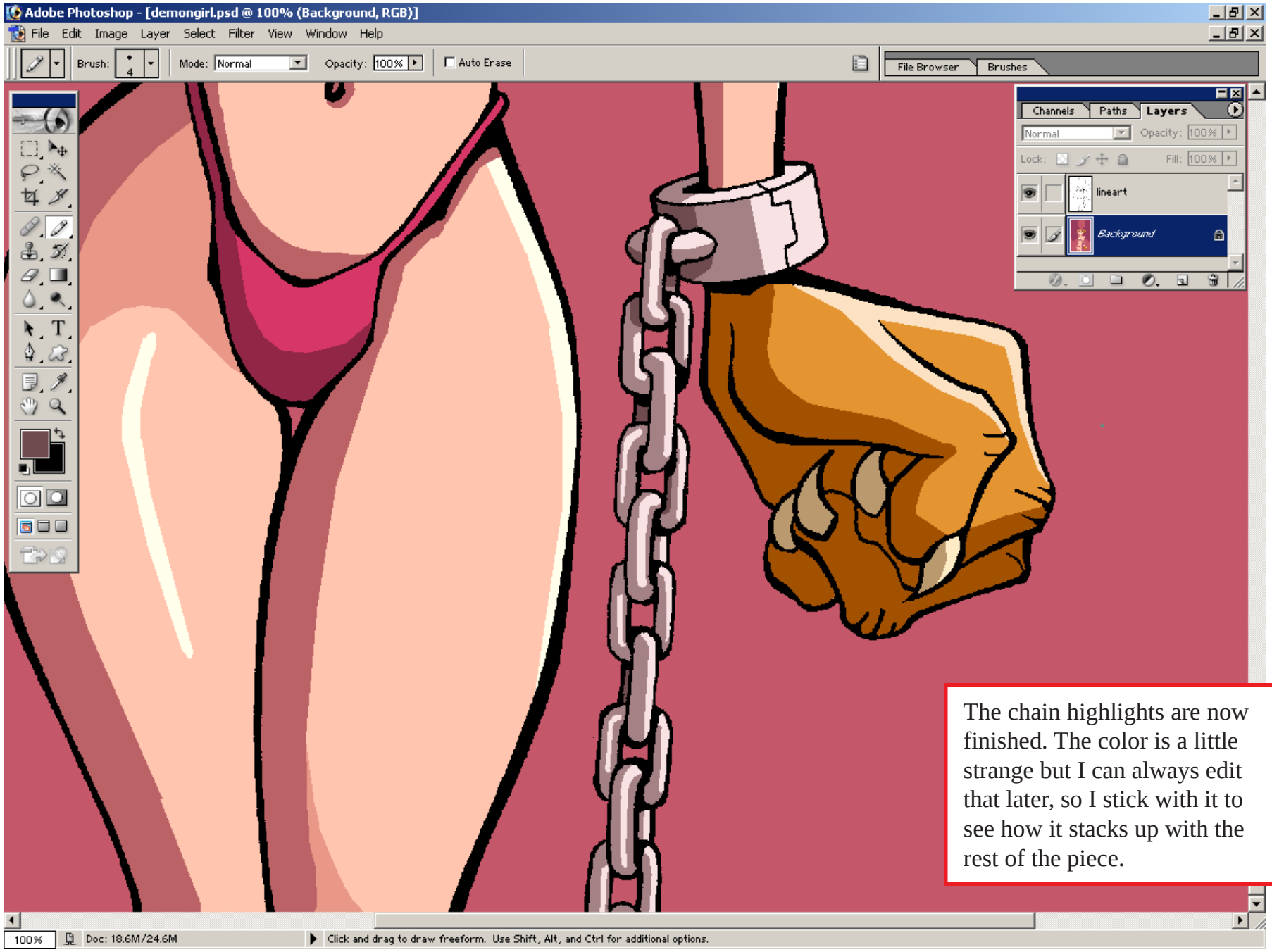
Time to fill in her clothes. I settle on a red color.



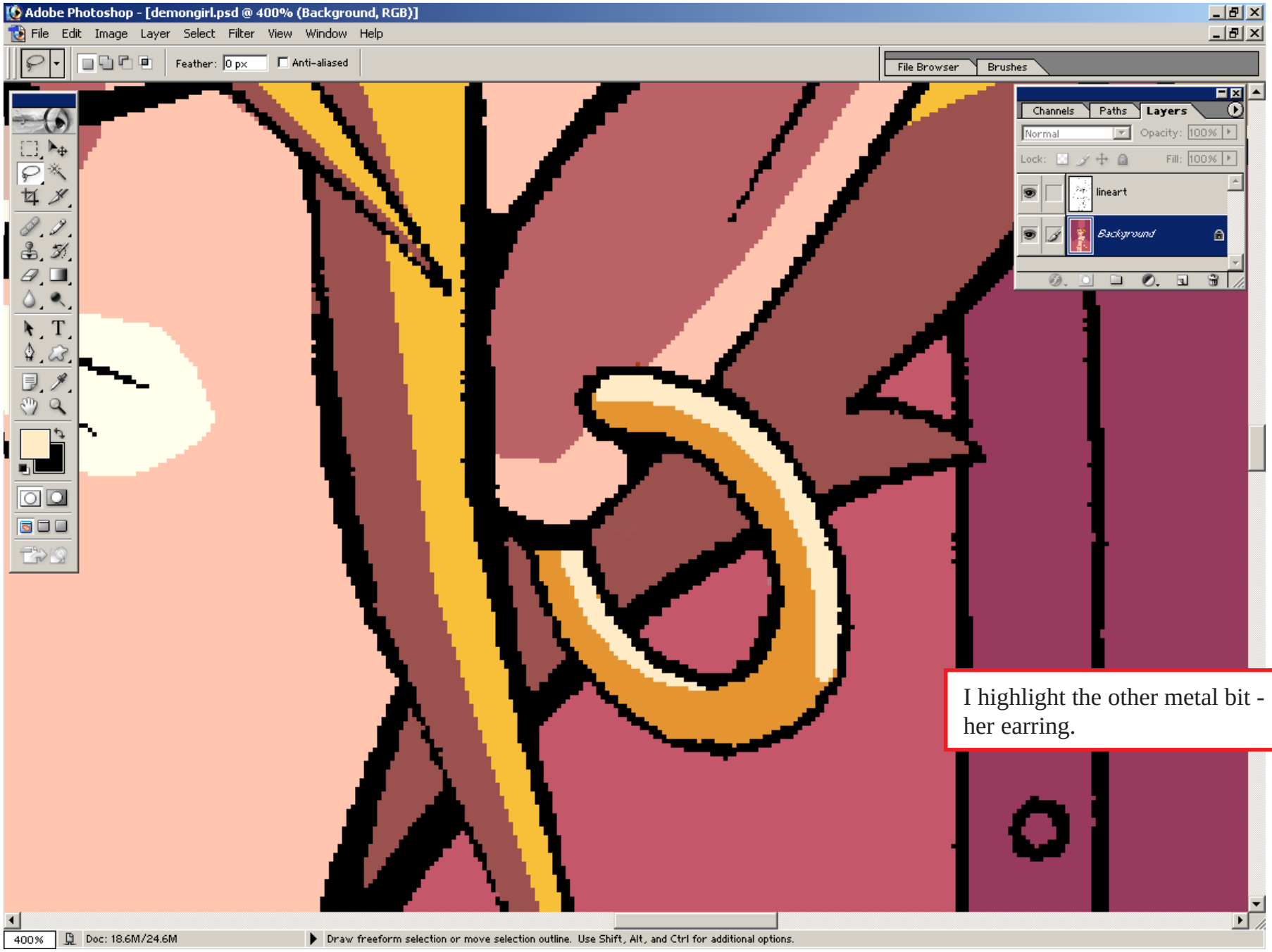
I shade the red with a darker value. The colors can still be tweaked and I'm not sure I'm happy with the color yet. So instead I aim for working up a compatible contrast.

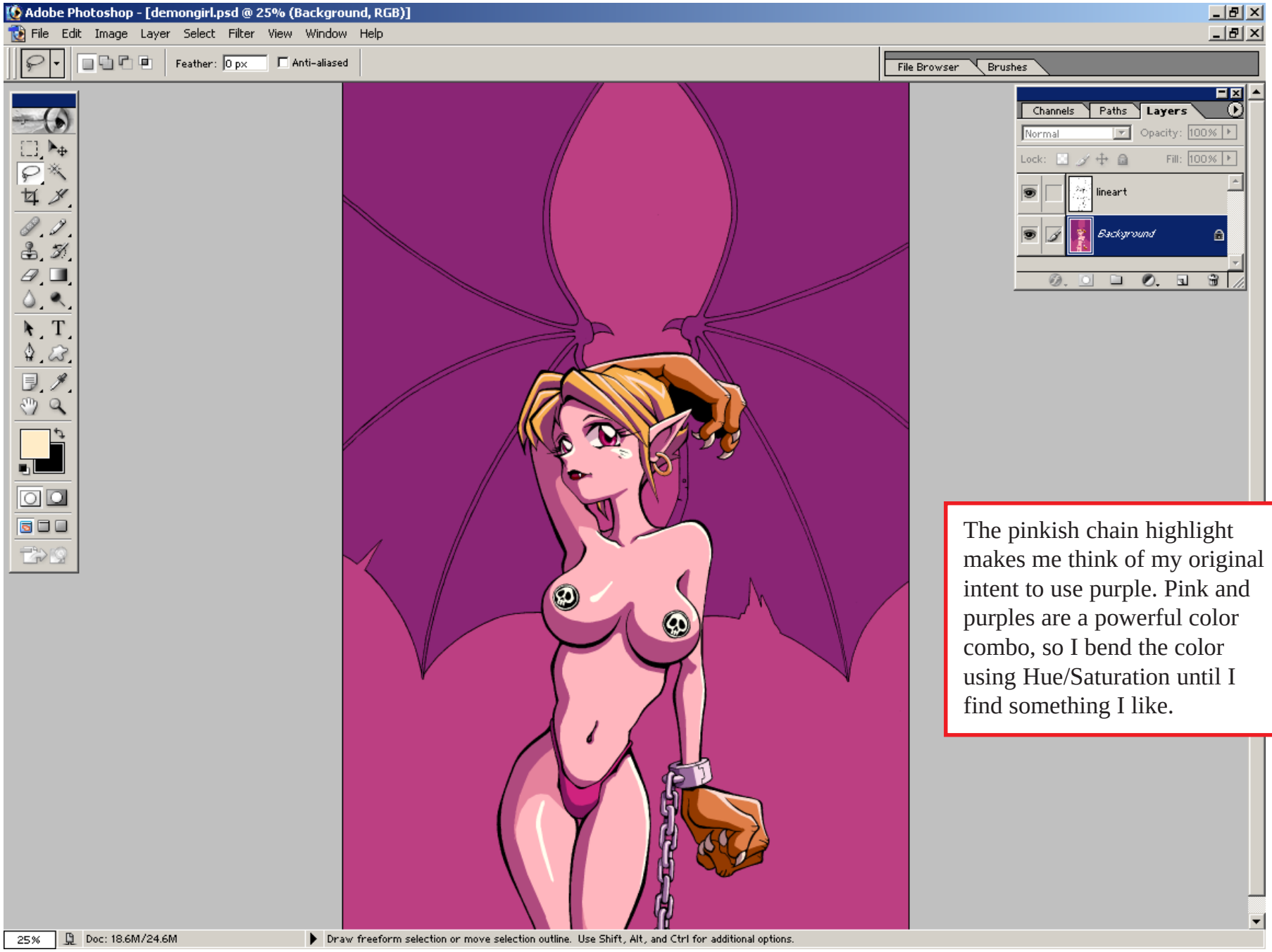

Adobe Photoshop - [demongirl.psd @ 325% (Background, RGB)]
File Edit Image Layer Select Filter View Window Help
Feather: 0 px
Anti-aliased
File Browser
Brushes
Channels
Paths
Layers
Normal
Opacity: 100%
Lock:
Fill: 100%
lineart
Background
Highlights for the chain. I'm still only using the lasso and fill tools.
324.89%
Doc: 18.6M/24.6M
Draw freeform selection or move selection outline. Use Shift, Alt, and Ctrl for additional options.


Adobe Photoshop - [demongirl.psd @ 106% (Background, RGB)]
File Edit Image Layer Select Filter View Window Help
Brush: Mode: Normal Opacity: 100% Auto Erase
File Browser Brushes
Channels Paths Layers
Normal Opacity: 100%
Lock: Fill: 100%
lineart
Background
I carry the shading down the chains.
106.04% Doc: 18.6M/24.6M
Click and drag to draw freeform. Use Shift, Alt, and Ctrl for additional options.

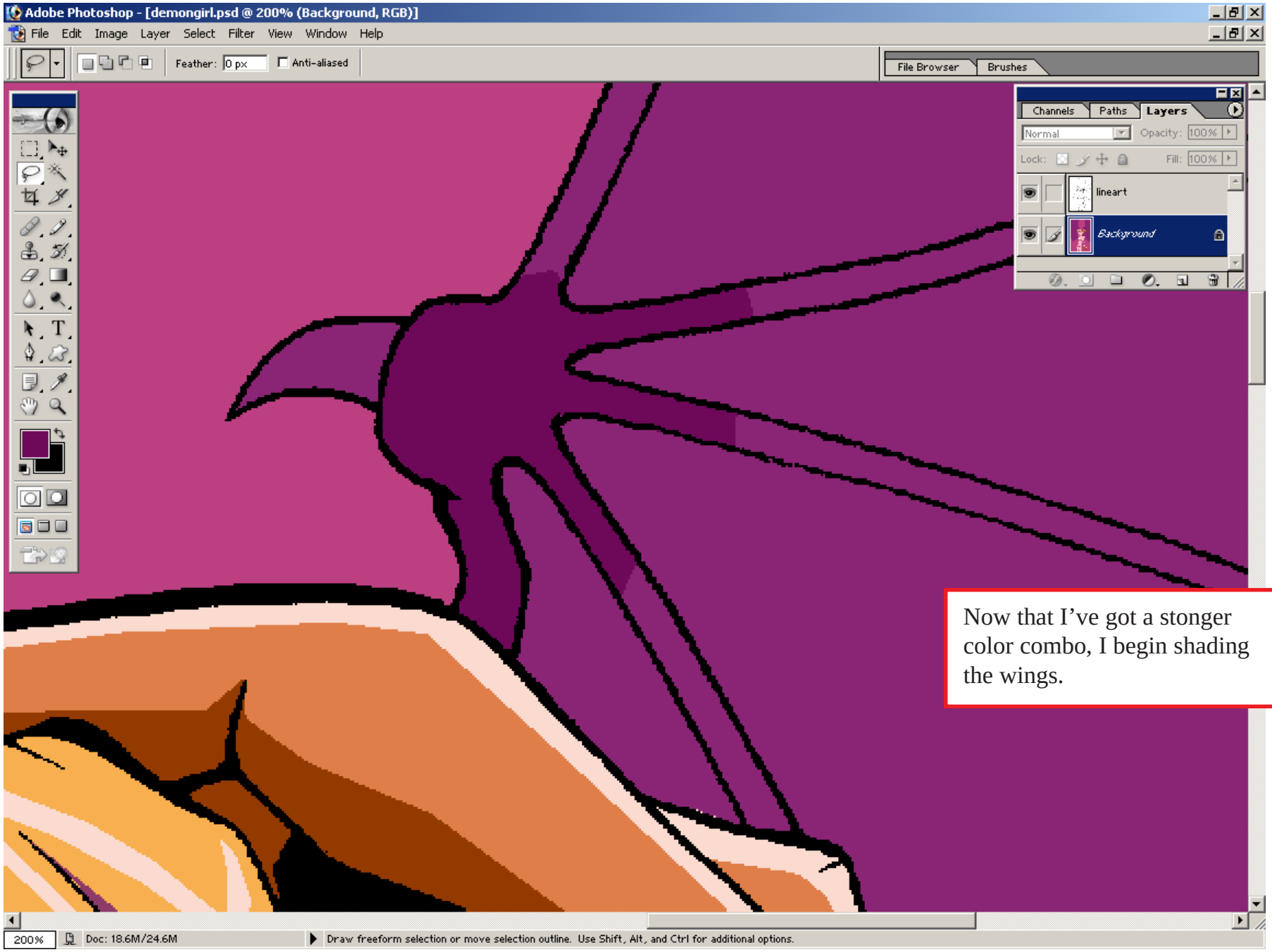


The chain highlights are now finished. The color is a little strange but I can always edit that later, so I stick with it to see how it stacks up with the rest of the piece.

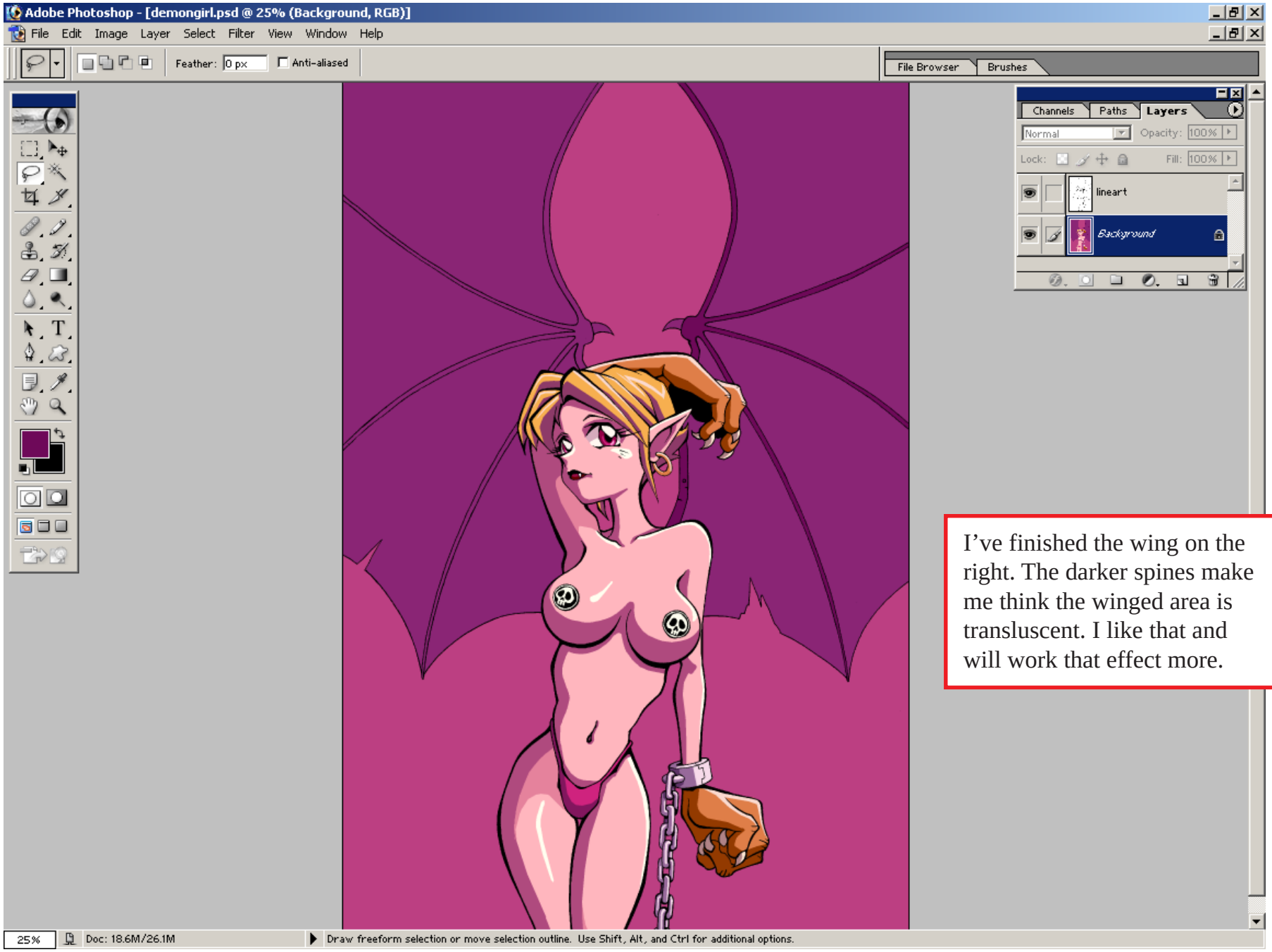

Adobe Photoshop - [demongirl.psd @ 400% (Background, RGB)]
File Edit Image Layer Select Filter View Window Help
Feather: 0 px
Anti-aliased
File Browser
Brushes
Channels
Paths
Layers
Normal
Opacity: 100%
Lock:
Fill: 100%
lineart
Background
I highlight the other metal bit - her earring.
400%
Doc: 18.6M/24.6M
Draw freeform selection or move selection outline. Use Shift, Alt, and Ctrl for additional options.



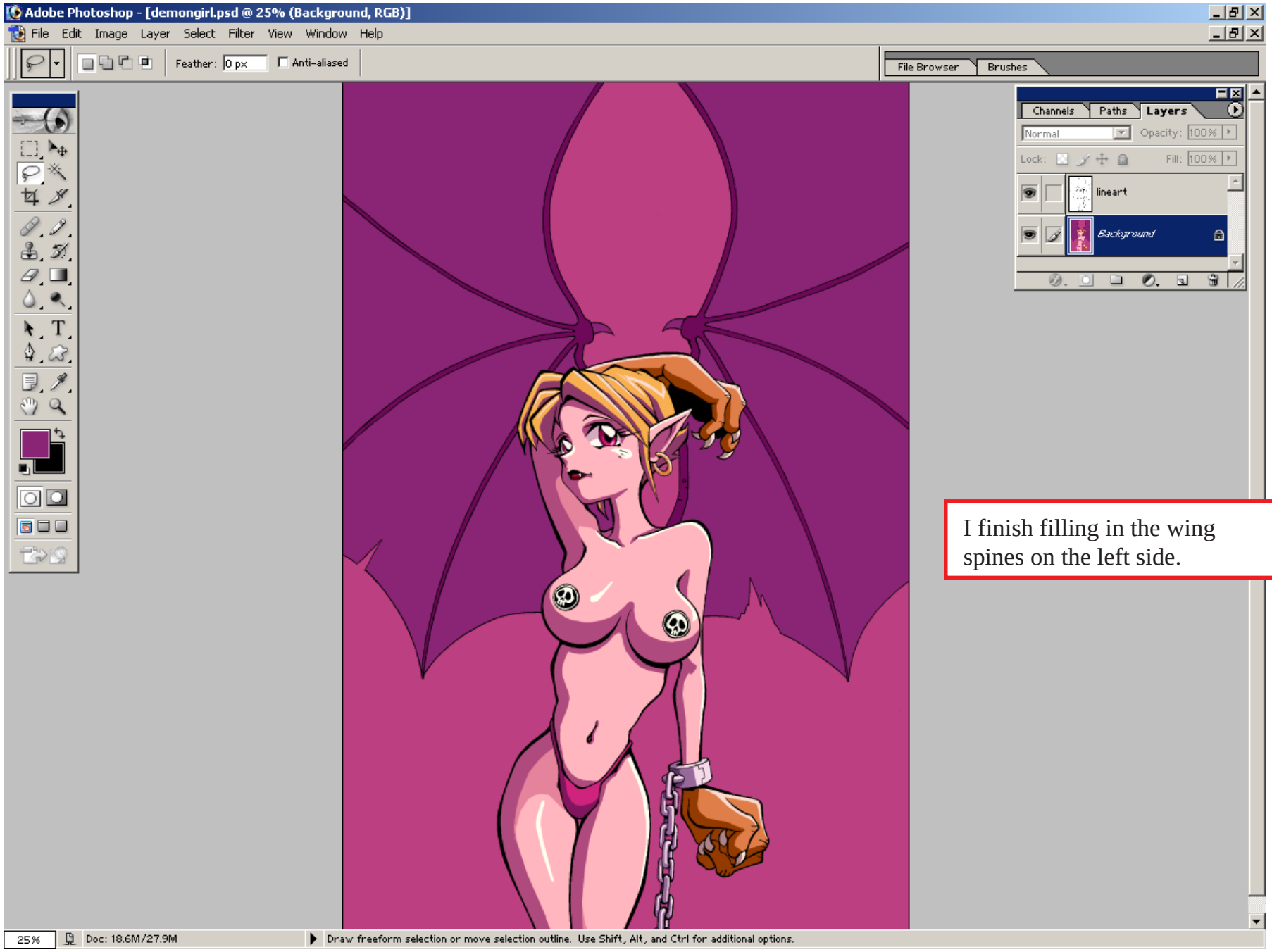
The pinkish chain highlight makes me think of my original intent to use purple. Pink and purples are a powerful color combo, so I bend the color using Hue/Saturation until I find something I like.



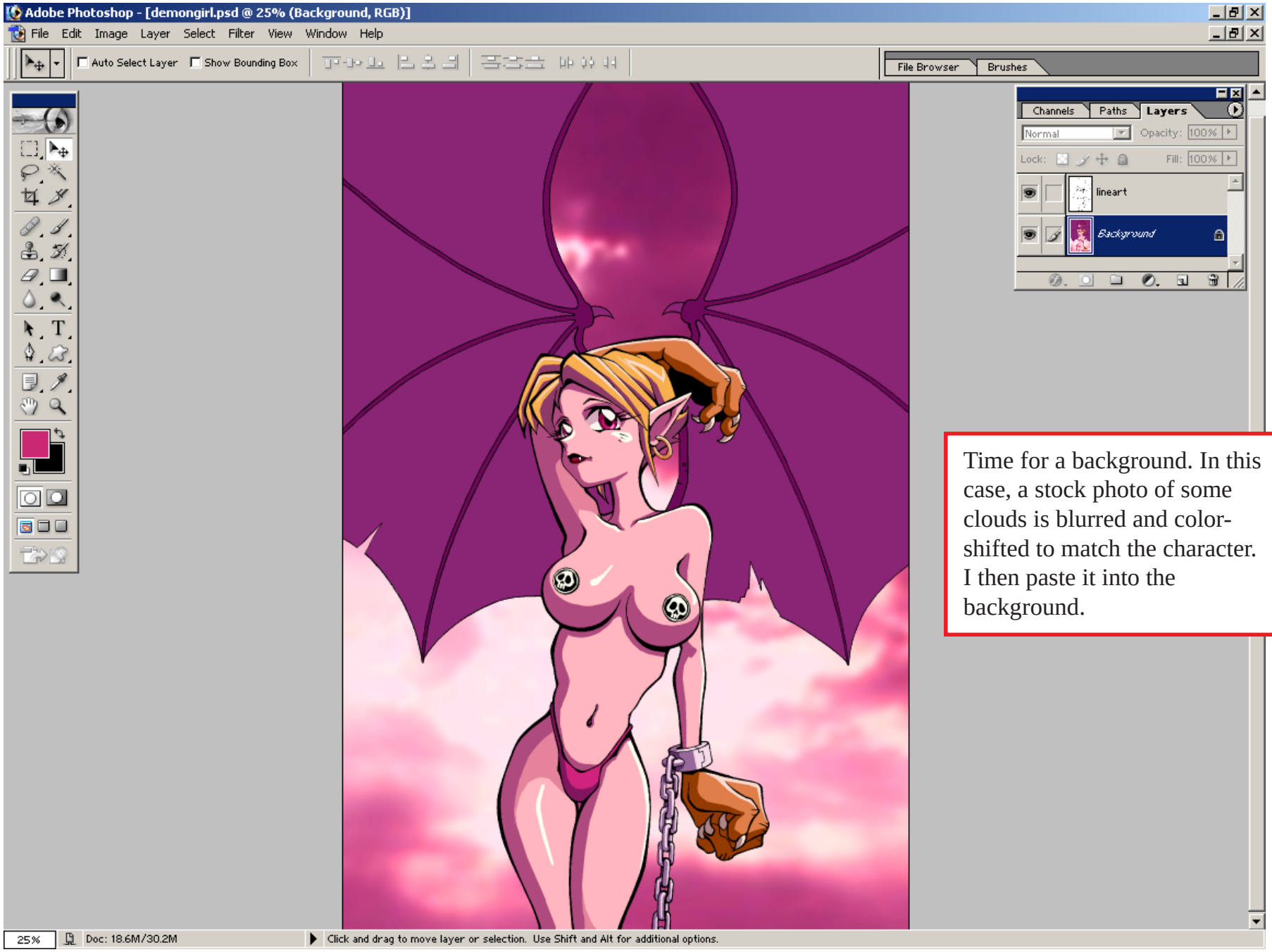
Now that I've got a stonger color combo, I begin shading the wings.



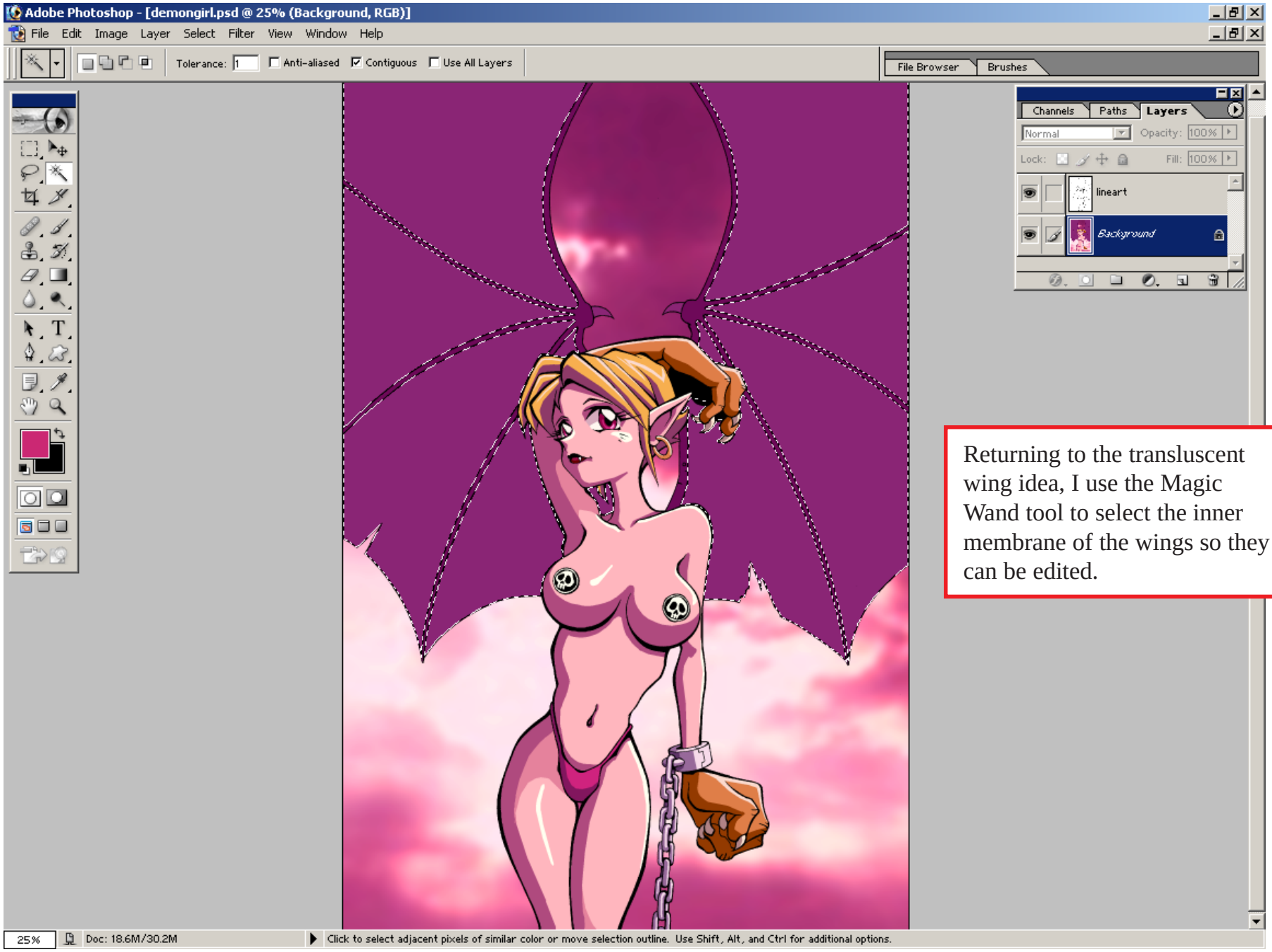
I've finished the wing on the right. The darker spines make me think the winged area is transluscent. I like that and will work that effect more.



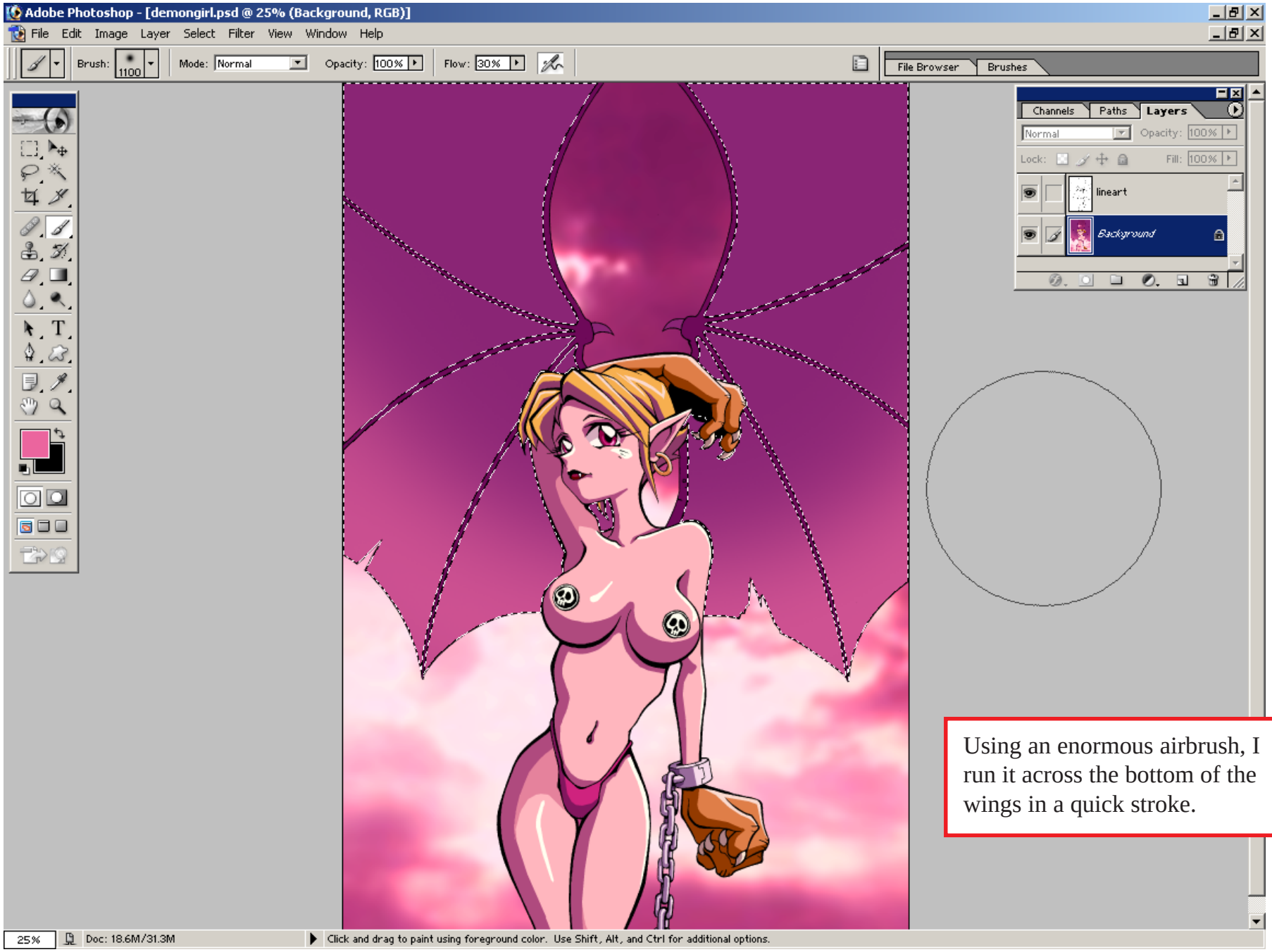
I finish filling in the wing spines on the left side.



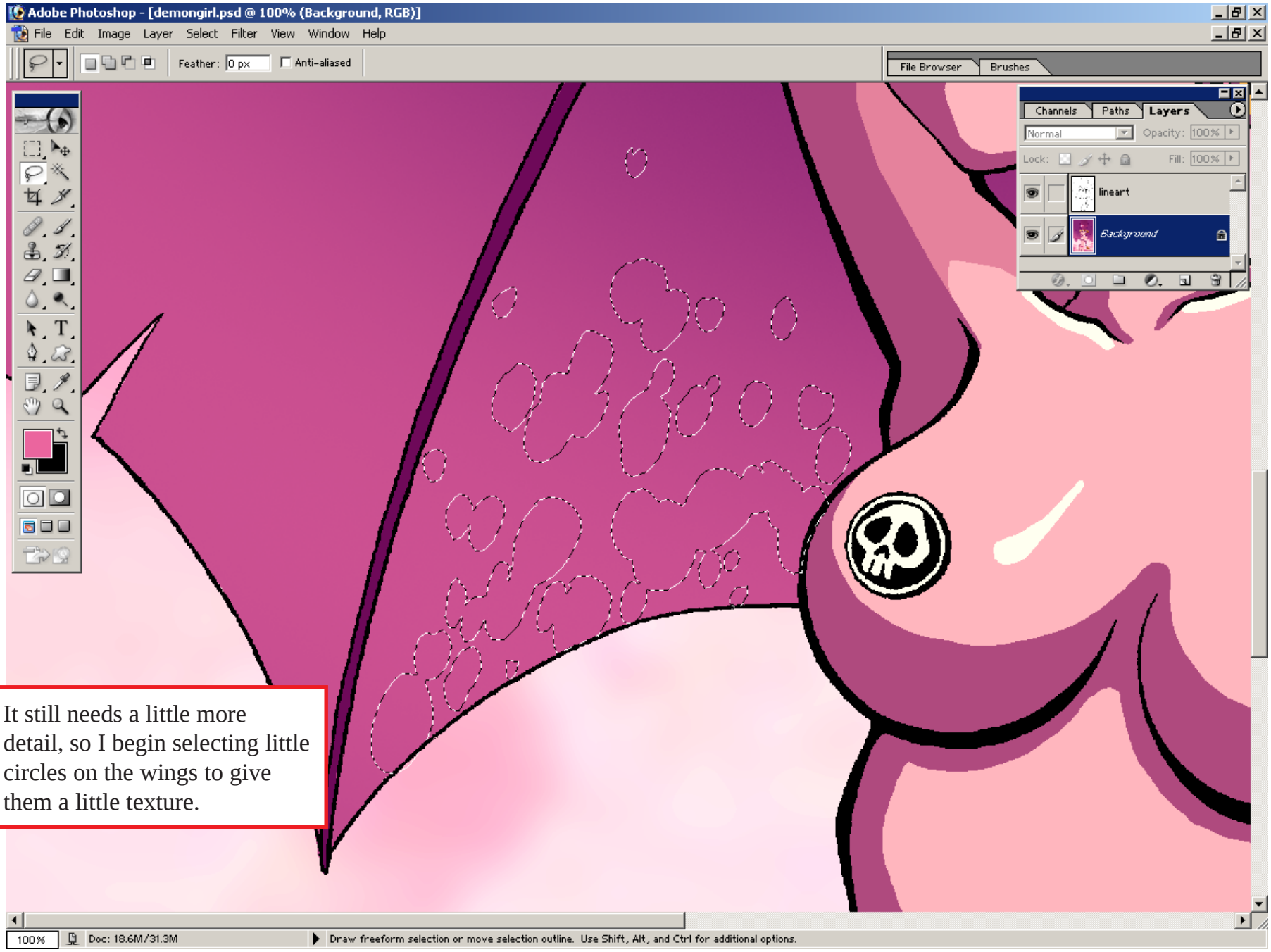
Time for a background. In this case, a stock photo of some clouds is blurred and color-shifted to match the character. I then paste it into the background.



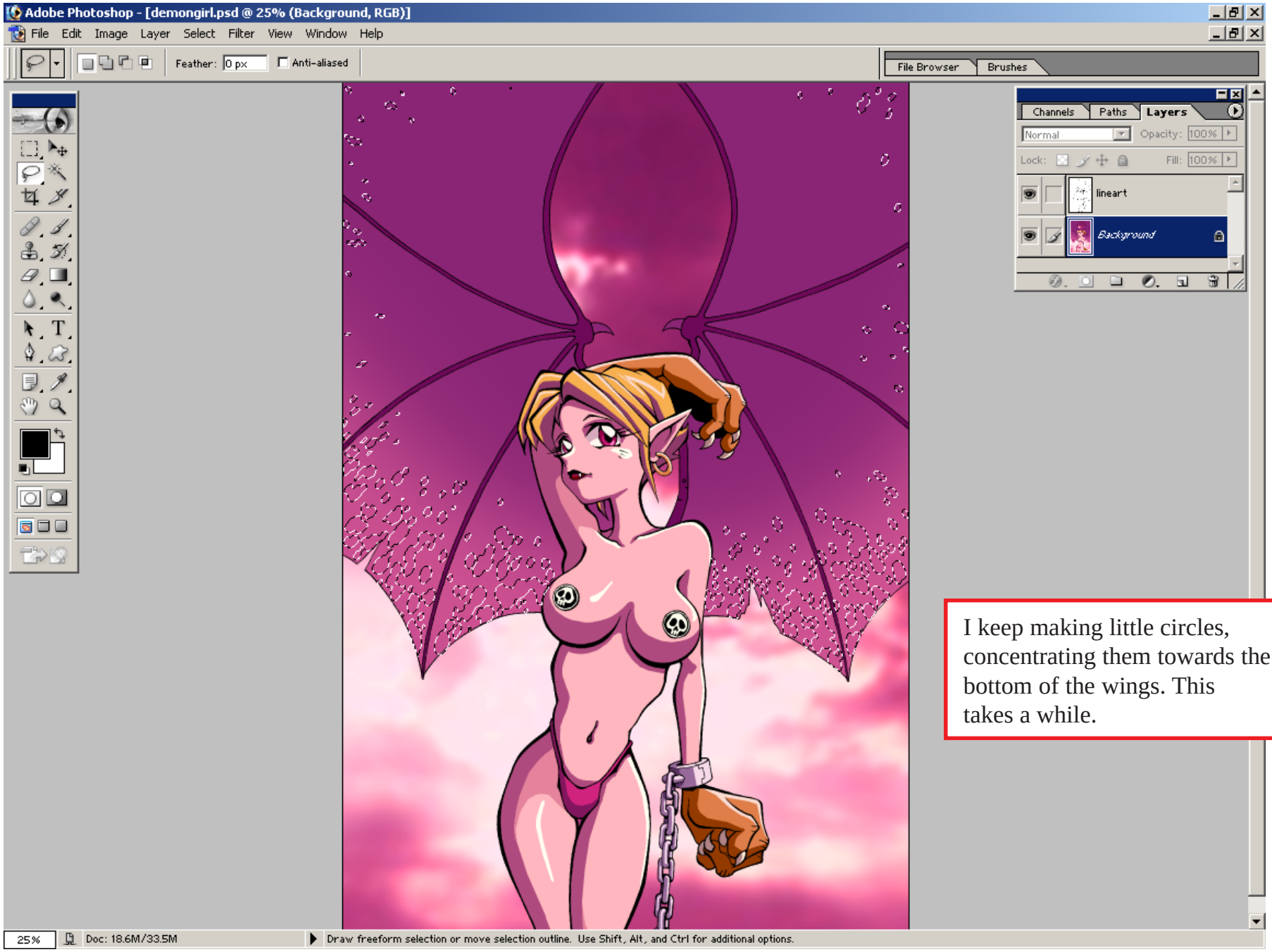
Returning to the transluscent wing idea, I use the Magic Wand tool to select the inner membrane of the wings so they can be edited.



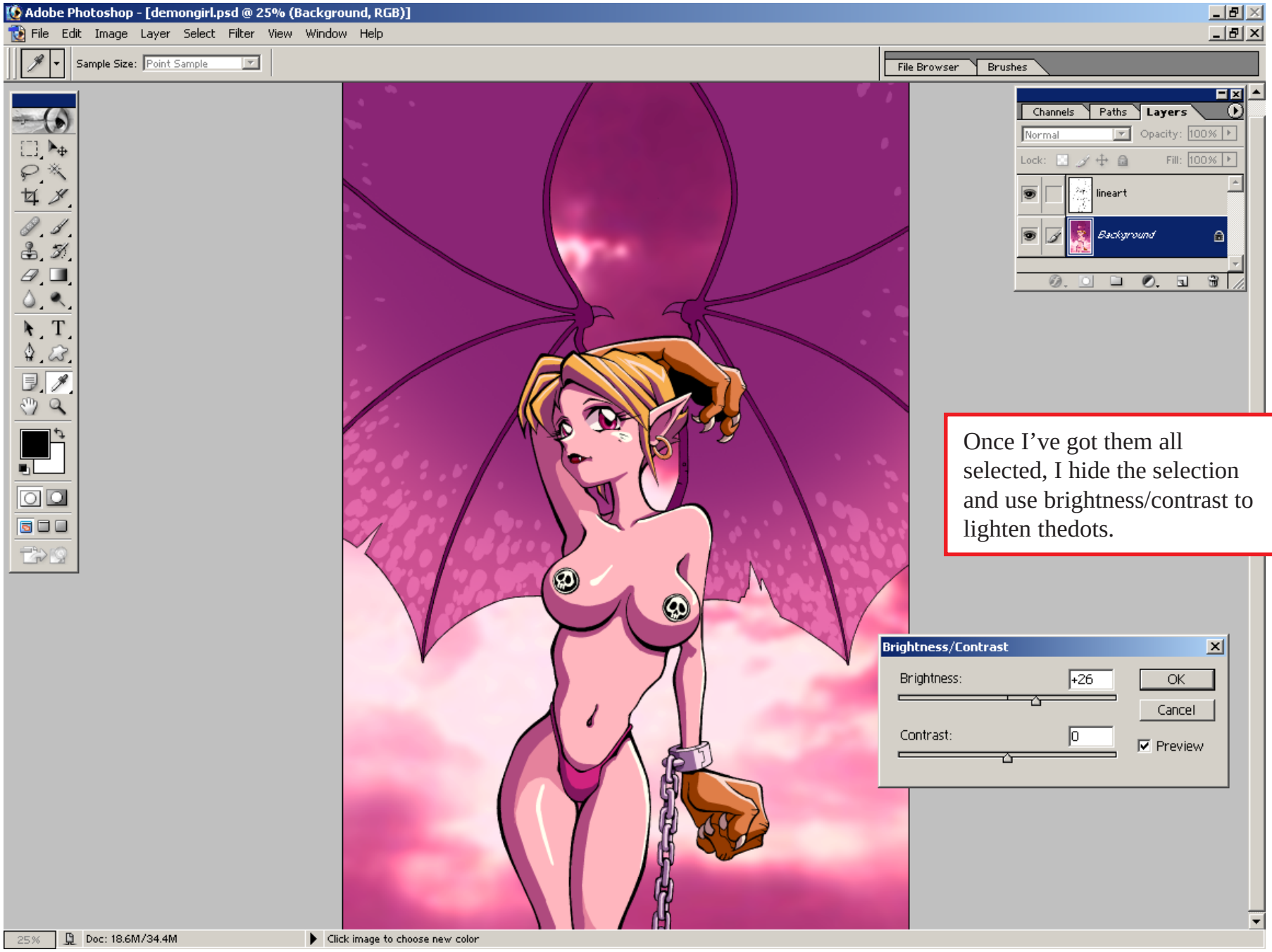
Using an enormous airbrush, I run it across the bottom of the wings in a quick stroke.



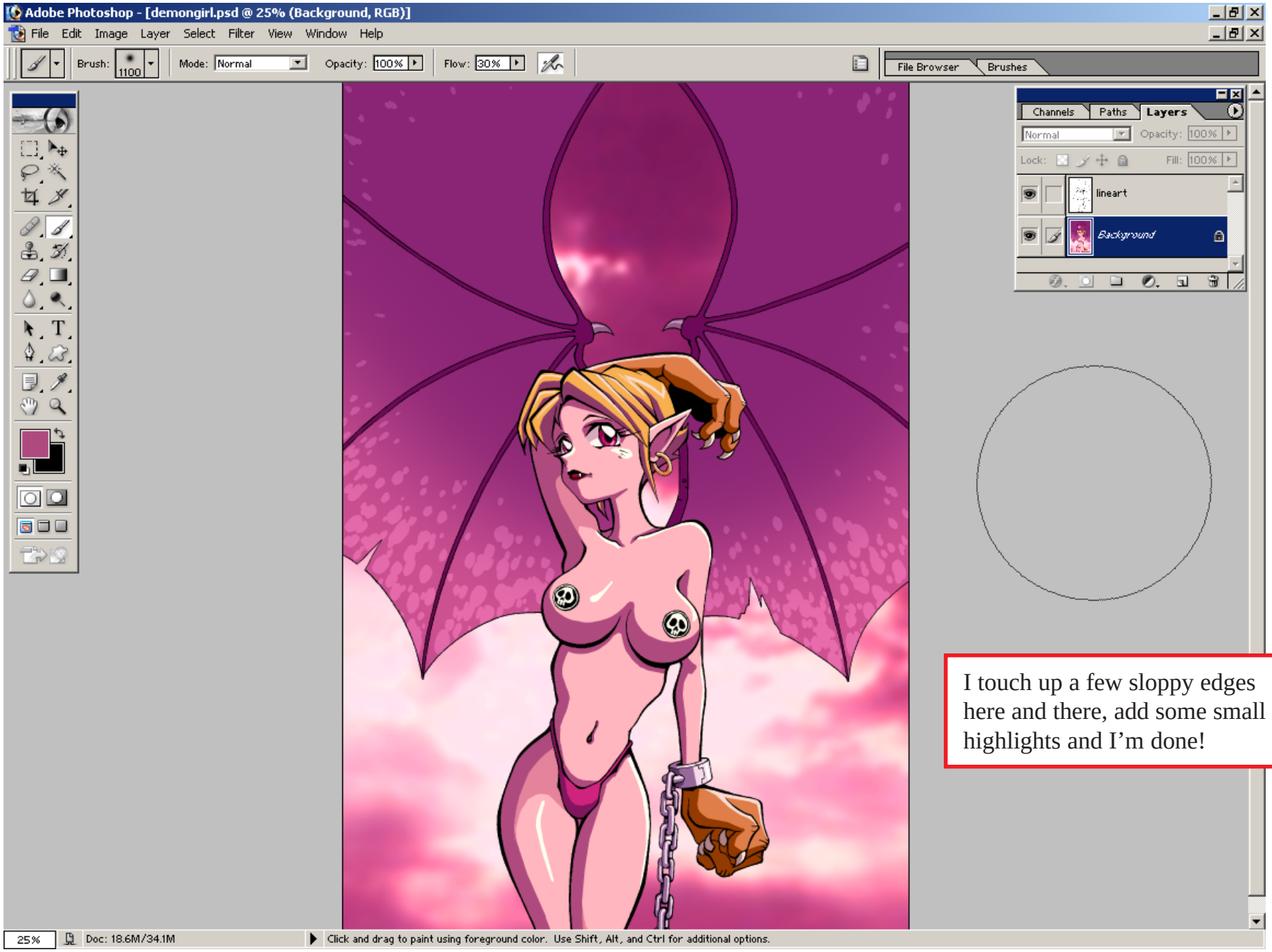
It still needs a little more detail, so I begin selecting little circles on the wings to give them a little texture.



I keep making little circles, concentrating them towards the bottom of the wings. This takes a while.



Once I've got them all selected, I hide the selection and use brightness/contrast to lighten thedots.



I touch up a few sloppy edges here and there, add some small highlights and I'm done!

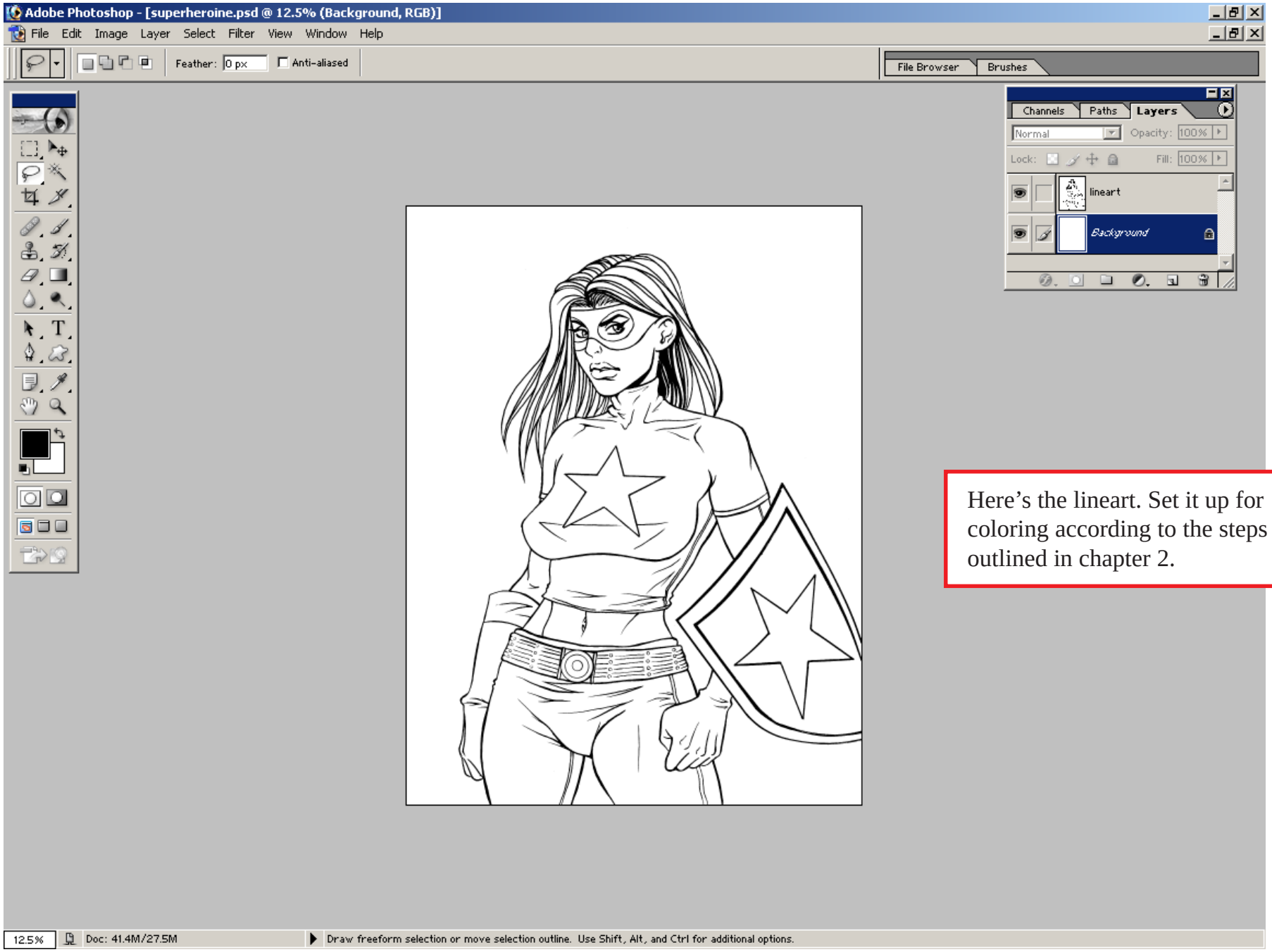
5 Coloring Part 4 - Cuts-styled Coloring

Cuts-styled coloring is a little more complicated than anime color. “Cuts” refer to the narrow selections made with the lasso tool. These selections are then airbrushed and, when built up in layers, produce a very slick highlight.

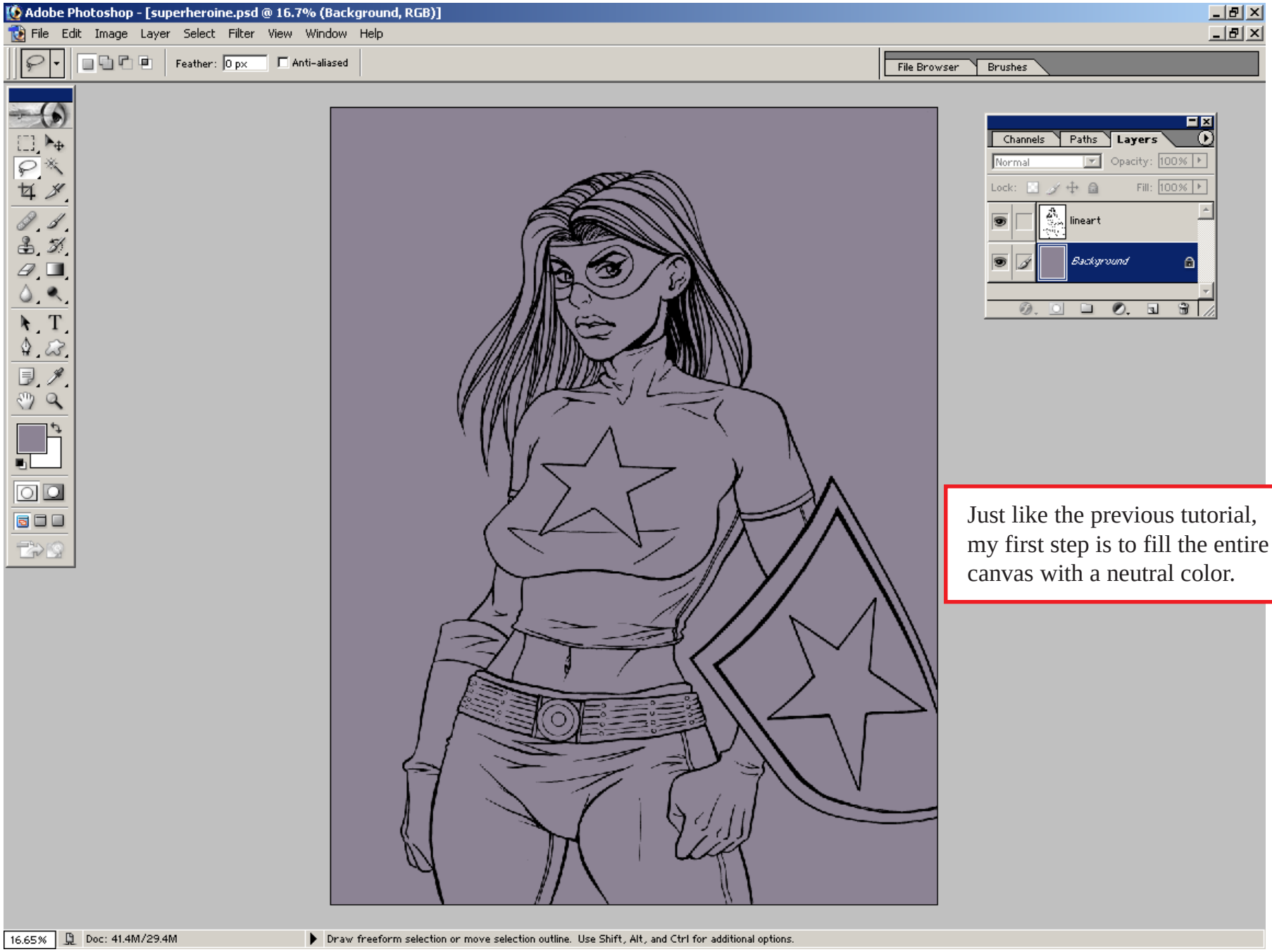
Cut-styled coloring is pretty popular; you see it a lot in commerical comic coloring. Currently this style dominates the super-hero genre and is probably the the style most synonimous with computer coloring. Understandably, there’s a lot of interest in this style.

Despite looking exteremely complex, it’s not too difficult to do. The technique is simple and fast and produces impressive results. It does, however, require some practice to do well.

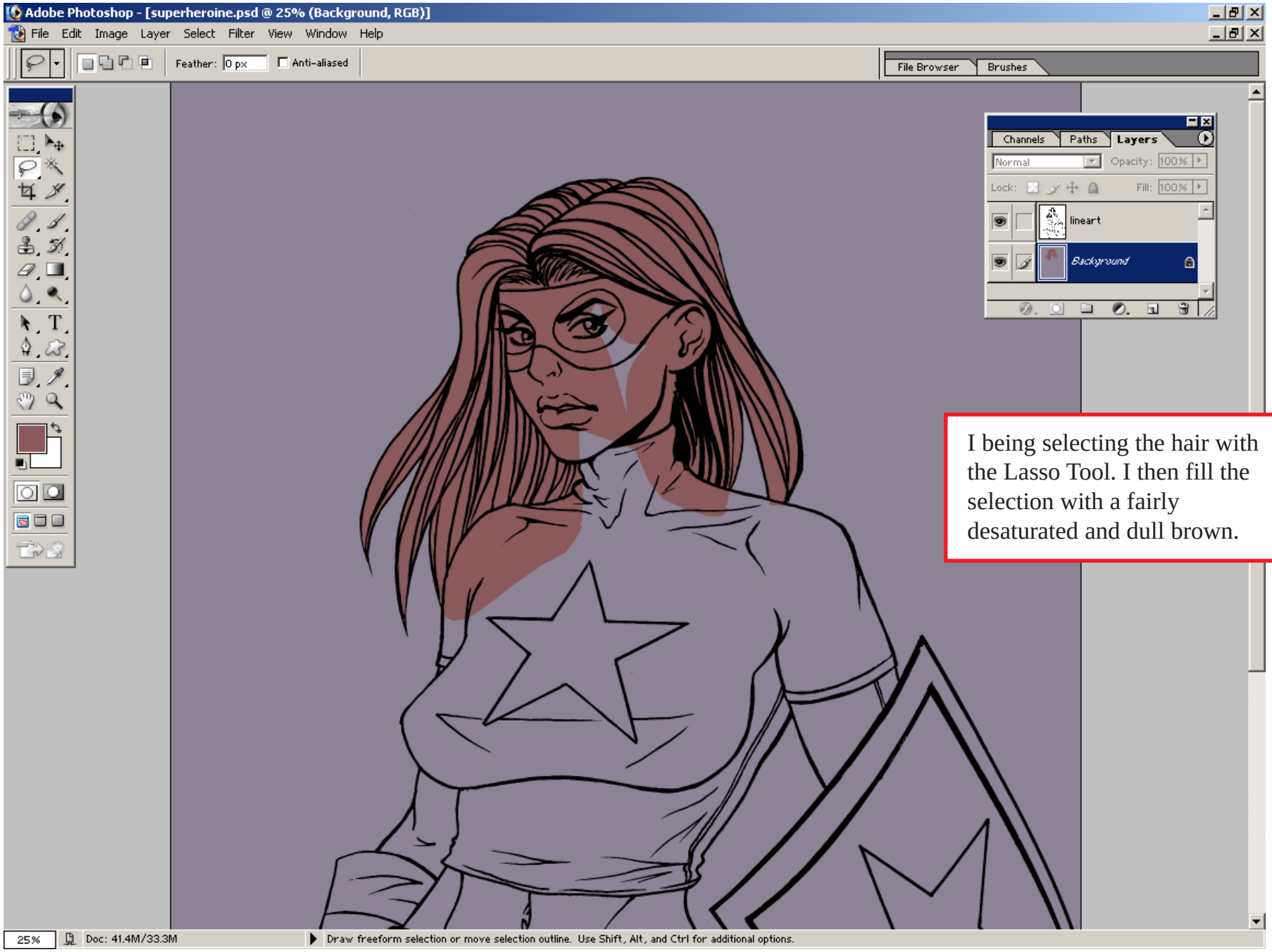
In this example I’m coloring a superheroine graciously provided by Will Allison. Again, I’ll take you from beginning to end. Of course, the lineart is on the CD so you can practice on this piece as well. My final version is also saved on the CD as a .PSD file so you can examine it closely.

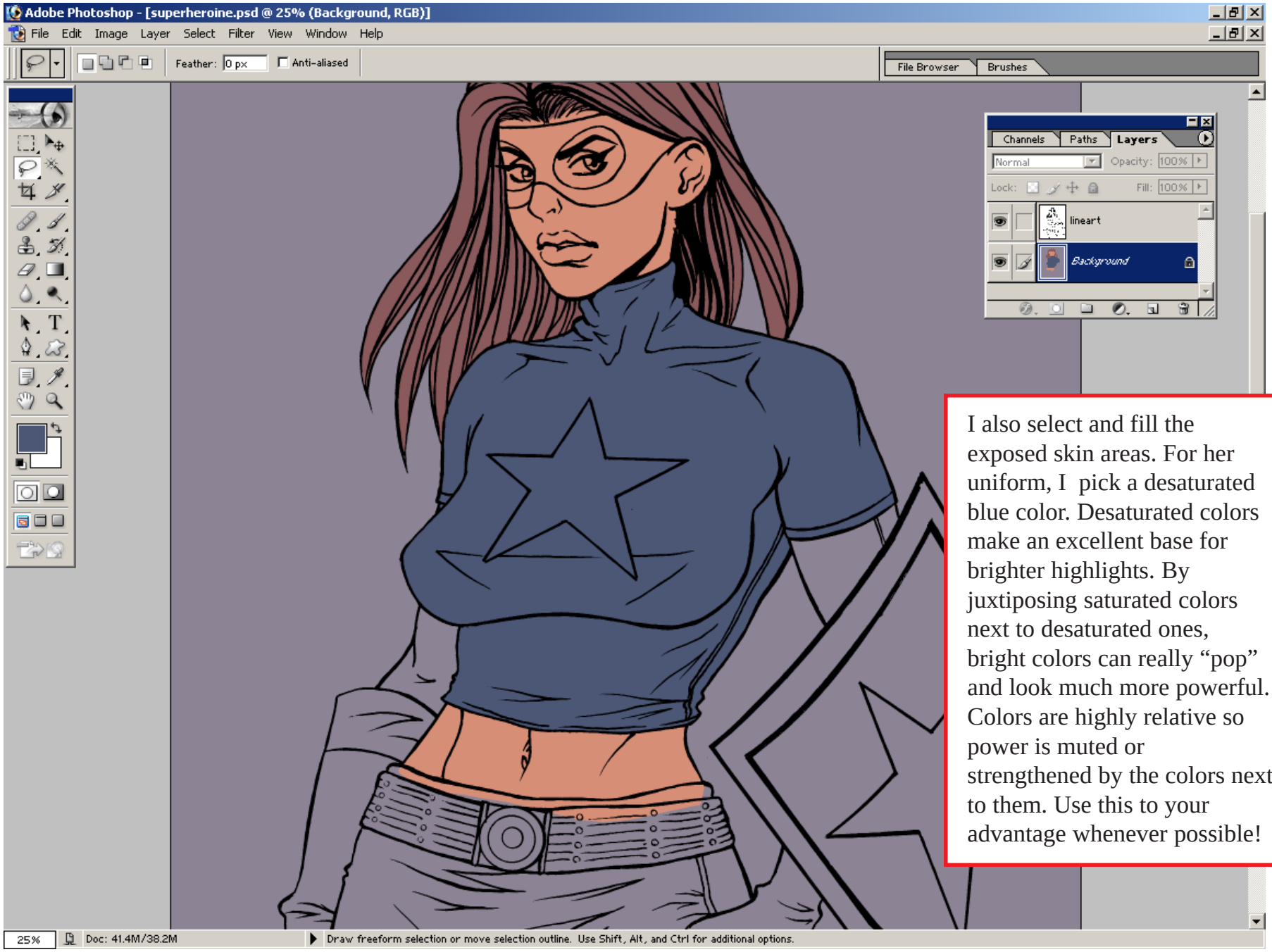


Here's the lineart. Set it up for coloring according to the steps outlined in chapter 2.

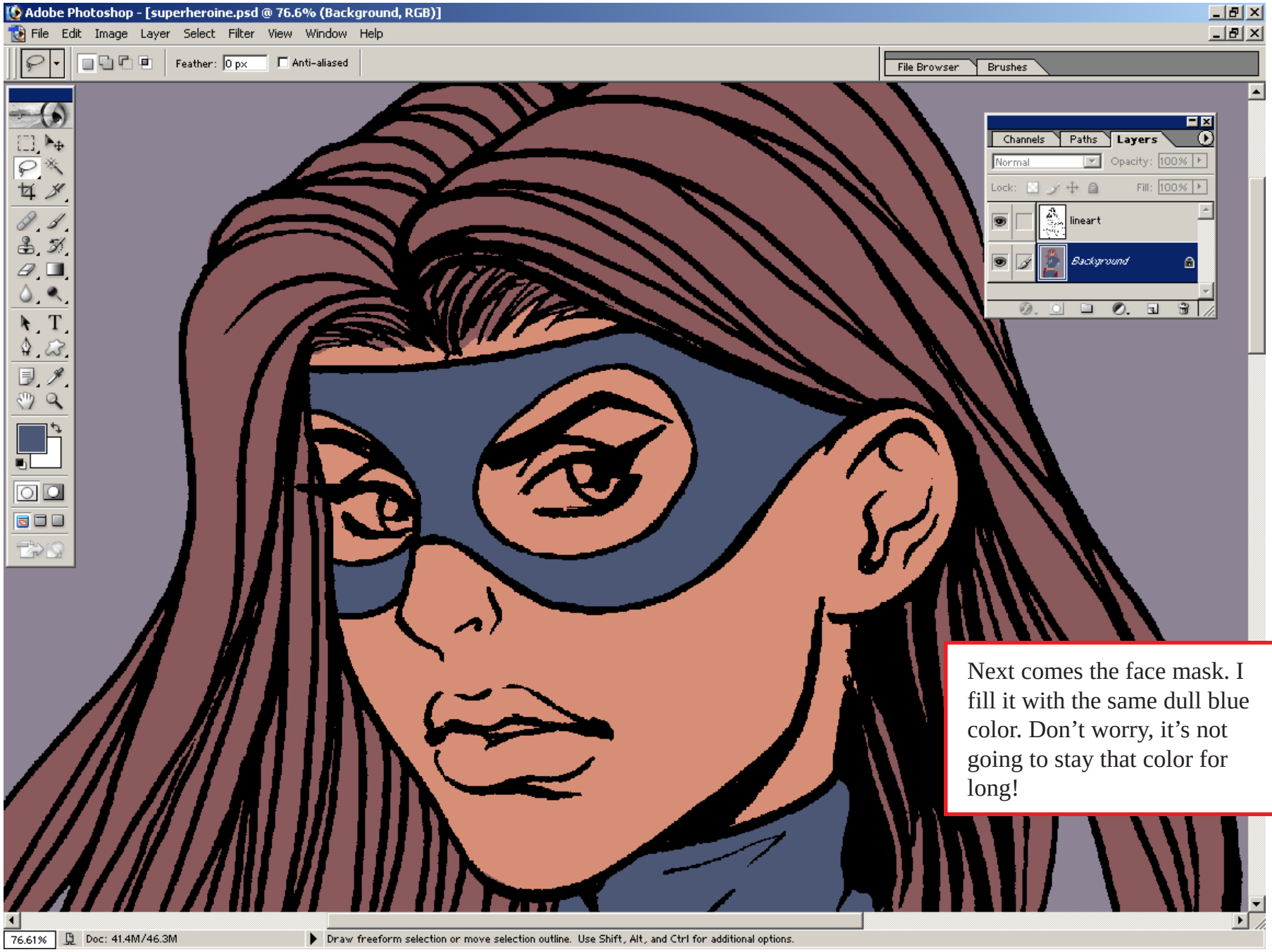


Just like the previous tutorial, my first step is to fill the entire canvas with a neutral color.

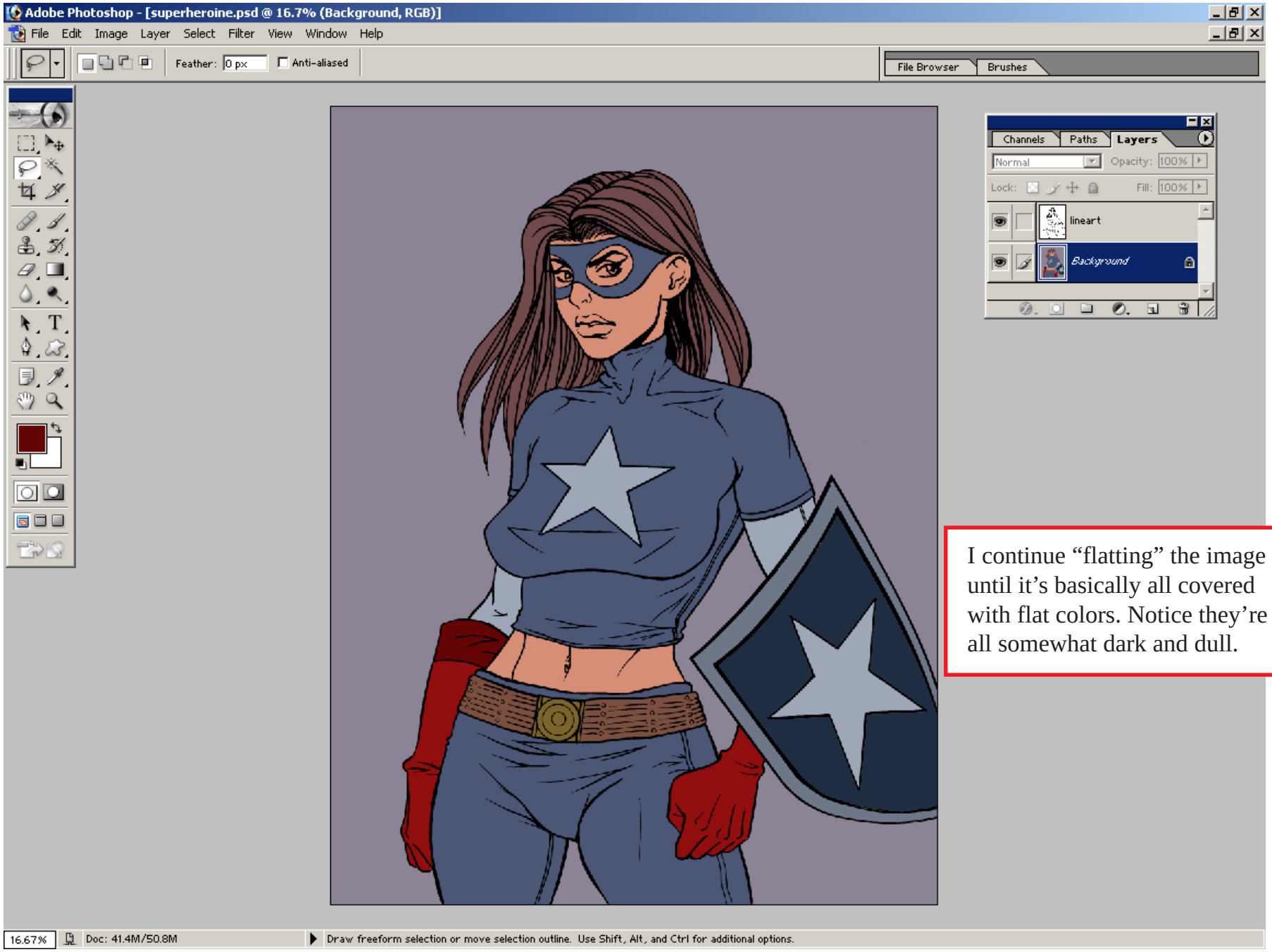

Adobe Photoshop - [superheroine.psd @ 25% (Background, RGB)]
File Edit Image Layer Select Filter View Window Help
Feather: 0 px
Anti-aliased
File Browser
Brushes
Channels
Paths
Layers
Normal
Opacity: 100%
Lock:
Fill: 100%
lineart
Background
I being selecting the hair with the Lasso Tool. I then fill the selection with a fairly desaturated and dull brown.
25%
Doc: 41.4M/33.3M
Draw freeform selection or move selection outline. Use Shift, Alt, and Ctrl for additional options.



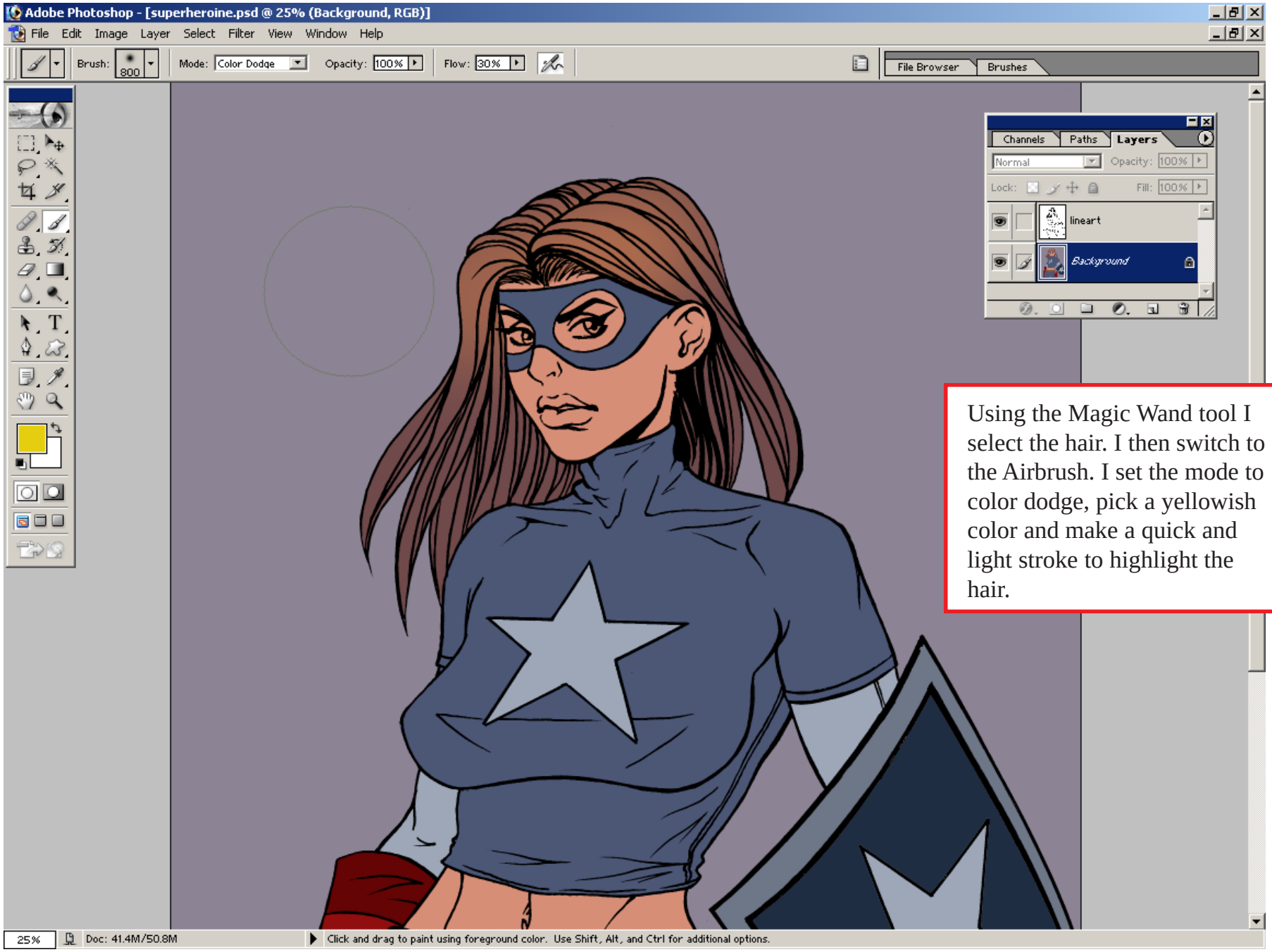
I also select and fill the exposed skin areas. For her uniform, I pick a desaturated blue color. Desaturated colors make an excellent base for brighter highlights. By juxtiposing saturated colors next to desaturated ones, bright colors can really “pop” and look much more powerful. Colors are highly relative so power is muted or strengthened by the colors next to them. Use this to your advantage whenever possible!



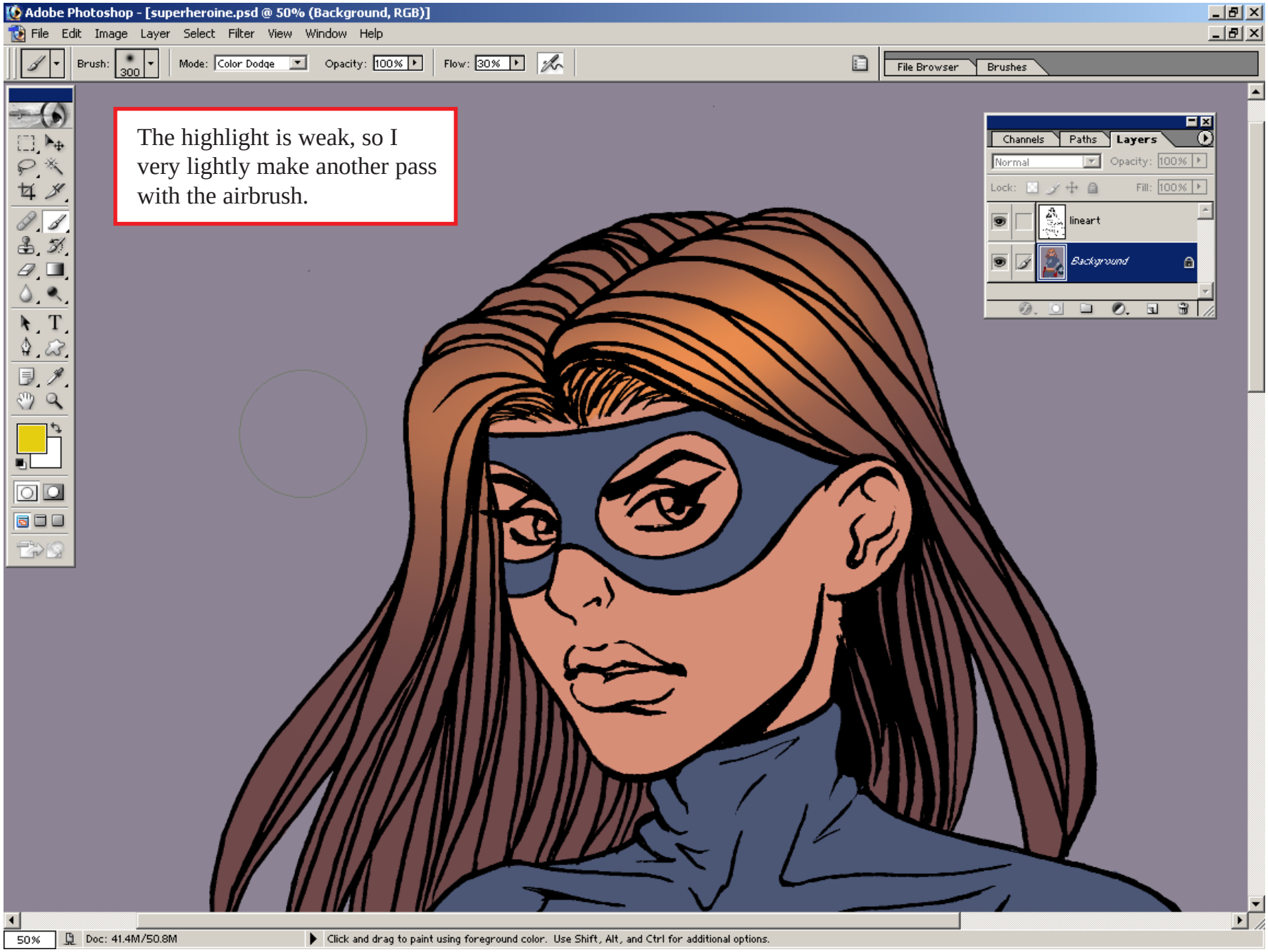
Next comes the face mask. I fill it with the same dull blue color. Don't worry, it's not going to stay that color for long!

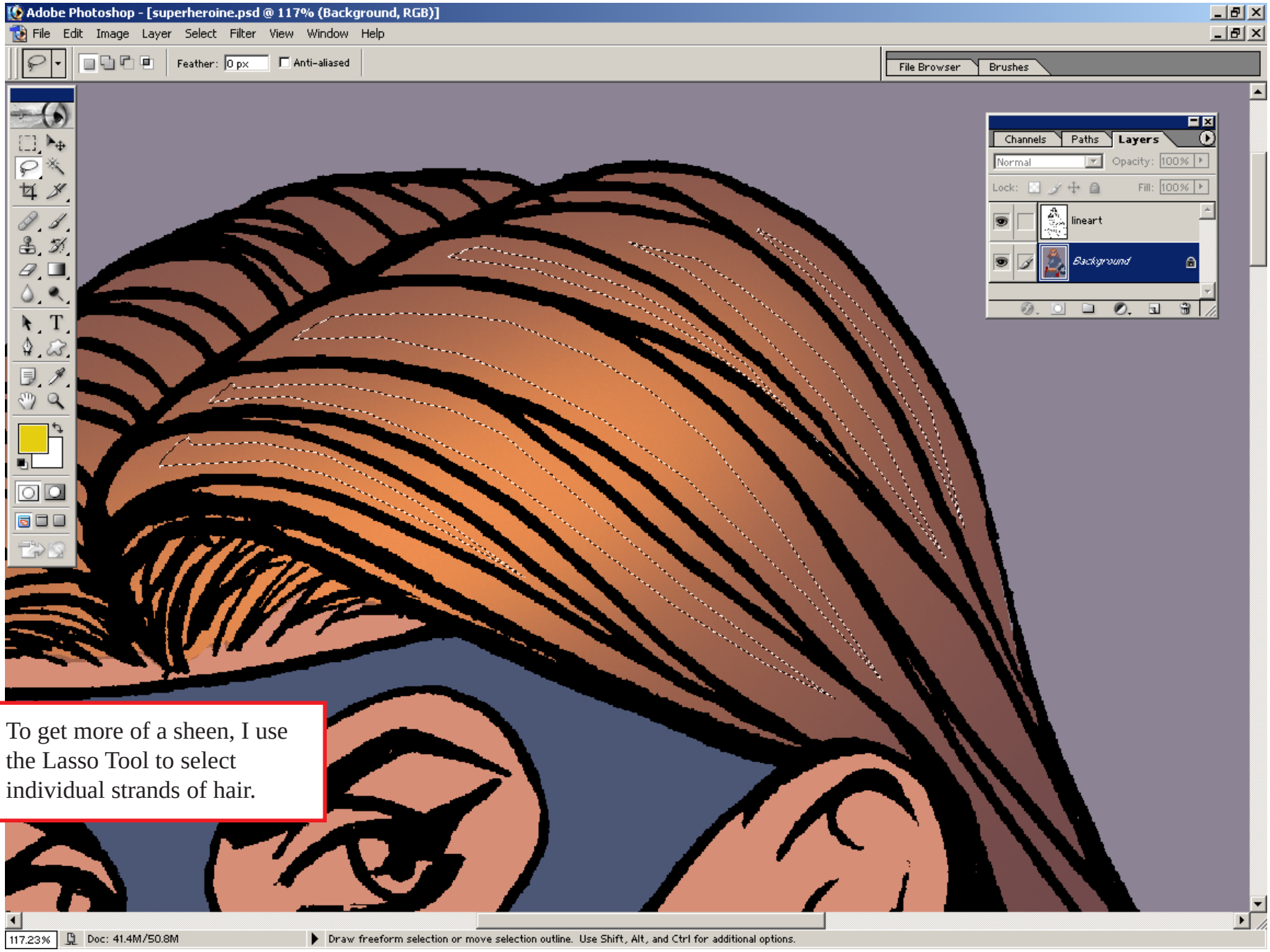


I continue “flatting” the image until it’s basically all covered with flat colors. Notice they’re all somewhat dark and dull.

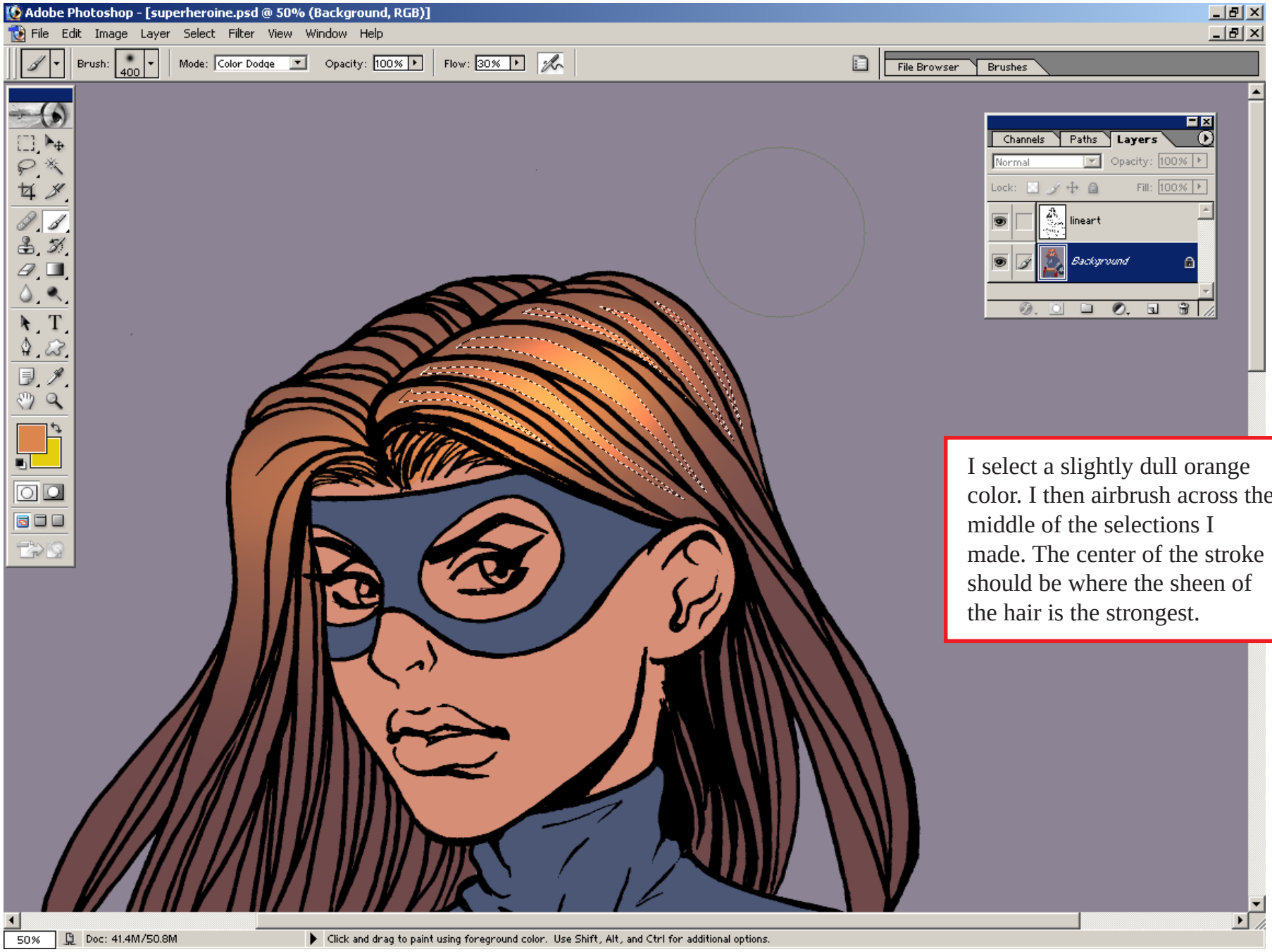


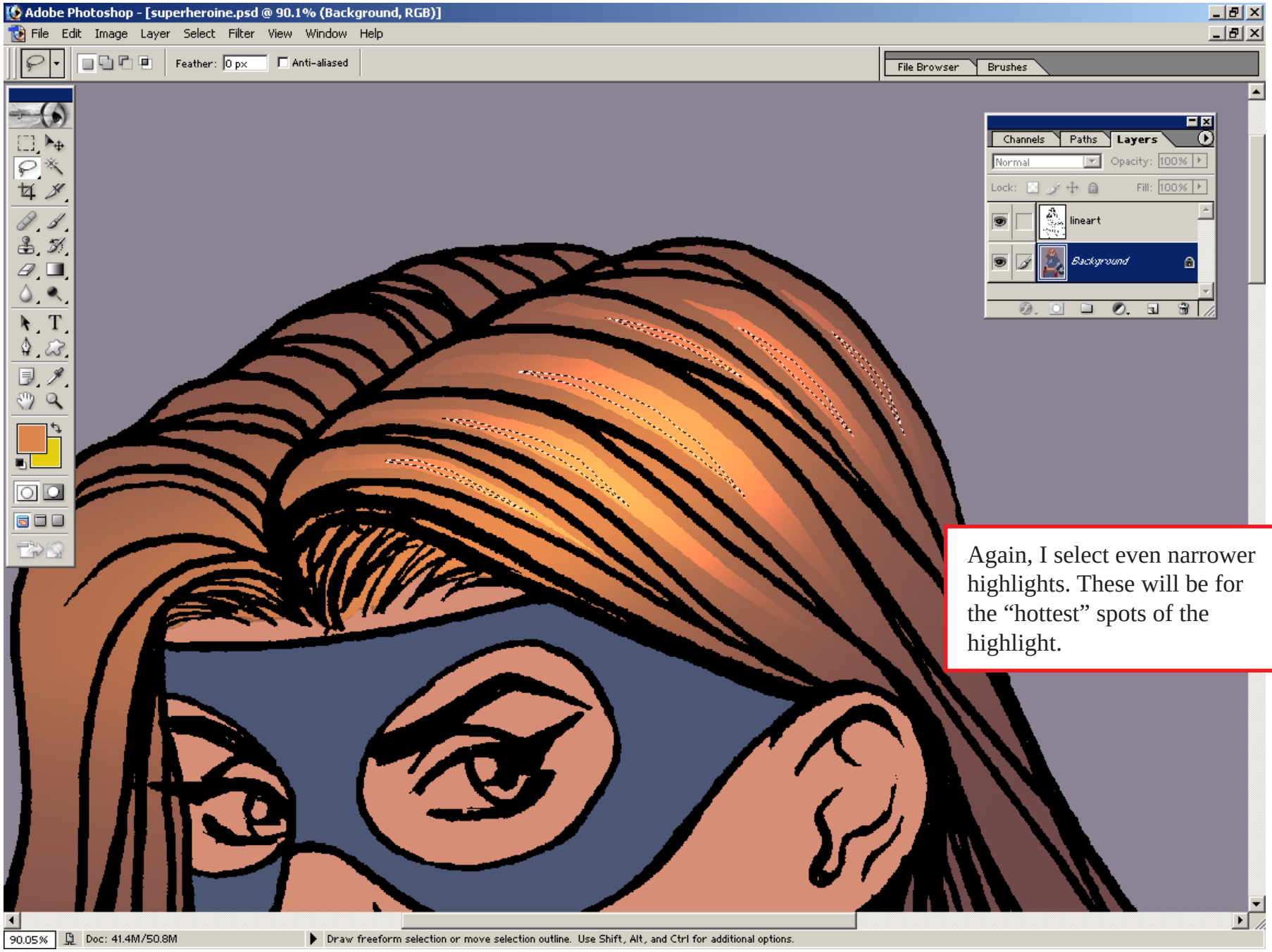
Using the Magic Wand tool I select the hair. I then switch to the Airbrush. I set the mode to color dodge, pick a yellowish color and make a quick and light stroke to highlight the hair.

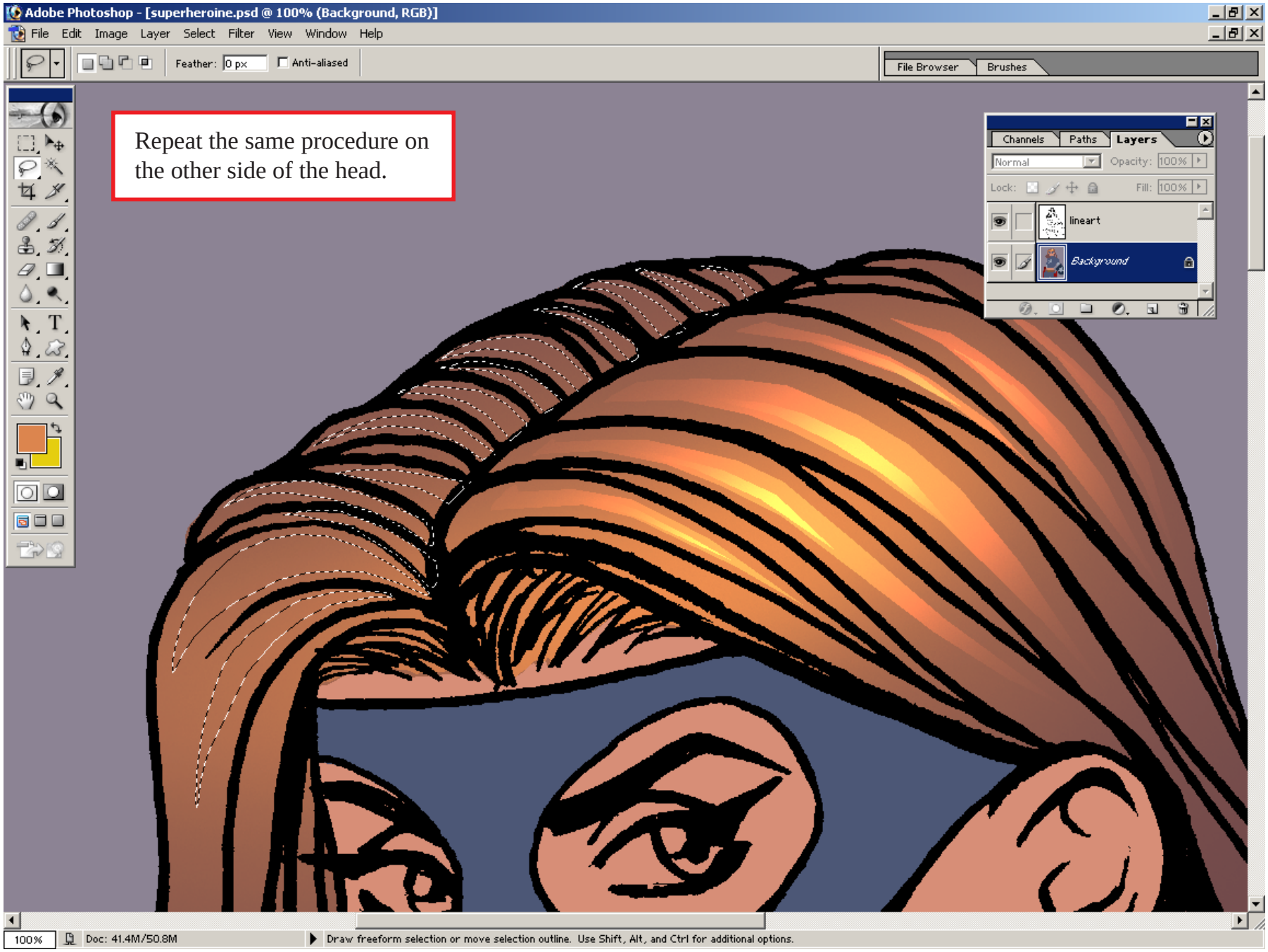

Adobe Photoshop - [superheroine.psd @ 50% (Background, RGB)]
File Edit Image Layer Select Filter View Window Help
Brush: 300
Mode: Color Dodge
Opacity: 100%
Flow: 30%
File Browser
Brushes
The highlight is weak, so I very lightly make another pass with the airbrush.
Channels
Paths
Layers
Normal
Opacity: 100%
Lock:
Fill: 100%
lineart
Background
50%
Doc: 41.4M/50.8M
Click and drag to paint using foreground color. Use Shift, Alt, and Ctrl for additional options.

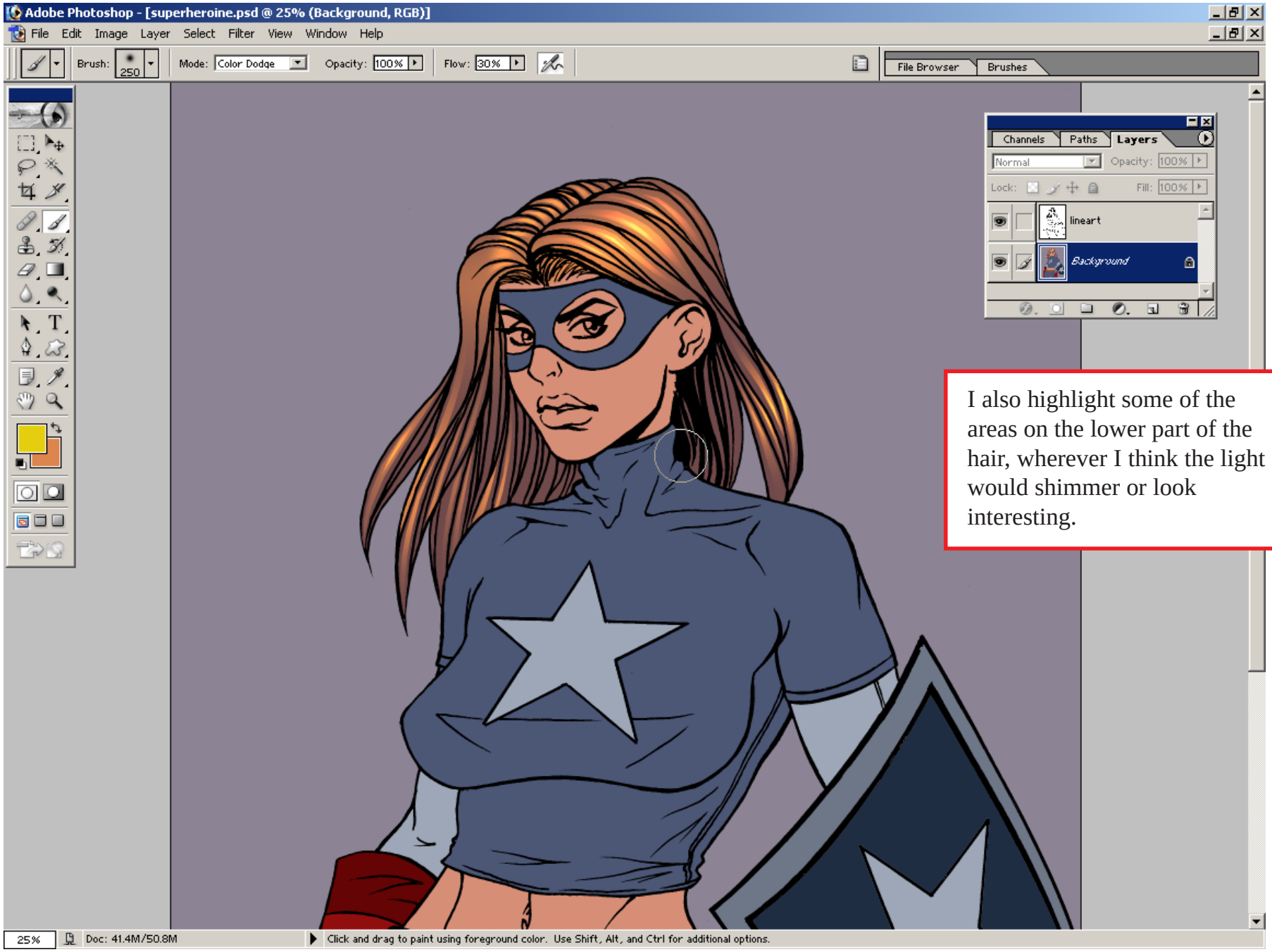


To get more of a sheen, I use the Lasso Tool to select individual strands of hair.

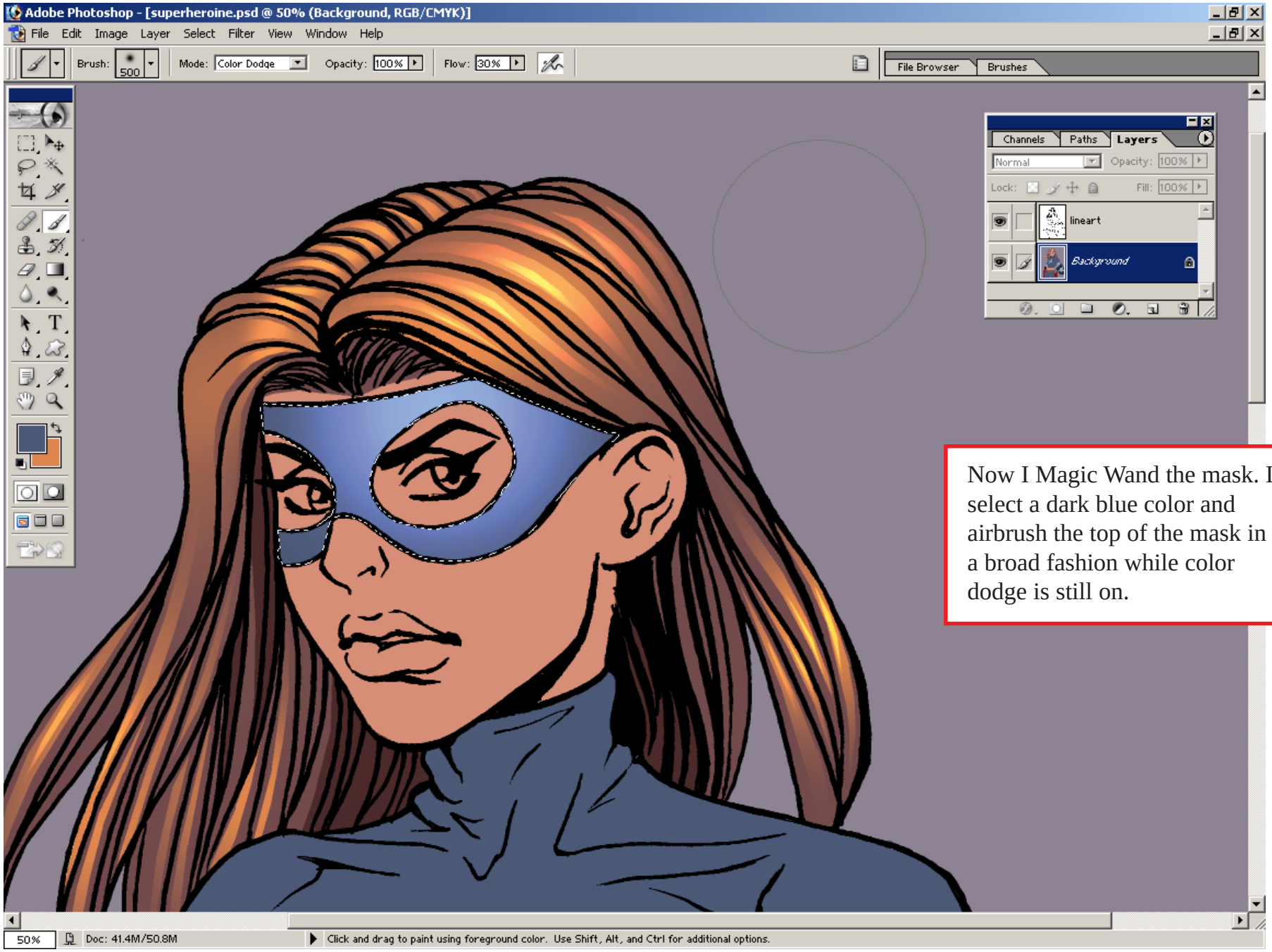

Adobe Photoshop - [superheroine.psd @ 50% (Background, RGB)]
File Edit Image Layer Select Filter View Window Help
Brush: 400
Mode: Color Dodge
Opacity: 100%
Flow: 30%
File Browser
Brushes
Channels
Paths
Layers
Normal
Opacity: 100%
Lock:
Fill: 100%
lineart
Background
I select a slightly dull orange color. I then airbrush across the middle of the selections I made. The center of the stroke should be where the sheen of the hair is the strongest.
50%
Doc: 41.4M/50.8M
Click and drag to paint using foreground color. Use Shift, Alt, and Ctrl for additional options.

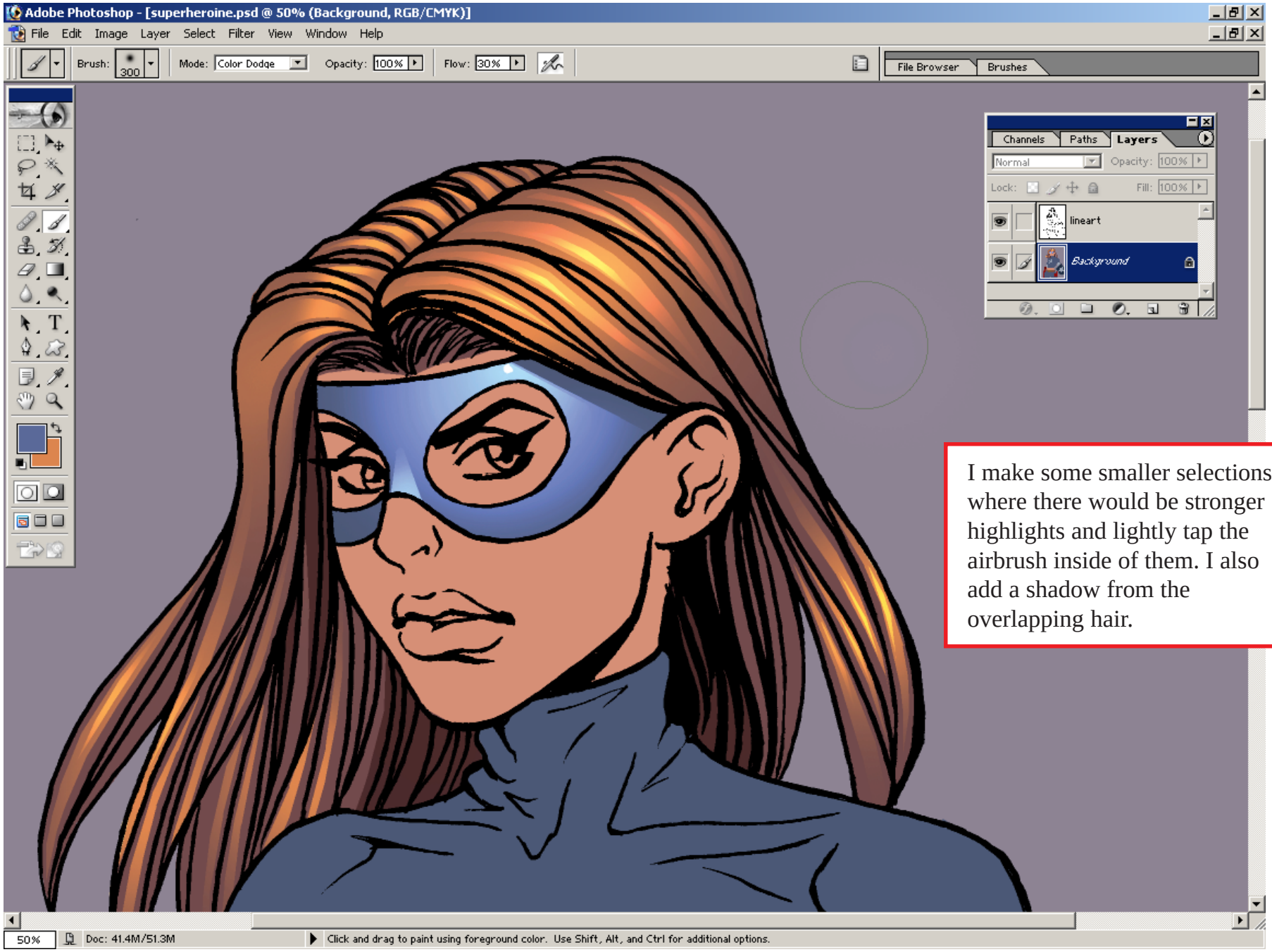

Adobe Photoshop - [superheroine.psd @ 90.1% (Background, RGB)]
File Edit Image Layer Select Filter View Window Help
Feather: 0 px
Anti-aliased
File Browser
Brushes
Channels
Paths
Layers
Normal
Opacity: 100%
Lock:
Fill: 100%
lineart
Background
Again, I select even narrower highlights. These will be for the “hottest” spots of the highlight.
90.05%
Doc: 41.4M/50.8M
Draw freeform selection or move selection outline. Use Shift, Alt, and Ctrl for additional options.


Adobe Photoshop - [superheroine.psd @ 100% (Background, RGB)]
File Edit Image Layer Select Filter View Window Help
Feather: 0 px
Anti-aliased
File Browser
Brushes
Repeat the same procedure on the other side of the head.
Channels
Paths
Layers
Normal
Opacity: 100%
Lock:
Fill: 100%
lineart
Background
100%
Doc: 41.4M/50.8M
Draw freeform selection or move selection outline. Use Shift, Alt, and Ctrl for additional options.

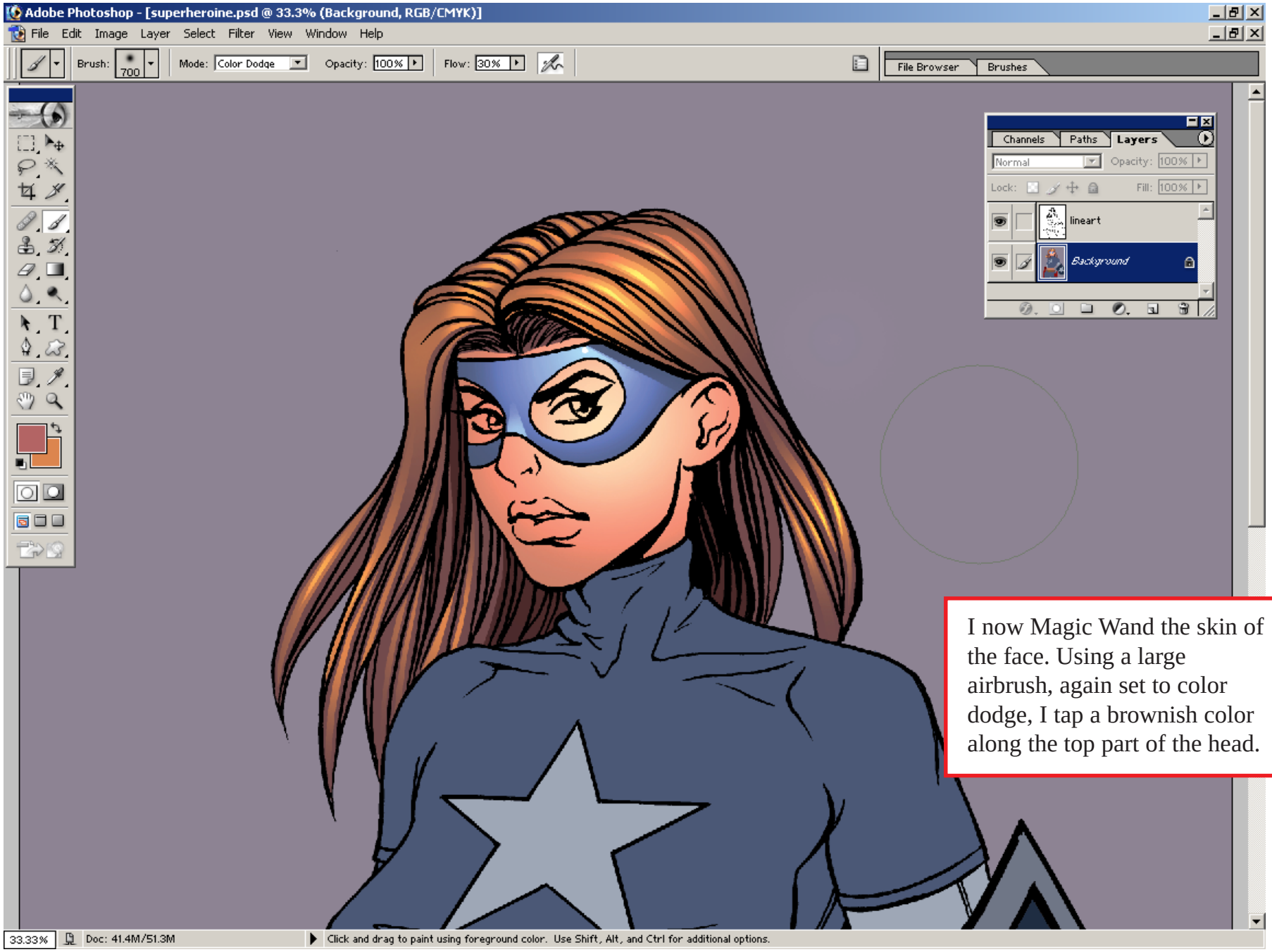


I also highlight some of the areas on the lower part of the hair, wherever I think the light would shimmer or look interesting.

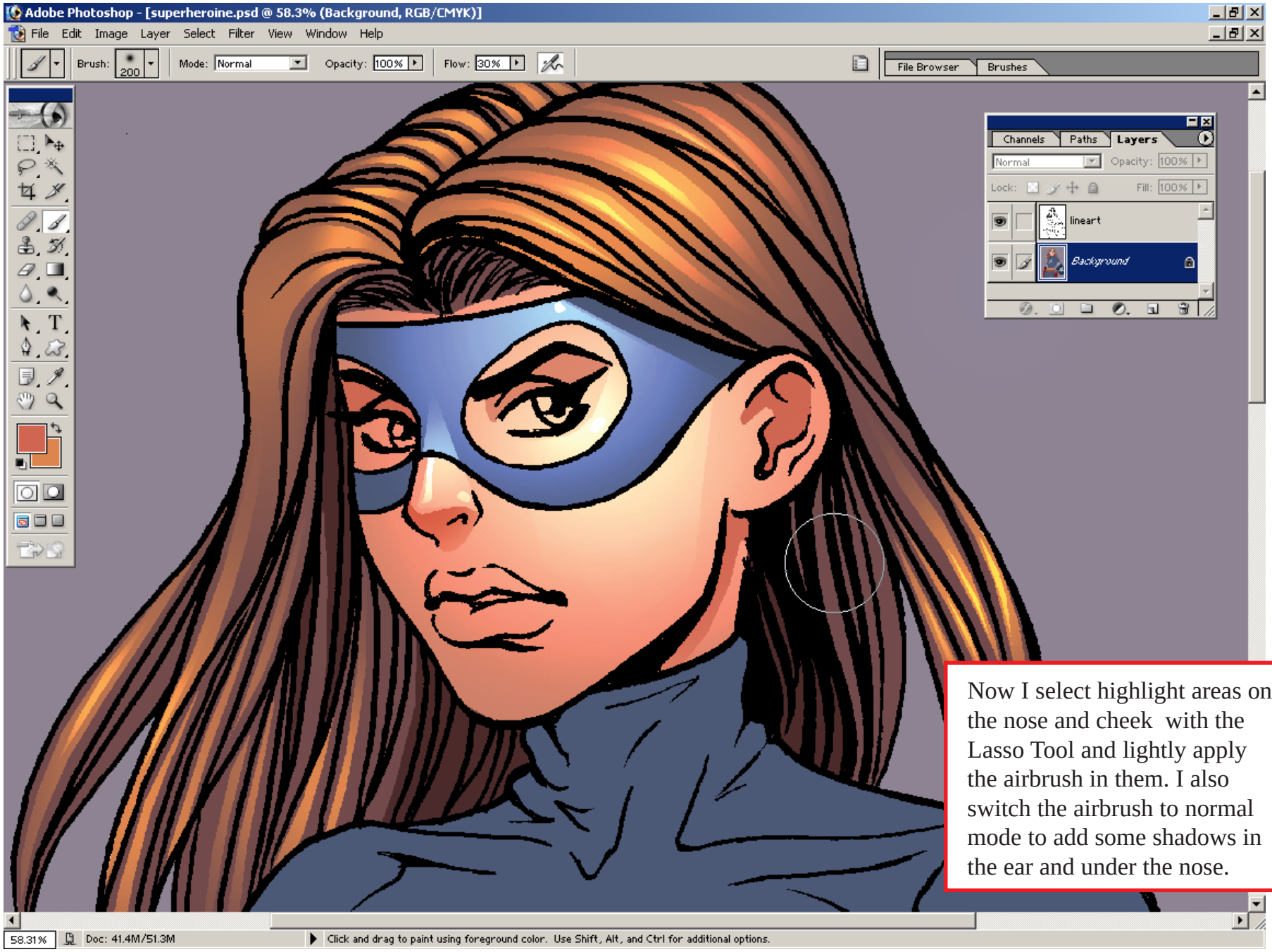

Adobe Photoshop - [superheroine.psd @ 50% (Background, RGB/CMYK)]
File Edit Image Layer Select Filter View Window Help
Brush: 500
Mode: Color Dodge
Opacity: 100%
Flow: 30%
File Browser
Brushes
Channels
Paths
Layers
Normal
Opacity: 100%
Lock:
Fill: 100%
lineart
Background
Now I Magic Wand the mask. I select a dark blue color and airbrush the top of the mask in a broad fashion while color dodge is still on.
50%
Doc: 41.4M/50.8M
Click and drag to paint using foreground color. Use Shift, Alt, and Ctrl for additional options.



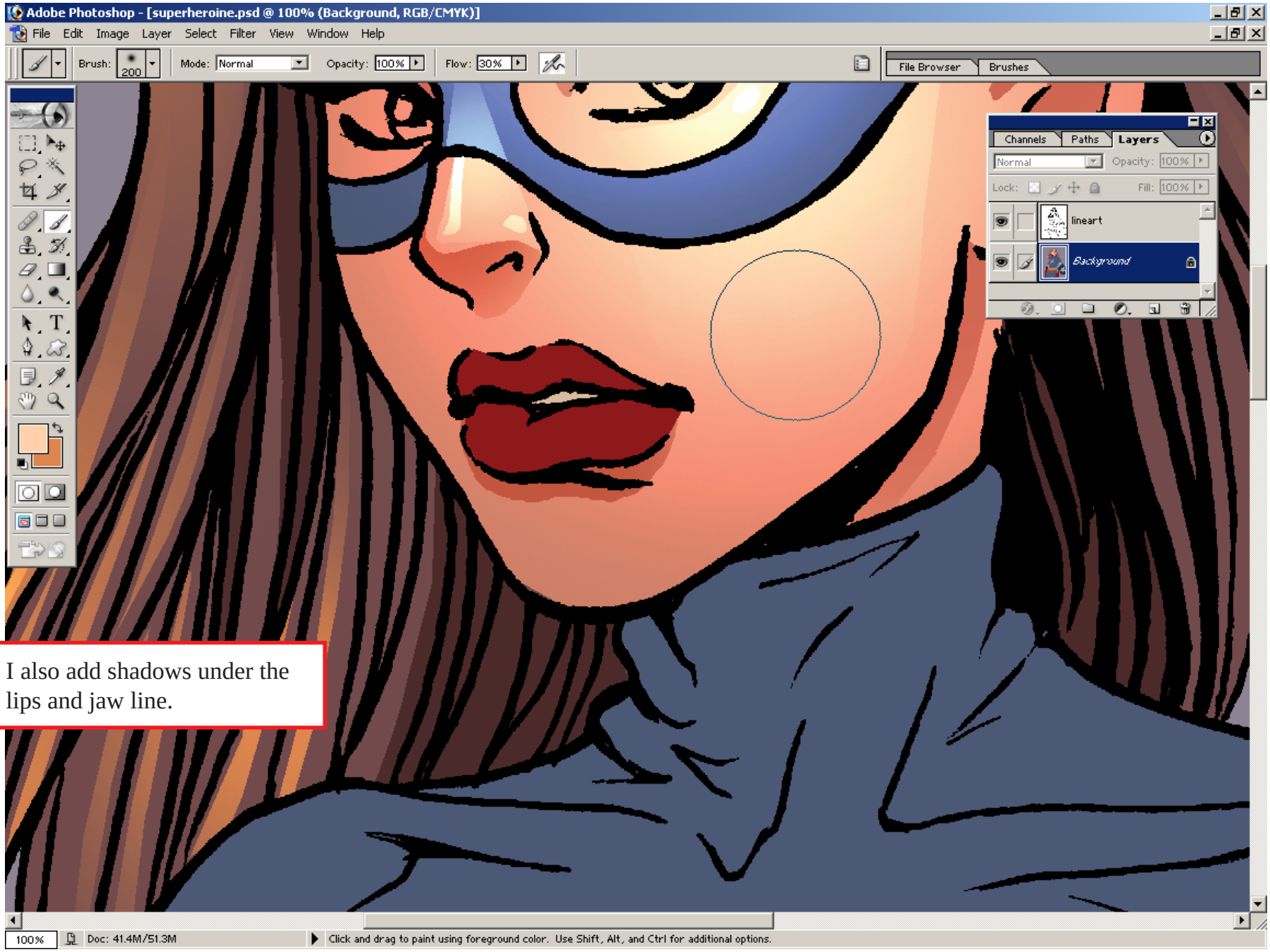
I make some smaller selections where there would be stronger highlights and lightly tap the airbrush inside of them. I also add a shadow from the overlapping hair.



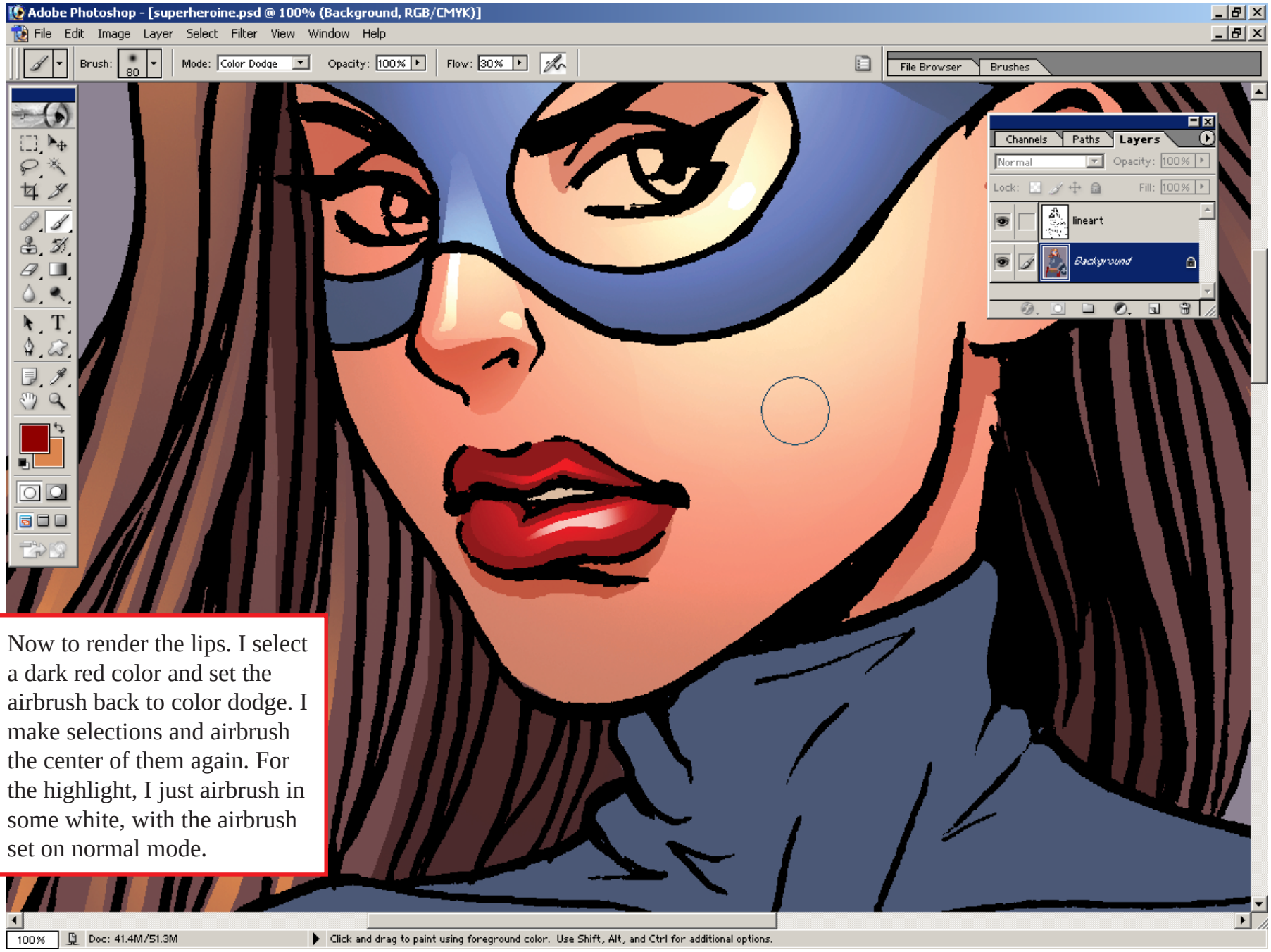
I now Magic Wand the skin of the face. Using a large airbrush, again set to color dodge, I tap a brownish color along the top part of the head.



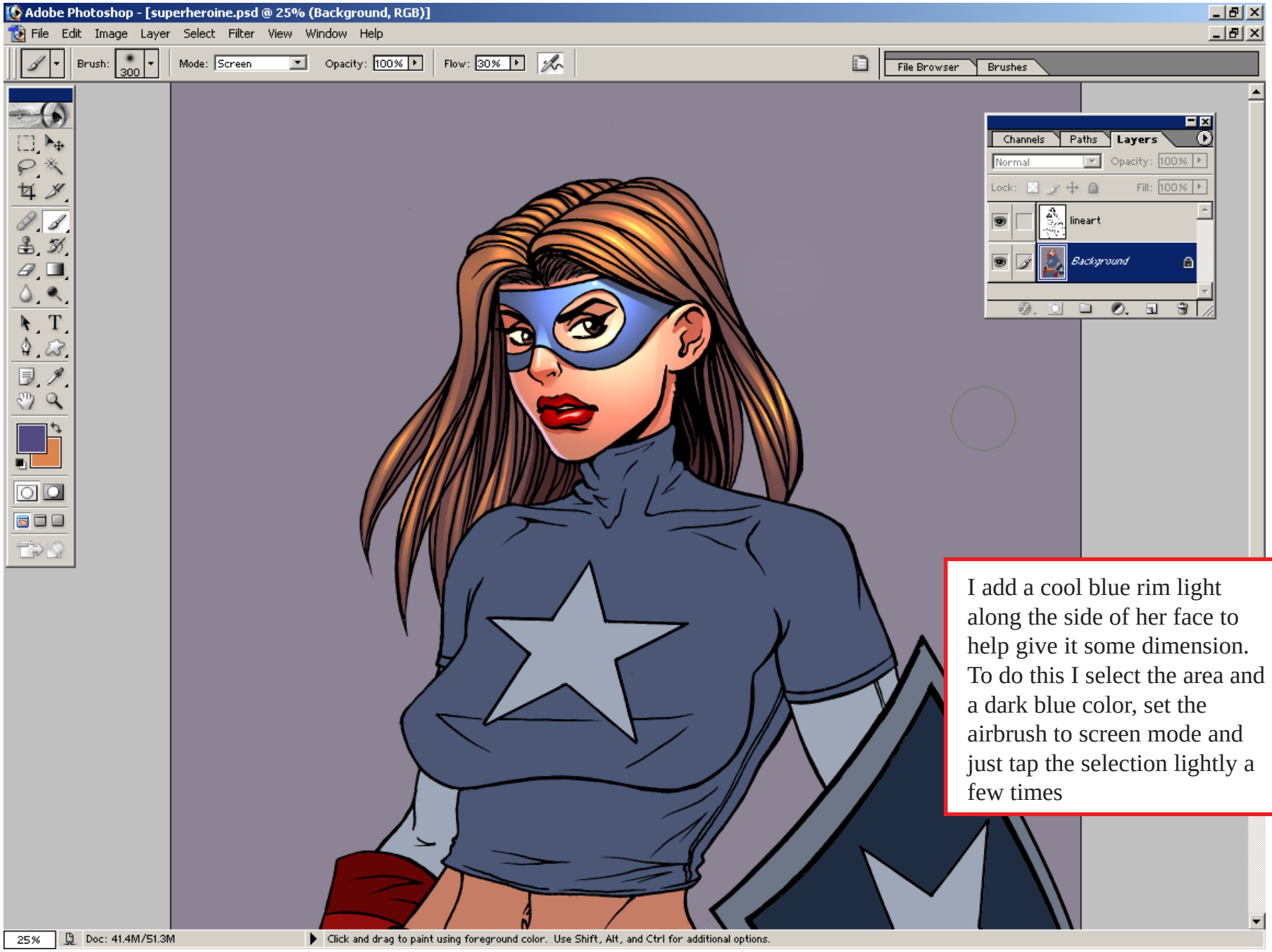
Now I select highlight areas on the nose and cheek with the Lasso Tool and lightly apply the airbrush in them. I also switch the airbrush to normal mode to add some shadows in the ear and under the nose.



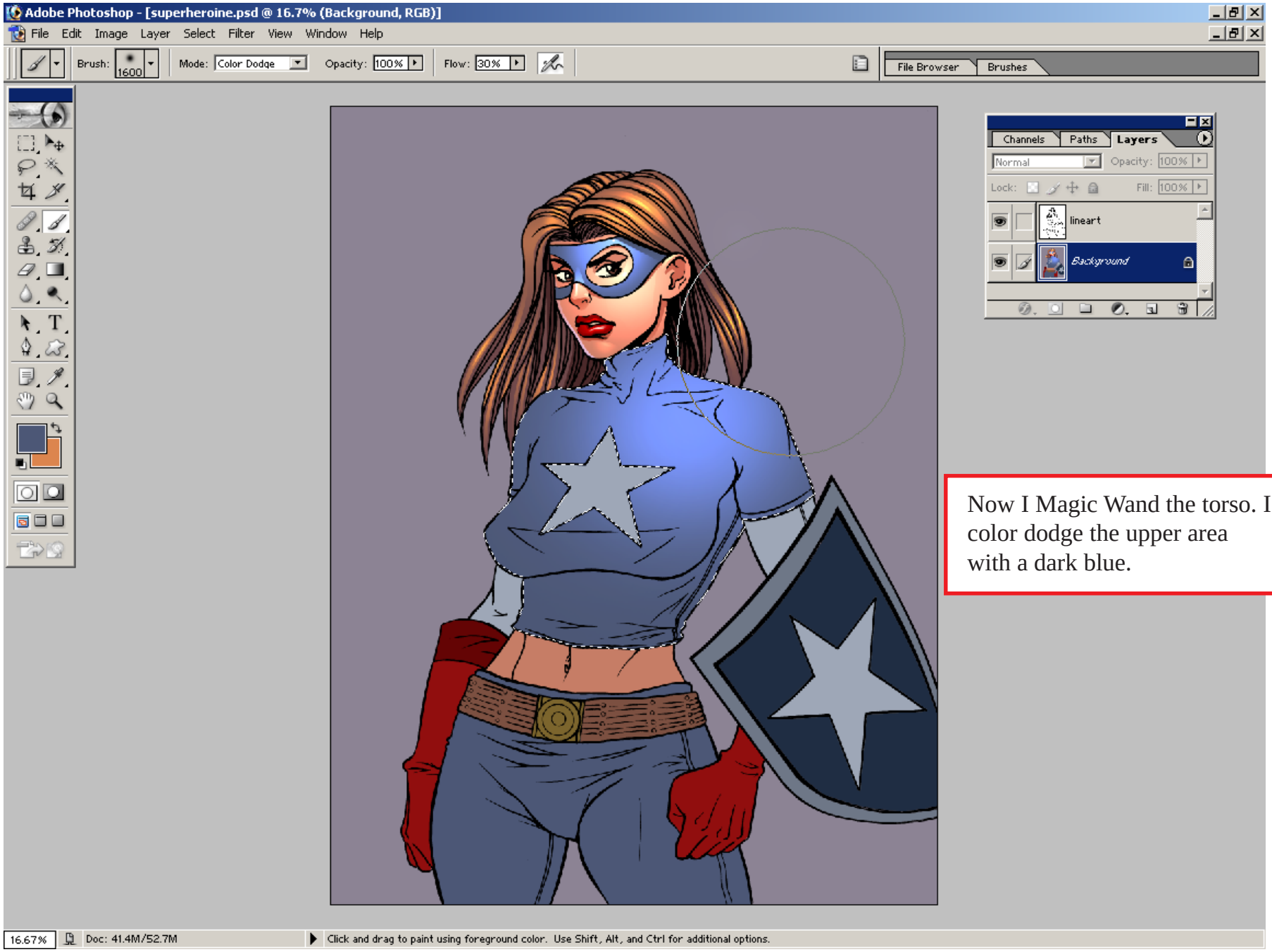
I also add shadows under the lips and jaw line.



Now to render the lips. I select a dark red color and set the airbrush back to color dodge. I make selections and airbrush the center of them again. For the highlight, I just airbrush in some white, with the airbrush set on normal mode.



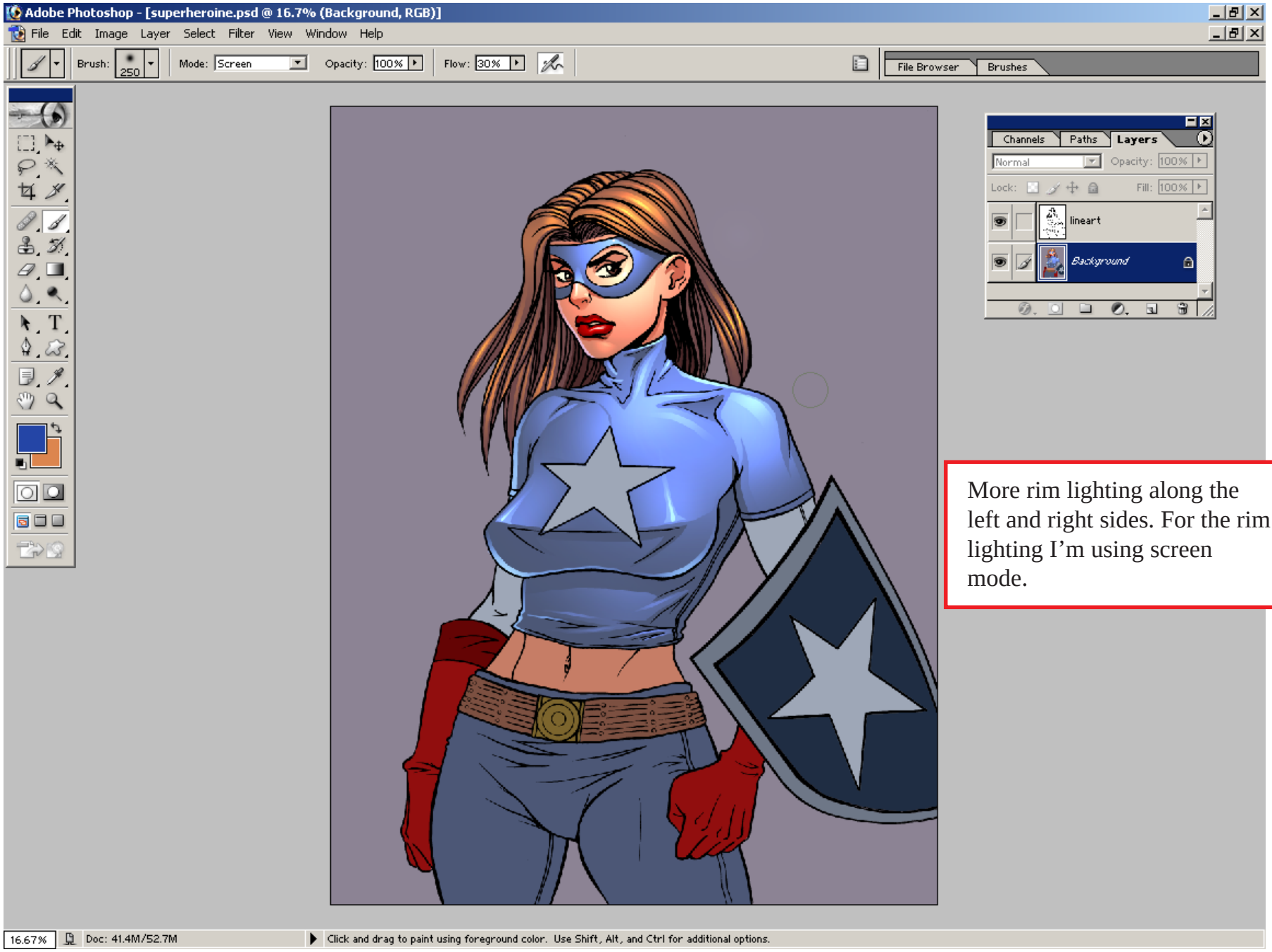
I add a cool blue rim light along the side of her face to help give it some dimension. To do this I select the area and a dark blue color, set the airbrush to screen mode and just tap the selection lightly a few times



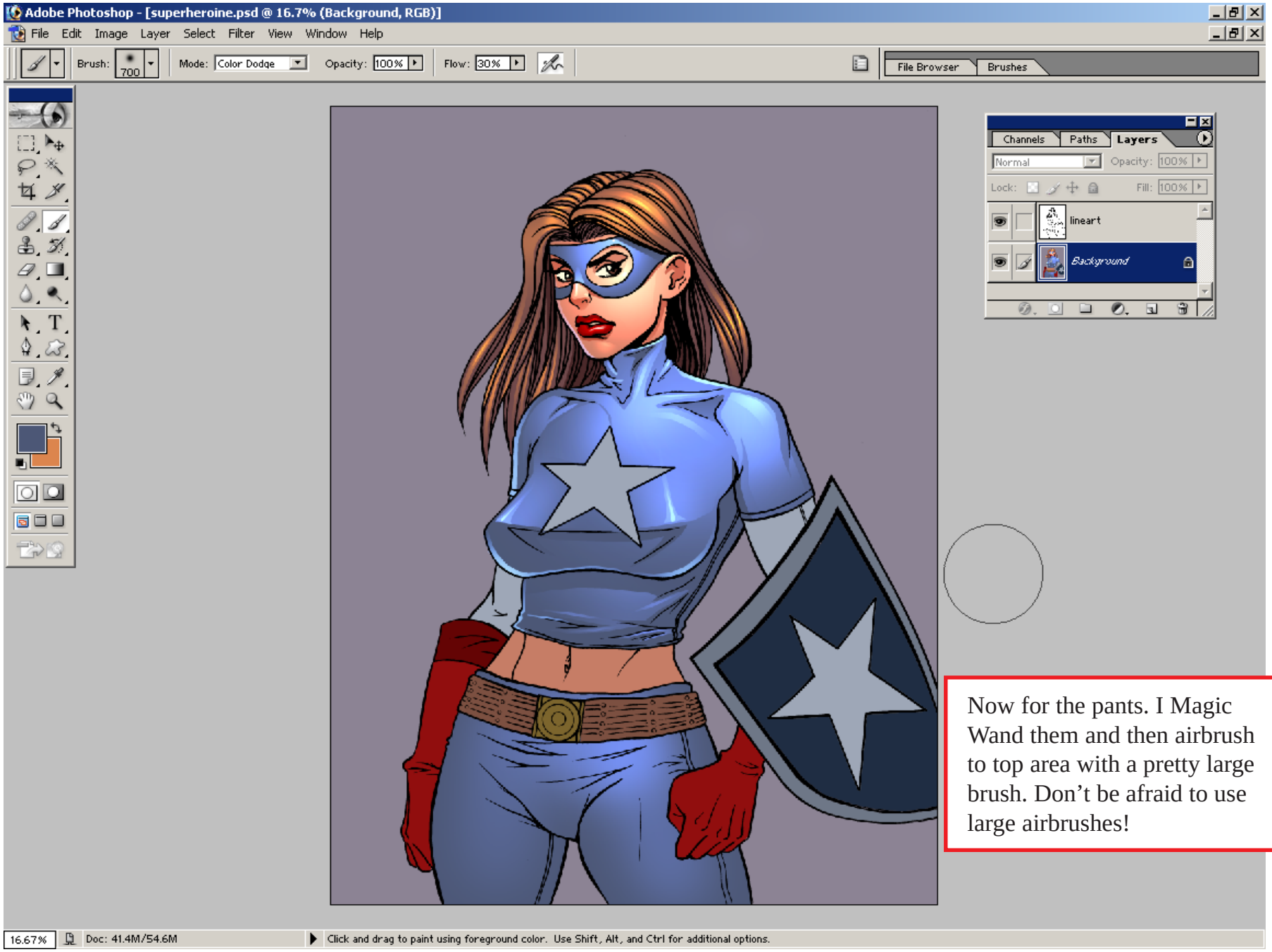
Now I Magic Wand the torso. I color dodge the upper area with a dark blue.

Adobe Photoshop - [superheroine.psd @ 25% (Background, RGB)]
File Edit Image Layer Select Filter View Window Help
Brush: 500
Mode: Color Dodge
Opacity: 100%
Flow: 30%
File Browser
Brushes
Channels
Paths
Layers
Normal
Opacity: 100%
Lock:
Fill: 100%
lineart
Background
Again, I highlight the areas that would catch some light and continue to layer more airbrush work.
25%
Doc: 41.4M/52.7M
Click and drag to paint using foreground color. Use Shift, Alt, and Ctrl for additional options.

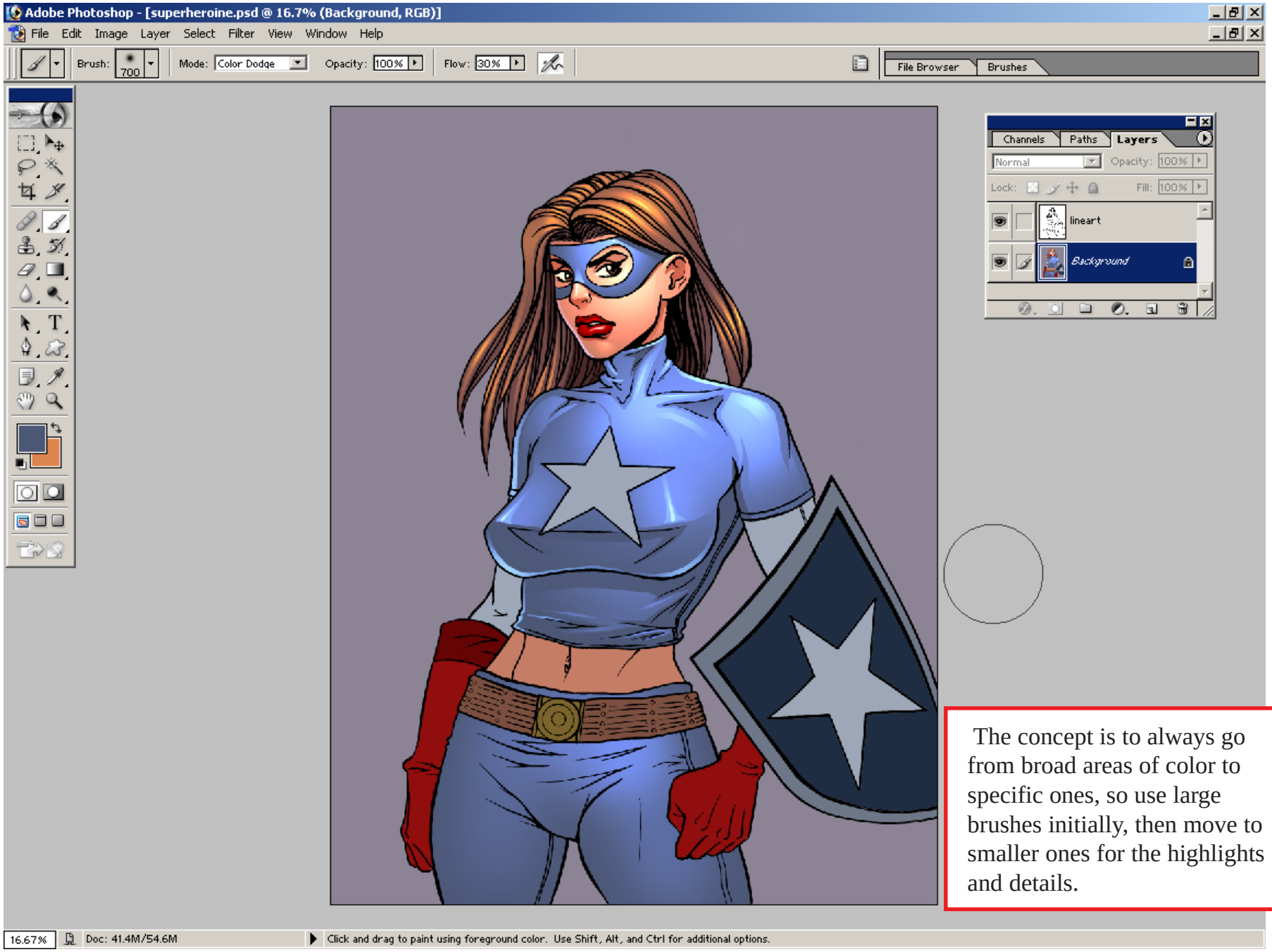
I refine the edges with some more highlights. I also carry the rim lighting from her face down along the left side. Again, I'm simply making selections and airbrushing into them.



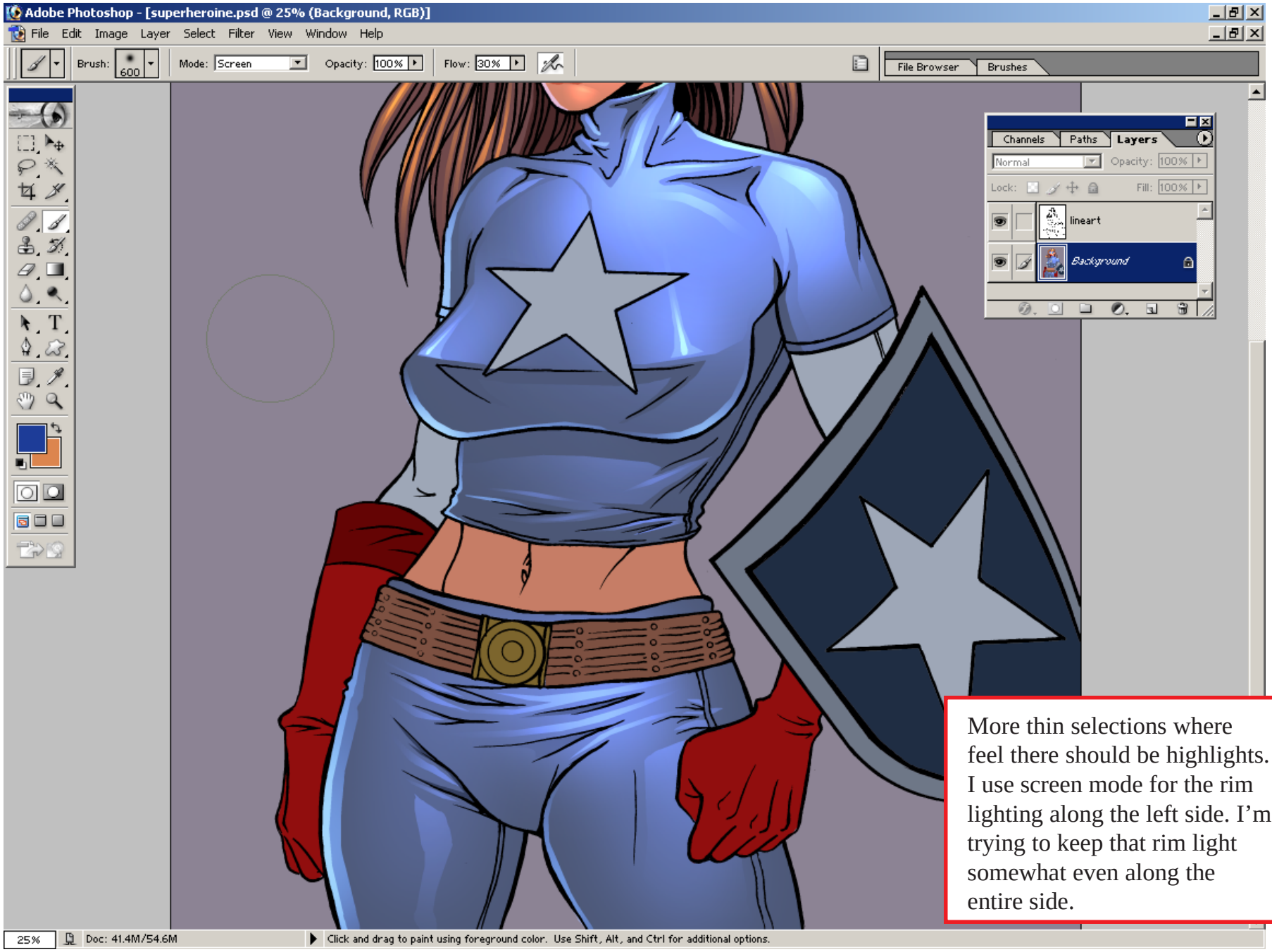
More rim lighting along the left and right sides. For the rim lighting I'm using screen mode.



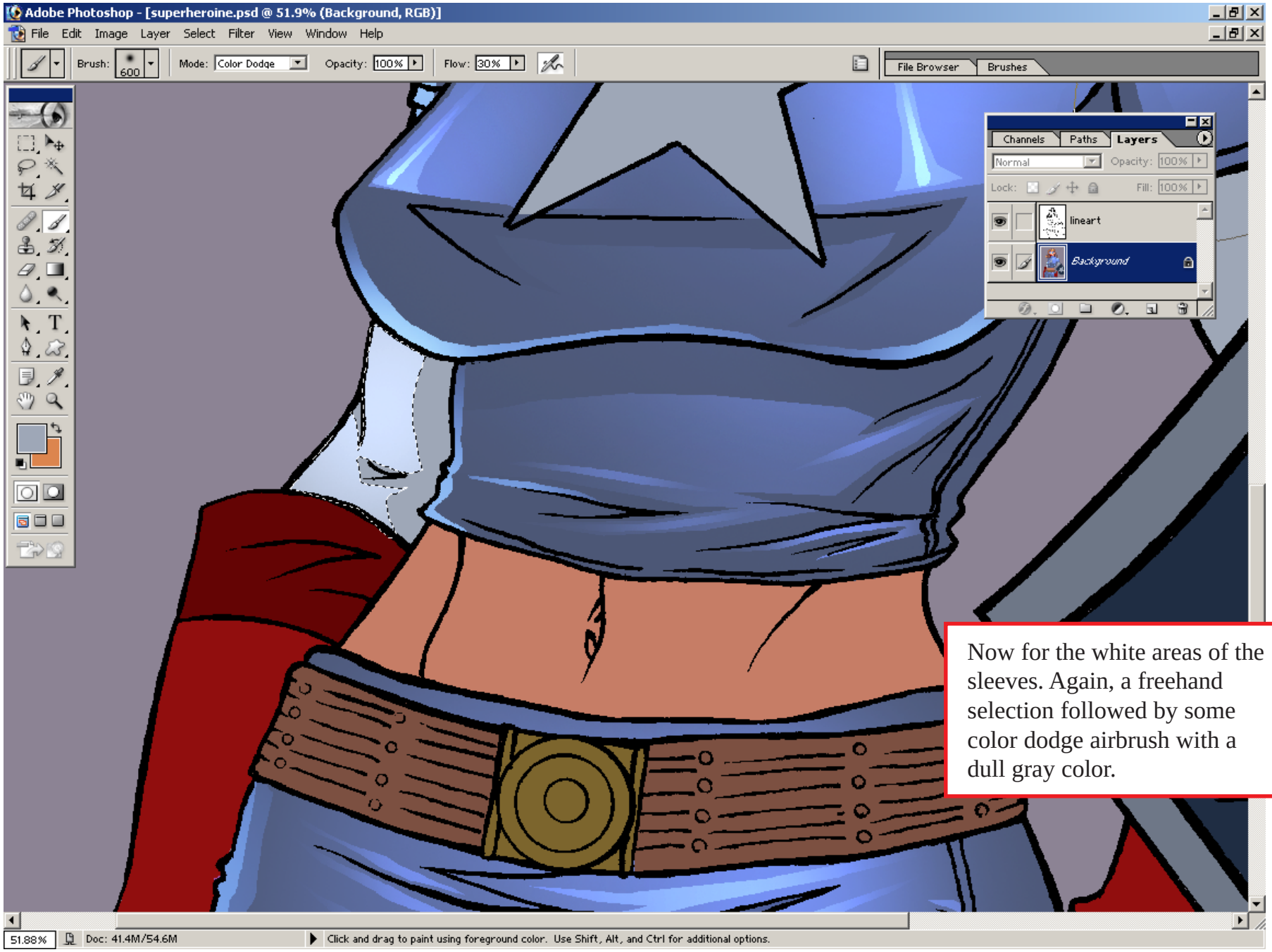
Now for the pants. I Magic Wand them and then airbrush to top area with a pretty large brush. Don't be afraid to use large airbrushes!

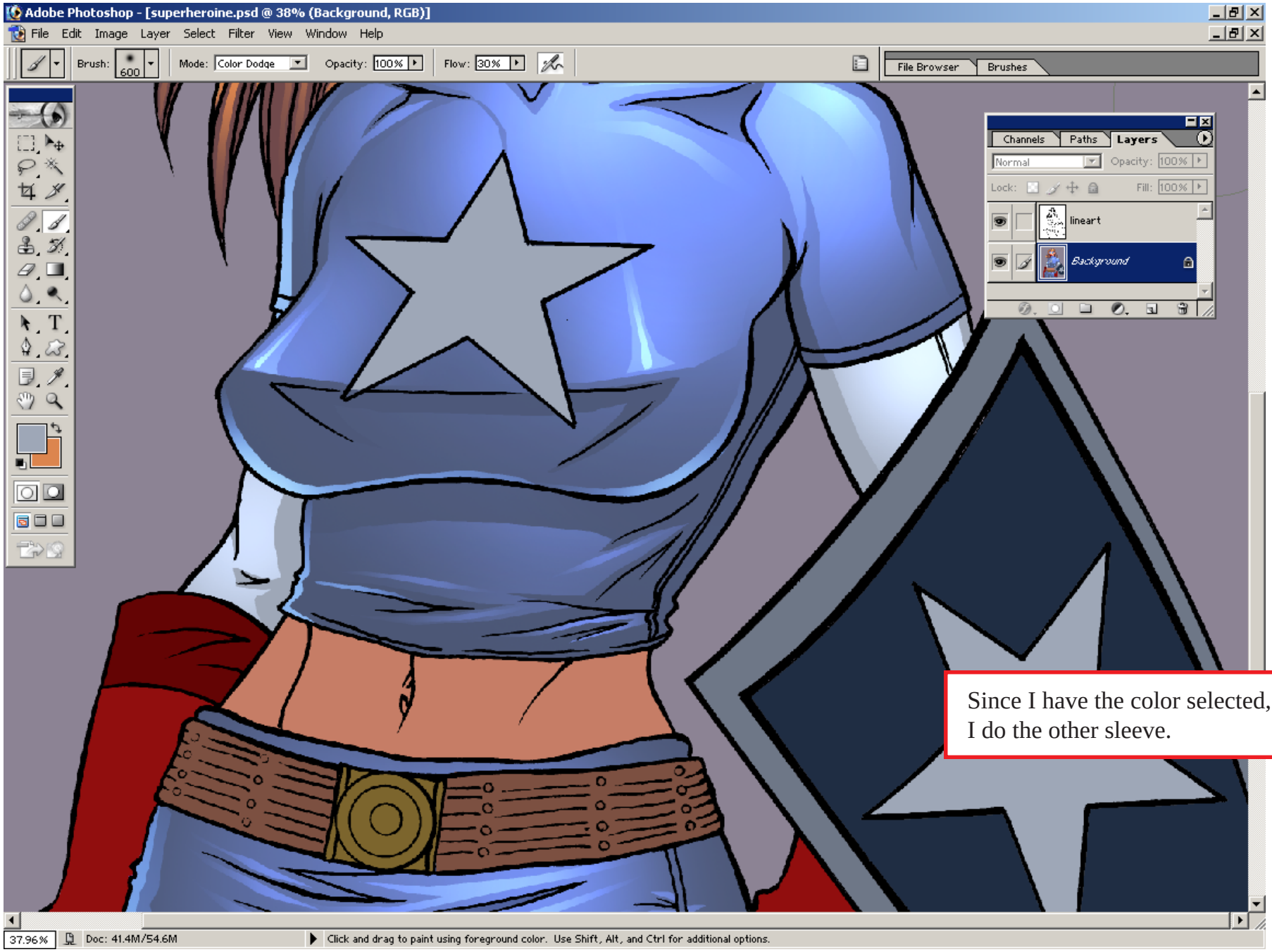


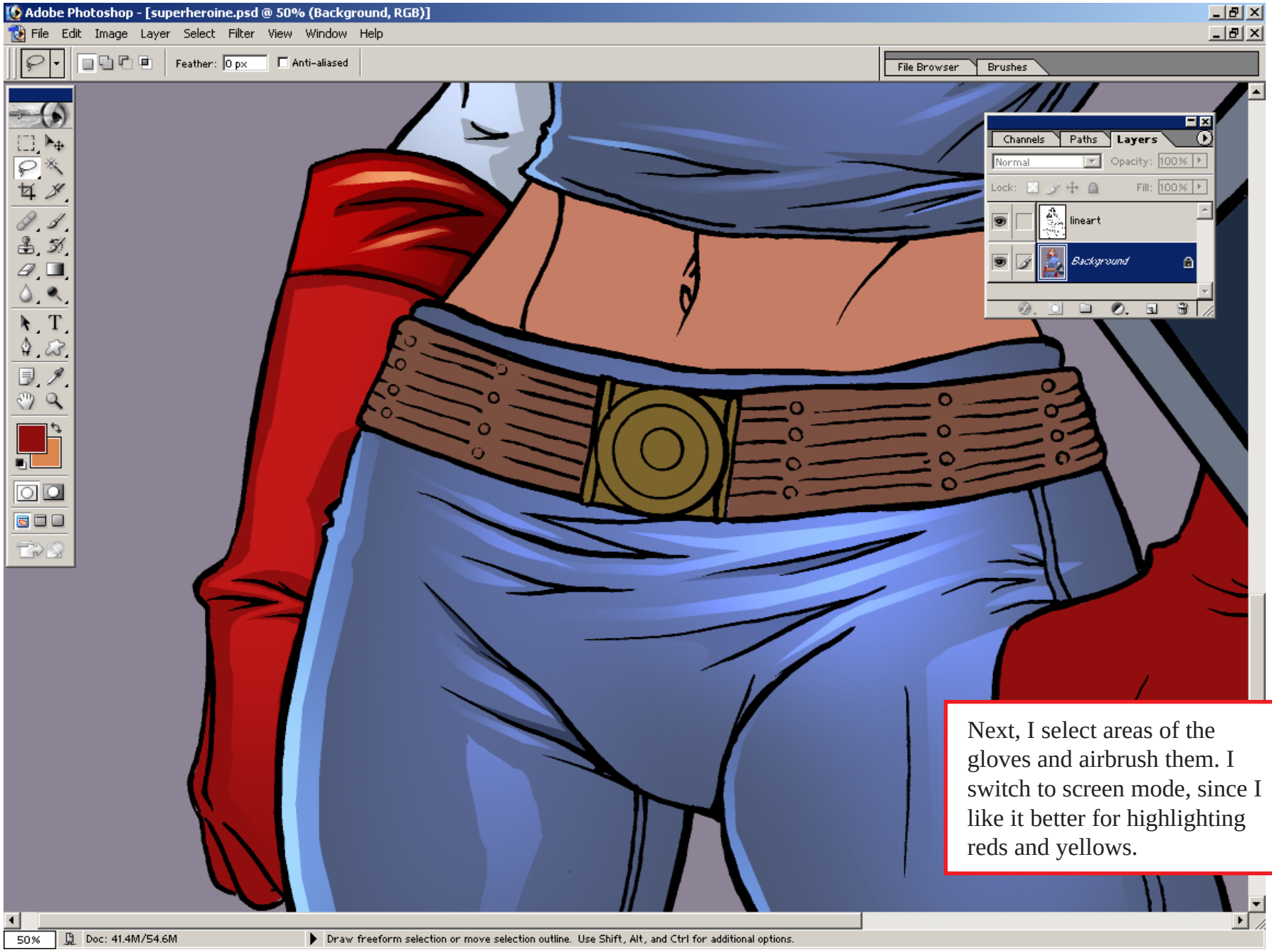
The concept is to always go from broad areas of color to specific ones, so use large brushes initially, then move to smaller ones for the highlights and details.

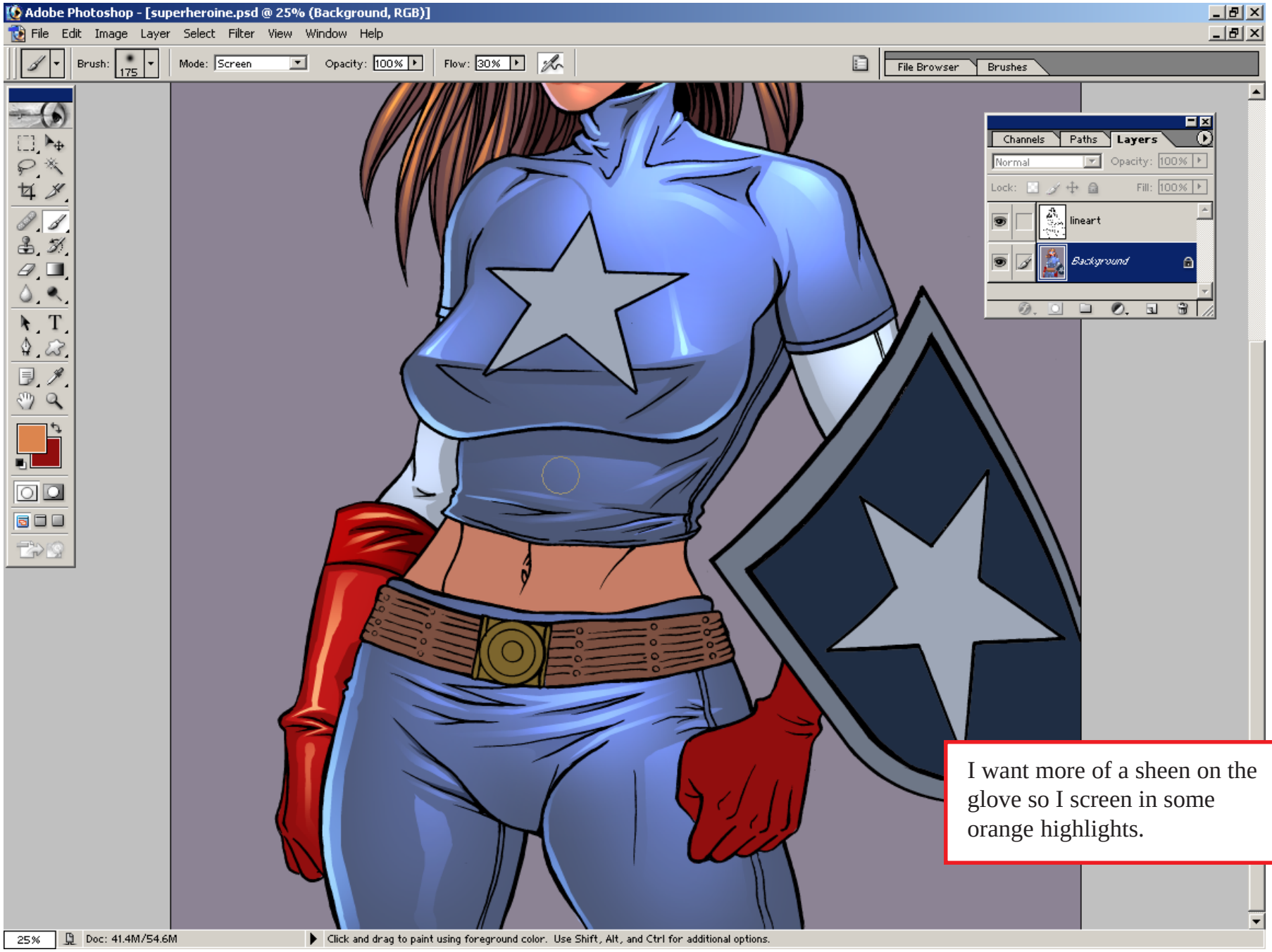


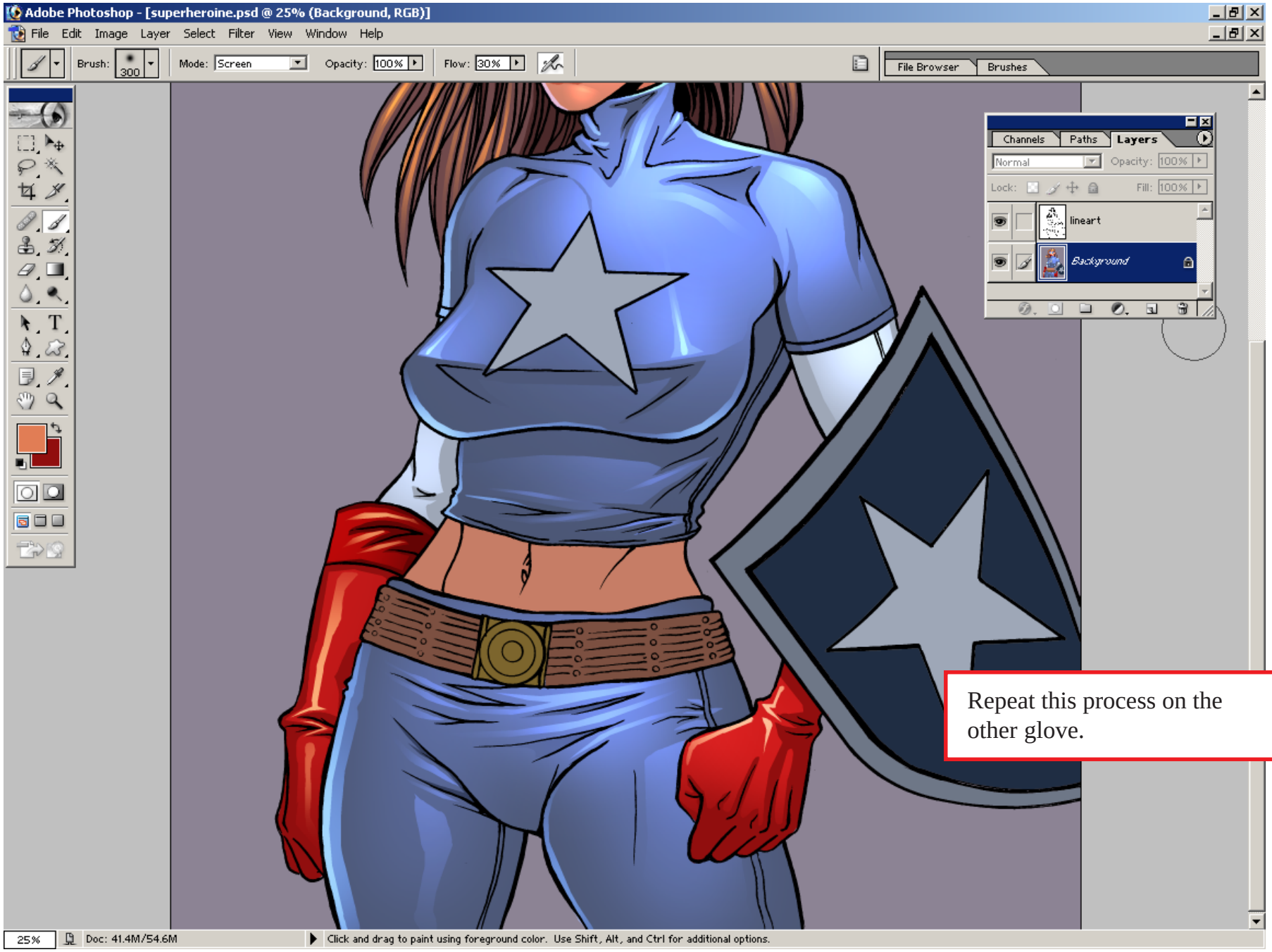
More thin selections where feel there should be highlights. I use screen mode for the rim lighting along the left side. I'm trying to keep that rim light somewhat even along the entire side.

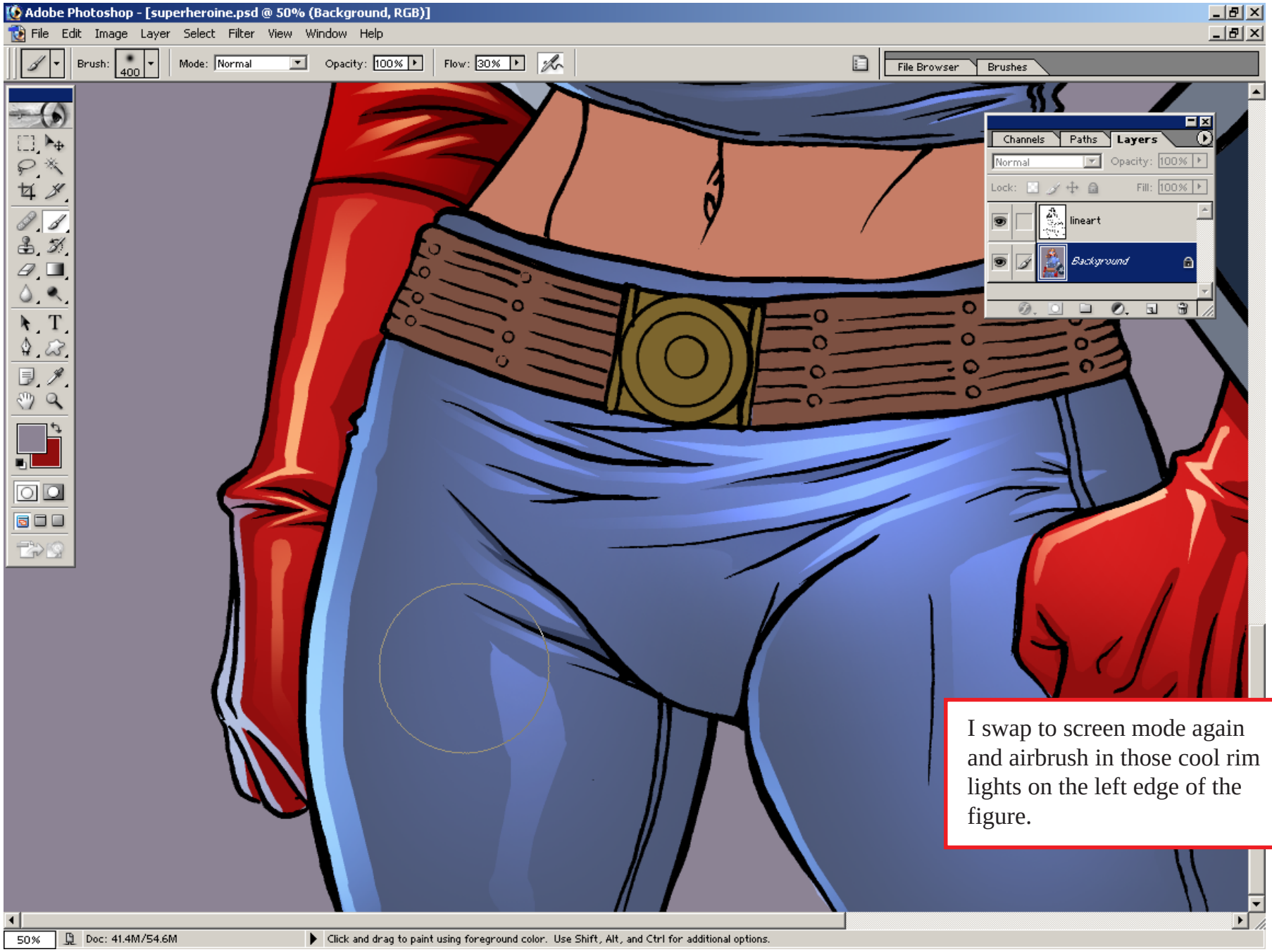

Adobe Photoshop - [superheroine.psd @ 51.9% (Background, RGB)]
File Edit Image Layer Select Filter View Window Help
Brush: 600
Mode: Color Dodge
Opacity: 100%
Flow: 30%
File Browser
Brushes
Channels
Paths
Layers
Normal
Opacity: 100%
Lock:
Fill: 100%
lineart
Background
Now for the white areas of the sleeves. Again, a freehand selection followed by some color dodge airbrush with a dull gray color.
51.88%
Doc: 41.4M/54.6M
Click and drag to paint using foreground color. Use Shift, Alt, and Ctrl for additional options.

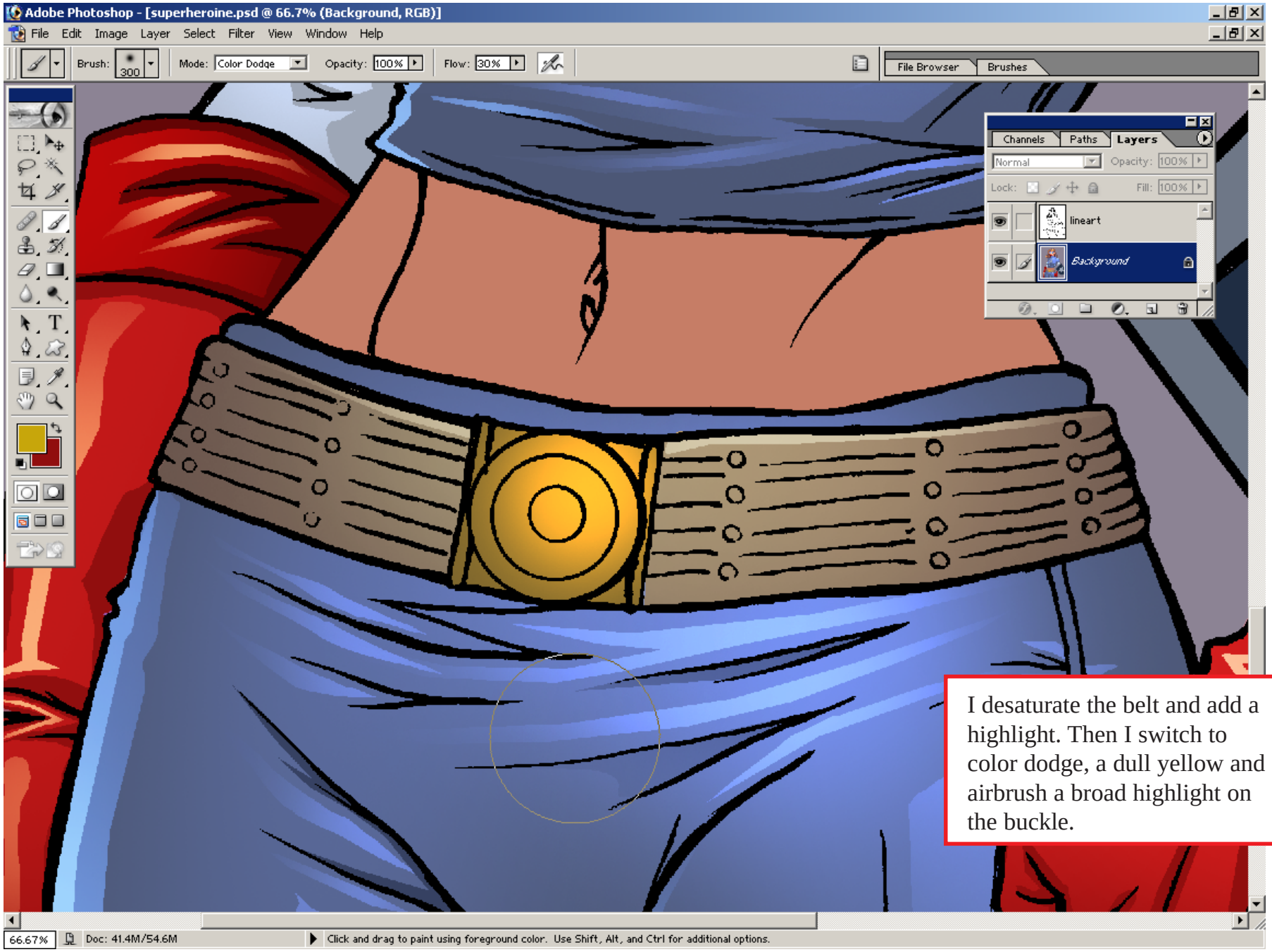

Adobe Photoshop - [superheroine.psd @ 38% (Background, RGB)]
File Edit Image Layer Select Filter View Window Help
Brush: 600
Mode: Color Dodge
Opacity: 100%
Flow: 30%
File Browser
Brushes
Channels
Paths
Layers
Normal
Opacity: 100%
Lock:
Fill: 100%
lineart
Background
Since I have the color selected, I do the other sleeve.
37.96%
Doc: 41.4M/54.6M
Click and drag to paint using foreground color. Use Shift, Alt, and Ctrl for additional options.


Adobe Photoshop - [superheroine.psd @ 50% (Background, RGB)]
File Edit Image Layer Select Filter View Window Help
Feather: 0 px
Anti-aliased
File Browser
Brushes
Channels
Paths
Layers
Normal
Opacity: 100%
Lock:
Fill: 100%
lineart
Background
Next, I select areas of the gloves and airbrush them. I switch to screen mode, since I like it better for highlighting reds and yellows.
50%
Doc: 41.4M/54.6M
Draw freeform selection or move selection outline. Use Shift, Alt, and Ctrl for additional options.

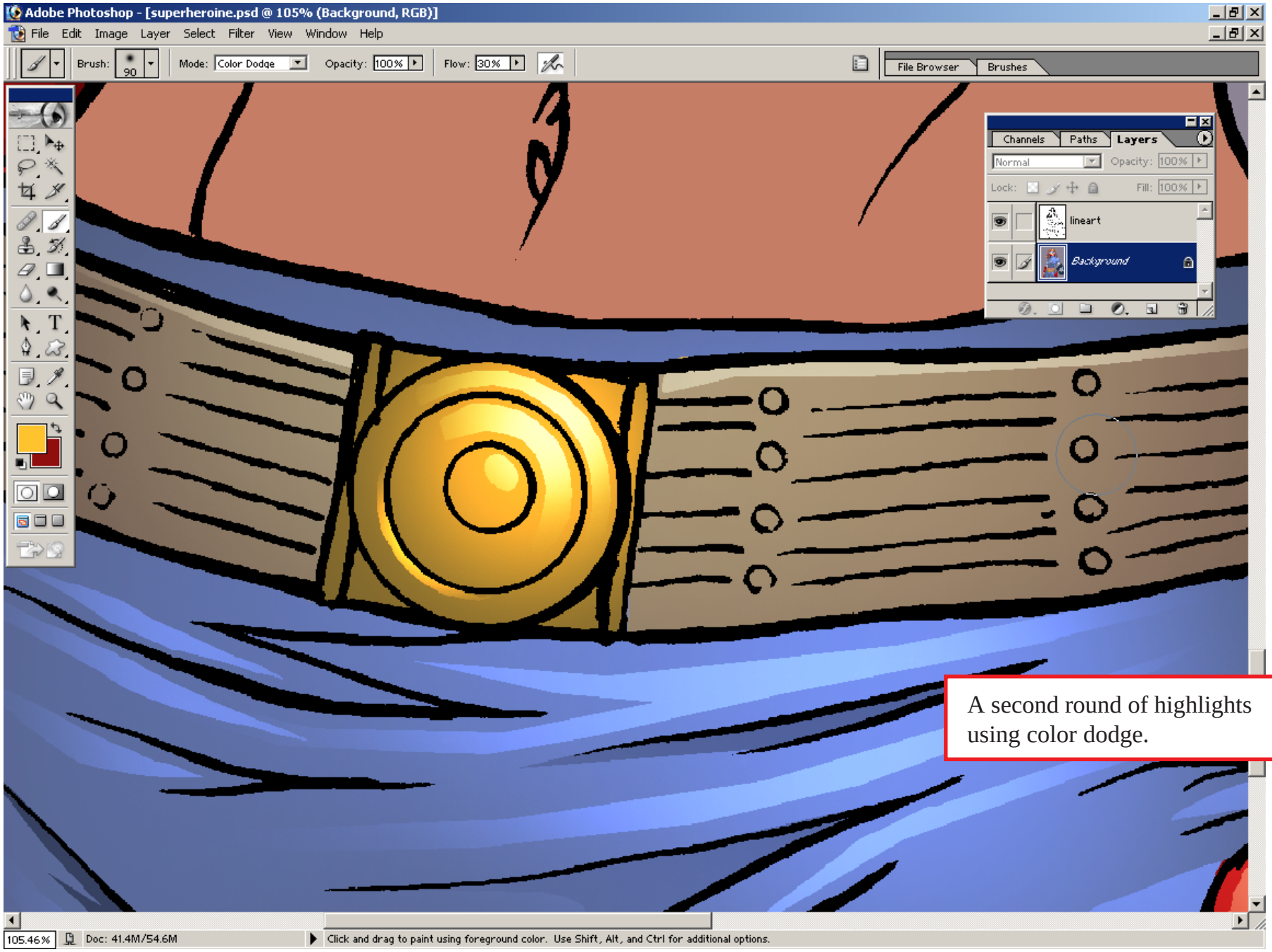

Adobe Photoshop - [superheroine.psd @ 25% (Background, RGB)]
File Edit Image Layer Select Filter View Window Help
Brush: 175
Mode: Screen
Opacity: 100%
Flow: 30%
File Browser
Brushes
Channels
Paths
Layers
Normal
Opacity: 100%
Lock:
Fill: 100%
lineart
Background
25%
Doc: 41.4M/54.6M
Click and drag to paint using foreground color. Use Shift, Alt, and Ctrl for additional options.
I want more of a sheen on the glove so I screen in some orange highlights.


Adobe Photoshop - [superheroine.psd @ 25% (Background, RGB)]
File Edit Image Layer Select Filter View Window Help
Brush: 300
Mode: Screen
Opacity: 100%
Flow: 30%
File Browser
Brushes
Channels
Paths
Layers
Normal
Opacity: 100%
Lock:
Fill: 100%
lineart
Background
Repeat this process on the other glove.
25%
Doc: 41.4M/54.6M
Click and drag to paint using foreground color. Use Shift, Alt, and Ctrl for additional options.

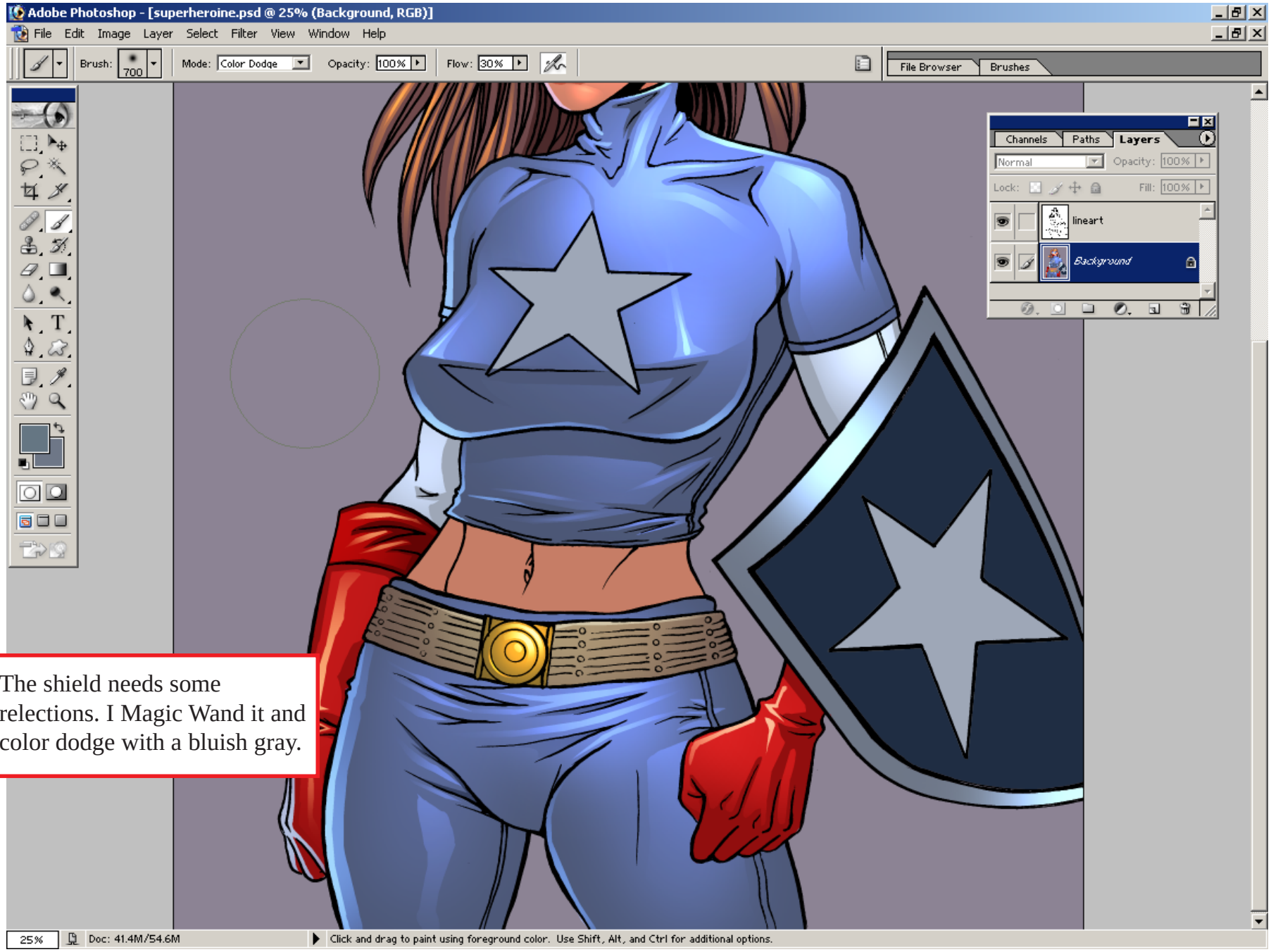

Adobe Photoshop - [superheroine.psd @ 50% (Background, RGB)]
File Edit Image Layer Select Filter View Window Help
Brush: 400
Mode: Normal
Opacity: 100%
Flow: 30%
File Browser
Brushes
Channels
Paths
Layers
Normal
Opacity: 100%
Lock:
Fill: 100%
lineart
Background
I swap to screen mode again and airbrush in those cool rim lights on the left edge of the figure.
50%
Doc: 41.4M/54.6M
Click and drag to paint using foreground color. Use Shift, Alt, and Ctrl for additional options.



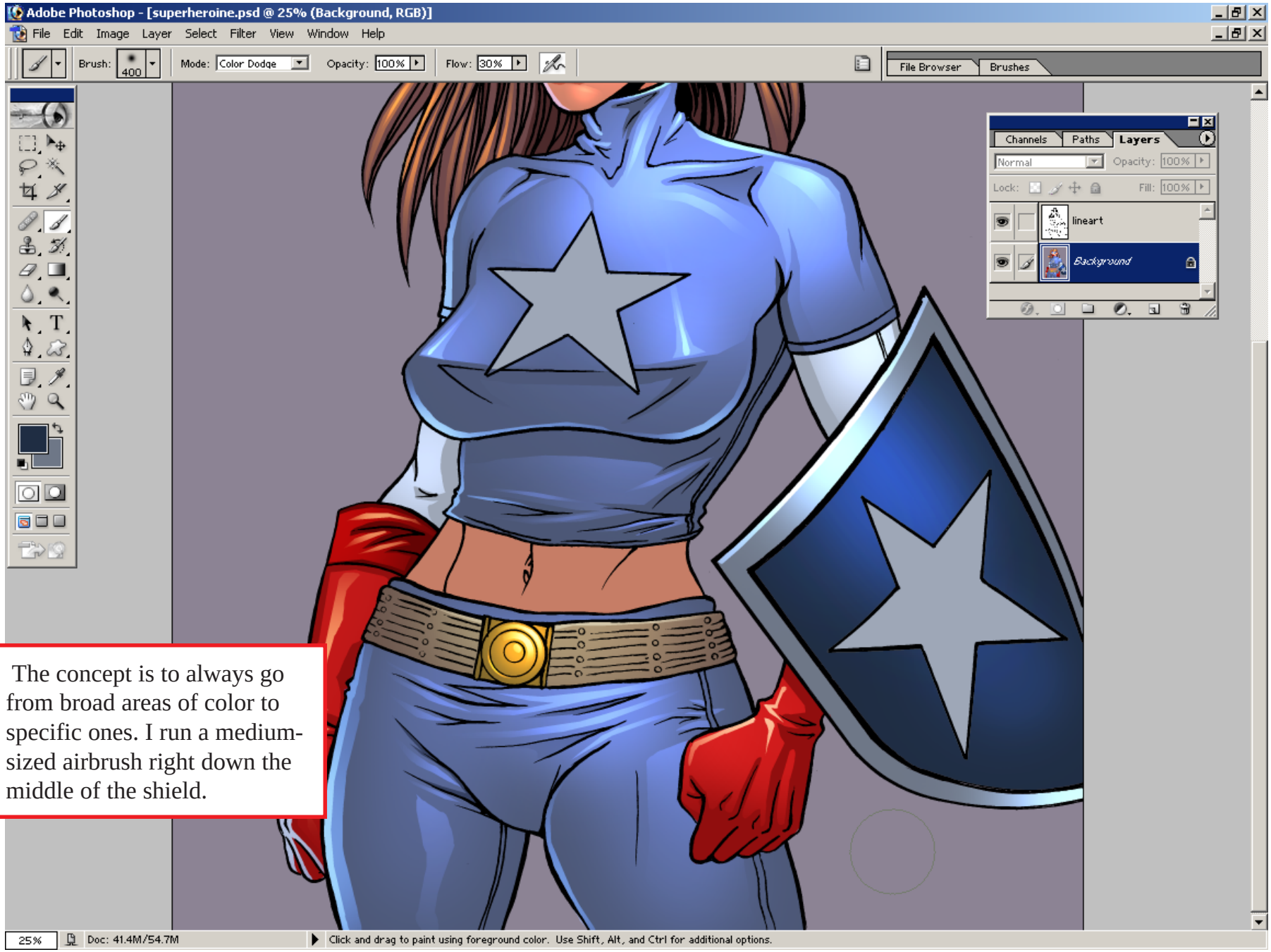
I desaturate the belt and add a highlight. Then I switch to color dodge, a dull yellow and airbrush a broad highlight on the buckle.



A second round of highlights using color dodge.

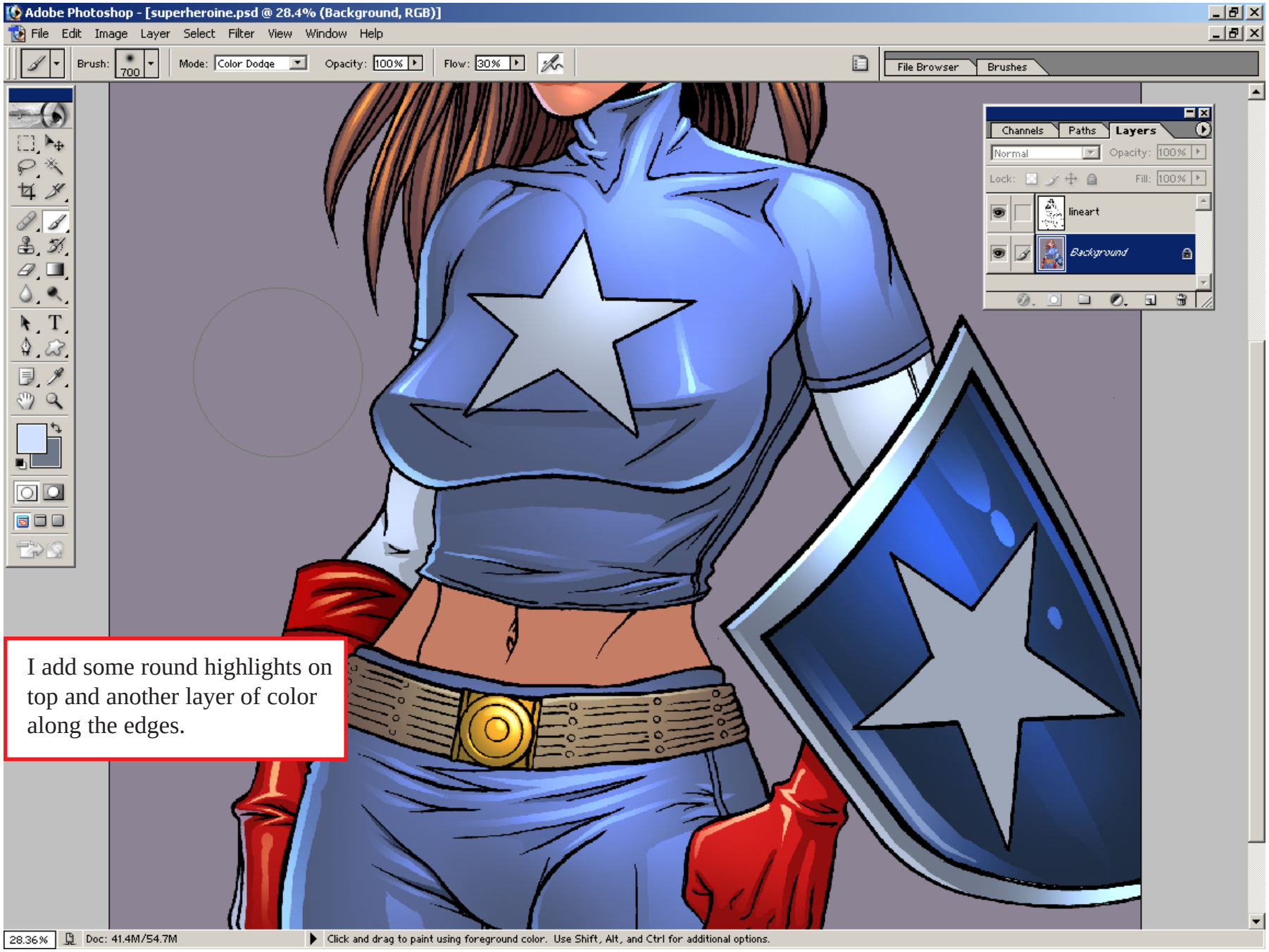


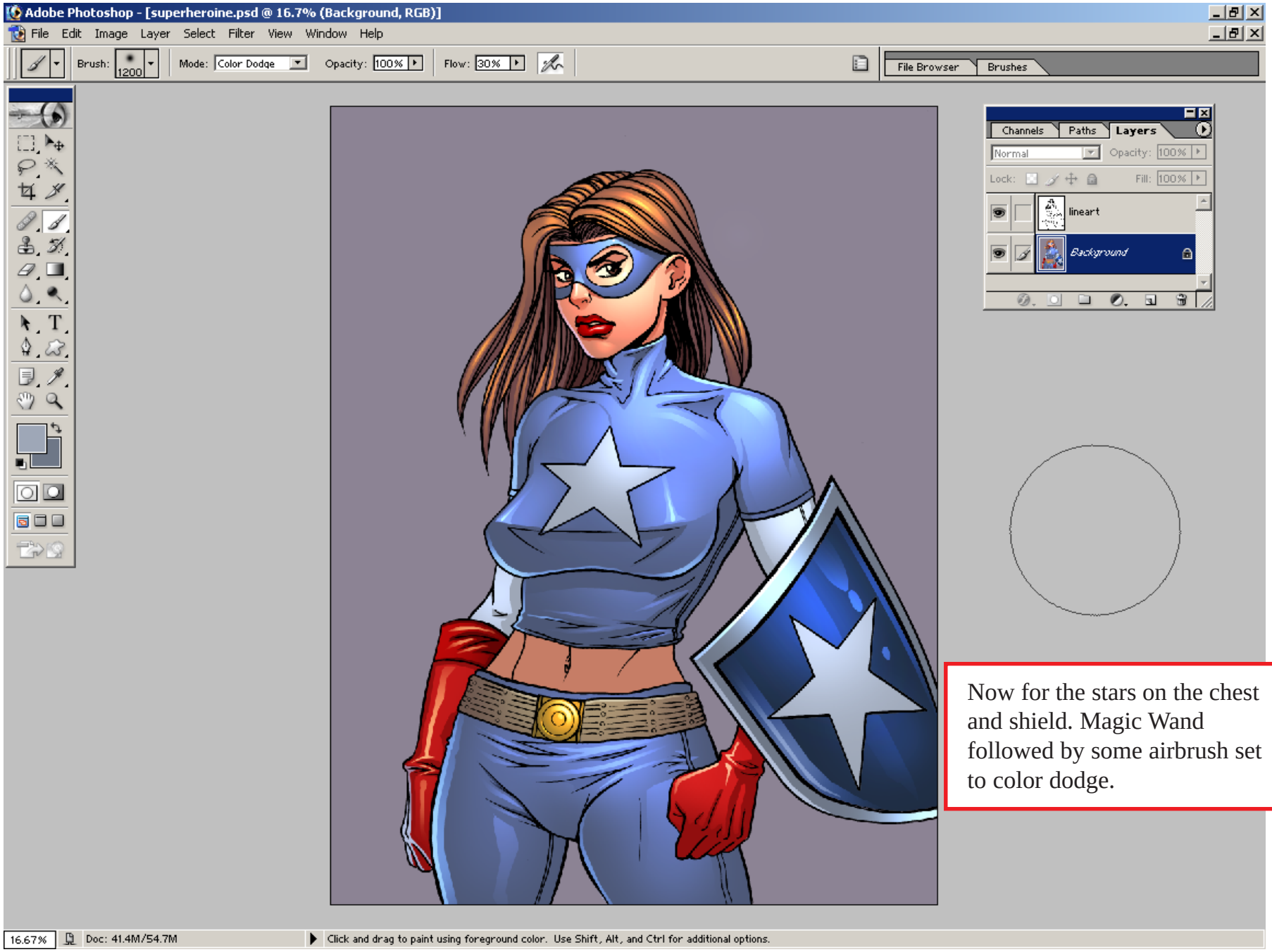
The shield needs some relections. I Magic Wand it and color dodge with a bluish gray.



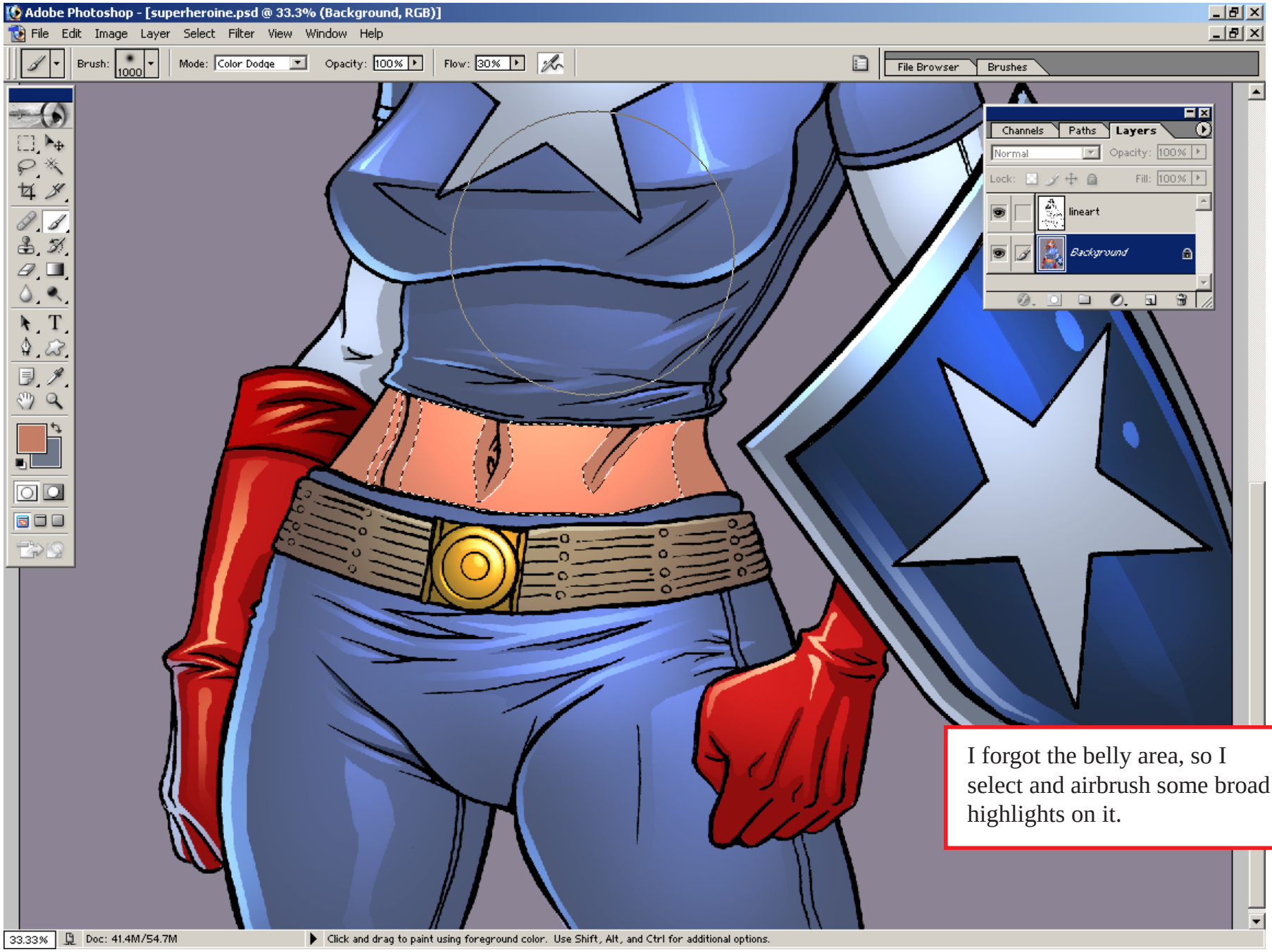
The concept is to always go from broad areas of color to specific ones. I run a medium-sized airbrush right down the middle of the shield.

Adobe Photoshop - [superheroine.psd @ 33.3% (Background, RGB)]
File Edit Image Layer Select Filter View Window Help
I make some selections along the top and bottom edges of the shield and then airbrush some highlights using color dodge and normal modes.

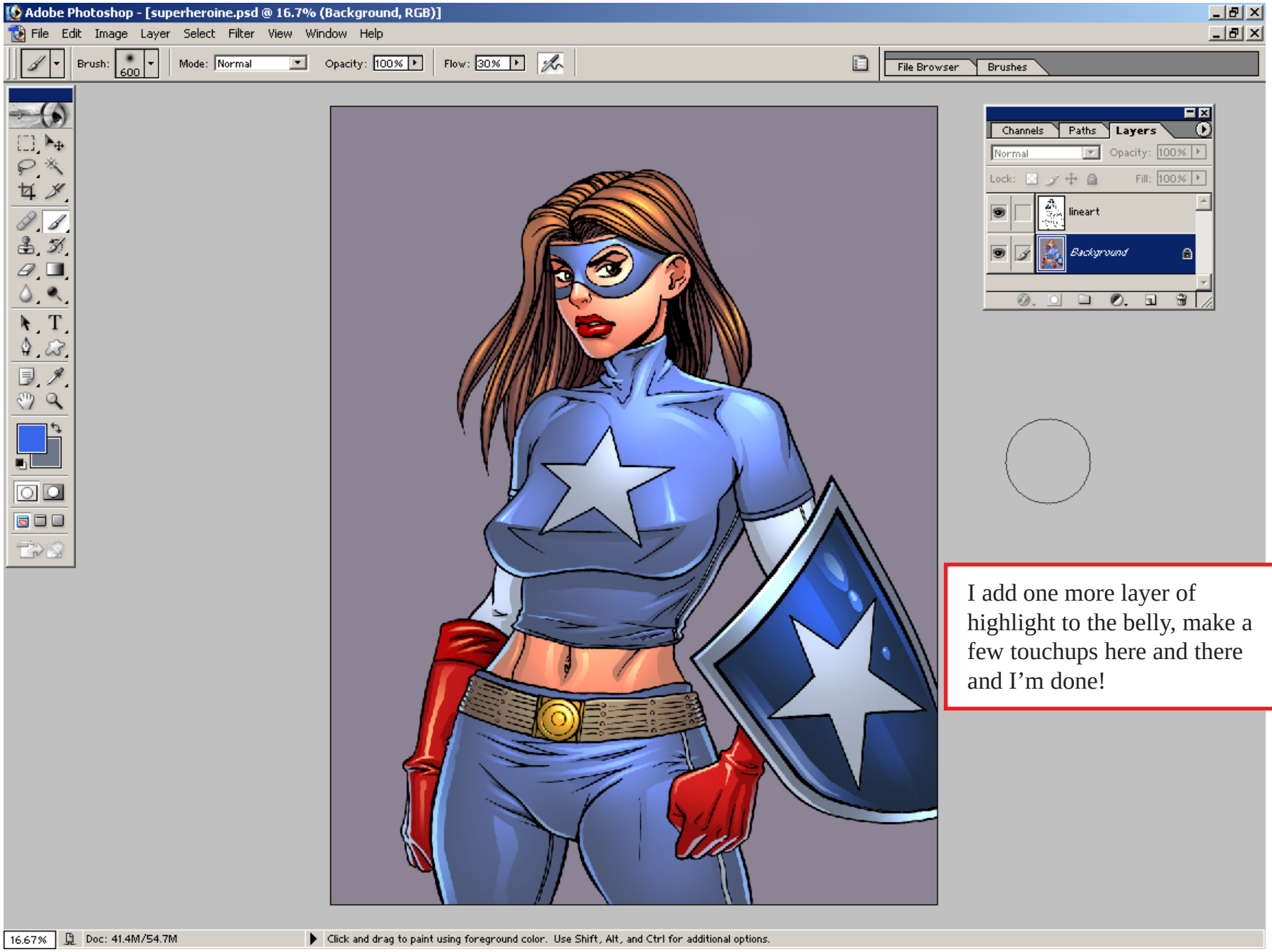

Adobe Photoshop - [superheroine.psd @ 28.4% (Background, RGB)]
File Edit Image Layer Select Filter View Window Help
Brush: 700
Mode: Color Dodge
Opacity: 100%
Flow: 30%
File Browser
Brushes
Channels
Paths
Layers
Normal
Opacity: 100%
Lock:
Fill: 100%
lineart
Background
I add some round highlights on top and another layer of color along the edges.
28.36%
Doc: 41.4M/54.7M
Click and drag to paint using foreground color. Use Shift, Alt, and Ctrl for additional options.



Now for the stars on the chest and shield. Magic Wand followed by some airbrush set to color dodge.



I forgot the belly area, so I select and airbrush some broad highlights on it.


Adobe Photoshop - [superheroine.psd @ 16.7% (Background, RGB)]
File Edit Image Layer Select Filter View Window Help
Brush: 600
Mode: Normal
Opacity: 100%
Flow: 30%
File Browser
Brushes
Channels
Paths
Layers
Normal
Opacity: 100%
Lock:
Fill: 100%
lineart
Background
I add one more layer of highlight to the belly, make a few touchups here and there and I'm done!
16.67%
Doc: 41.4M/54.7M
Click and drag to paint using foreground color. Use Shift, Alt, and Ctrl for additional options.

6 Coloring Part 5 - Finalizing Your Files

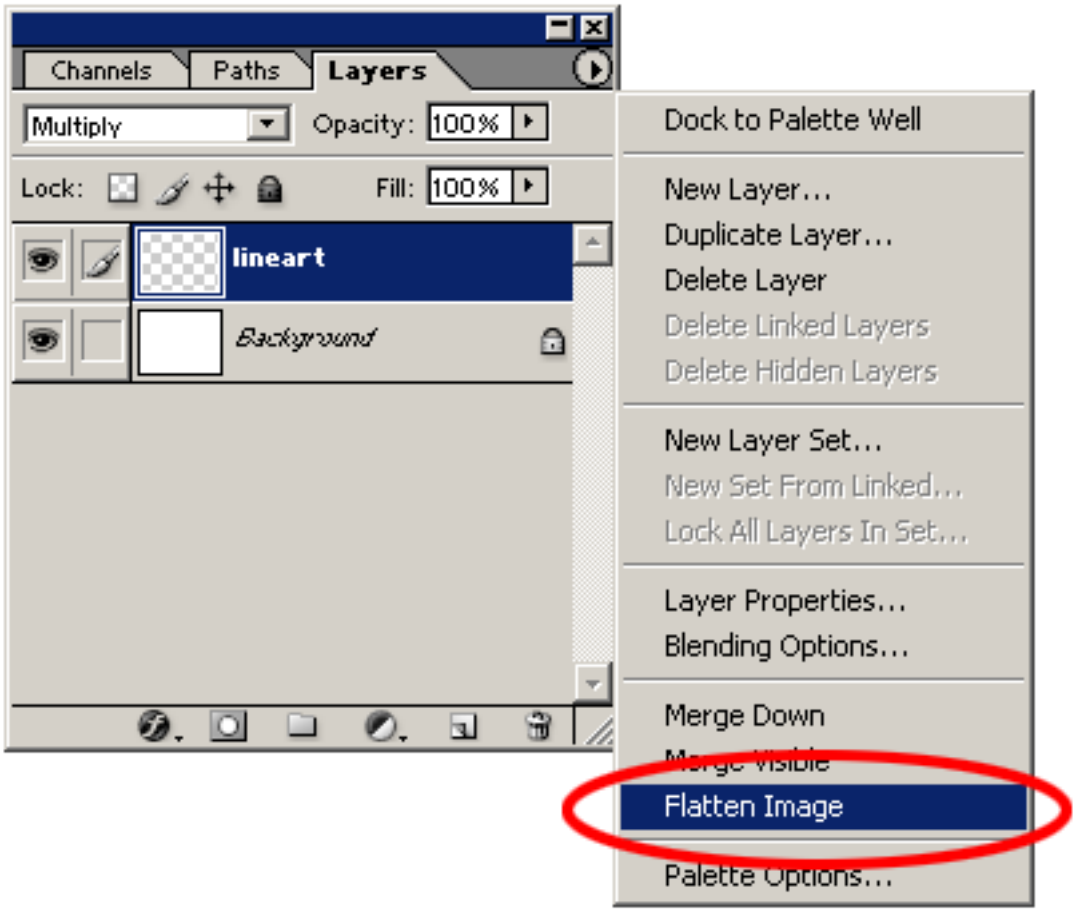
I'm done coloring, now what?

Once you're finished coloring your image, you've still got at least one step left. If you'll recall when we set up your image in chapter 2, we floated your lineart over the background. Now that you've finished coloring it's time to merge the linework with the background so it can be sent to the printer. Unfortunately, most printers can't print your documents straight from a native Photoshop file, so they'll have to be resaved into a format they can deal with. In most cases printers ask for .TIF files.

This is important: you'll want to keep a version of your file that is not flattened. Make a copy of it, back it up, but be careful to preserve an unflattened version of your image. Once you've flattened the document it will become difficult to edit it in the future. Sometimes your editor demands some changes, or perhaps you noticed a mistake later on that needs fixing. Whatever the reason, chances are you're going to have to edit your work again. Preserving the original .PSD file will ensure this is both quick and easy.

Flattening Your Image

To flatten your image, simply open the floating layers palette **[windows>layers]** and open the pull-down menu on the side. Choose “Flatten Image”.



Your image should now only be one layer. It will now be possible to convert the image to CMYK for printing. **[image>mode>cmyk color]**. It is important to only send files to the printer which contain no layers because most printing software can’t deal with them. With the layers gone, you can also save the file properly in several new formats, including the all-important .TIF format. TIF formatted files are the most commonly used format in layout programs such as QuarkXPress, Indesign or Pagemaker. Most printers prefer your pages to be placed inside one of these layout programs because it make it easier for them to print from. Each printer has different requirements concerning the software packages they prefer, so it’s best to ask which, if any, are best.

In most comic production, a variety of software can be used to produce the final images. While Photoshop is used for most of the art and coloring, lettering or sound effects may be made in another program such as Illustrator or Freehand. If this is the case, a layout program is used to composite all these elements together.

Flattening your image if you’ve used Channels

If you set up your linework on a channel instead of a layer, use **[image>apply image...]** to merge your lineart channel to the color data. Set the channel to your linework, blending set to “multiply” and opacity to 100%. Hit “OK” and they should merge. Note, your linework channel will still exist, so be sure to throw it away once you’ve verified it merged properly.

File Formats

When saving your file, use the format which will best serve what you need to do.

Some formats will alter your pixels during a conversion while others compress your image to save space. These are refered to as “lossy” formats because once you save image it will never be quite the same. Others formats leave your information intact so are refered to as “non-lossy”. Other file formats are compatible with other image modes, programs or even other computer platforms. To keep it all straight, here’s a quick overview of the different formats and their pros and cons:

.PSD - Photoshop’s native file format. This is a very reliable format specific to Photoshop. It’s not very small in terms of file space (offering only a RLE[1] compression scheme) but it’s main advantage is that it will save all Photoshop information in your file intact. This means all your custom layers, layer masks, lettering, layer styles, groups, etc. can be saved. Unfortunately, .PSD files aren’t very compatible with other graphics programs outside of the Adobe suite. It should, however, be your first choice if you want to save all your work with its elements in an editable fashion. Note: to increase compatibility with older versions of Photoshop, be sure to edit your preferences **[edit>preferences>file handling>always maximize compatibility with photoshop (psd) files]**. [non-lossy] [cross-platform]

.BMP - Windows Bitmap File Format. An older, but still commonly used format. Modest compression, but not recommended for comic work. [non-lossy][somewhat cross-platform]

.GIF - (Compuserve .GIF format) Acronym for Graphics Interchange Format. Unsuitable for most comic work. Modest compression, but extremely lossy on 24-bit images. Format retains only 256 colors and can introduce massive dithering. GIF89 does support tansparencies, making it useful for the net. [lossy][cross-platform]

.EPS - (Photoshop EPS) Acronym for Encapsulated PostScript. .EPS files can be used to define both raster and vector data. .EPS files defining vector data can be scaled up or down without losing detail. .EPS is an excellent format for bringing information into Photoshop, especially vector objects such as fonts, graphic elements, logos or sound effects. .EPS objects imported into Photoshop can be converted into bitmaps at any size or resolution you choose. This format is only marginally useful for saving information from Photoshop though, since most bitmap data -by its nature- does not scale well. While vector data is very small, bitmap .EPS files can get quite large. .EPS format can be useful for exporting images to programs when other formats fail. The format is also cross-platform. Photoshop DCS (desktop color separations) are also .EPS formatted files which allow you to save CMYK data and spot colors. DCS is useful in some instances for Duo-tone color and other specialized printing chores. [non-lossy/ lossy (if JPEG compression is chosen][cross-platform]

.JPEG - (aka .JPG) Acronym for Joint Photographic Experts Group. One of the most popular formats for the web. Using a series of encoders, .JPG format compresses images in 8x8 grids, averaging detail and color information. Depending on the level of compression, visual artifacting can be severe, making it generally unsuitable for comic work. The

format is extremely useful for the internet because of its extreme compression capabilities and relatively decent visual quality. If you plan on editing or re-using your image, avoid this format as the compression scheme tosses large amounts of data from your image. Also, be very careful about resaving .JPG files, as this will cause them to be compressed again, further degrading their quality. [lossy][cross-platform]

.PCX - PC Paintbrush File Format. An old PC standard, revised to work with 24-bit images. Widely supported on the PC, but not as much on the Mac. Not generally suitable for comic work as file sizes are larger than other formats and its compression algorithms are inefficient (an RLE scheme) leading to possible substituted image palettes. [non-lossy][possibly cross-platform]

.PDF - {Photoshop .PDF) Acronym for Portable Document Format. An Adobe file format which allows you to save graphics which can be used in Adobe Acrobat. Photoshop .PDF format can be useful for storing transparency and vector data intact for use in other Adobe products such as Indesign. While not commonly used, it is a powerful format when used in conjunction with other software. Using this format can also allow you to lock your images, preventing them from being viewed by unauthorized users. This is also one of very few formats which supports CMYK. [non-lossy/lossy (if compression is chosen)][cross-platform]

.PCT - (PICT) An Apple file format, used mostly on Macs. Widely supported by Macintosh software. Suitable for some comic applications, but not as advantageous as other formats in terms of size and compatibility. The format offers native non-lossy RLE compression for identical pixels, so images with a predominant color or large flat area will compress well. [non-lossy/lossy (if JPEG compression is chosen)][somewhat cross-platform.

.PXR - (Pixar) The Pixar Computer image format. Suitable for some comic applications, but with limitations. Supports 16 and 24-bit color, but not alpha channels or CMYK. The image files are uncompressed, so can become very large. Not recommended except for transferring file to and from Pixar computers.

.PNG - Acronym for Portable Graphics Network. Designed as a royalty-free format to .GIF. Not generally suitable for comic work, this format is better for the web. It supports 8 and 16-bit channels, spot colors, alpha channels and lossless compression. Many consider this to be the possible successor format of .JPG for web use. It also supports CRC data integrity checking and internal gamma correction. Sadly, it does not support CMYK. [non-lossy][cross-platform]

.RAW - An unencoded image dump format. This format literally dumps your pixel data straight into a file. It supports any Photoshop mode, including spot colors,16-bit channels and alpha masks. While it can be used for comic work, it's not suggested as the files are uncompressed and can be extremely large. This format can be handy for porting documents to other platforms or developmental work. [non-lossy][cross-platform]

.SCT (aka Scitex CT) Scitex Continuous Tone image file format. Designed for the Scitex image-processing devices. Not really suitable for comic work, though the format does support CMYK. Alpha channels are not supported and the format

is uncompressed, making for some large files.

.TGA (aka Targa) Developed by a company known as Truevision, this format was popular on the PC. The format isn't well-suited for comic work, but can be used for some tasks. It supports 1 alpha channel but not CMYK. The format supports RLE non-lossy compression, so images with large areas of identical color will see substantial space savings.

.TIF (aka TIFF) An Acronym for Tagged Information File Format. A legacy file format originally developed by Aldus. .TIF files are well-suited for printing and is commonly used in comics. The format supports unlimited channels (both 8 and 16-bit) and CMYK mode. Images compress well with a non-lossy .LZW compression scheme[2] . Mac or PC byte order generally doesn't make a difference since nearly all programs what can import/export .TIF files understand both. [non-lossy][cross-platform]

Compression Notes

[1]RLE - Run Length Encoding - a non-lossy compression scheme in which identical pixels next to each other can be compressed, resulting in a smaller file. This method of compression works very well for large areas of flat color, but results in almost no savings if the image is photographic or grainy.

[2] LZW - An acronym for Lempel, Ziv and Welch, the programmers who created the compression algorithm. LZW compression works by substituting common values in data with a shorthand notation, so redundant information can be replicated, not stored in its entirety. Tifs compressed with this method take longer to save and open since they must be compressed and decompressed.

In images with lots of redundant data, the compression can be enormous. If the image is grainy, the savings will only be slight. ■

7 Coloring Part 6 - Effects Techniques

This chapter covers a few specialized coloring techniques which can help your pages to really stand out. Properly executed, coloring effects can lift a ho-hum image up into an exciting and visually interesting piece. Be careful of overusing them though, as good effects are never a substitute for solid coloring.

Glows

Glows are probably the most commonly requested effect in comics, so where better to start? They're also easy to do and pretty cool looking.

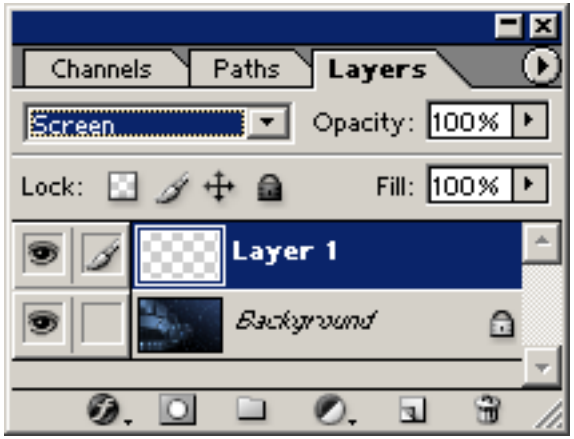
Glows should be handled almost last in your coloring. The reason for this is simple: glows go over just about everything, including your background, your characters and even your linework.

In real life, glows are an optical effect caused by bright lights. They come in all sorts of varieties and shapes such as circles, halos or lens flares. They can leave afterimages like when a speeding taillight is filmed, or prismatically fracture, creating rainbow slivers. The

types of glows you can render are almost limitless, so let your imagination go wild.

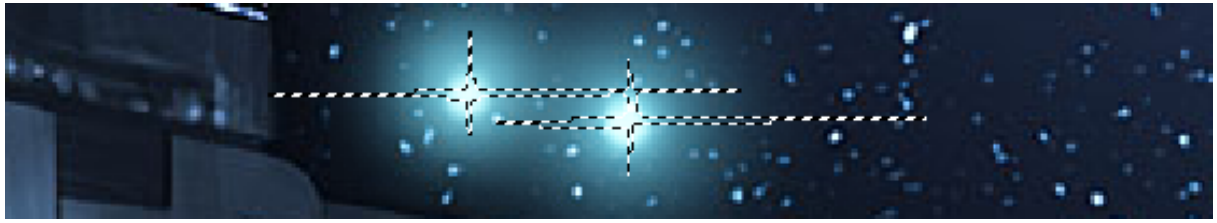
To start with, let's render a simple glow. This background could use a few.

Create a new layer and title it "Glows". Change this layer's blending mode to "Screen". It should look similar to this:



Next, select your airbrush. Change its mode to "Screen" as well. Now select the color you want your glow to be. Gently airbrush your glow on the new layer. Because your airbrush is set to screen, it's going to have a controlled dodge effect. Don't be afraid to use a large brush to get a smooth glow.

These glows look pretty good. If you're satisfied with them, you can flatten the image. Simple! If they're a little strong, you can adjust the Glow Layer's opacity. Want them to be more intense? You can duplicate the layer by dragging it down to the "New Layer" button on the floating layers palette. For my glows I want to add a little more. Using the lasso tool, I carefully select some highlights.



The final result. In just a few seconds I rendered a really nice effect that adds a lot of interest to the piece. Be careful of overdoing it though. If you use too many glows it can water the effect down.

Glows work best on dark backgrounds. Obviously, glows are much more powerful when there's a lot of contrast, but the "Screen" blending mode also has more opportunity to introduce new bands of color in the grad, which makes the effect more powerful. If you try this effect on a light image it won't look nearly as impressive.

This glow only used a single light blue color. Experiment with 2 or more colors, applied sequentiually on top of one another for and an even more varied look. You can apply the color "live" to the same layer, or create new layers for each of them, giving some of the intermediate layers different blending modes.

Knockouts or "Holding a line in color" (aka Color Holds)

A knockout is an effect where you replace the normally black line in an image with another color. This can be a very handy effect. It can be used to show an object is transparent, glowing or just to give an image a softer feel. If you use it on characters they tend to look more like they were animated, which can sometimes be appropriate. I use it quite a bit for distant background objects to give them a sense of distance and atmospheric perspective.

Knockouts are also an excellent technique for reducing the impact of over-rendered linework when it interferes with the color. Many inkers use a lot of crosshatching and other shading techniques which don't lend themselves easily to color. Knockouts are an excellent way to preserve these lines while reducing their overall visual impact.

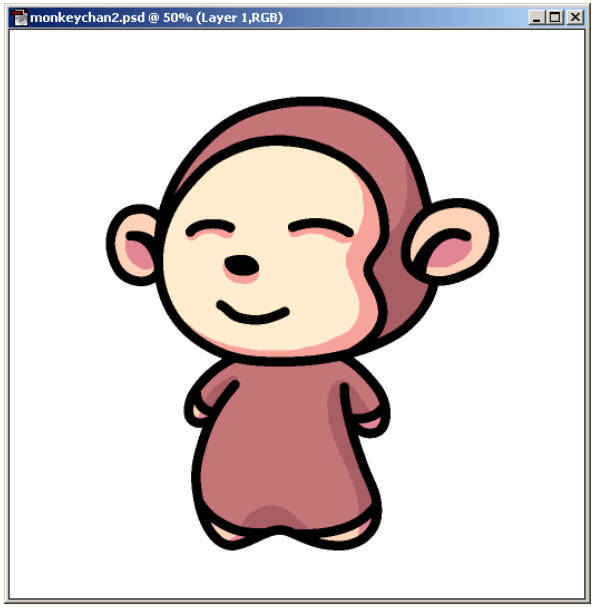
Again, this technique works best on an image you've just about finalized.

For this technique, you'll need the lineart

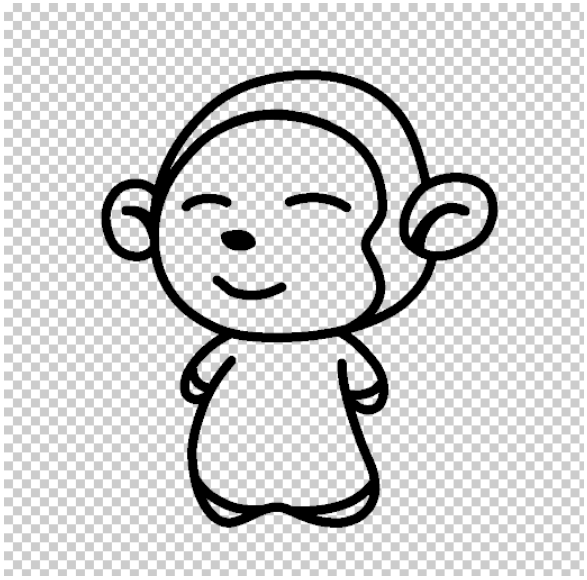
layer intact, so do it before you flatten your image.

We're going to completely remove all the white on the lineart layer, leaving only the black lines. We're going to replace it with "clear".

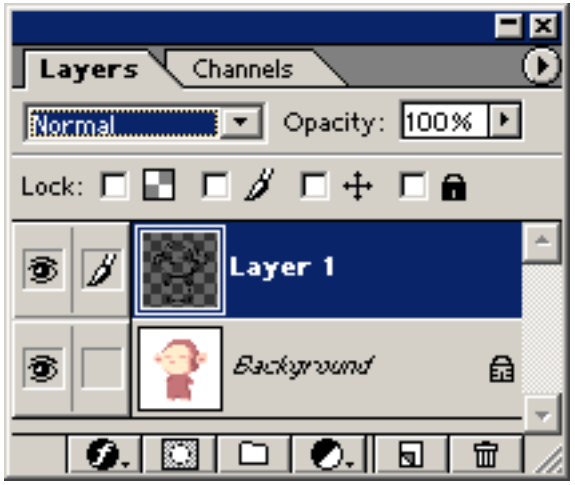
In this example I've got a simple mascot character I want to adjust the line color on. He looks pretty good already, but I



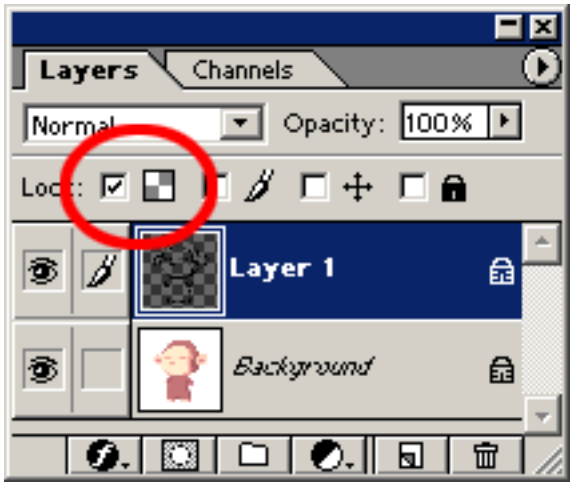
think we can make him a little cuter. The first step is to isolate replace all the white area with clear. Highlight the lineart channel to edit it. Now, from the tool menu, select the Fill tool (keyboard short cut **[G]).** If you get the gradation tool and not the fill bucket, hit **shift [G]** to alternate to the next tool. In the tool options along the top of your screen, change the mode to "clear". Uncheck the anti-aliasing option and the contiguous option. Now, using the fill bucket, tap in any white area of your image. Your image should look like this:



All the white in your lineart layer should be gone! The checkerboard pattern behind the lineart is Photoshop's way of telling you it's clear and there are no other layers visible beneath it. Change your lineart layer's blending mode back to normal instead of multiply. Check the eyeball on the background layer too, so you can see your entire image again. Your layers palette should look similar to this:



We just want to edit the lines, not the "clear" areas. We can do this by locking the transparent pixels on the lineart layer.



Now, any alterations you make to the layer will not affect transparent areas. At this point, you can simply select a brush (I prefer a hard edged pencil tool) and simply color over the lines. The brush will only apply color to the black lines! Transparent areas are left untouched, as well as all your coloring on the layer below!

You can also use the lasso tool to select areas you want to be the same color and use Fill to color the linework.

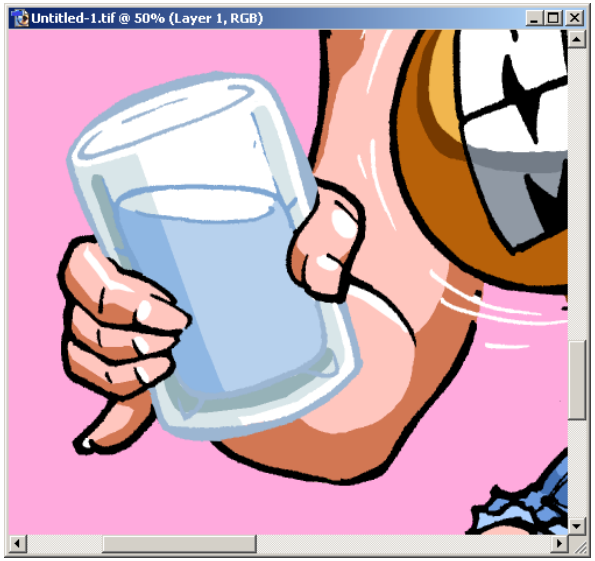
In the above image I selected areas of the linework that were black along with large portions of surrounding areas and then applied a Fill. Note that only the area where there were black lines did the color actually stick -all clear areas resisted the Fill. Using the same technique, I soften the body colors a bit.

Almost all the linework on the monkey has been replaced with color holds now! A few more airbrush highlights on the cheek and I'm done!

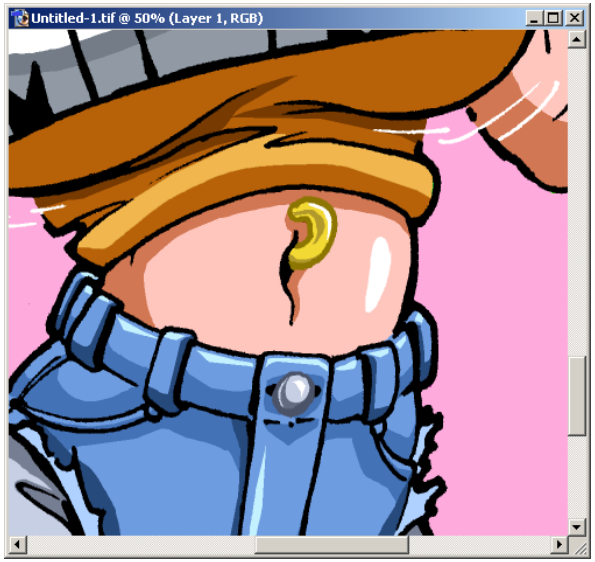
At this point you could move on to additional effects work. If you're done you can complete the image by flattening the layers.

If at any time you want to restore all the black lines, choose black from the color picker, select all **[ctrl A]** and simply do a Fill. All the lines will revert to black.

Knockouts are useful in many situations. The can be used to make Glass Objects read a little clearer. They can also be used



for motion type lines, to help indicate something is moving.

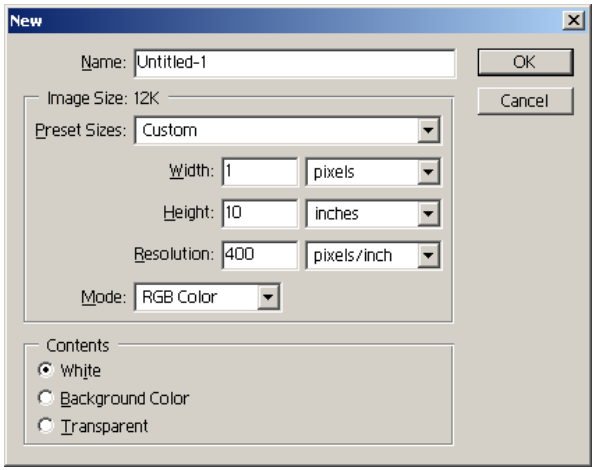


Or they can be used for metal objects to help indicate a different texture. The possibilities are virtually endless, so experiment!

Speedlines

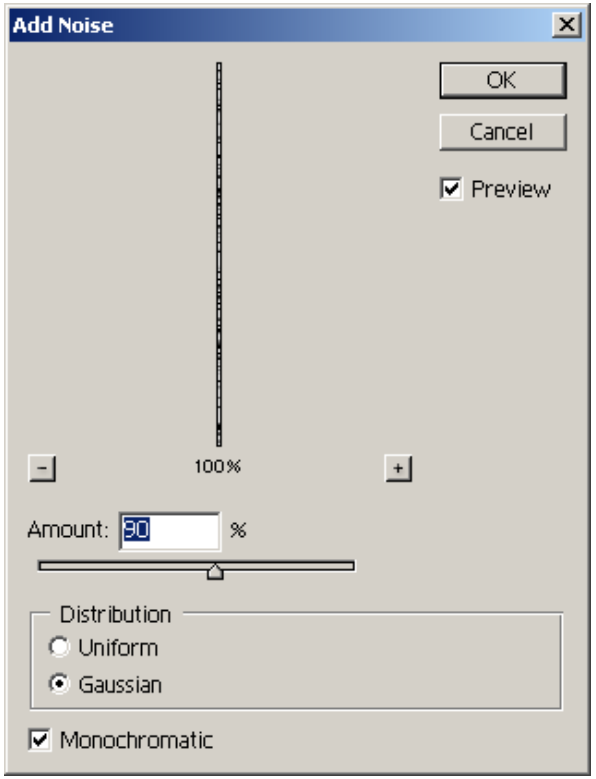
Speedlines are a graphic way to indicate motion. They're used a lot in Japanese comics, but they're starting to enter the visual vocabulary of comics everywhere.

Speedlines look great, the only problem is rendering all those lines can take a lot of time. Here's a great technique for making them quickly in Photoshop.



Create a new document **[ctrl N]** with the above settings. Note that the width is only 1 ***pixel***, while the height is 10 ***inches***. This is going to create a strange looking document, since it will only be a narrow strip.

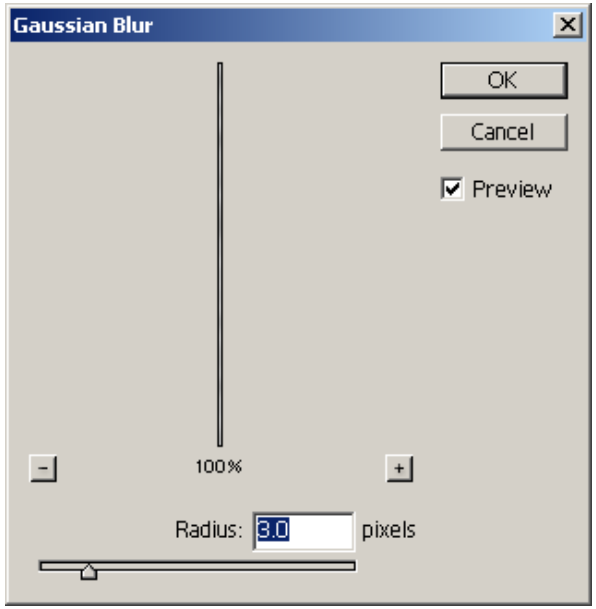
Next, use the filter "Add Noise" located in **[filter>noise>add noise...].** I used a setting of 90, but the higher you set it the more lines you'll get. Set it lower for fewer lines. I used a Distribution method of Gaussian, though on such a narrow document you can use Uniform as well. Important: be sure that the Monochromatic box is checked, otherwise you'll get multicolored speedlines!



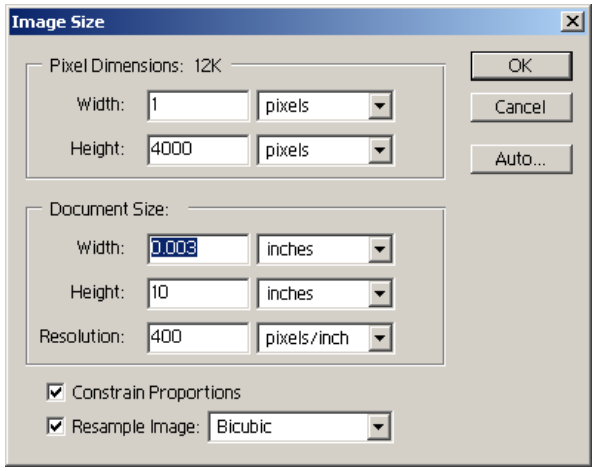
This is what my Add Noise filter window looks like. Hit OK.

Now, Blur the entire canvas using Gaussian Blur, located in [filter>blur>gaussian blur...].

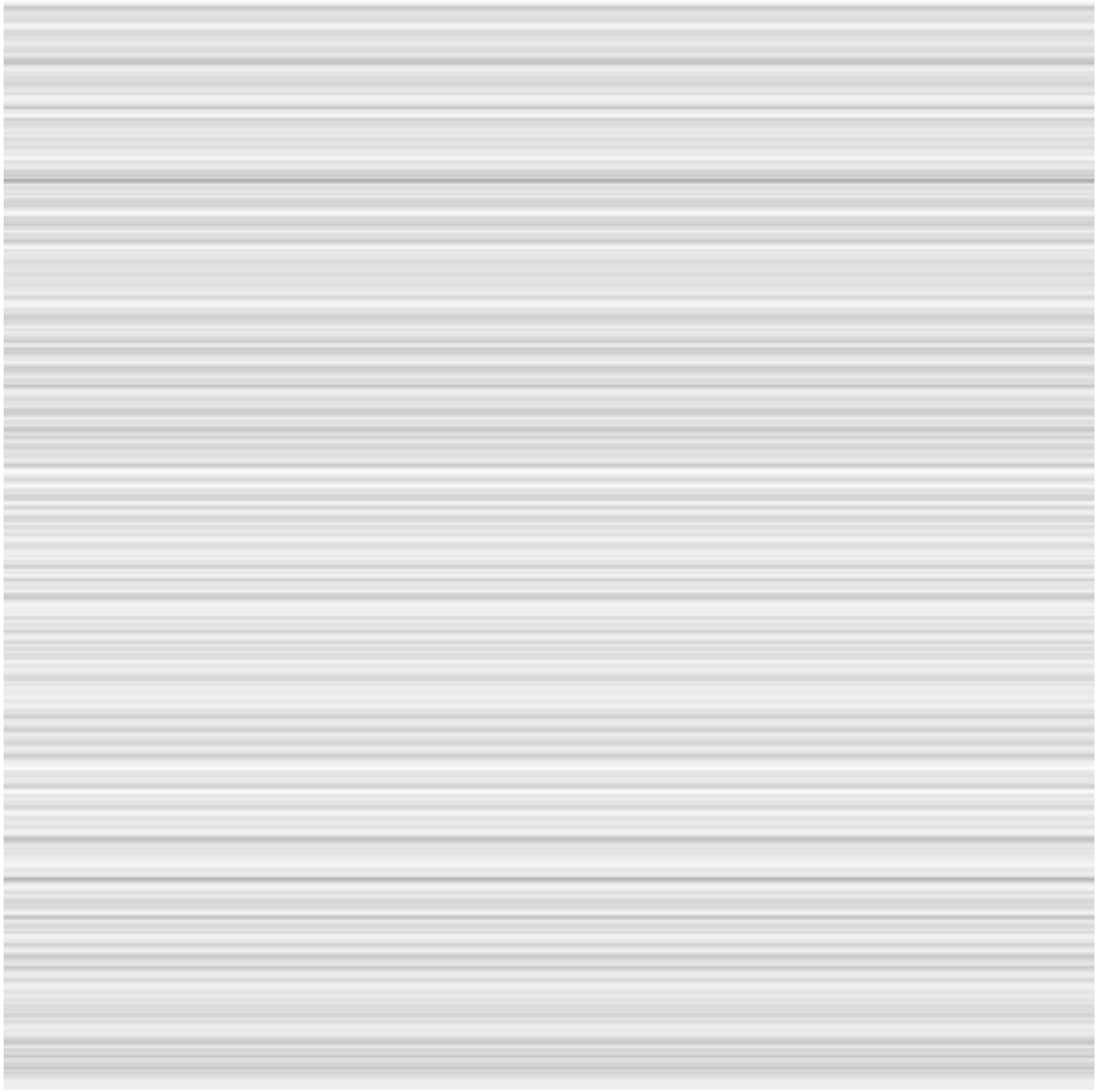
I use a setting of 3 pixels for a 400DPI document. Again, you can experiment with different values to get softer lines.

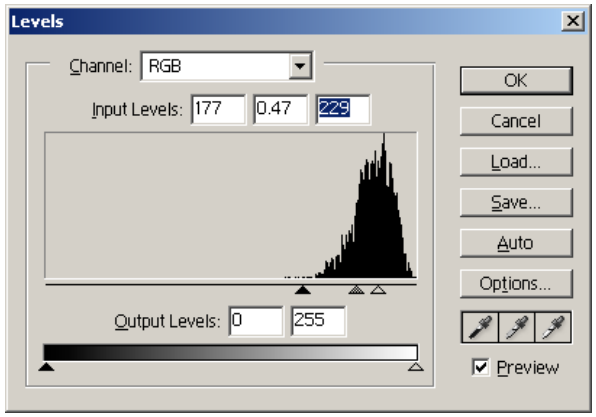


My Gaussian Blur filter settings looks like this. Now I can stretch my 1-pixel canvas out. To do this, call up the Image Size window **[image>image size...]**. It should look similar to this:

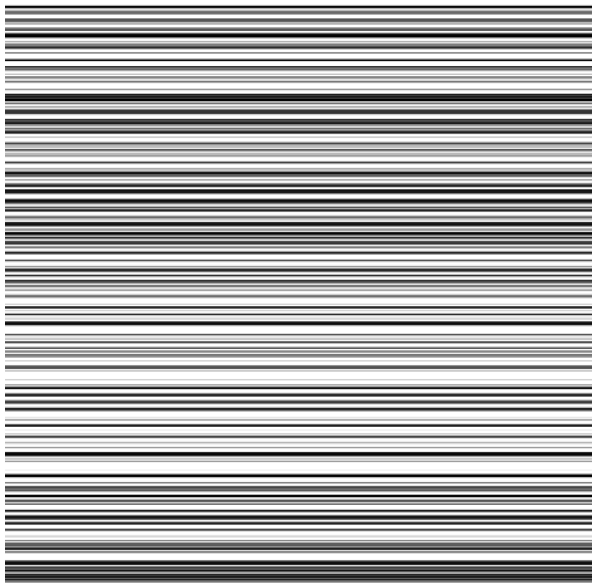


Change the width to 10 inches and uncheck the “Constrain Proportions” box. This will cause Photoshop to stretch your canvas out, extending your single-pixel noise dots into lines! Your image should now look something like this:





Those gray lines are a bit subtle, so to give them some contrast I use Levels function **[ctrl L]**. I bring the black and white triangles in, playing around with the gray point until I find some a result I like. Hit OK and you're done.



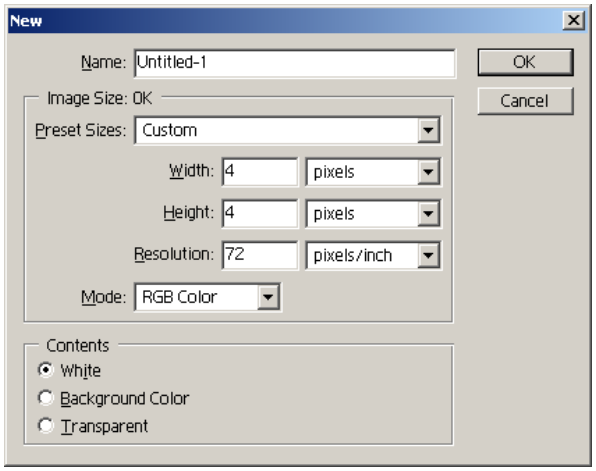
These speedlines can now be cut and pasted into any background. You can adjust their colors, contrast or even distort them for an effective and quick effect.

If you need the speedlines to not be anti-aliased, make sure to use the Threshold command located at **[image>adjustments>threshold...]**. This will allow you to interactively remove grayscale information *while* choosing the strength of the line!

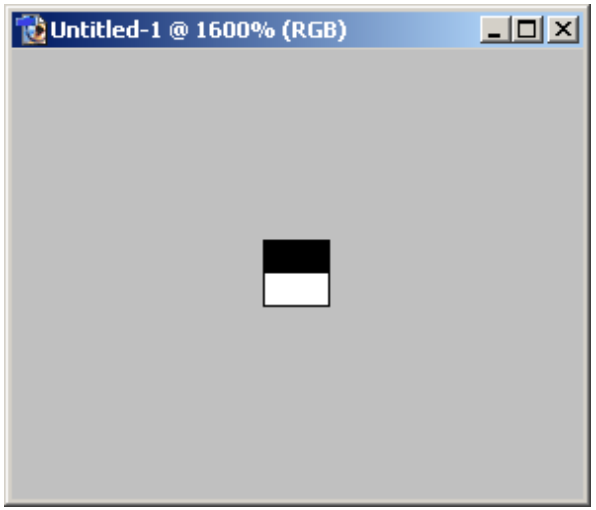
Television Interlacing

Here's a cool effect which is a variant of the speedlines technique: simulating the interlacing of a television screen.

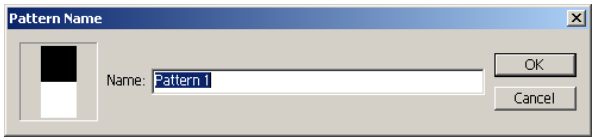
To start, create a new document **[ctrl N]** that is 4 pixels by 4 pixels at 72 DPI.



Magnify the tiny document to 1600% so you can see it easily. With the Pencil tool **[B or shift B]** fill the top half of the image with black. It should look like this when you're done:

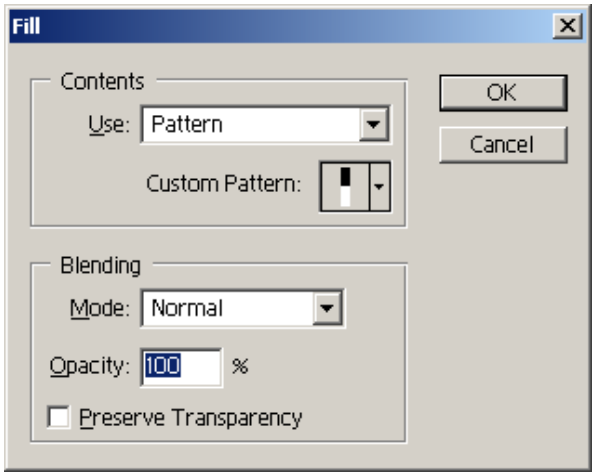


Next, we're going to capture this little tile as a pattern. Select All **[ctrl A]** and then **[edit>define pattern...]**.

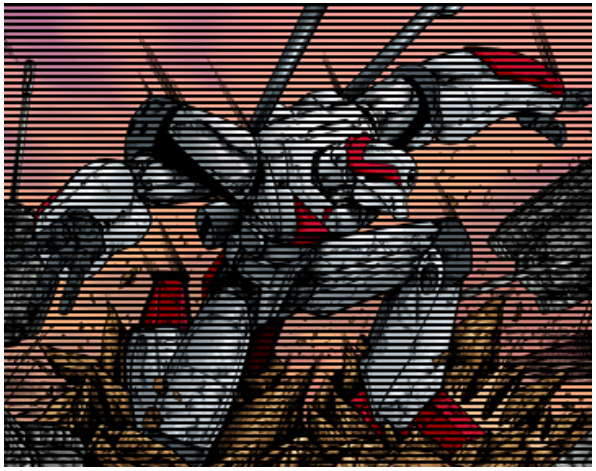


This brings up the Pattern Name window. Name your pattern (I used "interlace pattern") and hit OK. Now, open the image you're interested in applying the effect to.

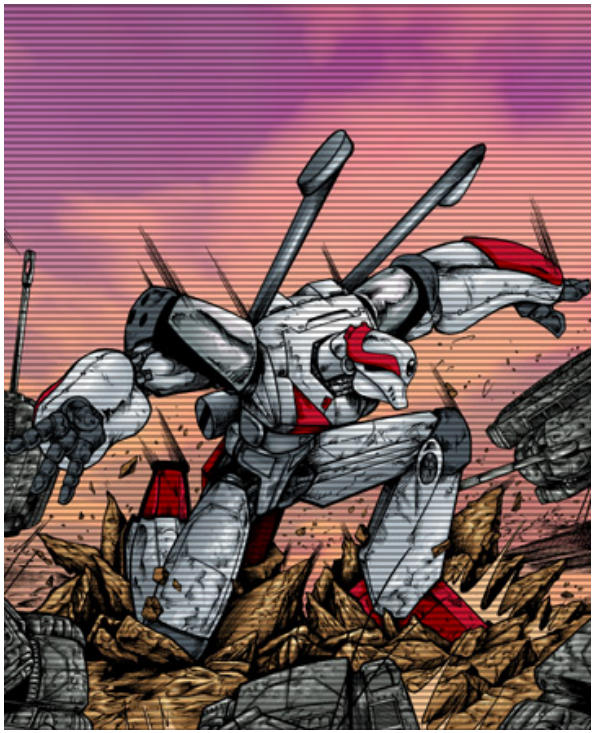
Create a new layer over the image you want to add the effect to. We're going to apply the pattern we just created to this new layer. Chose the Fill option **[edit>fill...]** and change the settings to look like this:



Change the "Use" option to Pattern. Select your custom interlace pattern from the pull-down menu. Blending should be set to Normal and the Opacity should be 100%. Hit OK. Your image should now have black bands running across it! Change that layer's blending mode to Multiply and you should see something similar to this:



The effect is pretty strong. For this particular image I want to reduce the effect a bit so I twiddle the layer's opacity until I get the line-strength I want.



Perfect! For larger lines, create a new pattern that's perhaps 6x6 pixels, or larger. You can also change the colors (you don't have to use black) or even the blending mode of the interlace layer.

When you're satisfied with the effect, flatten the image.■

8 Black & White

Coloring isn't all you can do in Photoshop! Photoshop is also excellent at manipulating images in grayscale and in black & white. Many mundane tasks such as lettering are made a lot easier with Photoshop.

Screen Tones

One of the most frequently asked questions I get is "How can I create Zip-A-Tone" in Photoshop? For those of you who are not familiar with Zip-A-Tone, it's the trademark name for a now defunct screen tone that came on transparent sheets.

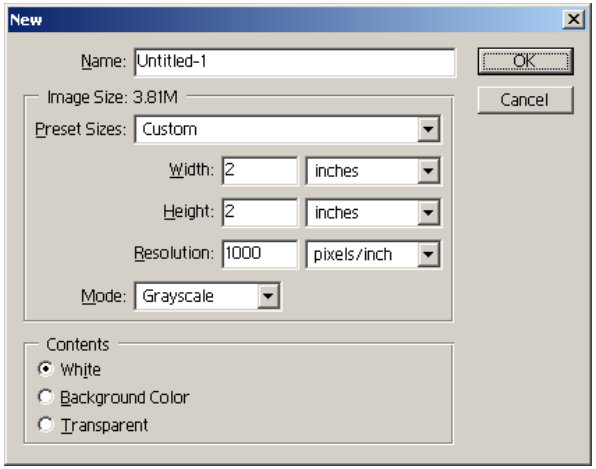
Even though Zip-A-Tone isn't manufactured anymore people still use its name to refer to a wide range of similar products. Zip, as it's commonly refered to by artists, is a clear adhesive sheet with a halftone on one side and a sticky, adhesive on the other. By using a sharp craft knife, it can be cut up and applied to artwork to shade it.

Zip is used extensively in manga, but is

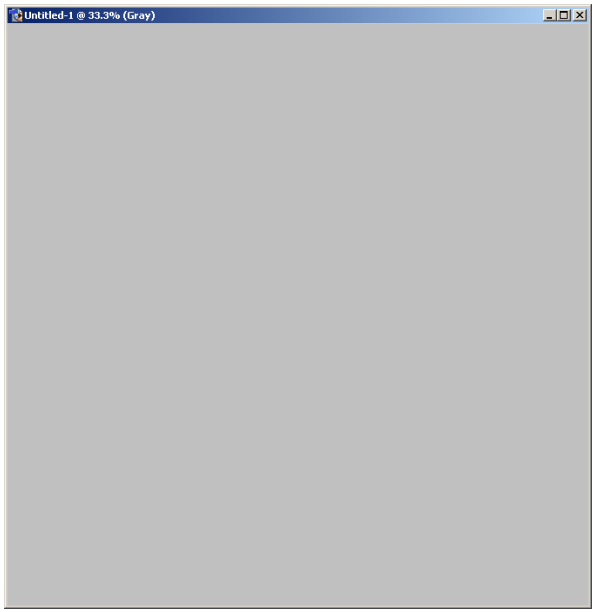
now widely unavailable in the U.S. When you can find it, it's likely to be extremely expensive. Thankfully, with your copy of Photoshop you can make thousands of dollars worth of Zip for free. But more importantly, you can make custom patterns and you can't buy.

The method of making Zip is pretty simple, but I'm always reluctant to explain it because if it's printed improperly it can look terrible. So, a word of caution before we proceed: this technique is aimed only for comics destined to be professionally printed. This technique requires a fairly powerful computer since the file sizes are pretty large and I do not suggest straying much from the suggested resolutions.

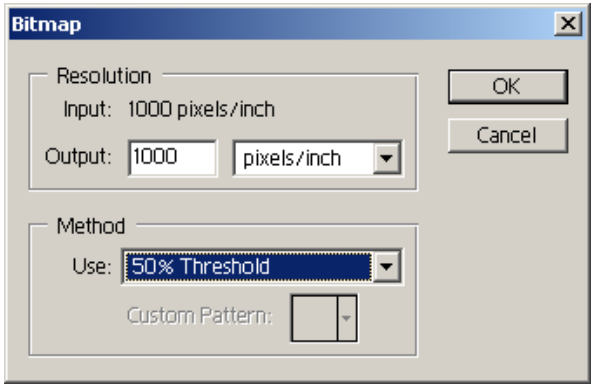
The secret to creating halftones in Photoshop is located in the often overlooked mode change dialogue. Create a new document **[ctrl N]** with the following settings:



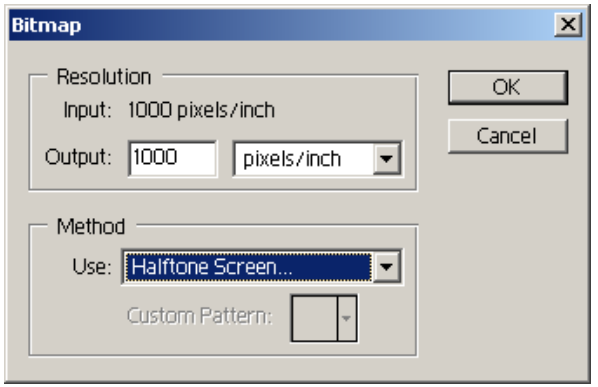
Fill the document with 25% black.



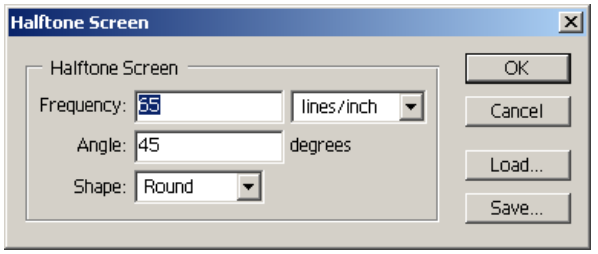
Now, convert the image to bitmap mode **[image>mode>bitmap...]** You should see the following dialogue box:



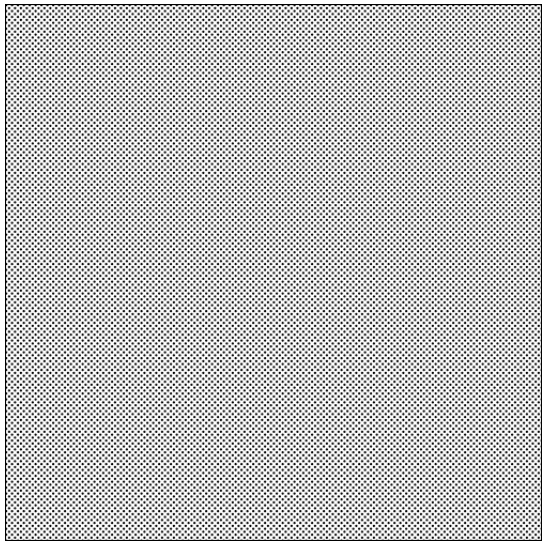
Leave the "Output" resolution the same. Under the "Method" category Photoshop defaults to a 50% threshold. Select the option for Halftone Screen. This is where the magic happens.



For our sample, use the following values:



Your image should now look like this:



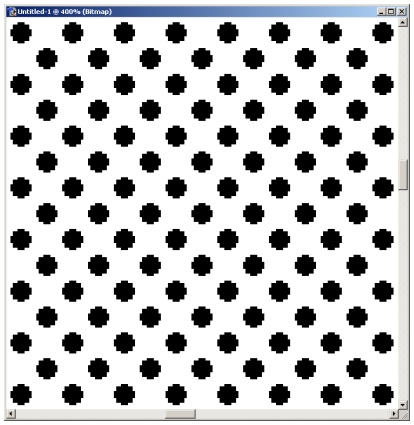
Congratulations, you've just made your first Zip pattern. This simple technique is the basis for converting grayscale images into halftones. Now, instead of using a flat gray color, try a gradation or even a photo! The resulting patterns can easily be cut and pasted into your work. The possibilities are nearly endless!

The three options in the Halftone Screen dialogue control how Photoshop generates the halftone pattern. The "Frequency" is probably the most important. It controls the size of the dots. A higher frequency generates smaller dots. A larger number will create larger dots. The shape option gives you several different halftone shapes, including round, diamond, ellipse, line, square and cross.

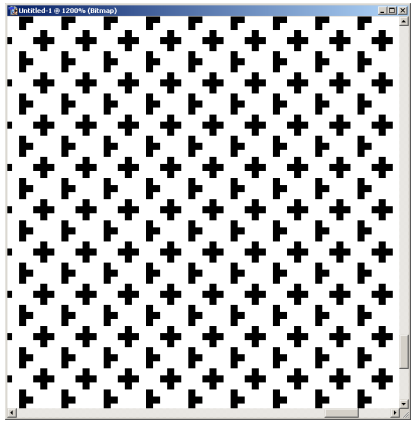
Resolution and Screen Tones

In our example you might have noticed we used a very high resolution. In fact, the small 2 inch pattern we made was about 4 megs. A full comic page done at a similar resolution could be as large as 70 megs! There's a specific reason for this: a high resolution is needed to prevent a moire pattern.

Pixels are square. Dots aren't. Since Photoshop images are comprised of large numbers of square pixels, to render a small dot and make it reasonably round requires a fair number of pixels. Let's zoom in very closely to our Zip pattern to illustrate this:



In our example, the halftone pattern is rendered at 1000 DPI. With this number of pixels, Photoshop can achieve a convincingly round dot.



This image is the same halftone pattern but rendered at only 300 DPI. Notice how some of the dots appear malformed? Photoshop does it's best approximate a round dot, but with only 1/3 of the pixels to do this with the result just isn't very spherical. These alternately shaped dots can form their own undulating pattern in what's supposed to be an even tone. This is refered to as a moire pattern and it's pretty undesirable. Moire patterns are pretty common when two ordered fields are overlapped. The interaction between the two frequencies creates a totally new pattern. The frequency of this distortion is

often refered to as the “Beat Frequency”.

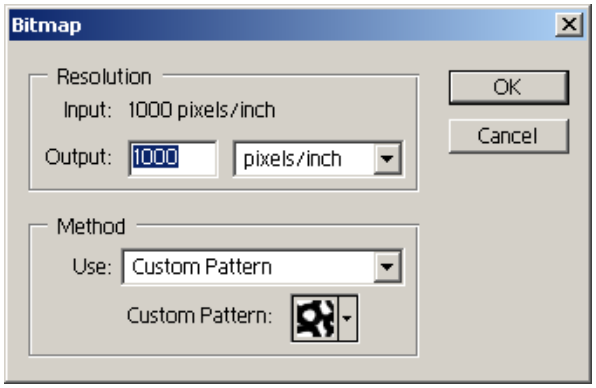
For the purpose of generating Zip, I’d suggest a minimum of 600 DPI. 600 DPI works well for for larger Zip dots, generally 65 LPI or higher. 1200 DPI is ideal, and should be able to adequately handle smaller dots. Common ranges for LPI are usually between 45 and 150, with 150 being almost a fine, continous tone. Quite a bit of commericially available Zip is between 45 and 75 LPI.

Custom Patterns

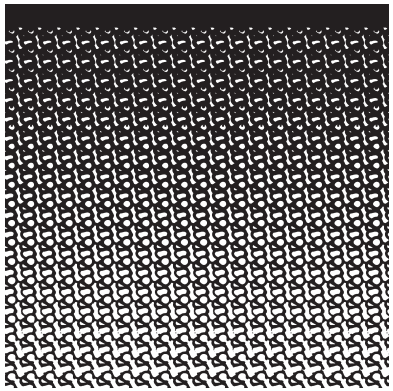
In addition to being able to create standard halftones, Photoshop also allows you to create custom ones. This is a powerful feature that opens up a wealth of possibilities for toning.

Any pattern can be turned into a halftone. Start with any grayscale design on a square canvas. You can define custom patterns in Photoshop by selecting all and then **[edit>define pattern...].** Small, seamless images tend to make the best patterns, but feel free to experiment. I’d recommend a decent range of grays as well, since Photoshop will have a much easier time making a smoother transition between light and dark if the source pattern isn’t too sharp.

Once you’ve defined your pattern, simply mode change to bitmap. However, make sure the Method is set to “Custom Pattern” and that you select the pattern in the pull-down pattern menu.



In my case, a simple black to white grad converted to a halftone with a generated this image:



The range of possible effects is quite varied, but the technique requires a lot of experimentation to produce usable results. However, it’s time well spent since there’s no other easy way to achieve such original patterns.

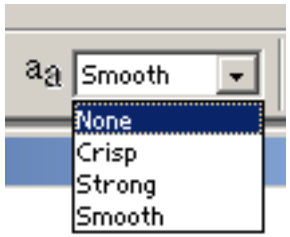
Lettering

Photoshop has made the tedious chore of lettering much easier. Individual artists no longer have to train themselves in the discipline of lettering, or the expense of sending their work out to be professionally lettered.

As lettering is a faily basic function in Photoshop so there’s not a whole lot to cover in terms of technique. A couple of points to keep in mind, however:

Lettering is generated on its own Text Layer, which means it can easily be redited. Be sure to save a .PSD version of the file in case of typos or dialogue changes. Text layers are indicated in the Layers Palette with a “T” on the preview icon. If you wish to edit the text as a graphic, you can rasterize it **[layer>rasterize>type]**. This can be important if you want to merge it with a balloon.

Since you're using fairly extreme resolutions designed for printing, make sure to turn OFF anti-aliasing on your letters. If the anti-aliasing is on, the gray in the letters will halftone, possibly making the lettering fuzzy.
The anti-aliasing controls are located in the text options along the top of the screen.



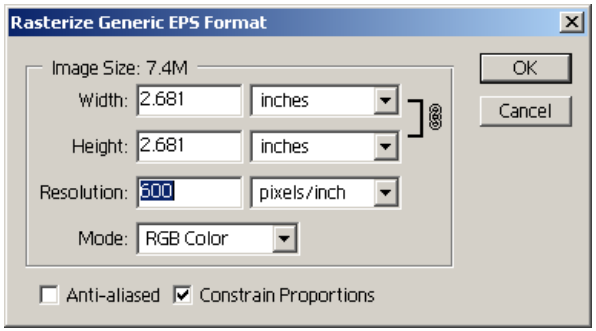
Fonts

If you're an indy creator, you might want to look into the cool fonts over at **Blambot.com**. Blambot offers some excellent free fonts for independent creators. Some of the fonts are available for a reasonable fee, which also applies to professionals who wish to use them. Blambot also has a wide range of balloons, sound effects and symbols, all of which are extremely useful and well crafted.

Word Balloons

I suggest using pre-made word balloons, since they look great and are an enormous time saver. Most word balloons are .EPS files, so they can be imported directly into Photoshop using the standard "Open" command.

When Photoshop attempts to open an .EPS file, a Rasterize Image dialogue box will open, giving you complete control on how the vector graphic is imported. Photoshop automatically inserts the object's default width and height. You can also choose a resolution and mode.



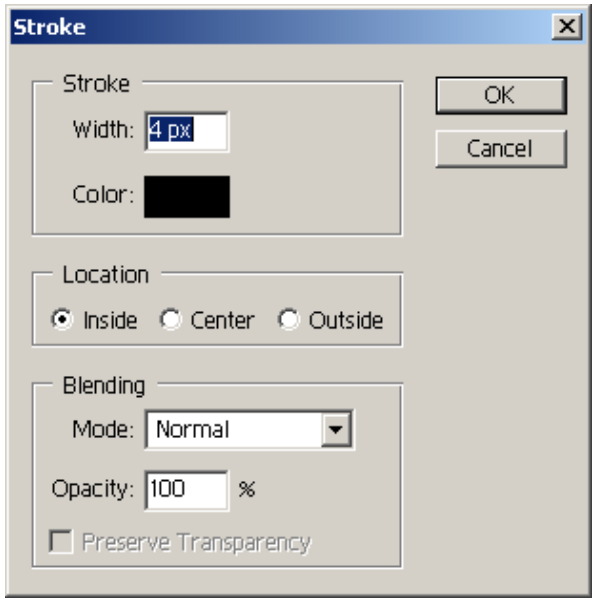
I suggest you turn off anti-aliasing so that the balloons are crisp. It's not necessary though. I also suggest you leave "Constrain Proportions" box checked, otherwise your balloon can rasterize with odd proportions.

Word balloons can also be created directly in Photoshop. Using the Circular Marquee tool, you can form the basis of your balloon over your text.

Next, use the Lasso tool to add a tail.

Now, to draw the balloon all that remains is to fill it with white and stroke it. This can all be handled from the keyboard to speed the process up. Hit **[D]** to toggle default colors black & white. Then **[X]** to swap them, so that white is in the foreground. Then fill the selection using **[shift + backspace/delete]**.

Hit **[X]** again to swap the foreground and background colors again and then stroke the selection **[edit>stroke...]**. I use the following settings:



Your balloon should look similar to this:

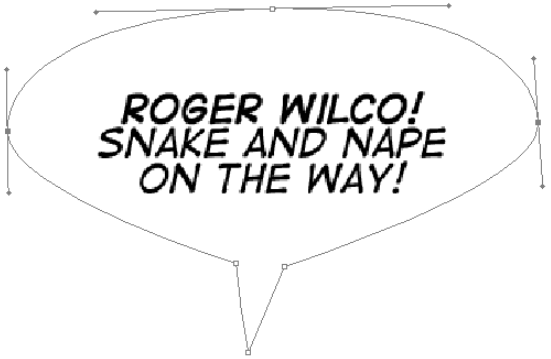
To finish it off, threshold the entire balloon (stroking can leave and anti-aliased line) and then flatten the image.

This can get a little tiresome after the 10th time, so I've created an action you can use which will make the process even faster!

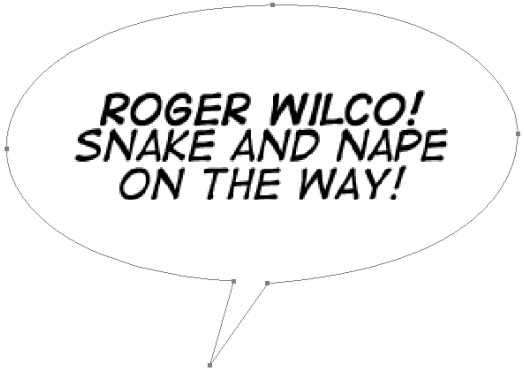
Balloons can also be created using the path tool. Although a little more complicated, paths work equally well.

First, using the Pen tool, rough in a balloon form around your text.

Next, switch to the Convert Point tool and edit the bezier curves to smooth out the points. This takes some practice to get a good result, so a little patience is important. In this picture, I'm getting close:

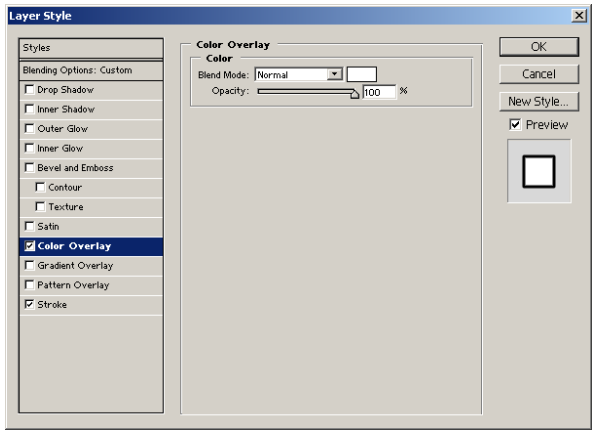


Finally, I've got the balloon the way I want it.

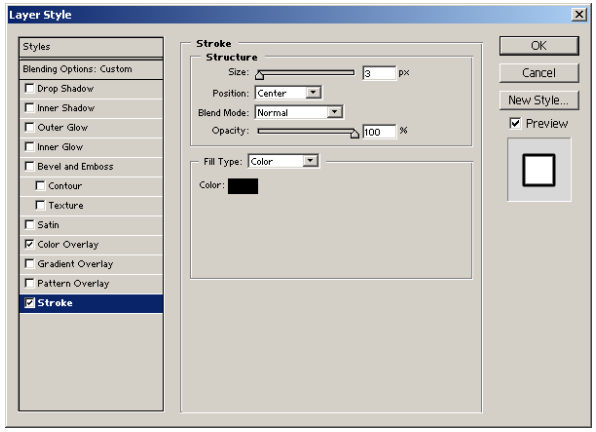


Now it's time to edit the shape's properties. Bring up the Layer Style window by double clicking on the shape preview icon in the Layers palette. Alternately, you can access them in the **[layer>layer style>blending options...]**.

Change the Color Overlay to 100% and change its color to white.



Next, set the Stroke option on and to the following settings:



You can turn off all the other Layer Style options. Make sure your shape is *underneath* your text layer and it should look similar to this:

From here it's a simple matter of flattening your image to finalize it. Depending on your settings and preferences, you may wish to Threshold the image as well, since it will probably be anti-aliased.

The shapes technique is a little more involved, but shapes can be saved and resused, cutting future balloon rendering times dramatically. They resize well too. The custom Layer Style settings can also be saved, so that your balloons will all be uniform and very sharp looking. ■

9 Output

Once you're done editing your images there are some important concepts to be aware to get the best possible results in printing.

LPI

LPI stands for Lines Per Inch. LPI is used as a measurement of halftone size, and was touched on a bit in chapter 6. It's important to check with your printer and know which LPI he or she is using. LPI controls the size of the halftone dots. During the printing process, ink has a tendency to spread a little. This is known as "Dot Gain." If your halftone is too fine for the paper, your dots will all bleed into one another producing a much darker image than you had intended. A high LPI such as 150 is suitable for high quality paper, but would yield weak results on newsprint. A 65-85 LPI would be a little more grainy, but probably print a lot closer in contrast to your original image.

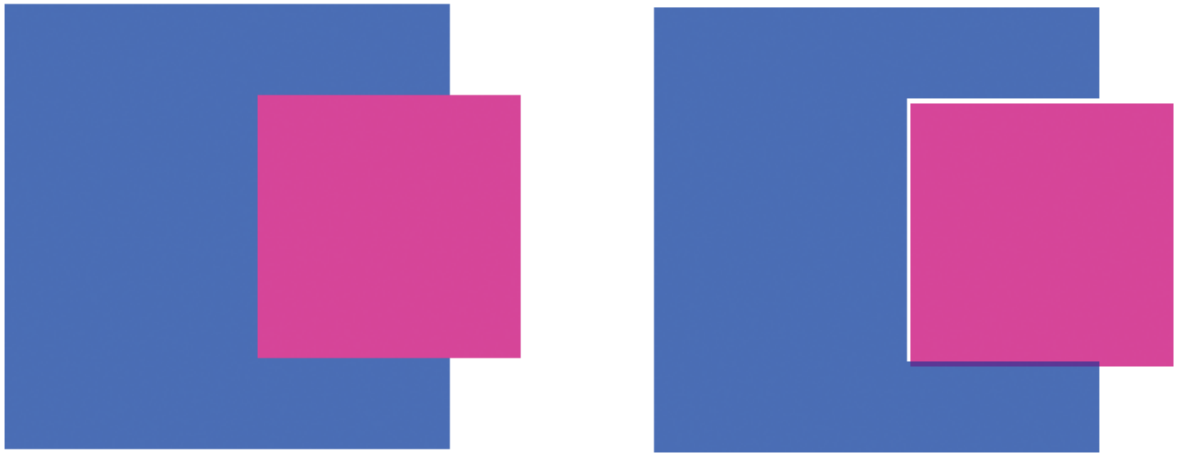
Unfortunately, paper and ink quality is not always in your control. Printers generally have a good handle on these

matters, but if you're aware of the some of the printing pitfalls, you can use some common sense to avoid some obvious mistakes.

Knowing the LPI your printer intends to use is important because it can also affect your decision on which resolution to use. As your halftone gets larger, you're not able to see as much detail, so your file resolution doesn't need to be as large. The rule of thumb is your DPI should be ***twice*** the value of your LPI. A typical comic page is printed at perhaps 133 or 150 LPI. In this case, 266 or 300 DPI would be sufficient information for this file. Be careful though, since this formula only applied to halftones. If you have any 100% black linework, it will ***not*** be halftoned and can appear a bit jaggy at 300 dpi. Lettering tends to be the biggest giveaway. Any black lines that are situated directly against halftones are difficult to spot.

Trapping

Printing is a four plate process, one plate for each for Cyan, Magenta, Yellow and Black, otherwise known as Key. Each color page has to be run under each of the plates, so registration becomes a big issue. If the paper shifts even a little, there will be gaps between the linework and the color.



While you design something to look like it does on the left, misregistration at the printer may make the final version look like the example on the right.

Your printer may ask you to trap your images. Trapping is a procedure which adjusts the tolerance of the plates underneath the Black plate. It does this by enlarging the color just a bit so that if they were to misregister a bit during printing, they won't have such a bad effect. Photoshop can handle this for you automatically.

Convert your document to CMYK. You can only trap a CMYK document, not an RGB one, so this has to be handled last. Trap your image under **[image>trap...]** using the pixel value your printer recommends. ■

10 Reference - Digital Theory

This is a supplemental overview of how digital color works. Believe it or not, there are technical limitations inherent to the digital format. These concepts are not going to have a huge impact on your day to day work but they are important for an advanced understanding of Photoshop.

Color Space Theory

Computers are binary; they store data in a series of 1's and 0's refered to as bits. Eight consecutive bits is refered to as byte. 1024 of these bytes is refered to as a kilobyte. 1024 kilobytes is refered to as a megabyte. For those curious this continues in the exact same manner with Gigabyte, Terabyte, Petabyte, Exabyte, Zettabyte and finally Yottabyte.

Graphics often described by the number bits used to define each pixel. A 1-bit image is monochrome. An 8-bit image supports 256 colors or monochrome values. RGB Photoshop images are considered 24-bit images. If you look in the channels palette while an RGB image is open, you'll note three individual 8-bit

channels: one each for the red data, green data and blue data. Since each of these 8-bit channels can have a total of 256 possible values and there are three of them, when combined 256*256*256 = a total possible range of 16.7 million colors! This range of possible values is also known as our Color Space. 16.7 million colors might seem like a lot, but sometimes even that amount isn't enough!

Sometimes, when creating gradations between two similar colors this limitation can be spotted. If there aren't enough color values between the two points of the gradation, you can see the individual steps of the gradation. This is strange phenomena is refered to as banding. Photoshop gives you the option of dithering the gradation, which is method of scattering pixels from both steps to make the band less visible.

The limitations of 24-bit color become even more apparent when you start editing your images. Radical color shifting, levels adjusting, brightness & contrast and hue/saturation changes can result in some of the information in your image getting "blown out". By this I mean the mathematical formula Photoshop uses to calculate these new changes can actually alter the values in your 8-bit channels so they no longer have any variation. You can peak your data out and the result is sort of an overexposed image. You're literally losing data when you do this! Subtle shifts don't have a discernible data loss, but extreme ones can leave your image with large areas with little to no variation in pixel values. So, if you want to rework the piece, Photoshop has far less information to calculate with and your piece will increasingly look severe. I refer to this as Pixel Rich and Pixel Poor. If your curious as to how full the range of color data is in your image, Photoshop allows you to view this with the Histogram Tool **[ctrl H]**. The Histogram tool polls and displays the entire range of color data in your image. A healthy picture such as well-balanced scanned photo should have a smooth bell-curve of data. Severely altered images often have large ranges of color data removed or a comb-like structure, revealing potential problems ahead for further editing.

I bring this up because Photoshop-generated images can be very Pixel Poor to begin with. The images we create during comic coloring or digital painting are typically made with standard brush and airbrush tools, which actually introduce very little variation in pixel-values and not a whole lot of dithering. This means we're particularly vulnerable to blowing out our images due to repeated global alterations. This is something to keep in mind when working and reworking your images.

48-bit color. One of the ways to decrease banding is to increase the color space. 48-bit color uses three 16-bit channels to define color instead of three 8-bit channels. Sadly, Photoshop 7 only offers limited 48-bit color editing capabilities. Photoshop 8 is poised to change all this, but as of this writing it has not been yet released.

Modes and Color Space

Most comic work is accomplished in RGB or CMYK mode with Photoshop. Each of these modes has a distinct color space with certain advantages and disadvantages, as discussed in previous chapters. What's important to note is that many of the modes that Photoshop supports have their own color space and translating a document between modes can truncate your color data.

LAB Mode

Photoshop uses LAB color as it's own internal color model, so it's becomes important to understand some of the advantages you can get from this little-used mode. When you switch modes, Photoshop actually uses LAB color to convert your color. The LAB color model does an excellent job of preserving colors during translation if they're within the color space of the new mode.

Instead of splitting the color of an image into 3 channels such as RGB mode, LAB color defines a Lightness channel (L) and two color channels (A) and (B). The color channels define a ramp between red and green and blue to yellow. Having the lightness information on it's own channel can prove very helpful for many editing tasks. Dodging and Burning this single channel allows you to control the value without altering the color information. You can sharpen or add grain in the image as well, all without introducing color artifacts.

Keep this unusual mode in mind in the future, it can be very useful for certain editing operations. ■

11 Reference - Resources

There are a number of amazing resources available online for people interested in learning more about digital art. Here's a list of some of the more interesting resources.

Company Sites

Adobe.com - (http://www.adobe.com) For the latest Photoshop news, program updates and active user forums, look no further than the source. Adobe also maintains several online Photoshop tutorials and an online store. Additionally, Adobe also hosts free seminars for many of their programs in many cities across the U.S. which you can sign up for on the web. I recommend you sign up for their company newsletter.

Adobe Studio Exchange - (http://share.studio.adobe.com) Formerly ActionXchange, Adobe now runs this excellent resource for sharing actions, plug-ins, extensions and tutorials for all their programs. New files and techniques are added daily!

Wacom.com - (http://www.wacom.com) An excellent resource for information about their tablets, the latest driver updates and special sales/software bundles. They also maintain an archive of Photoshop tutorials in their "Tips" section. I recommend you sign up for their company newsletter.

Digital Art Forums

Sijun.com - (http://forums.sijun.com) Probably the oldest digital art forum on the net. Populated with over 10,000 users from novices to professional matte painters. The forum has strong emphasis on painting and painting technique.

Eatpoo.com - (http://www.eatpoo.com/phpBB2/index.php) An offshoot forum of Sijun. Eatpoo has a lot of attitute as well as amazing artists. The attitute can get a little juvenile, but the focus on fresh, innovate work never wavers.

Conceptart.org - (http://www.conceptart.org) Ironically, there's little concept art on the site. Instead, this forum features a large number of specialized forums for digital artists of all types. While conceptart.org only boasts fewer than 5000 members, it's an astonishingly busy board with some remarkable work. It also hosts a number of inspirational galleries of professional artists.

Digital Art News

CGChannel.com - (http://www.cgchannel.com) Daily news and features all centering on the digital arts industry. The site also hosts a fairly active forum for digital artists.

InsideCG.com - (http://www.insidecg.com) Another daily news site. This site also features an active forum for digital artists, with a strong emphasis on 3D.

CGNetworks.com - (http://www.cgnetworks.com) Another daily news site. This site also hosts the CGTalk forums, probably one of the largest and most varied online community of digital artists. Definitely worth checking out. Lots of active members and application specific forums.

GFX Artist - (http://www.gfxartist.com) A site designed to find and feature amazing art around the net. It's more of an art community geared around communicating and learning about digital art. Members can post their work.

Comic Coloring Sites

ComicColors.com - (http://www.comiccolors.com) A site with tutorials and galleries specifically for comic coloring. It's not updated very often, but there are quite a few interesting resources and links.

GutterZombie.com - (http://www.dave-co.com/gutterzombie/index.php) A comic coloring forum hosted by Dave McCaig and Brian Reber. It's pretty active with lots of pros contributing. ■

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